FOR THE RADIO LISTENER

shortwave magazine

December 1993 £1.90 ISSN 0037 - 4261

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Cover:
Our cover this month shows an impressive lightning strike in Tucson, Arizona. Avoid losing your radio gear and be safer too by protecting it from lightning.

Photo: Keith Kent Science Photo Library.

BOOK OFFER DECEMBER 1993

SUBS OFFER DECEMBER 1993

features

regulars

good listening

editorial

SWM SERVICES

Subscriptions

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

Components for SWM Projects

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

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

Back Numbers and Binders

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

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

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

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

A new face is introduced to the *SWM* Editorial Team with this issue. Peter Hirons G1CEI joins as the new Assistant Editor. Peter has been interested in radio for about thirty years and licensed for some ten of these. A keen v.h.f. and u.h.f. operator, he has participated in numerous contests and is a supporter of the WAB Group and a member of RSGB. I expect that he will enjoy working to make the magazine what you, the readers want, just as much as I do.

Dick Ganderton G8VFH

letters

The Solution to the ATS-803A Problems?

Dear Sir

I was interested to read the letter from your Belgium correspondent Mr S. Malcom concerning the problems he had experienced with the Sangean ATS-803A after changing the batteries.

I had similar problems, including continuous frequency scanning and no control of the on/off switch. Thinking that this might be a corruption of the microprocessor control program, I looked through the manual to see if there were any references to a reset button. In the last entry of the *User Troubleshooting Chart* at the back of the manual, reference is made to incorrect display functions, recommending that the batteries should be removed and re-installed after 10 minutes if such problems are seen.

Having done this I found that the receiver functioned correctly again, so I suggest that this action should also solve Mr Malcom's problems.

T. Fairhead
Cambridge

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

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

If at First you don't Succeed...

Dear Sir

Thank you for publishing my recent letter regarding the SWM-50 receiver, and thanks to H. S. Stevens for the reply. Unfortunately, his suggestions did not improve matters, but at least I was encouraged to get the set off the shelf and have another go. The end result was a working receiver!

Ultimately, the specified RFC was an order of magnitude too small. The 'hundred turns on a one watt resistor' gave an inductance in the region of hundreds of micro-henries, the final component ended up in the region of 5mH. This item needs to be low resistance, and therefore bulky, to ensure minimal voltage drop, bearing in mind, the 100mA current draw of the specified valve's heaters.

Nevertheless, I did learn a lot about the fine tuning of a t.r.f. receiver, no doubt re-inventing the wheel on the way, and thought you readers may be interested in a few pointers if they have built, or anticipate building, the three-valve receiver you recently published.

Nothing much is new under the sun, much less so with this class of receiver. All the old rules hold true. Principally, large diameter, coils or heavy wire are much better than compact ones of thin wire, especially if the turns are spaced rather than close wound, thus 15 turns of 20s.w.g. on a 35mm diameter former, spaced over 35mm gives wider coverage, better signal strength and greater selectivity than 30 turns of 26s.w.g. on a 15mm diameter former, close wound. Tapping points seem to be able to be relocated pro-rata, i.e. two turns up on the 15 turn coil equates approximately to four turns up on the 30 turn coil, but be prepared to experiment. Especially with large diameter coils, plus or minus half a turn can make a difference on a weak station. Get the set working on a strong signal, then find the weakest station and you can try shifting the taps, you may well be surprised at the improvement.

A couple of other details concerning the grid-leak resistor and it's associated capacitor, R5 and C5 in the three valve set. The resistor can probably be usefully increased in value, going from 1MΩ to 10MΩ made a noticeable difference in my SWM-50. I finally settled at 20MΩ with a marginal further improvement. Also the capacitor is frequency dependant. A value of 100pF or thereabouts is necessary for regeneration to occur at 3MHz in my set, reducing to 20pF or less at the h.f. end of the scale, with a marked increase in selectivity, presumably due to the reduced loading on the tuning coil. Builders of a switched coil set may care to try including a modification along these lines.

Finally, wide band sets such as these definitely need the assistance of a good a.t.u. if they are to give anything like their best from the usual s.w.l. long-wire and ground arrangement, check out *SWM* April '87 and August '87 amongst others for suitable ideas.

C. R. Eve
Jersey

letters

Protecting you Assets

Dear Sir
I have recently purchased a Yupiteru MVT-7100 hand-held scanner. Let me say at the outset that I am very pleased with its performance and ease of use. However, I am disappointed that it was not supplied with a soft protective case. By its very nature, a portable scanner such as this is carried around in pockets, bags and glove compartments etc. Even with greatest care, the scanner and in particular the l.c.d. screen cover is likely to get damaged or scratched unless a protective cover is used.

The MVT-7100 is an expensive piece of kit. Why cannot a soft case be supplied as part of the package as is the case with many other scanners? Surely it is not entirely a case of 'if you are prepared to pay an additional £20, it can be?'.

To compound the situation, I understand that dealers are having great difficulty in obtaining supplies of appropriate soft cases. In that we are lead to believe that the MVT-7100 has been a good seller, there must be many other owners out there in 'scannerland' who would form a ready made market for what must be grudgingly accepted as an 'optional' extra, as a means of protecting their investment.

S. Bates
Berkshire

What do other readers think about optional extras? ***Ed***

Antennas for 122MHz

Dear Sir
A friend and I were chatting on two metres last week and the question on making a collinear antenna for the airband frequencies arose.

We both have Yupiteru airband receivers which are fed from home-built dipoles, loft mounted. Whilst we get good results, we are wondering if anyone has published a design for around the 122MHz frequency?

A collinear would give us around 5 or 6dB of gain, and a $\frac{5}{8}\lambda$ over $\frac{5}{8}\lambda$ would be too unwieldy when mounted outside.

We don't wish to use pre-amps as they not only amplify the signals, but also the noise. Our joint experience on two metres has led us to the conclusion, that you only use the pre-amp when you have to.

If you can give us any information concerning construction details of a suitable antenna on similar lines to GPV-5 used by many amateurs for two metres, we would be very grateful.

Hoping that you will be able to assist us, possibly you could give us some details about 'scaling' the GPV-5 to suit the 122MHz frequency.

Stan Clark G6NUO, Birmingham

Any readers out there had any experience of scaling the GPV-5? ***Ed***

More on the Morse Test

Dear Sir
I just had to sit down and type out this letter, after reading the whinging letter in this months *SWM*. It goes on and on, month after month.

As you know, I have been around ham radio for a large number of years, I started off at the age of 12 with 19 Sets, 18 Sets and 38 Sets and the like and I have to admit to the self-appointed call of GMS (No-one would know from that that my name was Michael Stott), I even made a c.w. transmitter with about 1 watt output that worked on 4.3MHz, as a company on the south coast sold crystals at about ten a pound. This was used to communicate across the village. I then went on to a.m. CB, back in the 70s before it was used in the UK by the truckers.

More recently, I got involved with f.m. CB using the handle "The Good Doctor", just to find out what was going on with this new mode of communication that we had been allowed to use. Unfortunately, I see the DTI lost control of it as (a) They should have given a call number to its users i.e. G2345 for Great Britain and GM2346 for Scotland and also that if you wished to have a call name (handle) this was registered to an address. To make the next bit work a callbook should be published, this would help the RIS find where sources of interference were coming from, i.e.. "Plastic Chicken" is giving interference so they could then look up his address and help him to put it right. As it is now, it is a right hotchpotch with only about 5% of CBers holding a licence. And (b) if a callbook was available a lot more people would wish to have a recognised call and keep it!

I took the RAE exam for the second time in 1968 and passed, the first time was seven years earlier when I was 14 years old. I failed this because of a lack of technical experience required in those days, the second time I passed, and was given the call G8BGU, this getting the nick name "Big Gertys Underwear". I started out on 70cm only, as all Class B stations had to at that time, with a APN1 radio altimeter transmitter converted for a.m. and f.m. (I think it did both in both modes), the unit being a self excited oscillator drifted through the band in about 15 minutes, and one had to call the other party up on the phone for a contact!!, well that was my start out in HAM radio, I had been a s.w.l. for about 6 years before that and a regular reader of *SWM* (where do you think I obtained the 19 Sets from RELDA RADIO).

But as I got on the air, Morse did not bother me at the time, I could do Morse at 5 w.p.m. from my days in the Boy Scouts, but that was it. Every time I tried, I might add with not too much effort, I hit the 10 w.p.m. wall, this for me was as fast as my poor brain could look down the list of Morse code characters that I had in my head and put the resultant letter down on paper, the numbers were not too bad, as I think I learn at a younger age the correct sounds or at least I split the list in half and only had five numbers to choose from. I think the five figure groups the forces send on shortwave could have been some help, but you could not be sure that you had got them all correct, but you got used to the sound blocks!!!

Well, after 24 years a local ham (G4LV), who had started me off in the hobby, became terminally ill and one day as I was taking tea with him in his last few remaining months I asked if there was anything I could do for him, he turned slowly to me, smiled and said "Get a proper licence". That was it! One hour per day for two months and I was up to 15 w.p.m. So you see, all you require is a need or a goal.

But the main point about the Morse test is the fact that just about every other country in the world has the same requirements for h.f. operation and if we did not have Morse on h.f. we could not have the reciprocal licences that we have today. If this lot wish to get on h.f. let those with a Class B licence do the 5 w.p.m. Morse test and get on to the h.f. bands. I think that they will soon find with a few weeks of h.f. on c.w. they will have both the speed and the confidence to take the 12 w.p.m. test.

Just out of interest, how many Class B hams operate c.w. on 2 metres? This would be a good place to start to build up speed and also confidence. There I go with that word again, well, I have been teaching the RAE for 25 years now and have found that over the last years, that's what its all about, the first step, getting on the air, having someone come back to that first CQ call.

This is one of the reasons why I am so pleased to be involved with the novice licence, as part of the pre-exam course is to make a phone contact. Can you remember your first contact? well, its the same with c.w., except you are doing it in another language, its like being plonked in the middle of Russia and then trying to sell vodka, everybody wants it, but nobody understands you!!

I am not saying that learning c.w. is easy, but as most of you went to RAE classes, and studied, so why not go to c.w. classes, and if your club is not running them, well ask them too, it's all part of becoming a radio ham.

Michael Stott G0NEE, G8BGU, WB6DJE
Northumberland

As someone who has been trying on and off for about 24 years to get around to the Morse test I would like to hear of anyone else's stick or carrot that finally made them take the plunge. ***Ast Ed***

grassroots

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

rallies

* Short Wave Magazine & Practical Wireless in attendance

***December 12**: Centre of England Christmas Radio, Satellite, Computer & Electronics Rally. **New Venue**, the Sports Connexion Centre, Leamington Road, Ryton on Dunsmore, Coventry A45/A423. Open 11am, admission £1, concession for RAIBC members and Senior Citizens, disabled through side door 10.30am. Over 80 traders, Bring & Buy, Talk-in on S22, bar and hot food all day. Ample free parking. **Frank Martin G4UMF. Tel: (0952) 598173.**

1994

February 13: 3rd Northern Cross Rally will be held at Rodillian School on the A61 between Leeds and Wakefield (near junction M1/M62). Doors open 11am (10.30am disabled visitors and Bring & Buy). Usual dealers, ample parking, bar and refreshments, Morse Test and talk-in on S22. **Dave Gray. Tel: (0532) 827883.**

February 26: 9th Rainham Radio Rally, this year a new and larger venue at the Rainham School for girls, Derwent Way, Rainham, Gillingham, Kent, easy to find from junction 4 M2 motorway, A278 or the A2 from Rainham, just follow the R.R.R. arrows or send an s.a.e. for a map. More space, more traders, ample parking, Bring & Buy, refreshments and snacks area with tables and chairs, all on one level, easy access for disabled. Admission £1, children under 16, free. Talk in on GB4RRR on S22. **G7JBO. Tel: (0634) 365980.**

March 27: The Bournemouth Radio Society is holding its 7th annual sale at Kinson Community Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth. Doors open at 10am, close 4pm. Talk-in from G1BRS on 2m S22. Amateur radio and computer traders, clubs and specialised groups. Excellent refreshments. Admission £1.00 including free raffle ticket. **Ian G2BDV, QTHR. Tel: (0202) 886887.**

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

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

AVON

RSGB City of Bristol Group: last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. November 29 - Annual home-brew construction contest, December 20 - Christmas party. Dave. (0272) 672124.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. December 1 - Darts evening-club match, 8th - 20 metre DX RX evening, 15th - Christmas party. For more information ring 02758 32222 on a Wednesday evening.

BUCKINGHAMSHIRE

Atari RUG: G. Rayer, 38 Brockhurst Road, Chesham HP5 3JE.

CORNWALL

Cornish RAC: 7.30pm. The Village Hall, Perranwell Station, Perranwell, Nr. Truro, Cornwall. December 2 - Club Christmas party, 13th - Computer section party and natter. Geoff. (0209) 820836.

DERBYSHIRE

Derby & DARS. Wednesdays, 7.30pm. 119 Green Lane, Derby. December 1 - Surplus sale, 8th - Constructors contest. Mrs Hayley Winfield, 2 Hilts Cottages, Crich, Matlock, Derbyshire DE4 5DD. (0773) 856904.

DEVON

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. December 17 - TARS annual Christmas party. Peter G4UTO. (0803) 864528.

ESSEX

Vange ARS: Thursdays 8pm, Barnstable Community Centre, Long Riding, Basildon, Essex. December 2 - Junk sale, 9th - Television, 16th - Christmas buffet. Doris. (0268) 552606.

FIFE

Dundee ARC: Tuesdays, 7pm. College of Further Education, Graham Street, Dundee. November 30 - Members question and answer night, December 7 - Construction night, 14th - Lectures on 'Medical Imaging' by Paul Rudd GM0CQL and 'Magnetic Resonance Imaging' by Dr. Malcom Nimmo GM8JVZ, 21st - Construction night. GM4FSB, 30 Albert Crescent, Newport on Tay, Fife DD6 8DT.

GREATER LONDON

Edgware & DRS:-Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. November 25 - Morse training evening, December 9 - Junk Sale. Rod Bishop 081-204 1868.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. November 26 - Club quiz, December 10 - Christmas social. 081-540 2180.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. December 14 - BARS Christmas dinner. Barry Taylor. (0527) 542266.

Bromsgrove & DARC: Fridays. Avoncroft Arts Centre, South Bromsgrove, Worcester. December 10 - Christmas party WCP. Joe Poole. (0562) 710010.

HERTFORDSHIRE

Dacorum AR & TS: 1st (informal) & 3rd (formal) Tuesdays, 8pm. The Heath Park, Cotterells, Hemel Hempstead. December 21 - Club Christmas dinner. Nicholas Camp, 48 Northfield Road, Harpenden, Herts AL5 5HZ.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. 28th - Talk on Morse code with Tony Smith G4FAI, December 9 - AGM. Roy G4UNL. 081-804 5643.

HUMBERSIDE

Wirral & DARC: 1st & 2nd Wednesdays, 8pm. Irby Cricket Club, Mill Hill Road, Irby, Wirral. December 1 - D&W at the Basset Hound, Thingwall, 8th - Talk (TBA), 15th - D&W at The Hotel Victoria, Heswall. Paul 051-648 5892.

KENT

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. December 14 - (Second Tuesday) Christmas party. A. Messenger. 081-777 0420.

Medway AR&TS: Fridays, 7.30pm. Tunbury Hall Catkin Close, Tunbury Avenue, Walderslade, Chatham. December 17 - Christmas social. Gloria. (0634) 710023.

Sevenoaks & DARS: Sevenoaks DC, Council Offices, Argyle Road, Sevenoaks. December 6 - AGM & social. Dave Sutton G0IPH.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. December 3 - Informal meeting, 17th - Annual Christmas party. John Taylor G3OHV. (0892) 664960.

LANCASHIRE

Rochdale & DARS: Mondays, 8pm. Cemetry Hotel, 470 Bury Road, Rochdale. December 20 - Christmas talk. G0PUD. (0706) 32502.

NORFOLK

Norfolk ARC: Wednesdays, 7.30pm. Formal meetings: University Arms, South Park Avenue, Norwich, Informal meetings: Hewett School, Hall Road, Norwich. December 1 - (informal) Committee meeting, night on the air, 8th - (formal) Voice pitch control by Ted G3CWC, 15th - Christmas party. Sheila Snelling G0KPW. (0603) 618810.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. December 13 - Christmas social evening. Mary G0NZA. (0623) 755288.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. December 26 - Talk in on S22 & on air - h.f. + v.h.f. + construction at Fairham College. Julie Brown G0SOU. (0602) 211069.

SOMERSET

Wincanton ARC: 1st & 3rd Mondays, 7.30pm. The Community Lounge, King Arthur's Community School, Wincanton, Somerset BA9 9BX. December 6 - Slow scan TV by C. Tabor G3UGR, 20th - Open evening, general discussion and activation of the club h.f./v.h.f./u.h.f. stations. Dave G3ZXX. (0963) 34360 Or Andy G1FPW. (0747) 51381.

WARWICKSHIRE

Mid Warwickshire ARS: 2nd & 4th Tuesdays. December 14 - Christmas meeting. Don Darkes. (0926) 424465.

Stratford Upon Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon- Avon. December 13 - How to get started on satellite and work the world on v.h.f./u.h.f. by John Heath G7HIA. Mr A Beasley G0CXJ. (0608) 682495.

WEST MIDLANDS

South Birmingham RS: West Heath Community Association, Hamstead House, Fairfax Road, West Heath, Birmingham. December 10 - Christmas party. G1DKI. 021-474 3784.

WILTSHIRE

Trowbridge & DARC: 3rd Wednesday. The Southwick Village Hall, Southwick, Trowbridge. December 1 - Christmas party and skittles evening, 15th - Natter nite, last meeting of 1993. Ian G0GRI. (0225) 864698.

junior listener

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

As this is likely to be the last issue to reach you before Christmas I thought I'd put together a few ideas for you to add to your Christmas list!

Have you ever fancied having a go at utility reception! If so why not have a look at the popular ERA Microreader. This stand-alone decoder connects to the audio output of your receiver and shows the resultant text on its built-in sixteen character display. It handles automatic reception of Morse and a useful range of radio teletype signals. Just to make the unit more attractive

the Microreader includes a comprehensive Morse tutor. In addition to the usual random groups of characters, the Microreader can check and display your hand-sent Morse. The Microreader currently costs £170 inclusive of VAT however, Director Bill Green has offered a £10 discount to Junior Listeners. For more details contact **ERA at Unit 26, Clarendon Court, Winwick Quay, Warrington WA2 8QP. Tel: (0925) 573118.**

Also on the decoding front is the MCL-1100 starter pack from Momentum Ltd. This package comprises the MCL-1100 decoder complete with a green screen 9in monitor and the a.c. mains adapter. All you need to do is plug the supplied lead into the external speaker jack of your receiver. The modes offered are Morse and four Radio Teletype modes. The current price for the starter pack is £299.95 including VAT. Full details can be obtained from **Momentum Ltd., 6 & 7 Clarkson Place, Dudley Road, Lye, Stourbridge, West Midlands DY9 8EL. Tel: (0384) 896879.**

If you need a radio to get started in the hobby you could take a look at the excellent range from the long established Roberts Radio Company. They produce a number of short wave receivers that have proved very popular with newcomers to the hobby. As a basic starter you could try the R101 which features seven short wave bands in addition to medium wave and stereo f.m. All this for a recommended retail price of £49.99. Next up the scale comes the R621 which includes an extra short wave band and clock/alarm facilities. All these extras come at an excellent £59.99.

For those that want the convenience of a digital frequency entry and display the R808 is a very good choice. The ability to enter the required frequency using the built-in keypad makes short wave listening a real pleasure and is well worth the extra cost. These digital features are further enhanced by the

inclusion of 45 tuning pre-sets that can be used to store all your favourite frequencies. The approximate retail prince for the R808 is £120. For more details on these and other Roberts models contact your local dealer or **Roberts Radio Co Ltd., Molesey Avenue, West Molesey, Surrey KT8 0RL or Tel: 081-979 7474.**

Still on the subject of receivers, Link Electronics of Peterborough have sent me a copy of the latest Tandy catalogue. This contains a wealth of goodies for the radio enthusiast. If you're interested in scanning Tandy have receivers ranging from the ten channel, £99.95 PRO-41 through to the £299.95 PRO-2006 with four hundred memory channels. This also features comprehensive coverage from 25 to 520MHz and 760 to 1300MHz. Contact either **Link Electronics, 216 Lincoln Road, Peterborough PE1 2NE** or your local Tandy store for more information.

If scanning takes your interest you would also be well advised to take a look at the AOR range of high quality receivers. Top of the range is the all mode, all band AR-3000A that features continuous coverage from 100kHz through to 2036MHz! This receiver also features full computer control and some four hundred built-in memories. As you would expect a receiver of this specification demands a high price, which in this case is around £949 including VAT. For a more modestly priced hand-held receiver the AR2000 takes a lot of beating at £309. This includes reception of a.m. and f.m. with continuous frequency coverage from 500kHz to 1300MHz. One particularly interesting facility offered by AOR is their Nearly New sales. This is slightly soiled or faulty on receipt items that are offered for resale with a full twelve months guarantee. To give you an example of the potential savings they offer a £150 saving on the AR-3000A. For more details contact your local dealer or **AOR (UK) Ltd., Adam Bede High Tech Centre, Derby Road, Wirksworth, Derbys DE4 4BG . Tel: (0629) 825926.**

Moving onto accessories, Datong have been supplying the radio market for many years. For those with very limited space for antennas the Datong active antenna systems can prove to be very helpful. The indoor AD270 covers from 200kHz to over 30MHz in a very compact unit priced at £59.95 inclusive of VAT. If you need an outdoor version the AD370 will fit the bill and costs £79.95. Datong are also famous for their excellent audio filters that can be used to improve the reception of all types of radio signals the two main offerings are the FL2 and FL3. The difference between the two being the inclusion of an automatic notch filter in the FL3, prices are £99.95 and £149.95 respectively. **Datong** can be contacted at **Clayton Wood Close, West Park, Leeds LS16 6QE . Tel: (0532) 742872.**

If you'd like to try your hand at some home construction it's well worth contacting C. M. Howes Communications of Daventry. They are very experienced in supplying kits to radio enthusiasts and have a wide range of products to suit all listeners. For those wanting to start out in broadcast reception you could try the TRF3 kit at £15.50. This provides coverage from 5.7 to approximately 12.8MHz in three switched bands. In order to complete the project you may also need to buy the HA33R hardware kit which brings the total price to £41.40. If you need an active antenna, the AA2 kit at £8.90 represents a very good starting point for the home constructor. This is only a very small selection of the range of kits available from Howes. If you're not too sure about your soldering ability you can purchase most of the kits as ready assembled p.c.b.s so you only have to build a suitable case. More information can be obtained from **C.M. Howes Communications, Eydon, Daventry, Northants NN11 6PT. Tel: (0327) 60178.**

news

Power supply for Black Jaguar Scanners

Solid State Electronics have released details of the SE PSU101 BJ power charger. This unit is designed for the Black Jaguar MkIV (*reviewed in last month's* SWM - *Ed*) and the Black Jaguar 1200/1300 pocket scanners. The 80mm-wide back will support these wider than normal scanners. A mains lead with fitted plug and a d.c. lead are supplied and is equally suitable for other scanners and hand-held equipment.

Solid State Electronics (UK), 6 The Orchard, Bassett Green Village, Southampton SO2 3NA. Tel: (0703) 769598 or Fax: (0703) 768315.

New Scanmaster Products from Nevada

Nevada have sent us information on three new products to join the Scanmaster range.

The Scanmaster Double Discone covers a receiving range of 25 to 1300MHz and offers better performance than the convention Discone and a low v.s.w.r. for transmission from 130 to 175MHz and 410 to 475MHz. The elements are stainless steel and the antenna is supplied with mounting kit and pole. The introductory price of £59.95 offers a saving of £10 over the normal price.

The Scanmaster QS300 Adjustable Desk Stand should allow any hand-held scanner to be used conveniently on the desk top. The unit is fully adjustable both horizontally and vertically, comes complete with a BNC to SO239 socket and costs £19.95.

The Scanmaster Mobile Mount allows the easy use of any scanning receiver in the car. The holder clips on to the air vent grill and costs £9.95. Both items are equally suitable for use with hand-held two-way radios.

Further Information from: **Nevada, 189 London Road, North End, Portsmouth, Hants PO2 9AE. Tel: (0705) 662145**

Martin Lynch Official Opening

Saturday 6 November saw the opening of Martin Lynch's new shop in Northfield Avenue, Ealing. Just a few hundred yards from the old one, but with four times the area, the store was packed for most of the day, requiring the food supplies to be restocked five times.

Representatives were on hand from the UK importers of Icom, Kenwood and Yaesu, as well as our 'home grown' AOR, to answer prospective purchasers' questions.

The store stocks all the major brands with many systems wired up and ready to try. All the usual accessories and a good range of second hand equipment are also available.

We wish Martin and his team the best of success with the new store.

Residential Course in Somerset

Kilve Course Residential Education Centre in Kilve, Somerset is running a residential weekend course called *An Introduction to Amateur Radio* The course, directed by Adrian Dening G4JBH, runs from 18 to 20 February 1994 and costs £59.50. Accommodation is in dormitories and twin rooms, some in the Georgian country house and some in the modern extensions.

The aims of the course are to use amateur radio to demonstrate the theory behind the uses of radio communication. Topics to be covered include propagation of radio waves, components of an amateur radio station, operating practices, computers in radio, home construction and radio experiments. Course participants will be able to transmit during the weekend as the callsign GB2KRC will be in use. Further details from: **Kilve Court Residential Education Centre, Kilve, Bridgwater, Somerset TA5 1EA. Tel: (0278) 741270, Fax: (0278) 741551.**

news

Short Wave Listeners' Contest

The White Rose Amateur Radio Society are holding their 13th International Short Wave Listener Contest on 15 - 16 January 1994. The rules for this contest, on the lowest three amateur bands, are:

1. From 1200UTC 15 January 1994 to 1200UTC 16 January 1994. The contest is over 24 hours but only 18 hours may be operational during the 24. A continuos 6-hour rest period must be clearly show in the log.

2. The contest is open to all s.w.l.s in the world. There will be two sections - Phone and c.w. Transmitting amateurs holding v.h.f. licences and Novice licensees are very welcome to participate. Multi-op and mixed mode entries are not allowed.

3. The 1.8, 3.5 and 7.0MHz bands are to be used.

4. The object of the contest is to log a maximum of five stations on each band in as many countries as possible. Scores shall be compiled as follows:-
Countries outside one's own continent score five points. All other countries score one point. Total points on each band to be multiplied by the total number of countries heard on that band. The final score is the total of the three bands.

5. The call areas of Canada, Japan, Australia and New Zealand will all count as separate countries, i.e.:- VO1, VO2, VY, VE1-VE5, JA1-JA0, VK1-VK8, ZL1-ZL4. All other countries will be determined by the ARRL Countries List.

6. No CQ, QRZ or similar calls will be allowed to count for points. Aeronautical and Maritime Mobile stations are not to be included in the entries.

7. Log sheets to show the following columns:- Date, Time (UTC), Station Heard, Station Being Worked, RS(T) at the listener's QTH. If both sides of a QSO are heard they may be claimed as separate countries, and the call signs are to appear in the station heard column. Each station heard can only appear once in the station heard column on each band. Logs should be submitted with each band on separate sheets. A separate sheet listing all multipliers for each band should also be included.

8. Entries should be sent to the Contest Manager, Mr David A. Whitaker, c/o The White Rose Amateur Radio Society, 57 Green Lane, Harrogate, North Yorkshire HG2 9LP. Entrants should ensure their entries are postmarked no later than 28 February 1994.

9. A plaque, suitably engraved with the winner's name, will be presented to the overall contest winner. Certificates of Merit will be awarded to the leading s.w.l. station from each country.

Grundig Announce Smallest World Receiver with RDS

The Yacht Boy 500 is new to Grundig's SW radio collection. Measuring only 113 x 186 x 41mm, this set features full s.w., m.w., l.w. and v.h.f coverage. The shortwave covers the entire range from 1.6 to 30MHHz and the bands from 90 to 10m can be directly selected.

The RDS functions in the v.h.f. range provide the station name on the display and automatic frequency selection. Stereo is available on headphones with connections for a recorder.

A ROM table holds information on nine international s.w. stations with a total of 90 alternative frequencies ready for retrieval. In addition, 40 further memories are available which hold frequency and mode (mono, stereo or sideband).

This radio also features a clock with two alarm times and an adjustable 'sleep' function.

The price of £189.99 includes a s.w. handbook and a carrying case.

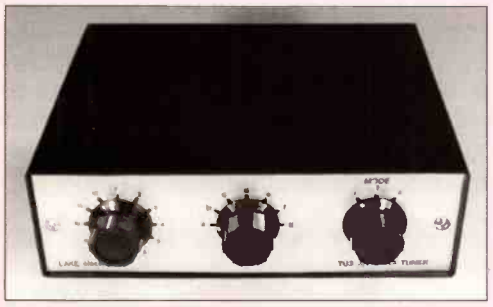
Lesley Treharne-Martin, PR Co-ordinator, Grundig International Limited, Rugby, Warwickshire CV21 1PR. Tel: (0788) 545801.

Extend your Satellite Receiver Coverage

DRS Trading Ltd have introduced the MTI BKU2353 'Quatroband' low noise converter for satellite reception. It offers an extended frequency range of 10.70 to 12.75GHz for reception below the normal 10.95GHz limit. The noise figure at 10.70GHz is 0.8dB. The LNB operates in two bands, switched by a low-voltage control signal from the receiver. The normal price is £159.95 but look out for a special offer in DRS Trading's advertisement in the January issue of *SWM*. Further details from **DRS Trading Ltd., Unit A, Sprint Industrial Estate, Chertsey Road, Byfleet, Surrey KT14 7BD. Tel: (0932) 355540.**

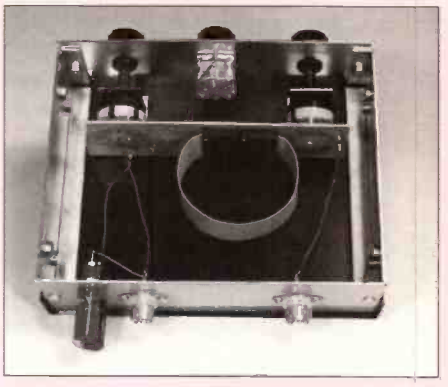
New Antenna Tuner Kit

Lake Electronics have sent information on the TU3 Antenna Tuner Kit produced primarily for the Short Wave Listener using a long-wire antenna on the h.f. bands - 1 to 30MHz.



Based on the L-match, the circuitry can be rearranged, at the turn of a switch, into three different configurations. The result is a very versatile a.t.u. able to 'match' a wide range of receivers, antennas and frequency combinations.

Measuring a neat 170 x 140 x 50mm the unit is housed in a quality aluminium enclosure, finished in matt black with brushed aluminium front and black facias.



As with all Lake Electronics products, the kit comes complete with all components and hardware, including pre-punched case and panels.

The kit is priced at £44 plus £4 postage and the ready-made version at £54 plus £4 P&P.

An s.a.e. to **Lake Electronics, 7 Middleton Close, Nutall, Nottingham NG16 1BX** will bring full details of the TU3 and the rest of the Lake range.

LOWE

NEW!

PR150

Designed mainly to complement our very own HF150 receiver, the PR150 can also enhance the performance of any receiver by helping to eliminate the effects of out of band signals and noise before they even get into the receiver. Its seven bandpass ranges are fully tunable allowing you to peak the wanted signals and an attenuator and pre-amp are built in for added flexibility. You'll be amazed at the difference it can make to a tired, old receiver! Try one on your MVT7100 or AR3000 and unleash the scope of even a scanner on the HF bands. Demand is currently exceeding supply, I'm afraid, but you can try one out in all our branches.

£199.95

WE TAKE A PRIDE IN OUR INFORMATION SERVICES. WE PRODUCE A BUMPER INFORMATION PACK, INCLUDING A FREE COPY OF OUR LISTENER'S GUIDE (OR AIRBAND GUIDE!), LOTS OF BROCHURES AND A COPY OF OUR LATEST SECOND-HAND EQUIPMENT LIST, PUT TOGETHER WEEKLY FROM THE FULLY TESTED AND GUARANTEED TRADE-INS AT ALL TEN OF OUR BRANCHES. WE ALSO INCLUDE UP TO DATE TECHNICAL NOTES IN OUR VARIOUS NEWSLETTERS COVERING ALL ASPECTS OF THE RADIO HOBBY. JUST SEND FOUR 1ST CLASS STAMPS TO LOWE ELECTRONICS AND WE'LL SEND YOUR INFORMATION PACK BY RETURN.

WHAT WOULD YOU LIKE TO FIND IN YOUR CHRISTMAS STOCKING THIS YEAR?

LOWE HF225 **from £479.00**

If only we could make them faster! Our world beating receiver goes from strength to strength - and from 30kHz to 30MHz with ease! CW, SSB and three AM filter bandwidths add to the performance. Options include synchronous detector and keypad

LOWE HF150 **Just £389.00**

With synchronous detection, quality sound, good sensitivity and ease of use, the HF150 has been designed specifically for the serious broadcast listner. Its excellent selectivity on SSB also makes it ideal for utillity monitoring, particulary for wefax reception. Ask about our optional computer control.

HF225 EUROPA **£699.00**

An enhanced HF225, optimised for the needs of the dedicated. broadcast band DXer. Better quality, narrower AM filters improve selectivity whilst magnetically shielded chokes and low capacity switching diodes improve on residual noise performance. Ideal for MW and Tropical Band working. Synchronous detection and keypad included as standard.

BRISTOL'S OPEN DAY !

It's been almost a year since we relocated our Bristol branch, so on the 11th December, Tony and Dave will be opening the doors to customers old and new. They're planning a bit of a party to celebrate with free refreshments all day and of course lots of special offers. Why not call in and see them?

SAT 11TH DECEMBER!

FREE XMAS CHEER! A GLASS OF WINE AND A MINCE PIE WAITS AT ALL OUR BRANCHES DURING XMAS WEEK!

DON'T FORGET THE CHRISTMAS RUSH! THERE'S STILL TIME FOR YOUR MAIL ORDERS TO GET THROUGH! GIVE US A CALL FOR SOME GREAT, LAST-MINUTE PRESENT IDEAS!

MVT7100

Without any doubt, this is the finest scanner we have ever sold. With its 1000 memories, ten user programmable search bands, both dial and keypad tuning, you would think it must be complicated. Not so! This has to be the easiest scanner to program and use! It gives you WFM, NFM, AM, USB and LSB and covers 100kHz - 1650MHz with no gaps, making it truly versatile! Get one now whilst the price is holding!

£449.00

PASSPORT TO WORLD BAND RADIO 1994

"PASSPORT" REMAINS THE BEST GUIDE TO WORLD-WIDE SHORTWAVE STATIONS, BROADCASTING PROGRAMS IN THE ENGLISH LANGUAGE. ITS UNIQUE LISTINGS BY TIME, FREQUENCY AND COUNTRY HELP TO KEEP YOU IN TOUCH WITH WHAT IS GOING ON AROUND THE WORLD. IT'S REVIEWS OF THE LATEST RECEIVERS ARE WELL KNOWN ,HELPING YOU TO CHOOSE EQUIPMENT. ONLY £12.95 IN OUR BRANCHES OR £14.50 BY POST

POOLEY'S FLIGHT GUIDE 1992

IT'S PACKED FULL OF VERY USEFUL INFORMATION ON JUST ABOUT EVERY AIRFIELD IN THE COUNTRY - INCLUDING RADIO FREQUENCIES - AN IDEAL DATA GUIDE FOR THE SERIOUS AIRBAND LISTENER - HELPS YOU TO WINKLE OUT ALL THOSE PRIVATE AIRFIELD FREQUENCIES YOURS FOR ONLY... £4.00 FROM OUR BRANCHES, OR £6.00 INCLUDING POSTAGE

SCOTLAND
Cumbernauld Airport
Cumbernauld
Strathclyde, G68 0HH
Tel / Fax 0236 721004

NORTH EAST
Mitford House
Newcastle International Airport
Newcastle , NE20 9DF
Tel / Fax 0661 860418

YORKSHIRE
34, New Briggate
Leeds, LS1 6NU
Tel / Fax 0532 452657

WALES & WEST
79/81 Gloucester Road
Patchway, Bristol, BS12 5JQ
Tel 0272 315263
Fax 0272 315270

SOUTH WEST
The Basement, Royal Fleet Club
Devonport, Plymouth, PL1 4PQ
Tel 0752 607284
Fax 0752 607285

LONDON - HEATHROW
6, Cherwell Close
Langley, Berks, SL3 8XB
Tel 0753 545255
Fax 0753 545277

SOUTH EAST
Communications House
Chatham Road
Sandling, Maidstone, ME14 3AY
Tel 0622 692773
Tel 0622 764614

SOUTH COAST(Closed Mon)
27, Gillam Road, Northbourne,
Bournemouth, BH10 6BW
Tel 0202 577760
Fax 0202 593882

EAST ANGLIA
152, High Street, Chesterton,
Cambridge, CB4 1NS
Tel 0223 311230
Fax 0223 315099

Most branches and Head Office open Mon - Fri, 9.00am until 5.30pm and on Sat from 9.00am until 5.00pm. If you need to make a special trip to buy something specific, please phone first to check local openning times and equipment availability

Head Office, Mail Order, Service and Spares Department:-

Lowe Electronics Ltd

Chesterfield Road, Matlock, Derbyshire, DE4 5LE

Tel. 0629 580800 Fax. 0629 580020 FaxInfo. 0629 580008

news

Novice Licence Course

A Novice Radio Amateurs' Exam Course is to be run in Sheffield on Monday afternoons (3 - 5 p.m.) starting 13 December. Course fees are £30 (with large reductions for those unemployed or retired). Just turn up on the day or contact **Steve Jackson, SPRITE, Thomas Street, Sheffield S1 4LE. Tel: (0742) 750581**. Please mark your envelopes 'Novice Course'.

Crazy Inventions at the Science Museum

It'll Never Work is the title of a special exhibition running at the National Museum of Science and Industry in London until 10 January 1994. This exhibition is based on a new BBC1 Children's Television series of the same name which has been broadcast on Tuesdays since 9 November.

Highlights of the exhibition include Victorian inventions specially built by the BBC from patent drawings. These include the Velo-douche of 1897 which washes cyclists as they pedal and Henry Rowlands' boat shoes patented in 1858 which let you walk on water.

Modern inventions are not ignored and on display is the latest pocket computer which can learn to recognise your handwriting and the world's smallest mobile telephone.

If you're going to the Science Museum don't forget to visit GB2SM, the permanent Amateur Radio station. If you hold a licence, take it with you and you may be allowed to operate the station.

Science Museum, Exhibition Road, South Kensington, London SW7 2DD. Tel: 071-938 8080/8008

Classic From AOR

The AOR Company have introduced the new AR3030 general coverage receiver to their range of products. The AR3030 has a classical appearance on the outside and comprises of a direct digital synthesiser design on the inside. The result is the New Classic.

The frequency coverage of the AR3030 is from 30kHz to 30MHz and features a.m., s.a.m. (synchronous a.m.), n.f.m., u.s.b., l.s.b., c.w. and FAX as standard. To help provide the ultimate in a.m. selectivity a Collins 8 6kHz mechanical filter is also fitted as standard. In addition to the Collins filter the 3030 is fitted with two other filters, a 2.4kHz for s.s.b., FAX, c.w., a.m., s.a.m., and a 15kHz for n.b.f.m.

Other features include 100 memory channels allowing data to be transferred in and out of the memory giving greater flexibility, 1.8W audio output, and standard headphone socket with 3.5mm jack socket for use with an external speaker. Antenna input is via a 50Ω BNC connector.

Other new models will also be available soon. These include a high performance all-mode wide coverage hand-held transceiver and a new base station all-mode wide coverage receiver.

The price for the AR3030 has yet to be confirmed but further details are available direct from **AOR (UK) Ltd., Adam Bede Tech Centre, Derby Road, Wirksworth, Derbys DE4 4BG. Tel: (0629) 825926.**

(The next issue of SWM *will include a hands-on preview of the AR3030.)*

Radio and TVDX News

China is to develop a system for High Definition TV (HDTV) and reckons to be on-air by 1999 with test transmissions starting 1996ish. City Network Corporation (CNC) is opening six transmitters in the densely populated cities from 1994 onwards giving up to four hours nightly of news and entertainment.

The first national commercial TV network 'Nova' opens in the Czech Republic February, 1994 using the channels in the existing F1 network chain. Programming will be mainly bought in from overseas, already a deal has been signed with Walt Disney and others agreements are expected shortly . As studios and production come on stream so increased local programming will be made.

Hi-TechVision is a new commercial network that opened in Ghana in early Autumn. It is relaying both M-NET and the BBC WSTV in a radius of 50km around Accra on Ch. E35 and Tema Ch. E55, each running 100kW e.r.p. transmitters. Transmissions are scrambled. Kumasi will be reached during late '94 and Sekondi-Takoradi a year later. Programmes, aired for 10 hours on weekdays and around the clock weekends, consist of sports, current affairs and films.

Transmitters across Bavaria are now radiating programming from the RTL-2 service on the following channels: Aschaffenburg E21; Augsburg E58; Bayreuth E46; Deggendorf E52; München E27; Nürnberg E53; Regensburg E48; Rosenheim E50; Weilheim E47 and Würzburg E34 and E56.

September 15 witnessed the opening of the new Swiss TV channel 'S Plus', during the morning period Euronews fills transmission time. A considerable time will be taken up with European sports.

For those readers visiting Australia, keep your receiver tuned to 88MHz for local tourist network stations, of which over 200 have been approved for operation. Currently there are tourist network stations on-air between Darwin and Hobart with 70% editorial and 30% commercial content. The 24 hour services are intended to advise tourists of the local sights to visit, give local advice and information such as chemist shops, doctors etc. The low power format of these stations will be extended to target Aboriginal listeners and scholastic enterprises. In many Australian metropolitan areas real estate radio services are now available. An estate agent will pre-record a tape giving details of a specific house which in turn is radiated from a low power internal transmitter. Intending purchasers can tour the area, locate each house and listen on their car radio (tuned to f.m.) to the house details.

news

£20000 Vintage Ekco Radio

The latest *Bulletin of the British Vintage Wireless Society* reports that a round Ekco AD65 receiver went under the hammer for the grand sum of £20000. No-one is quite sure why this particular receiver reached this price as they normally change hands for around £500. The only thing out of the ordinary was the colour - this one was green instead of the usual black or brown.

Although Ekco made some coloured sets, this model, as well as the one ivory and two other green examples known to exist, may well be the result of a 'marriage' of a chassis from a production set with a coloured case produced specially for an exhibition. This could have been done by either an Ekco employee or a dealer with access to parts.

Originally the Brown AD65 sold for £11.03 (£11.0s.6d in real money), the Black and Chrome for £11.55 and the Onyx Green or Pearl Ivory for £13.16. When the average weekly wage at that time was about £3, the large amount extra for the coloured set would have been a severe disincentive to potential buyers.

Even at £500 it is worth looking in the attic to see what you can find!

The British Vintage Wireless Society hold their own auctions at regular intervals. Anyone interested should contact the Society's Information Officer:
Dave Adams, 69 Silver Lane, West Wickham, Kent BR4 0RX. Tel: 081-7761531.

Frequency Schedule

We have received details of Radio New Zealand's schedule for the period 4 December 1993 to 19 March 1994.

UTC	Freq (MHz)	Comments
0659-1206	9.7	Daily
1207-1649	9.655	Occasional Use
1650-1849	9.655	Monday-Friday
1850-2137	11.732	Daily
2138-0658	15.115	Daily

Apology

In the October 1993 issue we published an article *A Differential Matching Amplifier For Loop Antennas* by David Porter. His callsign is really G4OYX and not G4QYX.

Latest from Roberts

Since the early days of broadcasting, Roberts have been renowned for supreme quality and a fast response to ever changing customer demand. The latest products to be released by the company are no exceptions to the rule.

Earlier this year Roberts introduced their distinctive D-line to its lifestyle range. One new item is of particular interest to *SWM* readers - the 4-band R309. The R309 combines a digital clock/alarm with a fully synthesised f.m., m.w., l.w. and s.w. (5.9 to 15.5MHz) radio in an attractive matt charcoal case. Five memories are available for each band, maintained, along with the clock, by separate batteries from those used to power the radio. A mains lead with a ready fitted 13A plug is also provided.

Further information from:
Roberts Radio Co. Ltd, 127 Molesley Avenue, West Molesley, Surrey KT8 2RL. Tel: 081-979 9995

Classic FM Extends Coverage

If everything went to plan, Classic FM - the National Radio Station of the Year - should have a total of 21 transmitters in operation by the time this issue is available. Three new transmitters came on line in November which, when the two transmitters planned for North Wales are operational, will give coverage to about 86% of the population. Most of the sites are shared with the BBC networks and are at the same power. Coverage should therefore be roughly the same.

The list below gives details of the network.

Transmitter Site	Grid Ref	ERP (kW)	Frequency
Wrotham, Kent	TQ 595 604	250	100.9
Holme Moss (Lancs)	SE 095 041	250	101.1
Sutton Coldfield (Staffs)	SK 113 003	250	100.1
Black Hill (Cent. Scotland)	NS 828 647	250	101.7
Wenvoe (S. Wales)	ST 110 742	250	101.7
Pontop Pike (Newcastle)	NZ 148 526	150	100.3
Rowridge (Isle of Wight)	SZ 447 865	250	100.3
Oxford (Beckley)	SP 567 105	46	101.3
Divis (Belfast)	J 286 750	60	101.9
Tacolneston (Norfolk)	TM 131 958	250	101.5
Peterborough	TL 127 913	40	101.9
Sheffield City	SK 324 870	0.3	101.7
Sandale (Cumbria)	NY 266 398	250	99.9
Londonderry	C 404 176	31	100.5
Meldrup (Grampian)	NJ 760 329	150	100.5
Dover	TR 274 397	7	101.8
Belmont (Lincs)	TF 217 837	7	100.5
N. Hessary Tor (Devon)	SX 578 742	160	100.0
Darvel (Ayrshire)	NS 557 341	10	101.3
Angus (Tayside)	NO 394 407	12	100.1
Kilvey Hill (Swansea)	SS 672 940	1	101.3
Planned sites:			
Great Ormes Head	SH 766 834	4	101.6
Arfon	SH 476 493	20	100.7

Classic FM, Academic House, 24-28 Oval Road, London NW1 7DQ. Tel: 071-713 3000

RC818 (SSP £199.99)

Multi-band Digital Preset Stereo World Radio with Cassette Recorder

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

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

R817 (SSP £169.99)

Multi-band Digital Preset Stereo World Radio

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

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

ROBERTS

R808 (SSP £119.99)

Multi-band Digital Preset Stereo World Radio

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

R621 (SSP £59.99)

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

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

R101 (SSP £49.99)

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

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

For your nearest stockist contact:

ROBERTS RADIO CO. LTD

127 Molesey Avenue, West Molesey, Surrey KT8 2RL
Tel: 081 979 7474 Fax: 081 979 9995

AN-1 Wide Range Antenna

For many listeners a large external antenna is either not practical or not acceptable. Peter Hirons G1CEI looks at one alternative, the Sony AN-1 Wide Range Antenna.

What You Get

Two major components are supplied. The antenna and its base (containing the amplifier) with universal mounting bracket form the remote unit and are connected to the local unit, the antenna controller, by 12m of coaxial cable. Also included are two connection cables and two antenna couplers, plus, of course, the usual multi-lingual instructions. All the components seem well made. I opened up the antenna base unit to try to get some idea of its water resistance properties and was pleasantly surprised to find it all enclosed in potting compound. Water would no doubt find its way through the outer case joint, as no gasket is fitted, but would cause no harm as it would find its way out through one of the two drain holes provided in the bottom of the case.

You need batteries or an external 9-Volt power supply to power up the antenna controller and make it all go.

Installation

The antenna must first be attached to the mounting bracket, easily achieved with the aid of a small coin or a screwdriver. The resulting assembly (See Fig.1.) should then be mounted as high as possible and away from any potential sources of interference, such as fluorescent lights and television sets. No tools are required as wing-nuts are provided for this stage.

The mounting bracket supplied is extremely versatile, allowing the antenna to be clamped to any vertical or horizontal square or round bar (up to about 40mm). For flat-dwellers it should be possible to clamp this to a balcony rail without difficulty. Alternatively the bracket could be screwed to a wall or the wooden fascia boards on the house. For this test I attached the antenna to the outside of an upstairs window using double-sided tape.- it worked, but I wouldn't recommend it for a permanent installation!

Next you plug the coaxial cable into the rear connector of the Antenna Controller and select the appropriate coupler. For medium and long wave reception the Controller should be connected, using the RK-69A lead (with miniature jack plugs on both ends) to the ANC-2 coupler. A little internal investigation revealed this to contain a short length of ferrite rod, wound with a short coil fed from the controller.

For short wave use, two possibilities exist. If the set has an external antenna connection then the lead with two crocodile clips (RK-36A) can be used to connect the Controller to the receiver. If not, the ANC-1 (connected with the RK-69A) should be slipped over the set's telescopic antenna. In practice this was not as easy as might be thought - on 50% of the sets I tried, the knob on the antenna was larger than the 7.5mm hole through which it had to pass! Fortunately, the main set I was using for the review had an external antenna connection. (Figure 2 shows the various connection methods.)

In Practice

I put this antenna to work with two receivers - A Siemens 736 portable (although I wouldn't want to carry it far!) and an Eddystone 958 communications receiver. Both of these are fairly old, but with well-known performances.

The Siemens set is normally

The G5RV antenna, designed by Louis Varney G5RV many years ago, is a 40m long dipole-like antenna that will provide a good match on all of the older amateur bands, i.e. 10m, 15m, 20m, 40m and 80m.

used with its telescopic antenna and has been used for the reception of BBC World Service all over Europe in the last few years. The ANC-2 coupler was used for m.w. and l.w. with this set but, as noted above, the ANC-1 could not be used due to the size of the knob on the antenna. Fortunately the external antenna connection could be used to good effect. This set has no signal strength meter so all measurements are purely subjective.

The Eddystone is normally used with one of two antennas - a random length of wire (probably about 12m) draped around book shelves in the room, connected via a simple a.t.u. and, for amateur bands, a G5RV in an inverted-V configuration. This receiver has no internal antenna so neither couplers could be used. I realise that this is not the sort of receiver for which the AN-1 is intended, but as it has a S-meter some objective measurements could be made.

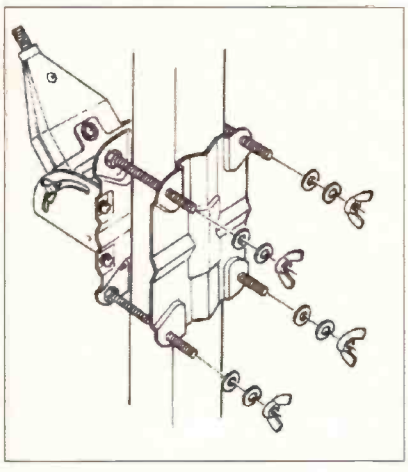


Fig. 1: The antenna mounting bracket.

Specification

Frequency Range:	l.w./m.w./s.w. (0.15 - 30MHz)
Semiconductors:	1 FET, 6 diodes
Antenna:	1.5m telescopic
Coaxial Cable:	12m fitted with a 'phono' plug
Output Impedance:	50 - 75Ω
Attenuator:	0/20dB switchable
Power Consumption:	90mW
Power Requirements:	9V d.c. (six AA cells or external adapter)
Price:	£54.95

Medium and Long Wave

With the active antenna switched off, a weak m.w. signal was found and the set rotated to peak the signal. The AN-1 was switched on, the ANC-2 connected and moved around behind and above the Siemens receiver until the signal peaked. In this case the best place was directly on top of the set - where the coupler was taped.

Tuning round the band, and comparing signals with and without the AN-1 switched on, gave some interesting results. Stations in the clear were much improved, particularly weak stations becoming readable. However, there was no improvement in the readability of those stations suffering from interference from adjacent channels - until I had a sudden flash of inspiration. By rotating the main receiver until the interfering signal was at a minimum the weaker signal became much clearer. In general there was no need to rotate the main receiver at all - a distinct advantage if, as mine does, the radio normally sits on a fairly narrow shelf.

On the Eddystone, directly connected, the signal strength received through the AN-1 was measurably more than that received from the random wire, generally one or two S-points. I tried both with and without an earth connection with no noticeable difference in the S-meter reading. With no internal antenna the technique of nulling out interfering signals could not be used.

Short Waves

Using the Siemens receiver an increase in signal strength was apparent throughout the whole of the band. With averagely strong stations the increase in level made listening easier. When the signal faded the programme was not totally lost. I suspect the additional signal gave the receiver's a.g.c. circuit just sufficient help to keep the signal there. On weak signals though things were not as good. The signal was increased, but so was the surrounding noise! To be honest, increasing the volume produced the same effect.

One area of significant improvement concerned locally generated noise. In any household there is a level of noise produced by all the electrical and electronic equipment with which we surround ourselves. A set-top antenna is obviously right in the midst of this noise, which is picked up along with the wanted signal. Using an elevated outside antenna the signal strength is increased, as the antenna is higher, and the noise level is (hopefully) reduced as the antenna is further from the sources of noise. Earthing the radio using the earth connection provided next to the external antenna connection improved this still further as it earthed the screen of the cable from the antenna and prevented further noise pickup.

With the Eddystone receiver the signal strength increase was less pronounced compared with the random length wire, however the same drop in QRN was noticed. The long wire had one advantage in that the a.t.u. allowed the antenna to be tuned.

I know it's an unfair test, but I compared the performance of the AN-1 with the G5RV on the amateur bands. This test was doubly unfair as the apex of the G5RV was at approximately twice the height of the AN-1. The differences were not as much as expected - typically about four S-points on reasonably strong signals, but on weak signals the AN-1 lost out. Perhaps if the AN-1 could have been raised to the same level it would have been a closer match.

I see no reason why the antenna coaxial cable could not be extended, however a d.c. voltage is fed up this lead to power the amplifier and there must be a limit to the length that can be used.

Conclusions

I would have no hesitation in recommending the AN-1 to anyone who cannot put up anything longer. For flat-dwellers, students, holiday-makers or caravanners, provided the head unit could be put outside and as high as possible, it would be better than any set-top antenna and probably better than anything that could be accommodated inside. For those with restrictive covenants on their properties against the erection of external antennas, the head unit is probably small enough that it would not be noticed, particularly if hidden behind a gutter down pipe.

If you can erect an external antenna then that is probably the better route to go, particularly if you use an antenna tuner as well. ■

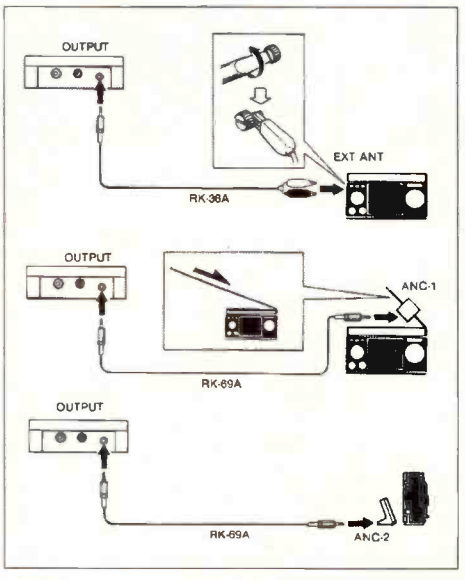


Fig. 2: Alternative way of connecting the antenna controller to your receiver.

Thanks go to **Sony (UK) Ltd** for the loan of the review model.

MARTIN LYNCH

G4HKS

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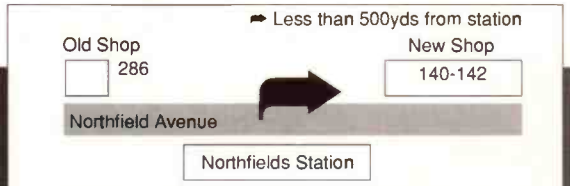

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A Day In The Life Of A Radio Inspector

Pro Bono Publico

J. Edward Brown continues his saga of 'Kilocycle Ken', the Radio Inspector and his young assistant, 'Golly' as they wage their war on interference.

"Mr Melton is a well known complainant," Kilocycle Ken the senior radio inspector said. "He's a Pom, of course."

"Poms are the worst, they always want their rights," Young Golly the trainee radio inspector said. "Why don't we get to deal with complaints from young attractive blondes."

"They have no time to look at television and complain about interference," Kilocycle Ken said.

"What is his problem?" Young Golly asked.

"Weak television signals and a large aerial pointing into the 11kV power lines - because that's the direction of the TV transmitters."

"Power lines seem to be a cause of many interference problems."

"There are power line troubles caused by bad construction practices, by faulty line equipment, but on days like today there is the ambient noise, always there, but worse when it is just on the point of raining."

"Has he got a legitimate complaint?"

"Our complainant is the author of his own misfortune for the most part. He's a man with considerable knowledge. He's measured the power line noise with his home-made instrument and he'll mutter to us about microvolts per metre and signal to noise ratios. He took the power board to court, but I don't think the magistrate really understood kilovolts and all the jargon. One can't fight the power authorities, and win."

Young Golly said, "One can, you know, bypass the electric meter so it doesn't register."

"I am shocked."

"Okay if you don't get caught."

"You youngsters today have no ethics."

"It's us against the monolothic big business and big goverment screwing the little man."

Kilocycle Ken crashed the gears. He was a bad driver, he wasn't trusted with any of the new office Japanese cars, he drove the old clapped out battered Hillman, but then he liked English cars. He was an old-fashioned man, not for him the electronic calculator, he carried a miniature slide rule which he would whip out and do a calculation - usually concerning overtime payments.

Kilocycle Ken wasn't an efficient radio inspector, but he was kind hearted. He had ruined several television sets by taking the backs off complainant's sets to make adjustments, just to save them money by not having to call a serviceman.

"Mr Melton fights everybody - the local council, central goverment, writes to the newspaper about drivel on TV, pornography on TV, dogs crapping on his grass verge, noisy trucks in the street."

"*Pro bono publico* himself."

"The reverse, he is only interested in himself." Kilocycle Ken sighed. "He brings it all on himself. There is an easement on his property for a transformer the power board installed alongside his house, but I sometimes think that he deliberately bought the house because of the aggravation he could cause. The power lines were installed before he bought the house, which he bought when it was in another part of town, in the path of the motorway.

He had moved it there.

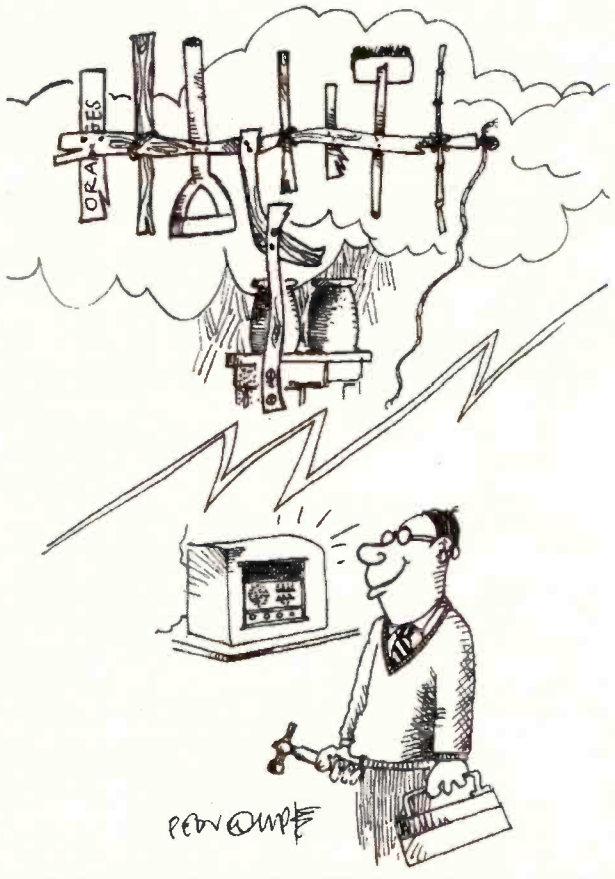
"A street light shines in his bedroom, and he wants it shifted. He wants his rubbish collection day changed from Friday to Monday because there's more rubbish after the weekend. He fights against rules about no rubbish fires in the summer, and no hoses to be used in times of water shortages."

"Salt of the earth," Young Golly declared. "Keeps goverment departments and local bodies on their toes, makes them nervous."

"He makes me nervous," Kilocycle Ken declared. But I've got a trick up my sleeve today."

The house was out of character with the other newer expensive houses. It was a very old bungalow. On the chimney was a massive multi-channel stacked array television aerial.

"I don't recognise that type of aerial," Young Golly said.



Well - that's the aerial finished, and for next week's programme you'll need some plywood offcuts and a large jamjar, to make the television.

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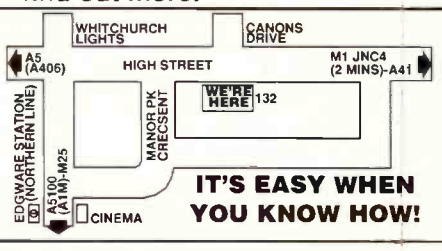

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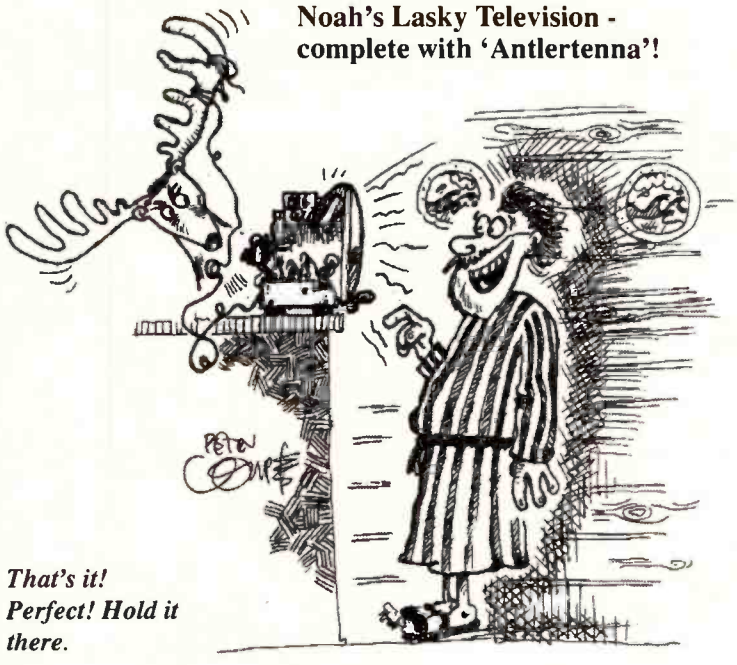

That's it! Perfect! Hold it there.

"It's not a Hills or a Channelmaster."

"It's home-made," Kilocycle Ken said. "Mr Melton is a typical New Zealander, a do it yourselfer. But at least it is real, made of metal. In the early days of television some people made aerials out of wood and put them up, just to make the neighbours think that they had a television set."

"He's what you call a nasty bit of goods?"

"He is not unpleasant, unless he doesn't get what he wants."

Mr Melton wore an old green cardigan with holes in the sleeves, thick spectacles. He had close cropped iron grey hair.

His television set was a bare chassis, the picture tube exposed, sitting on a packing case.

"I modified it myself, English, bought it from Laskys, opposite the Paddington station."

"It may be art," Kilocycle Ken murmured.

Mr Melton said, "Vacuum tubes glowing orange, heat rising, you know that it is a piece of electronic equipment, different to modern sets with transistors and integrated circuits, nothing to view except the picture."

He had a wireless on another packing case, also without a cabinet. It had a large multi-coloured glass dial with large dial lamps almost as big as Christmas tree lights.

"So what is the trouble today?" Kilocycle Ken asked politely.

"You know what it is, power line interference. Severe. The noise level contravenes the Radio Interference Regulations."

He showed them sparkling lines on the screen, dots and dashes.

"It's not quite as bad as usual when there is a frying noise on the sound."

"Like chops in a pan," Kilocycle Ken said.

"More like steak," Mr Melton said.

"With a couple of eggs?" Young Golly said. "I feel hungry."

Kilocycle Ken looked at Young Golly warningly.

"I don't want sarcasm from goverment officials," Mr Melton said coldly.

Kilocycle Ken said, somewhat diffidently, "Before we proceed any further, can I see your television licence please. It's a new rule, we have to sight it."

"Television licence! What are you talking about. I haven't got a television licence. No intention of buying one. Do you think I'm paying to look at power line noise."

"In that case, there's nothing further we can do for you."

"I pay my taxes!"

"Interference investigations are paid for out of television licence fees. No licence, no investigation, and we'll prosecute you for being in possession of a television receiver without a licence."

"You would have to prove it!"

"You have the audacity to complain for years about the programmes, without having a licence to view. Are you above the law?"

They stood, almost toe to toe, Kilocycle Ken in his brown safety shoes which he always wore, he said that he felt safe in them, and Mr Melton in felt slippers.

"I'm going to write to the newspaper about you lot!" he shouted. "You're not civil servants."

"We are not," Kilocycle Ken said, amiably. "We are public servants. Britain has a civil service, not out here, in the colonies."

The television set hissed with a sudden increase in noise.

It could be said that the air was electric.

"Be reasonable, Mr Melton, you must realise we only work for those who pay us. It is a shocking state of affairs that you have no television licence."

Mr Melton shouted, "You've been here umpteen times, but you've never fixed anything."

"You know that your situation is hopeless. I've told you before, the only cure for your television interference is to shift. You live in a low field strength area, you have high ambient noise."

"I'm not shifting, this is my home. The power board are causing interference by electro-magnetic induction into my television set, and therefore they should do something to alleviate it."

"You are wasting our time, and everybody else's. You have written to the prime minister, the postmaster-general, the director-general of the post office, the ombudsman."

"You've left out the minister for the enviroment."

"You only complain to annoy. We have better things to do. There are people with genuine radio and television interference whom we can help. And do help."

"We have another fish to fry," Young Golly said with a backward look at the television set. The noise from the exposed speaker was louder than ever.

Out in the car, Kilocycle Ken said, "I think he enjoys the battle."

'"And you feel good about using the lack of a licence to refuse him assistance?"

"No," Kilocycle Ken said regretfully. "I don't like hiding behind regulations, I like to help people, but some people are just beyond help."

Kilocycle Ken drove off with a crash of gears, lurching, bumping, the handbrake half on, the car in top gear instead of low, the headlights on full at midday, seatbelt dangling, undone.

"Weren't Lasky television used in Noah's Ark?" Young Golly said. ■

Tune-in for more Kilocycle Ken adventures during the coming months.

Early Mobile Amateur Radio

It was not long after its initial discovery that communication by 'wireless' was being used between moving vehicles, vessels, aircraft and land based stations; experimentally at first but later on a regular basis. The late Fred Judd G2BCX tells how radio amateurs were not far behind the 'professionals' in this respect.

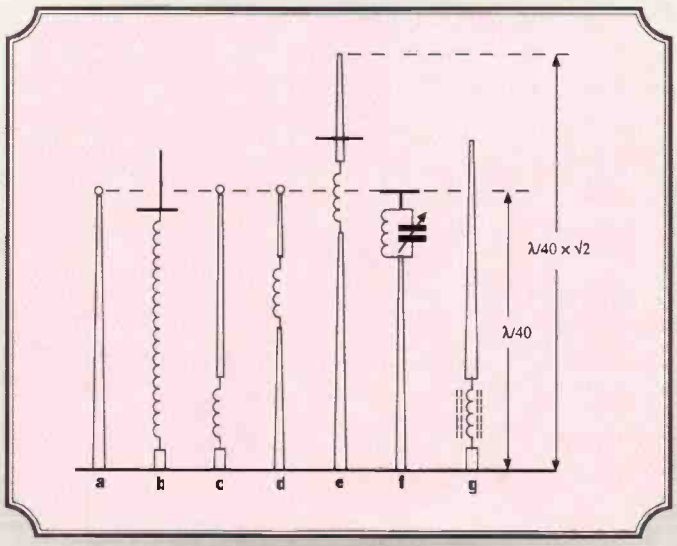

Fig. 2: Inductively loaded h.f. bands vertical antenna configurations. (a) Practical length 1/40th wavelength at 1.8MHz or approx: 13ft for all bands to 28MHz. (b) Helical winding with capacity hat. (c & d) base and centre inductive loading. (e) See text. (f) Top inductive and capacitive loading. (g) High grade Ferrite cored base loading coil.

Over a period of years following the end of the World War One, radio amateurs carried out experiments with two-way wireless communications between aircraft and ground, from an express train travelling between London and Scotland and fixed stations *en route*, between motorcars and fixed stations as well as car to car. All this is wireless history, of course, and has been documented in detail by other writers. Mobile amateur radio began in real earnest soon after the end of World War Two.

The Early Days of Mobile Operation

Many, of course, will remember those days, when all the radio equipment employed valves and most was home constructed, the problem with ignition noise, the somewhat unwieldy, long inductively loaded antennas for the lower h.f. bands (not much activity on 144MHz in those days), the first 'mobile rallies' and the formation of the Amateur Radio Mobile Society (ARMS), of which the author was a founder member.

The Amateur (Sound) Mobile Licence, as it was called, was first issued by the GPO during 1954 but some time before this, during 1947 or 48 (logbook records) a special licence for what was called 'portable mobile' operation could be obtained. This allowed a transmitter and receiver to be installed in a motor vehicle. Reception was permitted whilst the vehicle was on the move but transmissions could only be made when it was stationary.

One holder of this early licence, the late 'Eddie' Edwards G8TL, could find more traffic lights at 'red' in any one mile than any other car driver! Well, the licence said one could transmit when 'stationary'! His mobile antenna was something to behold also. Tuned for operation on Top Band, it consisted of two vertical poles fixed to the front of the car and one at the rear, each about 2m long. The antenna wire was suspended, horizontally, between these and inductively loaded at the bottom of the lead-in to obtain quarter-wave tuning. Others resorted to other similar antenna systems until 'inductively loaded vertical antennas' became popular for h.f. bands mobile application.

Fig. 1: Complete top-band transmitter/receiver designed and operated by the author circa 1954/5.

Mobile Equipment (Power Supplies)

The main power source was (and still is) the 12 volt battery which is fine for modern transistorised sets, but in those days transistors were only a dreamed of possibility, so transmitters and receivers (transceivers) employed valves.

The h.t. supply, average 300V d.c., for both transmitter and receiver, was obtained from a 'vibrator' unit, which in effect transformed the car battery voltage into a square-wave. This was stepped up by a conventional transformer, the output being rectified and smoothed accordingly. Valves with 6.3V heaters were often connected in a series/parallel arrangement and run direct from the 12V battery.

The Popular Top Band

The 160 metres (1.8MHz) band was just as popular in the 1950s and later, as the 144MHz band is today. Greater mobile to fixed station and mobile to mobile ranges were often obtained. Most were able to run to the allowed 10W d.c. input power to the transmitter p.a. stage that yielded about 60% of that in the r.f. power to the antenna; if you were lucky.

A transmitter for top-band generally consisted of a v.f.o., buffer amplifier and amplitude modulated p.a. stage, the r.f. output being taken to the antenna via a pi-network. The receiver was normally a superhet, with r.f. stage, mixer/oscillator, two i.f. stages, detector and l.f./output.

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Fig. 3: G2BCX/M arriving at a mobile rally in the Midlands. Valve transceiver for top-bands as in Fig. 1. Antenna 3m long centre-loaded. Probably during 1956.

Most sets were constructed as a. more or less, single unit with appropriate transmit/receive switching. Forerunners of the 'transceiver'. A valved mobile set for 160 metres designed and operated by myself during 1955/6 is shown in **Fig. 1.**

Antennas

As already mentioned, the most popular antennas for the h.f. bands were the inductively loaded verticals usually constructed for single band operation on any band up to 28MHz. Variations in design are illustrated in **Fig. 2** but for optimum performance on the lower frequency bands e.g., 1.8 and 3.5MHz, antennas of this nature needed to be as long as possible and fitted with a 'capacity hat' that tuned the loading coil. Less turns were required for this, which reduced coil resistance loss. Such antennas were very efficient but obviously there had to be a limit on total height.

Mobile operation with tall antennas could be dangerous where there were still trams or trolley buses operating from overhead power lines. Incidentally, the QRN from these could ,at times, prevent reception completely. Overhanging trees and long antennas that swayed about whilst on the move were also 'mobile' hazards.

Nevertheless, many top-band mobile operators, used loaded antennas 3.65 to 4.27m long mounted on the car running board (old cars) on the rear bumper that gave the impression of an antenna travelling along the road with a car attached to it! My first mobile was the little 1934 Morris Minor eight, shown in **Fig. 3**, complete with a modest 2.5m long centre-loaded top-band antenna. It attended many mobile rallies and took part in numerous RAYNET (then RAEN) exercises. (The transceiver used was the one shown in **Fig. 1**).

The Event of Transistors

It was not long before transistors became available with which one could construct receivers that would operate on 1.8 and 3.5MHz. There were also a few that could be used as oscillators and r.f. amplifiers in low power transmitters for operation on these bands. r.f. power was limited to a few hundred milli-watts.

By 1964 I had developed what was probably the first complete top-band all transistor transceiver with an r.f. output of 10W when operated directly from a 12V car battery. The p.a. stage employed a new (at that time) r.f. power transistor (2N1907) manufactured by Texas (USA) and which was operated in 'Class D' mode.

Details of a 'mobile' version of this were published in *Practical Wireless*, March 1966. A photo of the original, shown in **Fig. 4**, is of necessity somewhat of the large size when compared with a modern 144MHz band mobile transceiver. The receiver was a conventional transistorised superhet and the transmitter employed switch selected crystal controlled frequency channels, within Top Band, driving the single 2N1907 p.a. stage to provide an r.f. output of 10W. A suitable audio amplifier was incorporated for 100% amplitude modulation.

Top Band Mobile Afloat

The transceiver described earlier, but with a v.f.o. in place of selected crystal channels, was operated on hire cruise boats on the Norfolk Broads at holiday times during the years 1966-1970. Quite easy to tap the boats 24V battery for 12V and also rig an even taller loaded vertical antenna on the cabin top as in **Fig. 5**. Many of the radio amateurs operational in Norfolk during the above years will remember G2BCX/M on the 'Broads' and the QSOs on top-band.

Every summer a few radio amateurs go to enjoy a Norfolk Broads boating holiday combined with a little operating on the 144MHz band and maybe some h.f. band DX contacts. Why not try it. There is always someone to talk to. ■

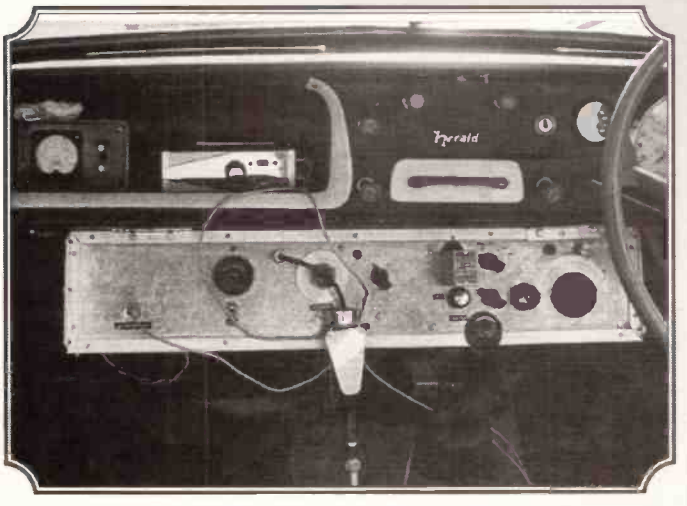

Fig. 4: First all-transistor mobile transceiver for top-band operation with 10W r.f. output. Operated direct form 12V car battery. Designed by the author and featured in Practical Wireless March 1966.

Fig. 5: Top-band afloat on the Norfolk Broads. Transceiver as in Fig. 3. Antenna centre-loaded vertical approximately 5m long.

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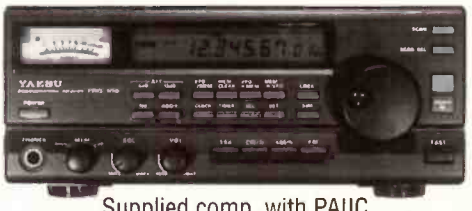

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Come On Out Into The Open

Once, radio field days were the tops in popularity with Jack Hum G5UM. He now looks back on some of the things they tried.

Back in those years known as The Dawn of International DX - meaning the twenties - amateur radio enthusiasts in Europe gazing metaphorically across the Atlantic were highly impressed with what they saw. By contrast with their own national amateur transmitting societies and clubs, often with only a thousand or two members, they perceived a highly organised body with a six-figure membership called the American Radio Relay League, complete with a large research laboratory and a monthly magazine (*QST*) a quarter of an inch thick.

Something else the envious Europeans noted was the freedom that American amateurs enjoyed under a relaxed and benevolent licensing authority. Quite different from the situation of their own patches where governments appeared to regard amateur radio movements with some scepticism if not downright suspicion, no doubt a mental aftermath of World War One. Indeed, in many European countries, amateur radio transmission was forbidden all together (which did not prevent many of them from forming active national radio associations nor exchanging QSL cards).

Study in concentration. One operator sends, the other logs. Taken during the 1957 NFD with the Mid Herts Radio Club.

Yet another aspect in which amateur radio was accepted in The States was the existence of a developed system of message handling for the public and, in addition, an enthusiastic contest ethic.

In Britain at that time, radio transmitting contests were barely known. Noting American precedent, the thought developed in the UK that it might be possible to initiate something similar that would not unduly offend officialdom. If it were, then any such initiative would need to be seen as a 'benefit' to society as a whole.

From this thinking emerged first of all the British Empire Radio Union (where art thou now, Empire?) and the first BERU contest of 1931, to be followed two years later by the first ever National Field Day. 'Come on out into the open and see if your home-made gear will work when it is transported out of doors!'. This was the implied challenge behind National Field Day. Soon, to a majority of keen UK Telegraphists, the phrase "That first weekend in June" came to refer not to a popular song of the period but to the rather more robust enterprise of setting up stations 'in the field'.

Each of these concepts, BERU and NFD was enthusiastically fathered by the national society, the RSGB. The feeling was abroad that, in the words of another popular ditty of the time, "Anything you can do (meaning the Americans) we can do better", or at least as well in spite of the fact that the British amateur radio movement was but a fifteenth the size of the American.

Before leaving BERU, which is not the remit of this article, it is worth remarking that although there was no formal membership for the British Empire Radio Union there was considerable informal support for it from those countries 'painted red on the map'. Even Canada, much under the dominance of US procedures, contributed participants to the yearly BERU contest.

And so the National Field Day, born 1933. It envisaged the use of all then available h.f. bands, the use of c.w. telegraphy only, and, to make it a real outdoor event, stations must be operated from tents.

The success of NFD was immediate. Coverage from each of the DX bands used was considerable, even with the 10W power stipulation. All over the world the 'red on the maps' (and many other besides) lay in enthusiastic wait for the tiny c.w. signals that winged their way from Britain into distant headphones.

The NFD stipulations that stations must be operated from tents and use c.w. only has remained almost unchanged to this day, although it has been known that a few participating groups, unable to obtain the loan of tents or unable to master the complexities of erecting them if they got them, resorted to the delectable comfort of a caravan: quite legitimately, for today's rules simply say 'not in a permanent building'.

Study in levitation. A member of the Leicester Radio Society prepares to pull out an extensible antenna mast during the 1969 VHF NFD.

Communication Under Adverse Conditions

Was there, then, a benefit to society to be derived from all these activities? Reckoning that they demonstrated how communications 'by wireless' could be set up and sustained under adverse conditions, the answer must be yes. But in a compact nation like Britain, not prone to many accidents of nature and enjoying a developed professional communications system the value of 'coming out into the open' and pounding a Morse key while rain poared down on the tent roof smacked rather of 'The ladies playing about with their wirelesses', as a cynic of the day might remark.

In North America it was so very different, vast distances to be covered, professional communications ruptured by nature from time to time, and radio amateurs stepping into the

Another study in levitation. Three more heaves and the 430MHz Yagi and the 1.3GHz dish will be aloft. Taken surung the 1967 VHF NFD with the Leicester Radio Society.

breach (often literally) to maintain contact with the outside world, or at least the next State.

Comparisons between them and us are invidious, though the British, adding privately among themselves "Let's do our field day in a responsible way, not only to show that we can but also to avoid any undesirable comeback from the Licensing Authority". There was none: NFD worked first time.

Then and Now

From it's inception, National Field Day was the epitome of the self-training requirement of the Transmitting Licence. You needed to train yourself to be a more-than-proficient telegraphist. You needed to know how to build the transmitters and yes, receivers you would use in that tent.

Today's circumstances are different. They accept that the use of factory-built equipment is inescapable for many self evident reasons: one of them is modest power consumption and consequently small power sources. 'Twas not ever thus. When NFD was invented 58 years ago, there was no factory-built equipment. And the thirst from those home-built valve transmitters and receivers demanded the use of large petrol-electronic generators, delivering typically 230V a.c. Today it is only the NFD antenna systems that retain the 'home-brew' ethic. Little else does, though it must be emphasised that those self-same antenna systems bring out the best in radio amateurs inventive ingenuity.

Self-training in home construction on the decline, then; self-training in operating skills decidedly not. Never before has c.w. skill been more paramount than it is in today's NFD, when the levels of interference and the sheer force of competition on overcrowded bands make it a 'must'.

Because National Field Day being telegraphy only allowed no scope for voice operation, separate events for this mode in it's various manifestations have been introduced in recent years to take cognisance of the fact that amateur radio communication nowadays is overwhelmingly by telephony. But for the old original hallowed event of That First Weekend of June telegraphy holds sway. It confers two special advantages: First, powers supply requirements are modest; but secondly, telegraphy will get through when all else fails. Operators quickly develop the ability to read weak c.w. signals against high levels of adjacent or even co-channel interference. The knack has become known as 'having crystal-filter ears'. It is not unknown for an operator to be so straining after a weak, duties signal that he finds himself reading the receiver noise. Most skilled telegraphists argue that this happens.

Why HF Only?

And so, during the post-war years National Field Day proceeded along it's familiar and much loved course. Then came a significant development: VHF National Field Day was invented.

The first VHF NFD took place in 1962, initially on 144MHz only before many years had passed embracing u.h.f. and microwave activity. Once again 'stations must be operated from tents'. But major departures from past practice were that the allowed power level could be upped to 25W, and, even more revolutionary, that any available transmitting mode could be employed, telegraphy or telephony.

When VHF/NFD was inaugurated ,telegraphy on the metre waves was held in high regard as representing the most effective way to persuade available r.f., hard-won from home-built transmitters and antennas, to reach distant points. Today, in great contrast, VHF National Field Day is very telephony-oriented. That first weekend of July is now as eagerly awaited by the v.h.f. person as that first week-end in June is by his h.f. oriented confrere.

It would be an exaggeration to claim that VHF National Field Day was initiated 'in response to enormous public demand'. Yet this is nearly true. Until then, the prevailing trend in British amateur radio has been towards the intercontinental h.f. bands, basking in the fading romantic glow of the previously mentioned Dawn of International DX. Increasingly, as amateurs enthusiasm and experimental exploration turned towards the bands above 28MHz it became clear that this frequency area of 'the very highs' could no longer be regarded as a place where 'little boys talked around corners' yes, the phrase was actually heard to fall from the lips or more than one h.f. oriented DX king of the period.

Study in relaxation. Operators from the Leicester Radio Society take a well-earned rest on a torrid 'first weekend in June' in 1976.

Already the way forward has been shown by *Short Wave Magazine*, whose proselytising over many years of this part of the frequency spectrum had

developed much enthusiasm among the more experimentally minded members of the amateur fraternity. Thus, VHF National Field Day could be seen as 'a natural' that flowed from this enthusiasm.

Within another two years the Class B licence had been launched, initially for frequencies above 430MHz but by 1968 embracing 144MHz as well, and of course since 1987 extending to 70 and 50MHz. This liberalisation released a large flow of metre-wave oriented operators to lend their assistance and expertise to VHF NFD and to find their G1, G6, G7 and G8 callsigns featuring in the final published results.

And what of those results?

Study in Admiration for the home-built 1.3GHz dish, backed up with a 'just in case' mesh antenna (left) and a multi-element slot beam for 432MHz. Taken during the 1965 VHF NFD with the Mid Herts Radio Club.

In terms of participation it may be expected that a hundred-plus stations will be put into the field on both the h.f. event and the v.h.f. one, each operating on six bands, including in the case of VHF NFD a couple of mircowave bands. Counting six operators per station and say half a score of helpers to do the gear lugging, the tent erecting and the catering, in all at least a thousand and a half actively participating in each event.

Another 1965 study in admiration of a microwave dish, fabricated long before satellite television dishes were thought of.

Benefit to Society

What benefit to society, that phrase again, does all this activity bestow? The answer, quite a lot. Back in 1933 during the East Coast flooding, when professional communications were devastated, there was a considerable corpus of radio amateurs at hand to keep the region in touch with the outside world, operating under decidedly rugged conditions.

Resourcefulness in putting stations into the field had been highly developed by 1953 as spin-off from National Field Day. It paid dividends then. Here, at last, the British were able to show that 'anything you can do, we can do equally as well'. where emergency communications and traffic handling over the air were called for. From these events sprang the Radio Amateur Emergency Network (popularly, RAYNET) whose value has been amply demonstrated on many occasions since 1953. The experience gained from both h.f. and v.h.f. National Field Days has stood the British amateur service in very good stead.

If ever a jaundiced critic should observe that field days are little more than fun things, the answer is that, well maybe they are, but they are something else much more serious, they are the basis for providing a swift acting communications service if ever the need should arise. If it does arise, it will probably be sudden and unexpected, but what is for sure is that the amateur service with its years of come out into the opening experience behind it, will be there. ■

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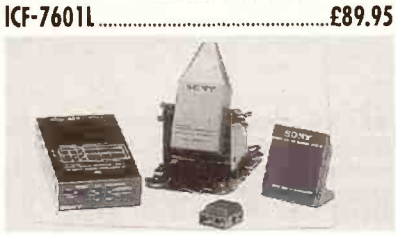

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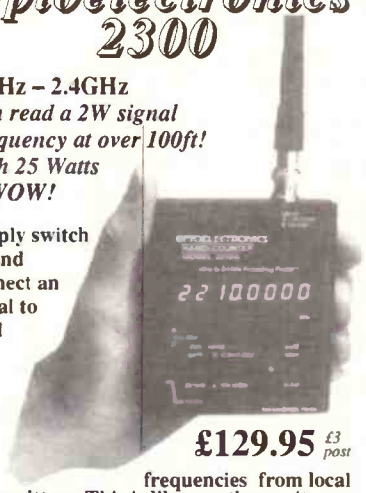

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The "Total Design" approach was used in the HF-150; indeed it is used in all our products such as the new "WireMatch" short wave aerial (but you will have to wait until next month for that!). To hammer home the point, I have produced "Helpful Leaflet No.2" which is a reprint of the Elton Byington review mentioned in last month's advertisement. He compares the HF-225 and HF-150 to other front runners, and says "I can state categorically that the Lowe receivers are the best sounding short wave radios I have ever heard". For the full review, write to me, John Wilson, at the new address below, enclosing two first class stamps and ask for "Leaflet No. 2". Incidentally, "Leaflet No. 1" on ATUs and preselectors is still available if you ask.

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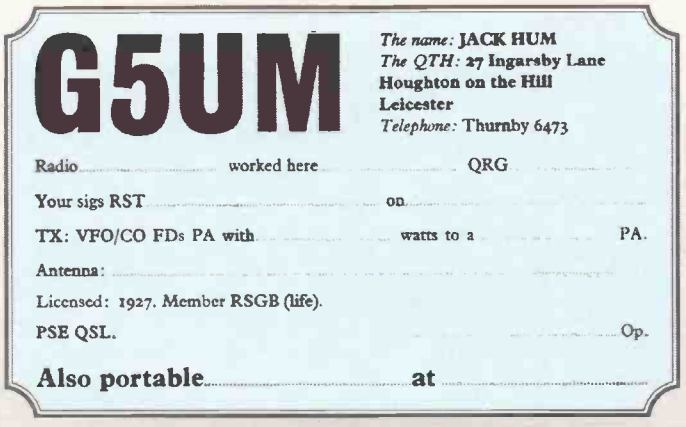
Happy Christmas
John Wilson

The Structure of British Amateur Callsigns

Jack Hum G5UM takes a look at how British radio amateurs obtained the peculiar array of callsigns you hear on the air.

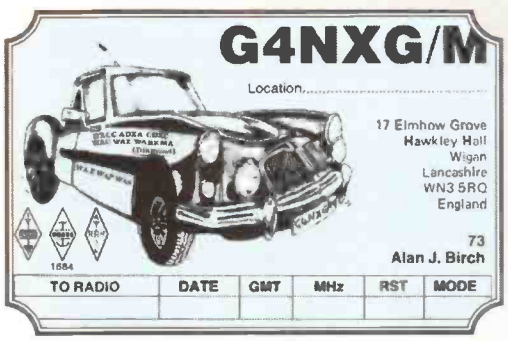


More than a quarter of a century ago, the late Alf Bruce G5BB was an active member of the Mid Herts Amateur Radio Group, and, by proxy, so was his little daughter Jane. She received her indoctrination into amateur radio not only by sitting in dad's radio room and overhearing what was said on the air, but also by attending the Mid Herts Group's meetings and field day events.

Now, Jane has a family of her own and lives on a farm in a picturesque part of West Wales. Although she does not actively practice amateur radio, she retains a peripheral interest in it that directed her footsteps towards the local club at Aberporth. It welcomed her warmly when the members learned that she was the daughter of the late G5BB. But there was much mystification about that callsign. Many of the younger members would ask her, "Where is the third letter?" and remained even more mystified when she replied that there wasn't one.

How best to explain the structure of British amateur callsigns? thought Jane. One possibilty occurred to her, write to G5UM to see if he could explain it all, and as another holder of a two letter callsign perhaps he could.

He did, and the result is as shown here



Before World War One

Most of the callsigns held by the 'wireless experimenters' of the time were self assigned and generally included the letter 'X' to indicate 'experimental'.

After World War One

When amateur radio transmissions were restored, callsigns in the following sequence were allocated.

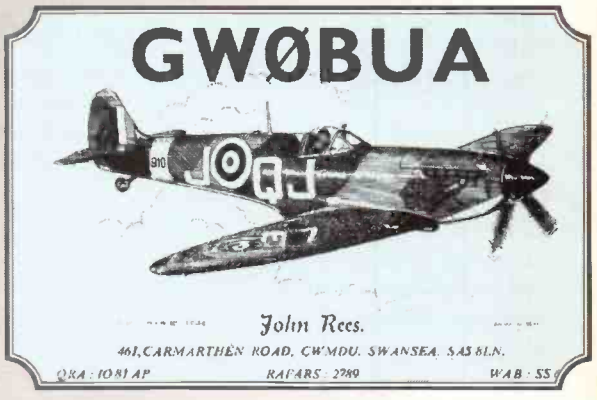
The figure 2 plus two letters, 5 plus two letters and 6 plus two letters. Note the omission of the country prefix, use of this was granted by special application to the Licensing Authority. When these three sequences were completed, a start was made on G8 plus 2 and later G3 plus 2. A start was made on G4 plus 2. Few were issued before World War Two intervened. All these callsigns required the Morse test. But what is the significance of the 2 plus 3 letter callsigns? Now read on...

The Artificial Aerial Permit

The Artificial Aerial Permit was granted initially when an application for a transmitting licence was received by Higher Authority. It's purpose, to initiate the would-be radio amateur into the setting-up and adjustment of transmitters, these to be fed into an artificial aerial (dummy load today). Curiously, a callsign (figure and three letters) was allocated, which seemed illogical in view of the fact that the holders would not be allowed to radiate it! Most of these holders eventually graduated to the use of a full two letter callsign upon passing the Morse test. But read on some more...

After World War Two

The pre-war callsigns were handed back after World War Two. So were the existing artificial aerial callsigns, with permission to use them on the air and the national prefix (eg. G, GM, GI *et seq*) added. This explains why such callsigns as G2BLA or G2FMJ are still to be heard. These two, by the way, were close friends of the late G5BB in the Mid Herts Amateur Radio Group. So much for the re-issue of pre-war callsigns. Then came an entirely new style of callsign, and so arrived.



The G3 plus threes

Issued to the very many ex-service personnel who had developed a taste for radio during the conflict and now wished to practice it as fully fledged radio amateurs. These three plus threes introduced the letter 'E' into callsigns for the first time.

Hithereto, Higher Authority imagined that this shortest character in the Morse code would not be resolvable in the receiver noise. So it wasn't allocated. As the post-war years passed the G3 plus 3 series was exhausted, a start was made on the G4 plus 3 and eventually the G0 plus 3. But a new concept was looming.

The Class B Licence

Introduced in 1964, the Class B licence confined its users to bands higher than 432MHz, later from 144MHz upwards, and today from 50MHz upwards. The series was distinguished by a G8 plus 3 callsign. Later came the G6 plus 3, followed by the G1 plus 3 and now today the G7 plus 3. When these become exhausted it is said that the next Class B allocation will be in the G5 plus 3 series. The old and ancient pre-war G5 plus twos will have a lot of explaining to do to the newcomers to convince them that "Yes, really there isn't a third letter!".

And Now

Of course, to add to the confusion, there are now many Novice Licensees taking to the air using the 2M1 plus three letters and 2W1 plus three letters. Where will it all end.....

■

Rediscovering the Dewtron Wave Trap

John Baily G4MDG bought his Dewtron Wave Trap by mail order way back in 1966, hoping to boost the sensitivity of his portable transistorised radio.

The Dewtron Wave Trap, as discovered after hiding for 20-odd years in John Baily's shack.

You know the way you put things neatly away in boxes that lay undiscovered for some time. Then, when you've nothing better to do one afternoon you dig out that old box and peer inside. One such afternoon, looking through my shack cupboard, I came upon this small red carton, the gold lettering upon it announcing 'Dewtron Wave Trap'.

It must have been 1966 when I purchased this object, by mail order, for a few pounds. This unit could, I suppose, be described as a form of active antenna. It is not large, the main unit being a grey and red plastics box measuring around 82 x 45 x 32mm. Externally it has a white knob on the front and a rubber sucker on the back of the case, the purpose of which will be revealed later! Emerging from the case is a grey lead nearly a metre long and a thin red wire about 750mm long.

What's Inside

The back of the plastics case, hinged at the top, opens up to reveal all. The white knob drives a tuning capacitor which tunes a coil mounted on a ferrite slab. There is a single transistor amplifier built around a small tag strip glued to the case and there remains just enough room to squeeze in the PP3 9 volt battery needed to power the unit. The tuning capacitor knob also doubles as a power on/off switch using a tag attached to the top right corner of the capacitor connecting to the rear plate of the capacitor for part of its rotation. A novel idea, but the face of the capacitor plate needs to be kept electrically clean to ensure a good, noise free connection.

Purpose

The purpose for purchasing the unit in the mid-Sixties was to boost the sensitivity of the portable transistor radios about at that time. The idea is to unwind the thin red wire, which was stored wound around the rubber sucker, and dangle it away from the unit. The other, grey lead leads into another coil wound around a ferrite slab and is covered in a grey plastics sleeve. This sleeve is placed on top of the radio, next to its inbuilt ferrite rod antenna and the signal amplified by the Wave Trap is coupled into the radio. The Wave Trap's tuning capacitor has to be peaked to its optimum and the resulting increase in sensitivity was quite amazing on the transistorised radios of that vintage. The unit covers the medium wave band and enabled me, in Somerset, to enjoy daytime reception of most of the offshore radio stations then operating around the country, stations barely detectable without the use of the Wave Trap.

The inside of the Dewtron Wave Trap - it *is* possible to fit a PP3 battery in here too! The sucker on the back is clearly visible.

Today's transistorised portables are more sensitive, but even so, with a Sony 2001D tuned to South Coast Radio on 1323kHz, the radio's *S*-meter barely registered S1 unaided, but with the Wave Trap a healthy S8 was obtained.

The Secret Of The Sucker

Now for the secret of the rubber sucker attached to the rear of the unit! In the '60s, car radios were not so plentiful (didn't you have to pay an extra on your broadcast receiving licence for a car radio?) and many a transistorised radio rested on the rear parcel shelf of the car. Without any external antenna the annoying thing was that on turning a corner, your favourite station disappeared! Here comes the Wave Trap to the rescue. Moisten the rubber sucker, attach the unit to the car window at right angles to the radio, place the grey lead on the radio, and then the ferrite slab in the Wave Trap plus the radio's own inbuilt antenna would ensure continuos reception. Simple but effective!

I wonder how many of these units survive today? I certainly will hang on to mine to catch that little bit of Medium Wave DX or distant local station without the need for a long outdoor antenna. ■

Marconi and Madeira House

An old photograph, unfortunately not reproducible, taken from the end of Bournemouth Pier in the Summer of 1897 shows Madeira House as the present Court Royal was then known, almost at the bottom of the sloping cliff face, overlooking the beach. At that time a few detached residences kept it company, but over the years all but the old house have disappeared. J. Southwell relates the connections between this old house and Marconi.

When I examined the photograph closely, I was most intrigued. What appeared to be the lines reminiscent of a ship's mast with rigging, was something quite different. Under a magnifying glass it proved to be a very tall wireless mast with bracing wires and antenna. But in 1897, and apparently, at the bottom of a garden?

The holidaymakers and sightseers appeared more concerned with their parasols and walking sticks rather than the tall antenna mast with its looping wires a short distance away. Seemingly, they were unaware of the dramatic impact it would make on the world within a generation.

But what was a mast doing in an elegant resort like Bournemouth, only yards from the beach? My enquiries revealed that in Madeira House, experiments were taking place that resulted in one of the most important discoveries of modern times. For Gugliemo Marconi, the brilliant Italian engineer, was at work!

Inspired by the discoveries of Heinrich Hertz and others in connection with the properties of electromagnetic waves, he began transmitting long wave signals through space to achieve remarkable results. Able to transmit and receive signals over short distances in the Gulf of Spezia, he offered his invention to his Government. Frustrated at their scepticism, he came to England in 1896 to offer his first patent in wireless telegraphy.

He set up an experimental station in 1897 at the Royal Needles Hotel on the beach at Alum Bay, Isle of Wight, erecting a wireless mast over 30m high. Charting a ship that carried a 20m mast, he transmitted and received signals over greater distances.

In November that year, the weather was bad for weeks on end, and gave the sailors and his assistants a hard time. But the rough weather was to prove momentously decisive. It did not affect his transmissions at sea as anticipated, neither did the slight curvature of the horizon over the distance from Alum Bay to Bournemouth seriously interfere with reception. These results justified the installation of a second experimental station, and this was set up in the Madeira Hotel as the house had now become.

A wireless mast over 30m high was erected, its antenna directed at Alum Bay, and Marconi took up residence at the hotel in February 1898. From these modest premises he conducted numerous experiments with ships at sea.

Parallel Courses

An eminent physicist of the time, William Thomson, had achieved world acclaim by introducing the dynamic theory of heat. With the advent of electric lighting he turned his brilliant mind to new devices. His interest in navigation led to improvement of submarine telegraphy and a new sounding apparatus. He became Lord Kelvin, after whom the absolute temperature scale and the City Hall in Glasgow are named.

These two men of genius, working independently on a parallel course, were to converge and co-operate at the Madeira Hotel in a famous experiment.

On 3 June 1898, Lord Kelvin, his wife and Alfred Lord Tennyson sent the first ever wireless message from Alum Bay to Marconi's station at the Madeira Hotel, Bournemouth.

The message read: *To MacLean, Physical Laboratory University Glasgow. Tell Blyth this is submitted commercially through ether from Alum Bay to Bournemouth and by postal telegraph hence to Glasgow. Kelvin.*

Marconi, in his laboratory on the ground floor of the hotel, transmitted the message to Glasgow. Kelvin insisted on paying two shillings, the price of a telegram in those days, and the world's first ever paid wireless message and radio link was established. The challenge for speedy communication had been taken up.

Marconi's association with the Madeira Hotel was not to last for he entered into dispute with the management after six months, and left to transfer his attentions and equipment further up the coast to the Haven Hotel at Poole.

Ideal Location

In those days, the trains only went as far as Bournemouth, the rest of the journey had to be completed by other means, through dense pine trees and ending in a sandbank. But for experimental purposes the location was ideal, the open stretch of water was quiet and tranquil, well away from interruptions. In fact, Marconi used the area as his headquarters for twenty eight years, and brought his mother down from London!

One spring morning he left his laboratory in Poole to cycle to Bournemouth for the thinnest possible wire. None of the shops he tried could help, but a clump of rhododendrons reminded him of a flower shop. In one of them he found a girl deftly tying flower stems together to form a corsage. She used a threadlike wire that was exactly what he wanted.

Success

For Marconi, 1898 was a good year. He transmitted his messages both ways across the Thames to the Speaker in the Houses of Parliament, and made contact with the SS *Carisbrooke Castle* as she passed Bournemouth on her

outward maiden voyage.

During the Cowes Regatta that year, the Prince of Wales, on the Royal Yacht *Osborne* anchored in the Solent, was suffering from an injury to his leg. He refused to convalesce at Osborne House and Queen Victoria was anxious to keep in touch. Marconi was invited to set up his equipment in the grounds of Osborne House, and a wireless antenna over 30m high was erected. Another antenna mast over 24m high was fitted to the Royal Yacht and the experiment began.

But it was not all plain sailing for the inventor, for the hills around the East Cowes presented problems of interference, and the Prince was liable to up-anchor without notice. Wrestling with his problems and lost in concentration, he made his way through the grounds to be suddenly informed, 'he must go round the other way and respect the Queen's privacy'. Marconi left in a huff, and his annoyance was reported to Her Majesty.

"Then get another electrician"' she said.

"Alas your Majesty, we have no Marconi" was the reply.

Marconi was summoned, and following an audience with the Queen, successfully transmitted over a hundred messages. Finally the Prince of Wales gave permission for Bulletins to be issued regarding his health. On 4 August 1898 the first Bulletin was transmitted from the Royal Yacht, revealing to that nation that all was well.

The Queen congratulated Marconi, and he gained a most valuable ally.

The Impossible

His perseverance achieved the seemingly impossible. On 12 December 1901 he bridged the Atlantic, transmitting signals from his wireless station at Poldhu, Cornwall to St Johns, Newfoundland. He had 'jumped' across the Atlantic Ocean sending messages without wires!

He continued his experiments taking a particular interest in wireless communication for general use on ships.

Little did Dr Crippen realise that he would become the first victim! Heading for Canada and a new life on the SS *Montrose* in 1910, the ship's antenna crackled out its messages to the authorities that he was on board, and alerted world opinions to the tremendous potential of Marconi's discoveries.

Today, nearly sixty years after his death in July 1937, telecommunications around the globe and in space is an everyday occurrence. Due to his vision and perseverance we communicate from one side of the world to the other via the numerous satellites orbiting in space. These satellites, increasing in complexity and power, seek to explore the mysteries of our universe, developing the theories first taken up by our scientific pioneers.

And what of the old photograph showing Marconi's wireless mast at the bottom of Madeira House a century ago?

It is, perhaps, when viewed in the context of service to mankind, the most important of Bournemouth's old photographs. Frozen in time, to record the Town and Hotel's connection with one of the most important discoveries in this age.

But the continued existence of the Court Royal Convalescent Home has been a close run thing. For over sixty years it has successfully resisted the advances of property developers and town planners.

For the Miners' Welfare Commission laid their plans well. In 1947 they bought the Hotel for the care and welfare of their workers in the South Wales coal fields. So the Hotel became a Convalescent Home, and it is thanks to their persistence and vision too, that the ex-miners suffering from the debilitating effects of working in the mines, enjoy such a pleasant location today.

It remains a credit to all concerned. To its builder, to Marconi who bestowed everlasting fame, the Commission, and to Sister Jones and her Staff who run it so capably.

Those selected for their period of convalescence are doubly fortunate in making a date with history, when attending the Court Royal Convalescent Home. ■

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by Leon Balen and David Leverett

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AORSC is a powerful program for the IBM PC (and 100% compatible) computer, which allows you to control an AOR scanning receiver using a serial port (RS-232 interface) of the computer. Many facilities are offered to provide you with a high performance radio monitoring system. The software is priced at **£75.00 plus £2.00 P&P.** AORSC is supplied on both 3.5 & 5.25 inch media for installation onto a hard drive. A **DEMO disk** (without RS232 support) is available on a 3.5 inch disk for installation onto a hard drive, **Price is £3.00** ***** Windows software soon to be released *****

ACEPAC3A For those with a larger budget, ACEPAC3A is also available for the AR3000A & AR3000 receivers. Installation is recommended on a hard drive but can be run from 3.5 or 5.25 inch floppies depending on machine compatibility. Features are similar to AORSC but ACEPAC3A has a more versatile spectrum graph type display. A descriptive leaflet is available to request. **Suggested Retail Price £139.00 plus £2.00 P&P**

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* Collins is a trade name of Rockwell International

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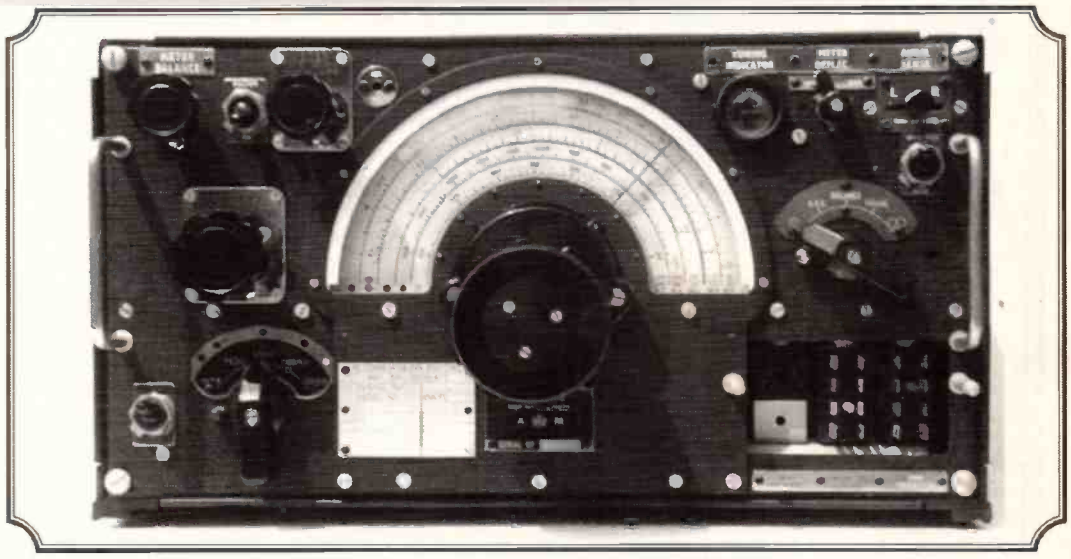
Restoring an R1155

Part 1

Another tale by Chas. E. Miller of resurrecting a broken and scrapped old receiver - this time a wartime workhorse used in many RAF aircraft, including the Lancaster bomber.

The receiver type R1155 was developed during WWII for airborne use by the RAF for direction finding and as a communications receiver. The d.f. function need not concern us here, indeed most R1155s one is likely to encounter will have had the relative components removed. This leaves it as a 6-valve superhet plus tuning indicator, with one r.f. amplifier stage, frequency changer, two i.f. amplifier stages, detector/output and b.f.o./a.g.c. rectifier.

Several variants were made with slightly different frequency coverage and d.f. specifications: as a general guide, models without suffix and those suffixed -A, -B, -C, -D, -E, -F and -M covered 75-200kHz, 200-500kHz, 600-1500kHz, 3-7.5MHz, and 7.5 -18.5MHz. Receivers suffixed -L and -N dispensed with the lowest frequency range and had instead an extra 1500kHz - 3MHz band giving continuous coverage from 600kHz up to 18.5MHz. These are, naturally, rather more desirable than the others for the purely s.w. enthusiast, but the alternatives are still extremely useful and more than adequate for those interested in m.w. and l.w. DX work. The i.f. of all models is 560kHz with a bandwidth of between 4 and 6kHz at 6dB down. The average sensitivity is better than 10µV for 50mW output - the maximum being 200mW into a 500Ω load.



Complexity

Even its designer could scarcely deny that the R1155 is a complex receiver with many unusual features that are difficult to comprehend at first glance. It is hoped that this account of how one example was restored will help to elucidate some of the mysteries!

It should be noted that the circuit diagrams and valve and component numbers correspond to those in the official R1155 service manuals. The full line-up is: V3, V4, V5, VR100/KTW62; V4, VR99/X66; V7, V8, VR101/MHLD6; and V10, VI103/Y63. The first four civilian equivalents quoted do not seem to have been on open sale, nor do they appear in the contemporary *Marconi/Osram Valve Data Books*; however, they are listed in the *Avo Valve Tester Manual* by means of which alternative types with similar characteristics may be selected. The KTW61 will replace the KTW62 and has a slightly better mutual conductance; the KTW63 may be used but its slope is only about half that of the '61 or '62. American types 6K7G or 6U7G may be used with similar loss of sensitivity. The X66 does not appear to differ to any great extent from the X65 or the American 6K8G. The MHLD6 is the real 'rogue' which no one appears ever to have seen! It is an octal-based double-diode-triode with a 6.3V 0.6A heater, the triode section drawing 11.5mA with 250V on the anode and a grid bias of -5V; the slope is 3mA/V. There is no valve which will replace it exactly, but some possibilities are discussed later.

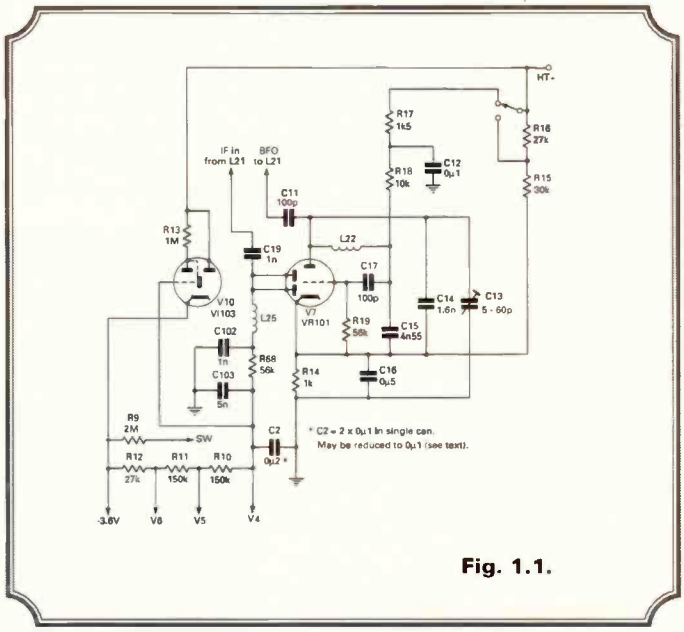
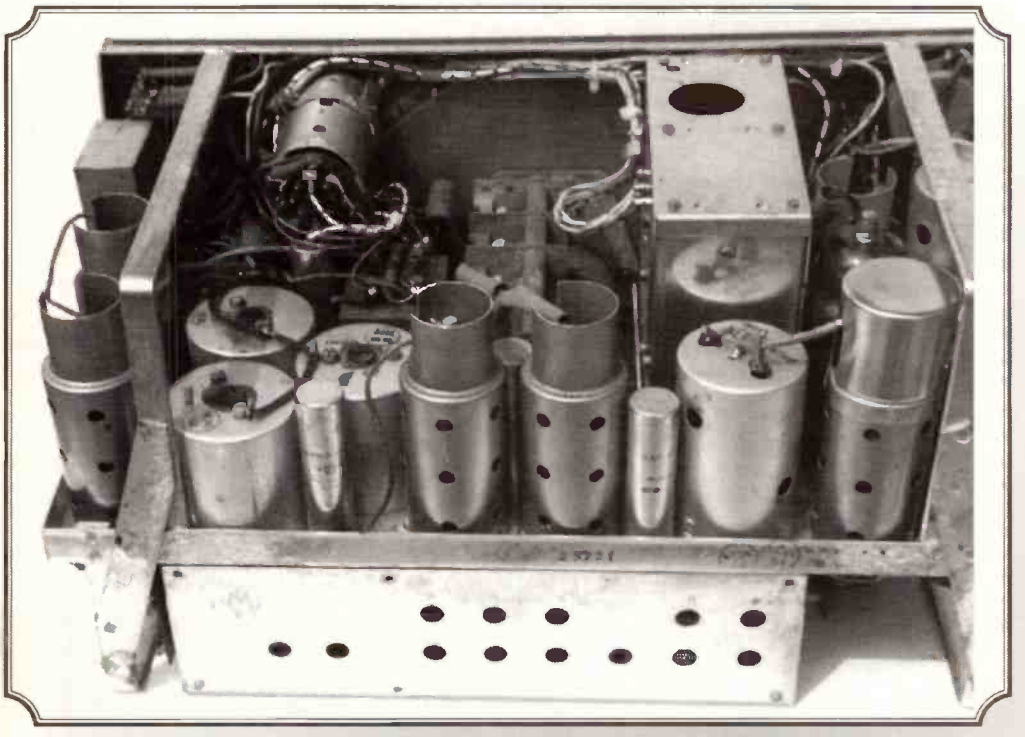


Fig. 1.1.

Treasure from the Tip

The particular receiver to be described is an -A model, which arrived from the local rubbish dump where it had been found by a 'tatter' who sold it to me for the princely sum of £7. The case and front were filthy dirty and the celluloid cover over the dial had been smashed to pieces. This had allowed soil and various examples of flora and fauna to enter the case, where they had established themselves with a fair degree of tenacity. In addition, it was painfully obvious that a good deal of modification work had at some time taken place, making restoration a somewhat interesting prospect - to say the least.

When the vegetation and wildlife had been removed a built-in power supply stage was



discovered. This consisted of a suspiciously small mains transformer with numerous leads cut short, a couple of silicon diodes hanging from a metal 0.1 + 0.1µF capacitor that had been bolted onto a chassis strut, and a large electrolytic capacitor housed in the compartment next to the b.f.o. unit. These were all stripped out and although the way in which they were wired up left much to be desired, the fitting of the transformer indicated almost diabolical ingenuity on the part of whoever managed to bolt it in below the master switch: one of the nuts was so placed that the only way to undo it was to tap it loose with a long, thin screwdriver, a fraction of a turn at a time, the head being completely inaccessible.

An Essential Task

On any R1155 there is one ineluctable job, namely replacing all the various decoupling capacitors in the h.t. and a.g.c. feeds. Why exactly the components used in these sets have suffered so badly with age is one of life's little mysteries, but the fact remains that nothing but a clean sweep can put things right. Much of the r.f. and i.f. decoupling is carried out by triple unit cans containing 3 x 0.1µF sections with four flying leads, one of them the common earth connection. The most straightforward way of dealing with these is to chop the leads at the can, leaving the remaining lengths to indicate where the replacements must be connected. This is particularly useful in the r.f. and frequency-changer stages where the coils and wave-change switch tend to obscure the valve bases, i.f. transformers, etc. Separate 0.1µF capacitors can then be soldered to the appropriate tags and the nearest earth points, which are fortunately plentiful. Note that C2 (a.g.c. decoupling) has a value of 0.2µF, being made up originally of two 0.1µF sections. According to the particular use envisaged for the receiver, it may be found desirable to alter the time constant of the a.g.c. by reducing C2 to 0.1µF, which was done in this case.

Anyone carrying out the work so far detailed cannot fail to notice that the cathodes of the r.f. amplifier, frequency-changer and i.f. amplifier valves are connected directly to chassis, negative grid bias being employed. The circuitry involved is characteristically complicated and worthy of close examination.

The R1155 has two operating modes in which the r.f./i.f. gain is controlled either by a.g.c. with a normal a.f. volume control, or by a manual r.f./i.f. gain control with the a.f. control shorted out to its maximum position. The two modes are designated 'AVC' and - for some unknown reason - 'OMNI' respectively, and indicated on the master switch by the letters AVC and by a circle with a dot at its centre. In either mode a standing minimum bias of between -2.4 and -3.6V, according to the wave range in use, is applied to the four valves concerned. In OMNI mode the gain control varies the negative bias from the minima quoted above up to approximately -30V. To obtain these voltages a veritable network of fixed and variable resistors is connected in series with the h.t. negative line, see **Fig. 1.1**. Thus great care has to be taken to ensure that the h.t.- output from the power supply unit is taken to the lower end of the network and not to the chassis. It is also essential that the h.t.- is not connected to the l.t. wiring in the p.s.u. via common earthing to its chassis. In some cases this may necessitate insulating the smoothing capacitor cans from chassis by binding them with tape. Should any doubt exist the resistance between the h.t.- and l.t. leads should be checked as virtually infinite before they are connected to the receiver.

In Part 2 the r.f. amplifier and modifications to the output stage will be described, as well as the first tests. ■

Abbreviations

A	ampere
a.f.	audio frequency
a.g.c.	automatic gain control
a.v.c.	automatic volume control
b.f.o.	beat frequency oscillator
d.f.	direction finding
dB	decibel
DX	'long distance'
h.t.	high tension
h.t.-	high tension negative
i.f.	intermediate frequency
kHz	kilohertz
l.t.	low tension
l.w.	long wave
m.w.	medium wave
mA	milliampere
mA/V	milliampere per volt
MHz	megahertz
mW	milliwatt
p.s.u.	power supply unit
r.f.	radio frequency
RAF	Royal Air Force
s.w.	short wave
V	volt
WWII	World War Two
µF	microfarad
µV	microvolt
Ω	ohm

Georg Simon Ohm

Greg Baker tells the story of Georg Simon Ohm, the discoverer of Ohm's Law, and his struggle to have his ideas accepted.

These days Ohm's Law is easy to understand and is brushed aside, almost as a self-evident truth, in the first half hour of radio or electronics course.

But for Georg Simon Ohm, the man who discovered the fundamental relationship between voltage (E), current (I) and the resistance (R) that E = I.R, it was neither self-evident nor a half hour exercise. And once he had completed his experiments it was a larger problem to convince others and to have his methods accepted.

The eldest of seven children, Ohm was born on 16th March 1789 at Erlangen, 10 kilometres north of Nurenburg in Bavaria, Southern Germany.

Ohm's father was a self-taught master mechanic earning his living as a locksmith. He was an avid reader of philosophy and mathematics and encouraged Georg and his brother Martin in the study of mathematics, physics, chemistry and philosophy.

The Ohm brothers showed considerable mathematical aptitude and were linked to the famous Bernoulli brothers. In addition, Ohm's father instructed Georg in the techniques of mechanics and tool making which was to later stand Ohm in good stead.

In 1805 Georg entered the University of Erlangen. After an interruption when he taught mathematics as a private tutor in Switzerland, he settled in Neuchatel in 1809 to continue privately with his university studies. In 1811 he returned to Erlangen and received his Ph.D in mathematics the same year.

His heart was set on an academic career but he had to make do with a range of teaching positions until he was made Head of the Department of Mathematics and Physics at the Polytechnic Institute in Cologne in 1817.

By the early 1820s he had decided to make a further push for advancement on the academic ladder. To do this, he needed to produce some important research work and he turned his hand to physics. This was the age of electrical exploration. Earlier Volta had built his Voltaic pile and in 1820 the Danish physicist Oersted had shown how a current flowing in a conductor would deflect a compass needle. So Georg turned his mind to electrical phenomena.

His first experiments were on the principle that bears his name: the effect of running a current through difference conductors. His approach was experimental. He had read Fourier's discoveries that heat flow between two points in any material depended on the temperature difference between those points and the heat conducting properties of the material. He reasoned that there could be analogy to current flow. Using a Voltaic pile and wires of different lengths and cross sections and that he had drawn himself using the mechanical lessons from his father, he began to experiment with current flow.

His first published formula connecting resistance, current and voltage was wrong but he soon realised his error and the problems with the Voltaic pile. The Voltaic pile not only has a high internal resistance, it discharges quickly and the terminal voltage declines during the course of the experiment.

Georg was able to correct this by bracketing each test wire with two readings of a standard control wire. This produced the correct result but he eventually decided to repeat the experiments with Seebeck's thermocouple. This device makes use of what is known as the Seebeck effect. This says that if the two ends of a conductor are maintained at different temperatures and these ends are electrically connected to two conductors of another material, a potential difference will develop between the two ends. This potential difference is not large but is dependant only on the two materials and on the temperature difference.

Using copper and bismuth as the two material and with one junction in ice and the other in boiling water, Ohm had a constant potential difference to work with. In modern terms what he had was a simple circuit with his test wires in series with the thermocouple. To measure the current he suspended a magnetic needle adjacent to the test wire and noted the deflections against a circular scale he had graduated himself.

Using wires of different lengths as test resistances R, he experimentally derived the formula

$$I = E/(RI + R)$$

where RI is the cell internal resistance

or in Ohm's terms

$$X = a/(b+x)$$

where "X is the intensity of the magnetic effect of the conductor whose length is x; a and b represent constant quantities depending upon the exciting force, and the resistance to conductivity of the other parts of the circuit".

In 1826 he published this experimentally derived relationship in the widely circulated journal of the physicist Schweigger: *Journal for Chemistry and Physics*.

This was interesting for two reasons. The first is that it is what philosophers of science would call an inductively derived law. Inductionists argue that laws of science can be derived from a wide observation of natural phenomena. Ohm did this, finding a perfect agreement between this formula and experiments with the variables extended in all directions.

Secondly, because Georg was trained by his father in philosophy and took a keen interest in philosophy, he would have been aware of the philosophical objections to inductivist science.

Among other things these objections include the fact that inductivists can never be sure, without prior theoretical guidance, that their experiments are sufficiently wide to cover all possible cases. Simple enumeration of experimental results need not necessarily give a universally applicable law.

Philosopher David Hume (1711-1776) for example had shown that induction by simple enumeration is not a valid form of argument. Ohm would have been aware of this, even if the then influential German philosophers Kant and Hegel did not agree with Hume's reasoning.

In order to correct this problem and follow up parallels between current flow and heat flow, he set about putting his discovery on a more sound footing. To do this he developed a mathematical theory of current flow in a conductor based on three fundamental laws. Unfortunately, he did not make clear in his theory its basis in his earlier experimental work.

In 1827 he published this in his best known work *The Galvanic Circuit Investigated Mathematically*. This was used then and for well over a hundred years after as a document showing that Ohm had derived and proved his law from theoretical assumptions and not from experiment.

This was clearly untrue and Ohm was up against other problems too. While his journal papers were widely read and followed up by the younger scientists within Germany, it was a time in that country when the philosophy of Hegel and Kant and the non-mathematical approach to science still held sway amongst those in established positions. And it was those in established positions who effectively controlled the academic postings.

Another problem Ohm was up against was the conceptual one that his work precipitated. Until then, while it was known separately that cell terminal voltages differed depending on the cell and that there was current flow in conductors connected to those cells, no-one had ever connected the two and showed that they were inter-related. Ohm's Law, of course, does this, but this was a giant conceptual step for the scientists of the day. This, for some, was difficult and added to his problems in having his work accepted.

His work did not lead to the academic advancement that Georg had hoped for. Indeed, he received so much criticism that he was forced to resign his position. For six years he lived in poverty until 1933 when he received an appointment at the Polytechnic School in Nuremburg. In 1835 he assumed, in addition, the Chair of Mathematics at the University of Erlangen.

His work was not widely known outside Germany until 1841 when he was granted the Copley Medal by the Royal Society in London.

From then on Ohm's fortunes began to improve. But he was growing old and unwell and his sense of duty meant that he tired himself fulfilling his teaching obligations and producing a physics text book.

He was appointed full Professor of Physics at the University of Munich in 1849 but by 1854 he was dead.

His work was finally recognised by the 1881 naming by the Paris International Electrical Congress of the unit of resistance as the 'Ohm' and this is still used today as the SI unit of resistance.

Next time that you calculate a resistance, current flow or voltage using Ohm's Law, spare a thought for the man who gave it to us. It was a struggle - but he got there. ■

Have Fun with a Vintage Short Waver

In 1923, the prestigious four-volume Harmsworth Wireless Encyclopaedia gave detailed instructions for building an apparatus that would tune from 300m (1MHz) downwards. Eric Westman built the set exactly to the instructions and was amazed at its performance.

For those who have become sated with the myriad refinements of the modern communications receiver, making and operating a 1923-style short wave receiver can provide an interesting diversion. Since, during much of the 1920s, the term short wave was applied to what we now call the medium wave, this little set should have merited the title 'ultra short wave receiver'.

A range of typical receivers of the same era.

It was an extremely primitive affair whose most remarkable feature was a 12-turn spiral inductance wound with brass strip. Rectification was by means of a crystal detector - no valve employed. Fascinated by its utter primitiveness, I built the little set exactly to the instruction of 1923 and was amazed at its performance. For readers who would like to replicate the project, constructional details follow.

Brief Description

On one side of a vertical panel a spiral inductance of brass strip is retained by four pairs of slotted bars. At the top of the panel an earth terminal connects to the outer end of the inductance, whilst a wandering lead from a corresponding antenna terminal clips on to any selected part of the spiral to give coarse tuning. Fine tuning is effected by a 250pF variable capacitor mounted centrally on the opposite side of the panel, with its spindle projecting through the centre of the spiral. On a wooden baseboard attached to that face of the panel bearing the spiral, are mounted the crystal detector or diode and the headphone terminals. Connections are made by 1.2 - 1.5mm tinned copper wire and include the right-angle bends that were *de rigueur* in the early 1920s.

The Panel

This consists of a piece of insulating material - ebonite in the original, but plywood is suitable - 190mm long by 160mm wide and 6.4mm thick. It should be drilled as shown in the diagram, with holes of diameters to suit the components being used. Cut four pairs of slotted retaining bars for the spiral from similar material 80mm long and 10mm wide. Saw 12 slots 4mm deep and 5mm apart in each pair of bars so that when the two bars are placed edge-to-edge, the slots will correspond and so enclose the brass spiral between them. Saw the first slot of the first pair 10mm from one end; with each succeeding pair, make the first slot slightly more than 1mm farther from the end, to accommodate the ever-widening spiral. Mark the matching pairs A, B, C, and D in the order in which they should be fitted. Drill a hole 5mm from the end of each bar to take the screw that will retain it to the vertical panel, drill them, and temporarily secure one bar of each pair to the panel.

The Spiral Inductance

The inductance is composed of a 4m length of brass strip a nominal 8mm wide and 0.8mm thick. Wind it round a former about 35mm in diameter, so that it forms a tight spiral of 12 turns, one on top of the other. Slip it from the former and, allowing it to spring open. insert it in the slots in the bars on the panel, starting at bar A so that the spiral assumes the correct shape. Finish the spiral where the earth terminal will be fitted and cut off the excess brass strip. Dealing with one retaining bar at a time, remove the retaining screws, fit the matching bar in position on the spiral, and screw the bars permanently into place. Fit the antenna and earth terminals on the same side of the panel as the spiral, and mount the variable capacitor on the opposite side, so that its spindle passes through the panel and the centre of the spiral. If it does not project far enough to allow a knob to be fitted, add an extension spindle.

The Baseboard

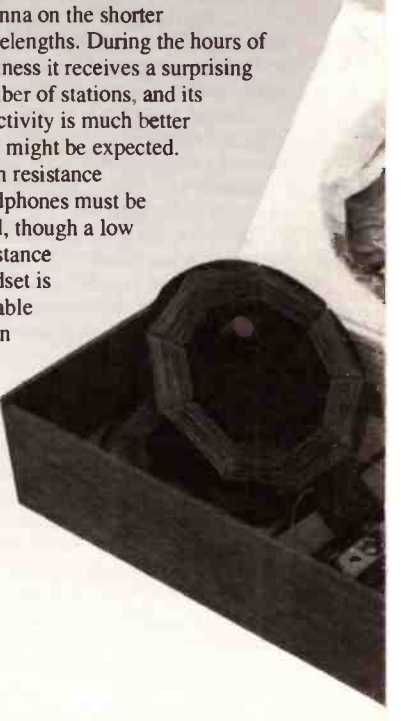
This is a rectangle of wood 160mm long by 130mm wide and 10mm thick. On it, mount the crystal detector or diode and the headphone terminals, as well as two sturdy brass brackets to secure it to the panel. If a diode is being used, it can be made to simulate a crystal detector by mounting it lengthwise in a glass or plastics tube up to 25mm in diameter, and fitting the tube with circular end cheeks and L-shaped brass retaining brackets.

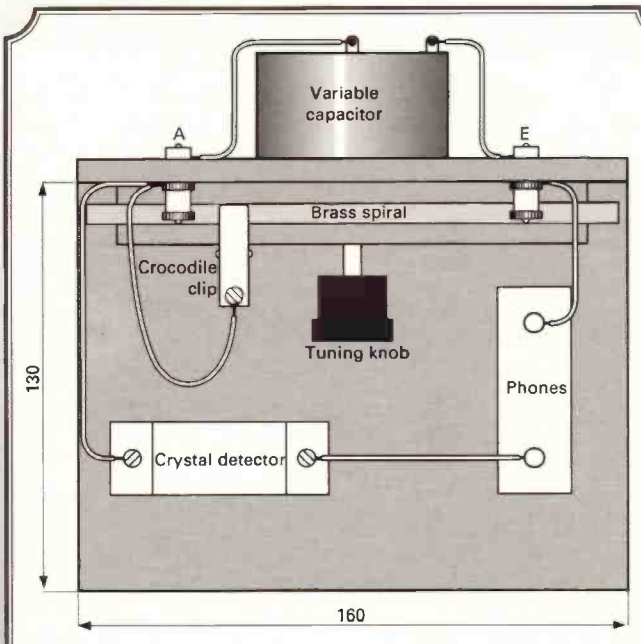
Completion

When the lower part of the panel has been drilled to take the screws securing it to the two brackets on the baseboard, and the panel and the baseboard have been screwed firmly together, undertake the wiring with all its rectangular bends. Only one soldered joint need be made, connecting the outer end of the spiral to the earth terminal. Connect a wandering lead of flexible insulated wire about 200mm long to the antenna terminal and fit a crocodile clip to the free end. The receiver is now ready to put to use.

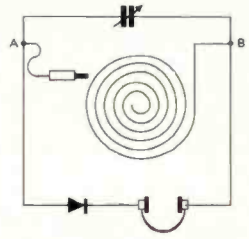
To Operate the Receiver

It would be expected that a good outdoor antenna and an earth are necessary for the little set to function adequately, but in reality it works well when connected to the outer element of a television coaxial lead-in for its antenna. Even a length of insulated flexible wire draped about the room will suffice. According to circumstances, it will sometimes work better with an earth or without one, and even without the antenna on the shorter wavelengths. During the hours of darkness it receives a surprising number of stations, and its selectivity is much better than might be expected. High resistance headphones must be used, though a low resistance headset is suitable when





Plan view showing layout and wiring.



Simple circuit diagram of the receiver.

connected to the output terminals through an inexpensive matching transformer.

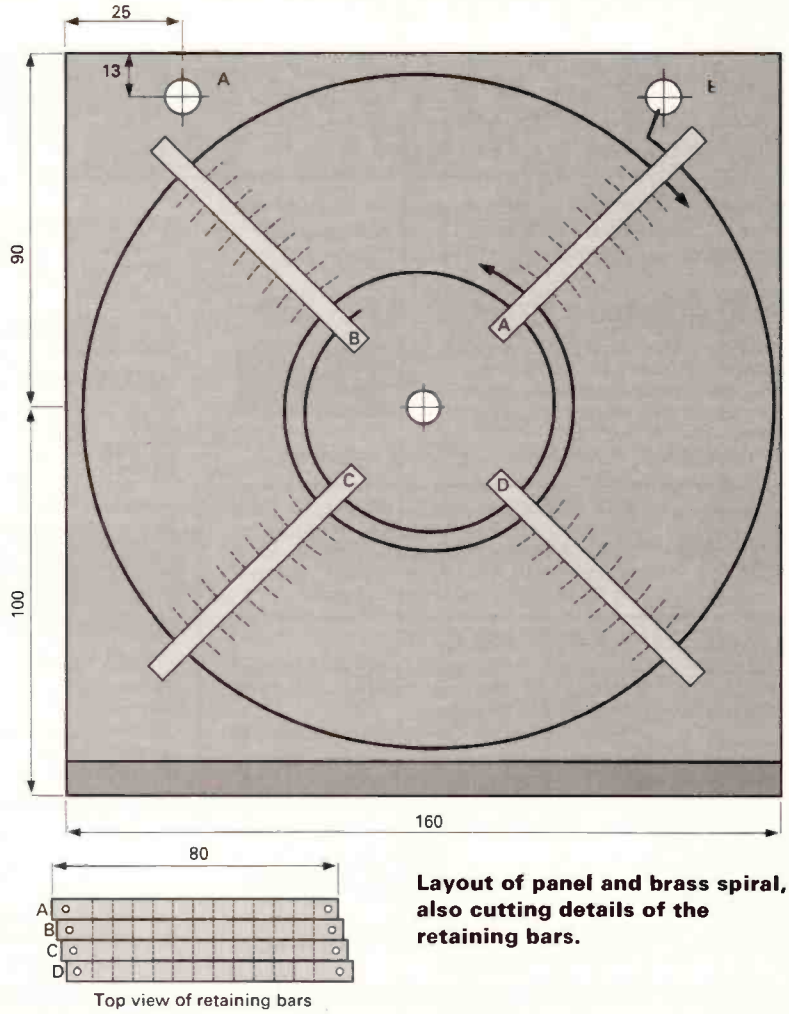
Performance can often to enhanced by clipping the antenna directly to some part of the spiral, usually towards the earth end, instead of to the antenna terminal. Most of the European short wave stations are received at excellent strength, as are some amateurs, though some of the latter are unintelligible since they operate the single sideband system.

Clipping the wandering lead and the antenna to various points on the spiral, as well as disconnecting or reconnecting the antenna and earth to the receiver, can be a wonderful object lesson in sensitivity and selectivity. Considering how basic the set is, it is surprising what interest and enjoyment can be obtained from it. Certainly the pioneer of 1923 would be astounded at the results it will produce nowadays.

You will need

250pF variable capacitor and knob
Crystal detector or diode
Brass strip 8 x 0.8mm (4m)
Terminals (4)
Small nuts and screws, about 30mm long (8)
Wood or insulating material 160 x 130 x 10mm and 190 x 160 x 6.4mm
Connecting wire, 1.5mm dia. (16 or 18s.w.g. if you have some in the junk box)

Not the subject of this article, but another 'vintage' set built by the author.



Layout of panel and brass spiral, also cutting details of the retaining bars.

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73 from Dave G4KQH, Technical Manager.

Lightning

Lightning can be fatal to radio equipment, but how many radio users follow the simple rules to avoid damage from lightning strikes, asks Terry Brown G0NSA.

From a very early age I have been aware of the damage that can be caused by a lightning strike, having lived in a house that received a direct hit.

I suppose it must have been about 1954, ours was one of the few houses in those days to have a television set. The 'bolt' struck the v.h.f. 'H' antenna on the roof - we would still have been hit without the antenna, but it provided a ready path to earth for the energy. After recovering from the shock it was found that the antenna was a very peculiar shape, the television no longer worked and all the fuses in the house had blown. On the more serious side, the chimney stack had been cracked from the pot down into the loft space.

We were lucky that no injury was caused, but from that day a warning of storms or the sound of thunder would result in the antennas being pulled and the mains plug removed from the socket.

In our modern society where the 'chip' rules everything from the toaster to the video, a direct strike will cause many hundreds of pounds of damage, in some cases cause fires and may well involve personal injury. So, just what can be done to protect ourselves and our delicate/expensive gear. At the first sign of a storm, stop using your equipment, remove the antennas and mains plugs.

I know that the weather forecasts are not failsafe, but they will often give you good warning. Your radio is also a good indicator. That DX that keeps getting interrupted by heavy static bursts, is it trying to tell you something? It is better to lose the DX than risk life and limb. If all warning signs have been missed and the storm has arrived, do not handle the equipment or the plugs, it's too late. A strike while you are holding an antenna cable will injure, if not kill, you.

Warning Signs

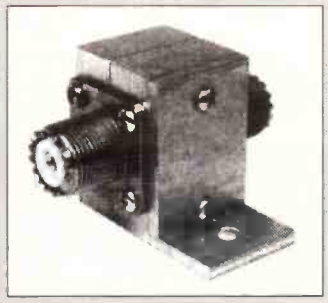
In early May of last year, warnings of a storm prompted me to insulate my TS-850SAT from the full size G5RV antenna, I laid the coaxial cable across my desk and settled down to read a book. In due course, I could hear the rumble of thunder in the distance, but apart from driving my crazy dog even crazier, it had no effect on my little world.

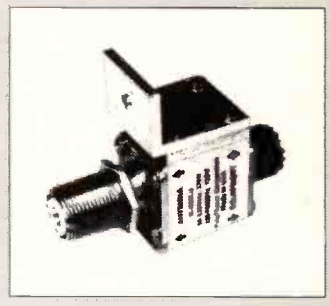
Then, an almighty crash of thunder and a flash of lightening ended my daydreams. A 50mm long spark shot out of the PL259 on the end of the coaxial cable laying across the table. Whilst not a direct hit, enough energy had been introduced into the antenna to cause serious damage to equipment had it still been connected.

It would be stupid to think all hazards can be avoided when we are prone to putting masts in our gardens supporting various items or ironmongery, but why not reduce the risk with a stout cable from the base of the mast to some buried earth rods.

I now intend to remove both power and antennas from the equipment after each operating session and sleep sound in my bed, will you? ■

Editor's Note: Many of the advertisers in *Short Wave Magazine* stock lightning protection equipment, contact your local dealer for details.





Two examples of surge arrestors available from SMC. While these will not withstand a direct hit, they will prevent the build up of large static voltages leading to discharges within your precious equipment.

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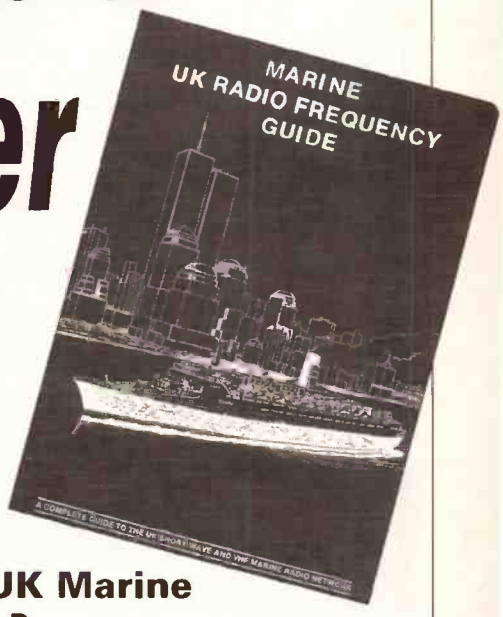

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Propagation

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

This column is very fortunate to have the regular support of experienced astronomers like **Cmdr Henry Hatfield** (Sevenoaks), **Ron Livesey** (Edinburgh), **Patrick Moore** (Selsey) and **Ted Waring** (Bristol). Each one uses the projection method of observation and they all have a special interest in solar work. Their respective observatories are widely seperated, which is good, because, when there is intermittent cloud cover, at least one stands a chance of seeing something of the sun on their drawing screen.

Solar Reports

In August, Ron Livesey located an average of 1.77 active areas on the sun's disc during his daily observations . Although some cloud hampered observations on the 15th and 24th, Henry Hatfield, using his spectrohelioscope, found 3 sunspot groups, an active plage, 12 filaments and 7 small quiescent prominences on the 12th, 2grps, 13fs and 7 small qps on the 13th, 2 spots, 16fs and 13 small qps on the 15th, 1 large spot, 11 filaments and 8 small qps at 1150 on the 17th, 4 spots, a slightly active plage, 12fs and 5 small qps on the 24th, 2 faint grps, 8fs, 1 medium 'tree' prominence on the west-limb and 9 small qps on the 28th and 1 faint grp, 6fs and 8 small qps on the 29th.

The 'tree' prominence, first observed on the 28th, was still the same size when Henry saw it again on the 29th. In September he identified a faint group on the 17th, 18th and 19th with about 12 filaments. However, at 1455 and 1025 respectively, on October 2 and 3, Henry logged 3grps, 4fs, 5 small qps and noted that one group had a very long chain near central meridian with two large component spots. All plages were active but there were no flares.

The progress and size of these can be seen in **Fig. 1**, which is the result of Patrick Moore's observation at 1020 on the 5th. There is little doubt that the frequent bursts of solar radio noise recorded by Henry Hatfield on the 1st, 2nd and 3rd was caused by activity within these large groups.

Ted Waring, counted 4 sunspots on September 4 and 16 on the 25th and Patrick Moore, observed a few very tiny spots on the 17th, 18th and 19th and reported a 'clear disc' on days 9, 10, 12, 13, 15, 22 and 23. Rain and overcast skies in Sussex toward the end of September and early October prevented solar observation.

Auroral

Ron Livesey, the auroral coordinator for the British Astronomical Association, received reports described as 'glow or patch' for the overnight period on August 16/17, 18/19 and 25/26, 'quiet arc or band' on 5/6 and 12/13, 'ray bundles' on 15/16 and 16/17 and 'active movement or flaming' on 3/4, 15/16, 16/17, 17/18 and 26/27, from observers ranging from Scotland to North America and Canada.

Magnetic

The various magnetometers used by **John Fletcher** (Tuffley), **Karl Lewes** (Saltash), Ron Livesey, **David Pettitt** (Carlisle) and **Tom Rackham** (Goostrey), between them, recorded strong disturbances to the earth's magnetic field on August 4, 5, 14,-17 and 28, which is not surprising because of the auroral activity on or around those days.

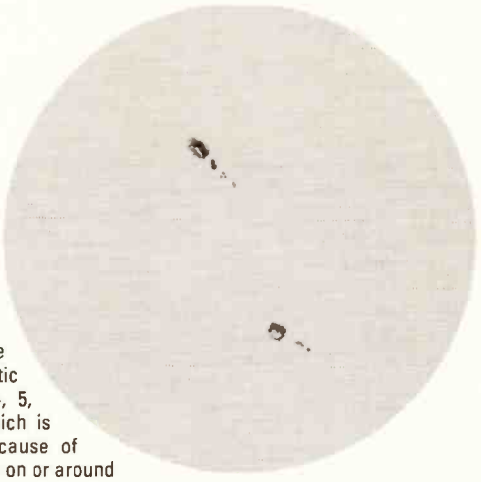

Fig. 1.

Propagation Beacons

As usual, my thanks to **Gordon Foote** (Didcot), Henry Hatfield, **Ian McDermid** (Comrie), **Ted Owen** (Maldon), Ted Waring, Ern Warwick (Plymouth) and **Ford White** (Portland), for their 28MHz beacon logs that enabled me to compile the chart seen in **Fig. 2**. Combining observers reports usually produces something of special interest and, to me, **Fig. 2**, indicates that the 1993 Sporadic-E season pulled-up sharply at the end of August and then faded out toward September 10.

Band II

While in his hotel room in Torquay, on September 11, **S.M. Hockenhull** (Bristol), tuned his Philips D2345 portable, with its telescopic rod antenna, through Band II and found reliable reception from the Redruth transmitter of BBC Radio Cornwall and Pirate FM, 116km away, in West Cornwall. He also logged BBC Radios 1, 2, 3 and 4 from the same place.

George Garden has moved to a new house in Edinburgh that conveniently had a 3-element antenna for Band II on the roof. George soon tried his Sony ICF-2001D portable at his new home and was surprised to receive BBC Radio Aberdeen (an opt out of BBC Radio Scotland) on 93.1MHz from the old Meldrum transmitter near Aberdeen and BBC Radio Newcastle and ILR Borders from Eyemouth near Berwick Upon Tweed. Just above 93.1, with signals nearly jamming together, he identified BBC Radio Ulster. His next job is to fit a rotator to the array.

The daily changes in atmospheric pressure for the period August 26 to September 25 and further information about propagation can be seen in my television column elsewhere in this issue.

Fig. 2.

	August						September																							
Beacon	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CT0APO	x	x	x	x	x	x	x	x		x	x	x		x		x		x		x										x	x
DF0AAB	x		x	x	x	x					x	x	x		x															x	
DF0THD				x	x																						x			x	x
DK0TEN		x		x	x						x		x	x				x		x									x	x	x
DL0IGI	x	x	x	x	x	x			x	x	x	x	x		x															x	
EA3JA																		x												x	x
HG5GEW	x	x	x	x	x	x	x			x	x				x					x						x				x	
IK1PCB	x	x	x	x	x	x	x				x		x	x		x															
IY4M	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x															
LA5TEN	x			x	x	x						x	x		x										x	x	x				
LU1FHH																															
OH2TEN	x	x		x	x		x				x																				
OH9TEN	x		x	x	x																										
PI7BQC	x																														
PI7ETE	x			x													x														x
SK5TEN	x	x	x	x	x		x				x	x			x																
SV3AQR	x			x							x	x						x		x							x			x	x
S55ZRS	x	x	x			x	x		x	x	x	x	x		x	x				x										x	
ZS1LA			x							x										x			x	x	x		x	x	x	
ZS6PW		x	x			x				x	x	x				x	x			x		x	x	x	x	x					
5B4CY	x	x	x		x			x	x	x					x																

DXTV Round-up

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

One of my regular contributors is **Bob Brooks** (Great Sutton) who listened to the BBC station '5SW' in the 1930s and worked on direction finding equipment while serving in the RAF during WWII. He has studied Sporadic-E and long distance television for many years and it is obvious from his detailed reports that he knows how to get the best results and the most information from a weak signal. Bob often photographs the 'DX' that he receives and is pleased to know that it gives new readers an idea of what to look for when Band I is open.

This time he shows us one of the Commonwealth Of Independant States' (formerly USSR) logos, **Fig. 1**, a news reader from Hungary (MTV), **Fig. 2** and captions from Czechoslovakia (CST), **Fig. 3**. and Italy, **Fig. 4** and Spain, Fig. 5. It is hard to realise that these pictures have been reflected hundreds of kilometers off their normal path by a natural disturbance in the earth's atmosphere. Like all photographers, Bob has captured that moment in time when it happened and has preserved the proof for posterity.

Fig. 1: Logo from CIS.

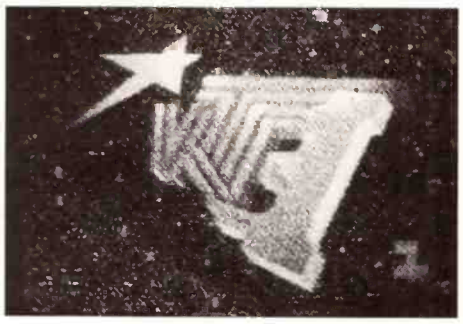

Fig. 2: Newsreader from Hungarian TV.

Fig. 3: Czechoslovakian TV caption.

Band I

Judging by the look of the 28MHz beacon chart in my 'Propagation' column, elsewhere in this issue, the 1993 Sporadic-E season faded out between the end of August and September 10. However, It's worth keeping a watch on Band I, especially on Chs. E2 (48.25MHz) and R1 (49.75MHz) for short-period Sporadic-E openings throughout the winter months.

Fig. 4: Italian TV Station.

Fig. 5: Spanish TV.

Towards the end of August, Bob Brooks received cartoons from Spain (TVE) and a test-card from Denmark (DR) on the 27th, programmes from Italy (RAI) and Portugal (RTP), films from Spain and a test-card from Sweden (SVT) on the 28th, programmes from Portugal, Spain and Sweden on the 29th and a mixture from Finland (YLE), Iceland (RUV), Ireland (RTE), Italy, Norway (NRK), Portugal, Spain and Sweden on the 30th. Bob found some short bursts of Sporadic-E activity on September 1 and 4-8, when he logged test-cards and/or logos from Spain and Scandinavia. However, between 1050 and 1550 on the 10th, he saw a programme schedule and test-card from Norway, programmes from Spain, news from TVE Aitaina and the Madrid logo.

In New Radnor, **Simon Hamer** received pictures from France (TDF), Portugal (RTP1) and Spain (TVE1 & 2) around 1330 on September 4.

"A blank month for TVDX, conditions appear to have declined with a 'bump'", wrote **John Woodcock** (Basingstoke) on his September report. "I normally see something through September, but nothing for me on any of the three bands!".

Satellite TV

Simon Hamer has received signals from the new Zuld Holland TV station from Rotterdam harbour on Ch. E49 in the u.h.f. band and remarked, "after the deluge of satellite TV. it's good to get something 'the hard way' as true TVDXers have allways managed before satellite". Simon now has two satellite receivers and tells me that one of them "can tune right down to the new Dutch 'RTLS' with good colour".

In Glasgow, **John Scott**, uses an Amstrad SRX200 decoder and has recently added a motor to his 800mm dish antenna. "The dish is at the moment on a wall-mounting arm so it swings 180 dgrees from the Reuters station right by Astra and the Eutelsat," said John and added, "the fact is that I am learning about this mode of receiving which is very interesting" .He enclosed print-outs of the pictures that he copied from Reuter's network, **Fig. 6** and Eutelsat II, **Fig. 7**.

Weather

While in Torquay on September 11, **S.M. Hockenhull** (Bristol) heard two French stations on his Philips Portable that he thinks was due to tropospheric lift conditions over a sea-path caused by a small ridge of high pressure ahead of tropical storm 'Floyd' that arrived, with very heavy rain and gale force winds around 0900 on the 12th. It rained all day here in Sussex on the 12th and messed up the Vintage Wireless Day at the Amberley Chalk Pits Museum. "The weather on the 12th was terrible here," wrote John Woodcock.

On the 18th, Joan and I visited the National Trust house, Uppark, on the Sussex/Hampshire border. This property, high on the Sussex Downs, is being reconstructed after a disastrous fire. The wind speed is monitored by the annemometer cups mounted above the work offices, **Fig. 8**. The weather that day was moving dark cloud, with glimpses of the sun as seen 'above' the instrument in Fig. 8. However, about 1400, we saw a sun-halo, an arc of which can be seen in **Fig. 9**. "That's a sure sign of bad weather to come," said Joan and, sure enough, it hit us on the 20th.

During September I recorded 7.13in of rain compared with 2.90in for the same period in 1992. Heavy falls of 1.35in, 0.93in, 1.50in and 1.15in fell on days 8, 16, 22 and 30 respectively. On the 22nd, 1.25in of the days total came during a 40 minute hail and thunder storm, causing local flooding, in the late afternoon.

The variations in the atmospheric pressure readings for the period August 26 to September 25, **Fig. 14**, were taken from my own barograph.

Vintage Wireless Day

Although, it rained all day on September 12, it did not spoil the happy atmosphere among the visitors and exhibitors at the Vintage Wireless Day. **Andy Emmerson** represented the 405-Alive group and the 405-line television system was demonstrated, with working sets, by **Bill Journeaux**, with his own collection and **Ron Weller** using the museum's sets. While Coastway Hospital Radio broadcast contemporary music and live interviews, around the museum, roving cameras from the Video

Fig. 6: Picture from Reuters link.

Fig. 7: Eutelsat II image.

Fig. 8: The author's anemometer.

Fig. 9: Sun Halo.

Fig. 10: 50 years of progress in portable sets.

Fig. 11: Marconiphone model 82 receiver.

Fig. 12: SSTV from Germany.

Fig. 13: And from Spain.

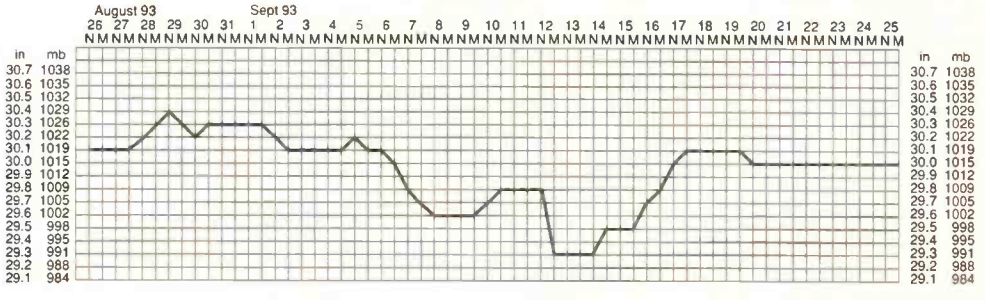

Fig. 14

Repeater Group covered the day and 30-line pictures could be seen on a replica of a Baird 'scanning disc' televisor built and demonstrated by **Dave Sumner**.

The programmes from Coastway were enjoyed on receivers of all ages. **Fig. 10**, shows the organiser **David Rudram** palm-holding a Philips NT300 f.m. transistor portable, while standing next to a massive McMicheal 'Super Range Portable Four' from his own collection. How sets have changed in 50 years, hi! Radio and Television engineer, **Dave Higginson** (Doncaster) became the proud owner of a rare Marconiphone Model 82 receiver, **Fig. 11**, and plans a complete restoration. Dave specialises in vintage radio and television work and can be contacted at 28 High Street, Misterton, Doncaster, Yorks DN10 4BU, or ring him on (0427) 890768.

Tropospheric

During a tropospheric opening on September 1, Simon Hamer, logged pictures from Belgium (BRT), Denmark (DR), Germany (ARD), Holland (NED), Ireland (RTE), Norway (NRK) and Sweden (SVT) in Band III and Denmark (TV2) and Sweden (SVT2 & TV4) in the u.h.f. bands.

SSTV

"I am interested in SSTV", wrote **E. Thomas** (Trefriw), who has a Yaesu FRG-8800, long-wire antenna, 48K Spectrum computor and Technical Software's RX4 program and TF1 interface. All good stuff, but, at the time of writing he had no results and is naturally disappointed.

Many years ago, I used a 48K Spectrum attached to the output of a communications receiver for slow-scan television and found it worked very well.The tuning of the signal takes a bit of getting used to, so I suggest that you listen around 14.230MHz for a strong 'twittering', then, watch your screen while you tune very slowly through the 'twitters' until you find the spot where the picture starts to 'run' and build up. I was also troubled by interference from the Spectrum on the band, so, I screened the long wire antenna between its entry to the window and the receiver with a piece of coaxial cable and put the Spectrum on the other side of the room with a screened (thin audio type) lead between the speaker socket on the set and the Spectrum's input. For me, this more than halved the unwanted noise and, consequently, improved the reception of the wanted signal. However, it's a case of 'try it and see' with interference.

John Scott found the 14MHz band busy at times with SSTV signals in September and among the countries he logged were Germany, **Fig. 12**, Spain, Fig. 13 and Sweden.

Stations

Jeremy Thorpe (Durban, South Africa) requests help to find the addresses of major radio and TV networks in various parts of the world. The only advice that I can give you Jeremy and others who require similar information is to obtain the latest edition of the *World Radio TV Handbook* which is published annually by Billboard. Some reference libraries do keep a copy or it can be purchased from the *SWM* Book Service.

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Satellite TV

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

Undoubtedly the main news since the last column has been the Russian Revolution - 2 in Moscow over October 3/4 and the political movements prior to that date, i.e. President Boris Yeltsin sacking parliament and seeking the support of the masses. When Yeltsin dissolved the parliament on September 21, I commented that Gorizont craft at 11°W and 14°W should be monitored since action, if any, would undoubtedly appear on these birds - and it did!

Matters came to a head with Yeltsin gaining the support of the military and the eventual shoot-out in and around Moscow centre, initially concentrating on the TV studio at Ostankino and later at the 'White House' parliament building. With the changes in the USSR (or CIS) over the last 2 years or so, the game was played out with the world's media at hand and instant reporting, of course, via satellite. The Gorizont craft provided a considerable amount of news material, broadcasters news feeds and 1- and 2-way reports to respective Western networks. On the 3rd and 4th action days, we saw locked-off camera shots from the news bureau rooftops of the Moscow scene. It appears that there are no facilities for live 'on the ground' reporting with video in Moscow, all material shot by cameramen in the city is returned on cassette to the playout facilities at respective news bureau and so is, at the quickest, a few minutes old.

For the majority of sat-zappers (or sat-DXers) with small dishes the only Ku band satellites that carried Moscow output were the Gorizont twins as above with other offerings from Intelsat K 21°W. Gorizont 11°W generally carried WTN (World Television News) feeds in both NTSC 525-lines and PAL 625-lines, the 14°W bird here was difficult to receive for the periods monitored due to excessive inclined orbit tracking. Gorizont 14°W carried American west-bound feeds for the CNN network, which **Ian Waller** advises was in parallel with a C Band offering via the same satellite. During the night of the 3rd, locked-off pictures of street scenes with army truck movements intercut with video playouts of the real drama being played out at the TV centre, the shoot-out having started at the studios earlier in the day. Numerous reporter-to-network inserts were carried out during this period to both European and American networks. The next morning dawn broke over a smoke-blackened and burnt 'White House' with a flurry of European reporters standing before camera and the soiled 'White House' in the background.

A couple of readers have reported that the UK Forces' SSVC service carried via Intelsat 601 at 27°W, which is normally scrambled has been in the clear recently and another writes to advise that reports suggest both Wire TV and TLC - both on 601 - are to scramble using the relatively insecure SAVE system. This merely reverses video polarity and superimposes across the video a sine wave of about 90-100kHz. By inverting the video sense on the satellite receiver pictures can be seen, the use of a dynamic notch filter will usually terminate the picture fluctuation causes by the 100kHz sine wave.

Berry Habekotte (Holland) recently ordered a Triax feed/polariser head for his 1m Triax dish and tried it out on a 650mm Maspro dish with disappointing results. Though when fitted into the designed Triax dish, reception was excellent which, as Berry suggests, shows that it is very important to use the correct feed system designed for a given dish rather than haphazard fitting of any feed to any dish! The Triax feed carries a Triax sticker but is in reality made by Fuba.

What am I bid for this 'des res?' and on October 7 a property auction was carried out via Intelsat K for nearly 1 hour, the house bids resembled telephone numbers advises **John Locker** from Wirral! The 'des res' in the auction were American mega-mansions with twin-gated drives and a team of gardeners - makes a change from the usual cattle auctions. A few days later on Eutelsat I F1 25°E John viewed *The Race of the Pharaohs*, a car and bike race across the Egyptian Desert with some spectacular shots of the sandy wastes.

Commercial Break

There's a new English language satellite magazine on sale, published in Germany by Alexander Wiese, well-known in the early 80s for TVDXing. His TVDXing magazine gradually changed to a 100% satellite publication and is now available in an 'International' edition, this in addition to German and Russian language versions. The magazine is a coloured, glossy packed full of satellite information, receivers, products, reviews and satellite listings (that are updated monthly) running to 12 sides of small print A4 covering both Ku and C Band craft. Subscription for 1 year of the International edition *Tele-Satellit* (12 issues) costs DM 120 (£48 UK) from Tele-Satellit, International Edition, PO Box 1234, D-85766 Unterfoehring, Germany. Fax +48-89-9506165.

Fig. 1: The day after Moscow fell, an English TV reporter catches up on the local news just before her live report into BBC TV, meanwhile the Moscow 'White House', now blackened smoulders behind! Via Gorizont 14°W.

Fig. 2: John Locker snapped a test transmission via Tele X at 5°E for the Baltic University, 12.610GHz circular.

Fig. 4: The Israeli test card via Intelsat 512 at 1°W photographed by a Cairo reader.

Fig. 5: Identification logo for Israeli TV again in Cairo.

Fig. 3: Tele Monte Carlo opened up on Telecom 2B on October 16 as seen by Andrew Sykes, Halifax.

Swift Television Publications, 17 Pittsfield, Cricklade, Swindon, Wilts SN6 6AN have just released their *Satellite Channel Report*, a soft-bound A4 publication that details the following - UK geographical latitude/longitude/elevation/azimuth - South - for most large towns in the UK; similar data for all satellites from 66°E to 76°W; polar mount data; gain/ beamwidth/efficiency tables for dishes; a master list of all satellites transmitting in C/S/Ku bands with radio/TV and a master list of encrypted transmissions with decoder requirements. The publication is updated monthly so when you buy it's up to date. Cost in the UK is £15 with UK post £2.50, European £5. Upon request, John Breeds will advise co-ordinates for a main town in Eire when ordering. Query first or ring +44-(0)793 750620 or FAX with same prefix on 752399. John will also send a complete satellite book listing on request (please include an s.a.e.).

Satellite News

It's digital compression everywhere, the BBC are already sending their BBC WSTV into Canada digitally compressed and now both BBC 1 and BBC 2 are to be sent to New Zealand via Intelsat compressed into a single transponder and providing the full programme line up to TVNZ. Currently only the main news and breakfast programme is sent to TVNZ.

Digital compression is now used to relay TV from Denmark into Greenland, the problem being that very large dish systems - 11m typically - are needed to resolve near horizon C Band signals that using conventional analogue bandwidths would be at least 20MHz, compression allows high quality pictures and numerous audio carriers within a 5MHz bandwidth. The Greenland TV centre at Nuuk uplinks output onto Intelsat 603 (34°W) for downlinking back across the Greenlandic wastes onto eight other 11m systems for local transmission. Compression based on Spectrum Saver is used at all receiving sites with more likely to come on stream in the coming months. Astra (SES) and the News Corporation (Sky) are forming their own technical committee to research MPEG-2 digital compression with a view to developing a downlinking capacity of 600 channels, Murdoch having perhaps 180 of these channels. Both the UK NTL and US Spar Comms. have been signed up to develop compression technology for world-wide exploitation.

Sat-zappers should keep a sharp lookout for a new identification to be seen shortly, that of the Grand Bahamas International Teleport (GBITeL) which has just been given the go ahead by the local government.

Bandscan

Australia
Greg Baker

Australian news about radio and television has been dominated by the pay television story in the months leading up to this column's deadline. From fear of boring my readers with too much of that I've tucked it away at the bottom and begin with other things.

Seized Book

Roger Bunney reported in *SWM* July 1993 that a copy of John McCormac's *European Scrambling Systems - Circuits, Tactics and Techniques* imported by an Australian named Nicholas had been seized by Australian Customs and referred to the Attorney-General's Department to establish its status as a prohibited import. The Office of Film and Literature Classification (OFLC) in Sydney was asked to advise Customs whether the book contravened Australian regulations.

According to my contact in OFLC they saw the book and decided that it did not contravene the regulations. They subsequently released the book to Customs. Nicholas no doubt now has his bedtime reading!

Amateur Radio by Balloon

I reported last time that I would bring more details of the first human crossing of the Australian continent by balloon. Dick Smith and co-pilot John Wallington lifted off from Carnarvon at 1452UTC June 16 and landed a day and a half later 40km west of Casino on the New South Wales coast at 0715UTC June 18. The distance covered was 3640km.

Base station for the crossing VK2AWI was equipped with a Yaesu FT-1000 and a Yaesu FT-990 and manned by eight volunteers over the two days on the 7MHz and 14MHz bands. Ground based antennas included a tower mounted beam for long distance contact with the balloon on 14MHz. During the forty hours of the flight there were 230 QSOs many of which were through VK4, VK5 and VK6 relays.

After the east coast landing the special event station VI2AUS was activated and operated by six volunteers. In the 13 days VI2AUS was operating almost 2000 contacts were made using c.w., s.s.b., f.m. and packet modes. Those who made contact with VK2AWI or VI2AUS or listeners with reception reports can obtain a special QSL card via Stephen Pall VK2PS care of Wireless Institute of Australia N.S.W. Division, PO Box 1066, Parramatta, NSW 2124, Australia. For a direct reply send a self addressed envelope and stamps or IRCs.

My thanks to Stephen Pall and the Wireless Institute of Australia's publication Amateur Radio for this information.

Triple-J

$A19.2 million (approximately £8 million) has been earmarked by the government to expand the Australian Broadcasting Corporation's Triple-J youth radio network to forty four regional areas covering 3.7 million people. Triple-J provides a wide range of youth programming including contemporary music, news, views and current affairs, drama, comedy, cultural affairs and other issues of interest to young people.

The station began broadcasting on the a.m. band in Sydney in 1975 and has been extended to Melbourne, Perth, Darwin, Adelaide, Canberra, Newcastle, Hobart and Brisbane. It now operates exclusively on the f.m. band. Initially aimed at audiences aged between 15 and 25 the network is now estimated to reach 15% of the 25-39 audience each week as well as 17% of the 10-17 audience and 28% of people aged 18-24.

VLF Station Closes

The Australian government has announced that it has given 180 days notice to the USA that it intends to close the Australian Omega Navigation Station in Gippsland, Victoria. The station that began operating in 1982 is one of a world-wide network of eight v.l.f. radio transmitters used for navigational and meteorological position fixing.

The Australia station operates under an agreement with the US government and costs of operation have been recovered from the commercial shipping industry. The Australian Maritime Safety Authority that operates the station has advised that the shipping industry does not require continued used of the station.

The Australian government has said that it will consider keeping the station open if acceptable alternative funding can be negotiated. At this stage that seems unlikely.

The late 1970s, early 1980s proposal to build the Omega station in Gippsland created a furore at the time with conservation and peace groups arguing strenuously against the station. Their concern was not only because of the effects on the beauty of eastern Victoria but also because the v.l.f. signals could be used for position fixing by US ballistic missile carrying submarines. They argued that this would make Gippsland a possible nuclear target.

Australia All Over

For those wanting a taste of the real outback Australia try listening to the programme *Australia All Over* on Radio Australia. Frequencies to the United Kingdom are the usual Radio Australia outlets of 21.745MHz from 0910 - 1000UTC and 5.960 and 7.260MHz at 2110 - 2200UTC. Times are on Sundays.

Australia All Over is widely heard in Australia and often acts as a forum for comment on happenings in the bush. It is an excellent source of information from all around this continent and provides a regular and useful geography lesson.

Special Broadcasting Services

The on air timetable for new radio transmitters for the Special Broadcasting Services (SBS) seems to have slipped a little. I reported in 'Bandscan' Australia March 1993 that SBS transmitters would begin operation this month in Adelaide, Perth, Darwin and Brisbane and that a second SBS station would start in July 1994 in Sydney. The contract has now been let for transmitters and other technical equipment in Brisbane, Adelaide and Perth. It is now expected that these three cities will have SBS Radio by April 1994. The July 1994 date is still quoted for the second Sydney station and Melbourne is now billed as having a second SBS station at the same time. SBS Radio brings programs in 64 languages to Australia's many ethnic communities.

Budget Initiatives

1993-94 Federal Budget telecommunications initiatives from the government have waived the transmitter site rental fees for two commercial television licensees in Tasmania. This will enable access of the Hobart and Launceston audiences to two commercial stations instead of the single station at present. In addition the National Transmission Agency has received approval to build a new transmission tower on Mount Wellington near Hobart. This mast will replace the existing mast which has reached the end of its working life and provide facilities for the second commercial television station as well as housing ABC and SBS services.

Aboriginal broadcasters, Radio for the Print Handicapped and rural and suburban community radio stations will benefit from additional funding of almost $A750,000 (over £300 000). This funding will increase the grant to the Public Broadcasting Foundation to $A3 million (£1.25 million) which supports and funds community broadcasters. There are currently 116 community radio stations on air in Australia and another 13 preparing for full-time transmissions.

Pay Television

Pay television in Australia is a little closer after the past few months of machinations. The two highest bidders for Australia's two pay television licences - HiVision and UCom - were unable to meet the government's deadline for payment of their bids and the opportunity passed to the next two highest bidders. These in turn did not meet the deadline for deposits and the game entered the third round. This time the two companies were able to find the deposit and lodged it by the required deadline. Interestingly, one of the companies was UCom having made multiple bids and a company with links to UCom called New World Communications. Between them these two companies put up the $A10.7 million (£4.5 million) non-refundable deposit on the total bid price of $A214 million (£90 million).

There are more twists yet to come in this story however. UCom and New World need to untangle their joint affairs so that they satisfy the requirements on media ownership set down by the Australian Broadcasting Authority and the Trade Practices Commission. In addition it is reported that both companies are having difficulties raising the balance of their bids on the US capital market.

And speculation here has it that the US sanctions on the export of missile technology to China will put another dent in pay TV plans. The link of course is that Optus satellites go into orbit on Chinese Long March rockets.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by *SWM* readers so I can chase up more details and interesting snippets from this end. My address is PO Box 208, Braidwood, NSW 2622, Australia. For personal replies please send 2 IRCs.

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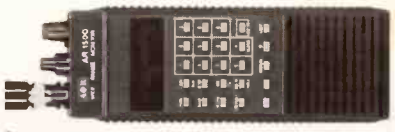

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SSB Utility Listening

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

Looking back at the October 1993 issue of *SWM*, I noticed in the SSB Utility Listening section the photographs of the KC-135s; the captions have been transposed (or is it the pictures?). I'm sure that you will all have noticed the slip up, and put the correct caption to the relevant picture. In my rush to explain about the callsigns used by the ANG and AFRes units, I omitted to mention that the 'word' part of the callsign is always follwed by a two-digit number, eg 'Pack 99', 'Soda 51'.

ANG and AFRes KC-135s regularly visit the UK on 'TDY' (temporary duty), particularly to Mildenhall and Fairford. They usually arrive in the UK or Europe using one of the callsigns in the list, then while they are here, they fly using different callsigns, usually related to particular missions or bases (e.g., Quid, Exxon, Mobil). When the fly home again to the USA they revert to their original callsign.

The 'Specials'

As promised a few months back, here is some information on the 'special forces' units based at RAF Alconbury near Huntingdon, including a list of some of their discrete high frequencies.

The 'special forces' at RAF Alconbury comprises three individual squadrons. The first of these is the 7th SOS (Special Operations Squadron) that operates a fleet of five Lockheed MC-130H 'Combat Talon II' Hercules. These are standard Hercules transport aircrafts especially adapted with various 'bolt-on' gizmo's such as low-light TV, terrain-following radar, precision navigation and electronic counter measure equipment, and in-flight refuelling capability. As a transport aircraft, they are capable of dropping parachutists and supplies, and they can also operate as a Command Post in a limited fashion. One of the more public tasks that they have undertaken recently is the air-drop of leaflets to publicise the food-drops in Bosnia, however much of their work is shrouded in a cloak of secrecy. As with just about every Hercules, the h.f. antenna is in the form of a long-wire which stretches from the top of the cockpit to the tip of the tail. The most commonly reported callsign for aircraft from this unit is 'Talon' (followed by two numbers). They have also been heard using the callsign 'Shadow'.

The second unit is the 21st SOS, which operates six Sikorsky MH-53J 'Pave Low III' helicopters. These massive machines are also capable of in-flight refuelling (quite rare in a helicopter) and regularly operate with the Hercules from the 7th SOS. As a helicopter, they are used for 'combat search and rescue' and for the recovery of special forces troops from various locations; they can also be used to parachute dropping and for carrying cargo and small vehicles. The h.f. aerial on these is again a long-wire, but it is along the sides of the fuselage and the tail section. The callsign used by these helicopters is almost always reported to be 'Pave'.

The third unit is the 67th SOS. These also fly the Hercules, but the so-called 'rescue' variant, the HC-130. It is these aircraft which are used to refuel the MH-53Js of the 21st SOS. This unit mainly uses the callsign 'Shadow' but they also use the callsign 'King'; I believe that the 67th SOS are the primary users of the latter callsign but it is also used by the 7th SOS aircraft to avoid drawing attention to itself.

These three units all have aircraft that are capable of using h.f., and they share a number of discrete frequencies. These frequencies each have an allocated 'letter' and when the aircraft and ground stations are communicating they refer to the 'letter' rather than the actual frequency. A number of their frequencies are known, but not many 'letter' tie-ups are confirmed. The following frequencies are the result of months of listening and research through various magazines:

3.166, 5.732, 6.729 (D), 8.026, 9.018, 10.270 (E), 11.180, 11.228 (V), 13.102, 15.738

The most commonly reported frequencies are 'D' and 'V', probably because they are close to other very active aero frequencies. The list above comprises those frequencies where various 'Talon', 'Shadow' and 'Pave' callsigns have been heard. For those of you who live near enough to RAF Alconbury, aircraft from the above squadrons use 142.375 narrow-f.m. to contact their Command Post.

Apart from being based at RAF Alconbury, there are 'special forces' aircraft operating from Incirlik in Turkey to patrol the 'no-fly' zones in northern Iraq, and from Brindisi in southern Italy for operation in Bosnia. The 'special forces' at Incirlik use the callsign 'Blackcat', so any reports of aircraft in contact with this callsign are more than welcome. The same callsign has also been heard when referring to the Command Post at Alconbury.

'Intercept' recently produced a list of callsigns allocated to the three squadrons here. In the following list I have highlighted the callsigns that I have personally heard, or have received loggings of them.

7th SOS

Acton, Ankle, Barn, Cobby, Cone, Ditty, Donna, Essex, Genus, Guda, Junk, Lance, Larma, Mull, Part, Satel, Slope, Slump, Spit, **Talon**, Tier, Utter.

21st SOS

Pave.

67th SOS

Atoka, Brigg, Buzz, Daily, Furor, Into, Jest, **King**, Patch, **Shadow**, Snick, Storm.

Your Letters

David A. writes from Belfast asking about using an antenna tuning unit (a.t.u.) with his Sony SW-55 receiver and Sony AN-1, and wants to know if this would improve reception. I think that you'll find that you don't need to use an a.t.u. with an active antenna (such as the AN-1). An a.t.u. should be used between a receiver and some form of long-wire antenna (e.g., a G5RV, or a random wire). I have tried using my own a.t.u. with an active antenna, but with very mixed results, and reception has always been much better with my G5RV antenna and a.t.u. Part of the 'fun' of listening is being able to experiment with different antennas, so why don't you make-up a random-wire antenna and compare the results with your AN-1. Good quality receivers are generally quite forgiving with antenna mis-matches, but portables (including your SW-55) have simple broadband front-ends that have problems with strong signals and mismatches - the results is that the receiver becomes overloaded or desensitized. If you do try a wire antenna, I strongly recommend an a.t.u.

David also asks about a suitable book to explain about antennas and a.t.u.s; almost any of the books listed in the *SWM* 'Book Service' under the 'ANTENNAS (AERIALS)' heading at the rear of each issue will provide a large amount of information that would assist you. Can anyone recommend good books that would help David; if you have any suggestions, please remember to supply the full title, author and publisher.

Evan Murray writes all the way from New Zealand with details of the 'New Zealand Radio DX League', for which he is the National Secretary. They have a monthly magazine called *DX Times* that contains a section for 'Utilities'. The section comprises mainly loggings from various readers, and some interesting snippets of news regarding utility communications. It makes fascinating reading, especially seeing the antipodean view of things - stations that we take for granted (anything on the NAT tracks, for example) are exotic DX down under. Evan says that they have a number of members in the UK, and that they would be happy to hear from anyone who would like to know more about them;details are available from: New Zealand Radio DX League, PO Box 3011, Auckland 1310, New Zealand - please remember to include an IRC for return postage.

...and Finally...

Seasons greeting to one and all. This is the last column of 1993 to reach you before Christmas. I hope that Santa brings you a large helping of good signals, or that brand-new receiver that you've always wanted.

Amateur Bands Round-up

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

Perhaps the most significant event radio-wise in 1993 will be seen as the spectacular way the sunspot count and solar flux have declined. If the prediction of a sunspot minimum for 1997 comes true, then the four days when no sunspots at all could be observed in September seems to suggest either a short cycle, or a rather long period near the bottom. Of course, this may not be the case - after all, four days after a zero we find a sunspot count of 73!

G2MI

Older listeners and amateurs will be saddened to hear of the death in the first week of October of Arthur O Milne G2MI, at the age of 86. Arthur was the doyen of the weekly GB2RS news-readers, having done this weekly task over 1500 times since the service was started in 1955 after years of lobbying. His other claims to fame include running the RSGB QSL Bureau through the years of WW2 and on into peace time; RSGB President in 1954, attendance at the ITU Geneva Conference in 1959, and election as a Vice-President in 1964. Another link with the early days of Amateur Radio leaves the scene.

Water In The Works

The autumnal winds and rains are upon us, and quite apart from the worries as to whether the antenna will actually stay up(!), there is the unhappy question of 'Has any water got in the feeder?' if dipoles or similar are in use.

Frankly, I don't have faith in any home-made waterproofing systems! Alas, I don't know of a commercial product to solve the problem either. The methods divide, essentially into two main streams. The first stream involves plastering some sort of 'gunge' over the offending area. Denso tape seems about the best of this group, although in practice one usually manages to leave a pinhole somewhere for the water to get where it shouldn't.

The second stream looks potentially more promising; the 'umbrella' stream, comprising all the schemes that place the danger area inside a shelter of some sort such as a bottle. Alas, there has to be a hole for the coaxial cable to get in, and a couple more for the antenna wires to get out. On weight grounds alone the container is of plastics and almost invariably this will degrade and break up under the stresses of sun, rain and wind. Long before then, though, the water will be in!

Once water has penetrated into coaxial cable anywhere we can look for the effects. The water uses the braid just like wax goes up a wick. Hence the water can climb **up** a cable by wicking, defying the old dictum about water always flowing downhill. The shiny strands of the braid first go dull and then turn green; the green copper compounds migrate into the polythene, losses rise markedly and the cable is now good - but only for tying up parcels!

All, then is Doom and Gloom

But - we haven't finished; we still have to get the home end into the building. Now, maybe we don't have the problem of the coaxial cable degrading, but instead we have to devise a system which won't allow wind and water IN, but does enable us to remove and replace the coaxial cable whenever needed. One recalls, some years ago, the local club moving from a QTH idyllic in summer but awful in winter to somewhere passable all year round. At the old place, someone had renewed some of the brickwork and our antenna wire was now embedded in cement! Our only practical answer was a pair of cutters, applied inside and out.

Still with the water problem, coaxial connectors such as PL259/SK239, or TV types are not and have never been claimed to be waterproof. Thus in one memorable case water that began at the top of a tall mast found its way down over a single wet weekend, to form a pool in the high-voltage area of the rig.

So, up in the eye of the antenna, where it can't be seen easily we have a can of worms.

My own current design involves a box containing the end of the coaxial cable and the wires, carefully designed to be as waterproof as possible and made in the dry. This is then painted several coats on the outside, against the u.v. rays and weather. Then the inside is filled with forced-in grease. Finally, a Denso tape outer skin.

Letters

A bit thinner on the ground than usual this time - perhaps everybody is still swimming towards the letter box? However, **Harry Richards** did send me various reports, though as a newcomer he got in somewhat of a tangle. The 'Q' code seems to have been at the heart of the problem. Any Q-code combination used on c.w. can be either a statement or a question simply by the omission or use of the question-mark. In amateur practice and particularly on Phone, the Q signals sometimes have their meanings 'bent' - for example QRK is often used to refer to the price of an item, but correctly QRK? means 'What is the readability of my signals? Harry has been enjoying listening to the group around W2ONV on 14.198MHz and 1000UTC.

Inside a brown envelope carrying a 'Burnley and Pendle' postmark I found two Xerox copy sheets of calls heard, but alas no name, even though I can say the writing is recognisably enough to be a 'regular'. Leaving out the Europeans, on 14MHz I found 4Z4ZB, CN8ST, EL2PP, ZC4KS, W1FOY, W9TOQ, 7X2DG W1RAN, W1LRR, CU2YK for the Azores, W3NA, NT1T, K3FNZS2JL, W1SEB, VE3ANB, NR9Z, KC1KQ, plus 7MHz coverage of all Europe.

A YL who wishes her name to remain secret writes on the question of pile-ups. How the blazes, she wonders, can you be sure which station you're listening to?

Quick answer - with difficulty! Seriously, though, the problem escalates as the station tends towards rarity. Take the simple case of the station somewhere in UK working, say, somewhere in Italy. You can't hear the UK end because of the skip effect, but you know the one you are hearing is the Italian simply because at the beginning and end of each over he sends his own callsign last. By the same argument, if the skip lets you hear both ends, this test - own callsign last - still differentiates perfectly. Even if one of them is a newcomer to the hobby and gets it wrong, with a bit of attention you can sort it out - for example, I don't think you would find 'Cardiff' in Italy! Now, we must look at that terrifying rumpus called a pile-up. Just as soon as it gets a bit fierce for the d.x. station, he will begin to operate 'split' so now he won't be listening on the frequency he is transmitting on. What's more, several kilohertz of useful band will be covered by people yelling two letters (AB or XY or whatever) at regular intervals.

Also, you will notice how the pile-up has a 'throb' to it - when the DX is transmitting, the majority of his callers are listening. Now you can scan across the pile-up carefully until you find a station that seems always to transmit as the pile-up is at its quietest (note, I didn't say silent!), uses very abbreviated procedures, maybe only gives his call occasionally and seems to be ruling the mob. Stick around on him until, once every so many contacts, he might mention his own call and give such extra information as the correct route for a veri. Ideally, you would like to know for certain who he is working; the transmitting amateur has an IRT control, or two master oscillators or even both, so he can find his DX and then look for the place where the DX is listening. Once found, at the flip of a switch he can listen to both ends. The listener can usually do something similar with his memory facilities. With a single older receiver without memories, you have to use a scratch-pad and a logging scale. Don't forget that 1. the bigger the pile-up, the wider the split, and 2. the DX may well decide to say he is 'listening 10kHz up;' - but if that makes his problem worse he may copy a well-known DX op, who proceeds to listen on the opposite side of his transmit frequency! Finally, yes Mrs A, I am inclined to agree that a significant number of listeners do log the wrong end of a DX contact!

Leighton Smart in Trelewis comments on how good the ground-wave coverage can be on Top band; Leighton has a $\frac{3}{8}\lambda$ on this band, and mention EI, G0EOB in North Devon in daylight, GM3OXU, GD0LQE who was using QRP DJ8WL, and another low power addict in G4DBN. For 7MHz the trap dipole managed to draw in N3RS, KP2JA, EI5DK, RA4UAT, and SM3OKC. The 14MHz dipole found HT1T for a new one, plus various Europeans. To revert for a moment to the question of ground-wave coverage, on Top Band the level of ground wave coverage by a transmitter relies very largely on what work you have done on the earth side, and what you have done to make the 'useful' portions of the antenna vertical; but the coverage for a receiver tends to depend much more on the local noise level, so a small screened loop fitted with a pre-amplifier may well yield signals on this band that a big transmitter-type antenna buries in noise. The screened loop - there have been many designs published in various magazines - is small enough to be rotatable, has a better null than the unscreened variety and wide useful lobes, so often a listener can use it to discriminate against the noise rather than for the signal.

Finale

We have nattered on a bit this time. However, I can always use more letters. You can tell me what you've done for instance, or what you've heard. What went wrong and how you got over the problem - so long as it's legal! - and indeed anything to do with your activity as an s.w.l.

Don't forget that there is a delay of around six weeks between me receiving your letter and the issue coming out, so post early before Christmas!

Airband

Godfrey Manning G4GLM
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65 The Drive, Edgware, Middlesex HA8 8PS

I am pleased that 'Airband' reaches distant points on the globe. From Gibraltar, **Wilfred Guerrero ZB2IB** sends an aerial photograph of the scene at an RAF Open Day held there. I recognise a Buccaneer, Canberra, Dove/Devon, Harrier, Hawk, Hercules, Jaguar, Jetstream, Nimrod, Orion, Shackleton, Tornado, Trislander (not in the main static park) and 125/Dominie. One of everything! Well, no helicopters or Queen's Flight. Shame the Red Arrows weren't booked for the last-ever Open Day, held earlier in 1993. Wilfred sees everything from his home, which is near the airfield. The local airline, Gibair, shares British Airway's company frequencies 10.072 and 13.333MHz. A letter with IRC to Wilfred at PO Box 211, Waterport, Gibraltar, will bring Wilfred's kindly-offered local frequency list to anyone who intends visiting the area.

Closer to home, **Dave Shirley G4NVQ** (93 Alfred Road, Hastings, East Sussex TN35 5HZ) lives under (U)A20 and sees arrivals destined for Gatwick, Heathrow and Northolt. Despite having reached my age (I wasn't going to mention this, but I'm 37) Dave only flew for the first time recently (B.747 to Florida, B.737 and Airbus to/from Germany). Relatively local to Dave, Manston also controls the Folkestone sea-front display. The Hurricane and Spitfire Museum's restaurant overlooks Manston's runways from which IEA (soon to change its name?) operates Spanish charters. This is also the place to see old jet transports, with B.707s, IL62s and the like actually operating cargo flights. Finally, Dave would like to collect pictures or film of Lydd in the 60s: please write to him direct. Nowadays, this airfield is frequented by light aircraft and Dave watches these from the restaurant there.

Your Flying Experiences

The Editor, **Dick Ganderton G8VFH** had to fly from Chicago O'Hare, but I understand that he is now fully recovered! At this, the world's busiest airport, the criss-cross of parallel runways enables various combinations of more than one simultaneous landing and departure stream. The take-off queue was daunting, but Dick was more alarmed at the need to start rolling whilst an arrival was clearly approaching the intersecting runway! Luckily, they never seem to meet in the middle...

On a smaller scale, **Christine Mlynek** (Aylesbury) found herself held up by the runway crossing at Heathrow when departing Terminal 4 *en-route* for Australia. Landing traffic was too closely spaced on 27L to allow her B.747 to cross and taxi for a 27R departure. This is the only UK airport with a runway crossing and a 90s gap is needed for larger aircraft.

Occasionally passengers encounter another event that can be frightening to the uninitiated: the go-around. Approaching to land can end with one of two results: a completed landing or a go-around (including touch-and-go). Passengers assume that the landing will be completed but this is not always the case. The two most common causes for a go-around are weather and an obstructed runway.

Looking at weather first, an instrument approach is one where ground-based navigational aids (often i.l.s. but not always) permit the positioning of the aircraft close to the runway and heading towards it. in the case of a precision approach, a definite height above the runway can be achieved at the same time. Unfortunately, most such approaches are not accurate enough to enable control of the aircraft when close to the ground; visual references are then needed. A typical i.l.s. approach requires visual procedure once at a decision height of 200ft above the ground. If the runway can't be seen at this moment, it will not be possible to land.

Grumman Goose amphibian at the PFA Rally, Wroughton. *Christine Mlynek*

HB 23 Scanliner at the PFA Rally, Wroughton. *Christine Mlynek*

At selected airports, suitably-equipped aircraft can make an auto-coupled approach to much lower heights. Often, the equipment still requires the pilot to guide the final roll-out as the aircraft comes to a stop on the runway and so some visibility will be needed. A decision in this case might be made at as little as 12ft (wheel height above runway), so it is possible that the wheels might just touch before enough power comes on to climb the aircraft away. Now, 12ft sounds like a frighteningly small margin, but remember that the aircraft is entering the flare and is hardly descending at all at this moment. A runway obstructed by snow (it happened to me), or a previously-landed flight that was slow to clear, also requires a go-around.

When the decision-making crew member calls 'Go-around' the throttles are opened smoothly to the predetermined go-around power setting, the wings are held level and a suitable nose-up pitch is attained to ensure a climb without external visual references. The flight director (an instrument with pointers that guides the pilot's actions) is set to go-around mode, often by pressing a button conveniently mounted on a throttle lever. By following the instructions of the flight director, the handling pilot can more easily attain the wings-level/nose-up attitude required.

Two Engines Good, Four Engines Better

Despite the continued debate, with many pilots objecting to the new procedures, extended-range twin-engine operations (ETOPS) is now permitted and is, indeed, a fact of modern aviation life. My personal opinion is that I would refuse to make long over-water crossings (particularly the North Atlantic) in a twin such as the B.757/767/777 or larger Airbus types (other than the A340). A minimum of three engines (DC-10 or L.1011) is my preference and four engines (B.747, A340 or some recent Russian types) are better still. Passengers are not offered much choice when trying to fly from a particular part of the country on a chosen day (I don't understand the modern consumer jargon, 'More choice'). However, you can vote with your wallet if you feel strongly on the ETOPS issue. When booking that holiday to Orlando or wherever, ask the travel agent if the aircraft has more than two engines. The agent will almost certainly look in the *ABC World Airways Guide* when arranging your booking and the aircraft type is listed here. 'Airband' readers will know which aircraft is which!

My attention was drawn to the 9/93 *AAIB Bulletin* (Ref: EW/C93/4/3) in which B.767-322ER N654UA suffered failure of an engine compressor on take-off. The problem was known to the engine manufacturer but not all of the affected fleet had yet been modified so as to prevent similar occurrences. In view of this, the regulatory authority had allowed the aircraft to fly on ETOPS up to 120 minutes away from a landing, but had witheld approval for a further extension to 180 minutes.

Personally I wouldn't want to fly even 120 minutes from a suitable aerodrome in an aircraft that hadn't had a known engine problem corrected yet. As I said, many (but not all) pilots agree with me (judging by comments and articles in the aviation press). There are two sides to an argument: write in and tell me what YOU think!

Follow-Ups

Now that the v.h.f. airband has been extended to 137MHz, the Sony Air-7 receiver no longer covers the whole range. The Air-8 does go up to the top of the band, as I saw demonstrated by its vendor Transair Pilot Shop, West Entrance, Fairoaks Airport, Chobham, Near Woking, Surrey GU24 8HX, Tel: (0276) 858533.

Last month **Peter Wade** (Sevenoaks) told us about Redhill's proposed development. Now some surplus RAF property at Biggin Hill is up for grabs. This airfield's part in the War is well known and needs no repeating here. If it wasn't for the defence mounted from airfields

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Scanning

Alan Gardner
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Coming soon... the new AR3030 from AOR.

After a relatively quiet period in terms of new products, AOR have now announced the latest addition to their range the AOR AR3030. However, this is not a new v.h.f./u.h.f. scanner but a high performance general coverage receiver for the short wave bands. Those of you who went to the *SWM* stand at the Leicester Amateur Radio Show may have been lucky enough to see the prototype on show there. Several years ago I remember seeing a prototype general coverage receiver based on the AR-3000 but this is a completely different 'kettle of fish'.

Perhaps the most noticeable feature of the new receiver is that it does not use the usual AOR plastics AR20001/2 3000/a style cabinet that we have all come to know and love! The new case looks much more professional as it is formed from extruded aluminium sections with metal top and bottom panels. The control panel is divided into two sections with the top half containing a signal strength meter, frequency display and function buttons. The bottom half of the panel features a front facing loudspeaker, a.f. and r.f. gain, b.f.o. and squelch controls, tuning knob and numeric keypad.

The r.f. performance should be good as the local oscillator is produced by means of a Direct Digital Synthesis circuit. This gives the advantage of 5Hz tuning steps and good spectral purity, giving all the advantages of a traditional analogue variable frequency oscillator, but without the drawback of poor long term frequency stability. This is particularly important if you are interested in decoding data communications. The receiver covers the frequency range 30kHz to 30MHz and has demodulators for a.m., synchronous a.m., n.b.f.m., u.s.b., l.s.b. and c.w. with the added facility to vary the b.f.o. pitch, which is particularly useful when monitoring c.w. transmissions. A high quality 8-pole Colins mechanical filter fitted as standard should produce excellent performance when monitoring a.m. broadcast stations.

Other features include keypad frequency entry, 100 memories, scan, RS232 port, i.f. output, tape output, multiple antenna inputs and operation from either 12V d.c. or internal batteries.

Nice to see that an i.f. output has been provided; I think that this will be an important feature over the next few years as manufacturers of data decoders begin to use i.f. signals as inputs rather than relying on the receiver to provide demodulated audio tones.

The exact price and specification of the UK model is not known at the time of writing but you can obtain further details from AOR (UK) Ltd, Adam Bede High Tech Centre, Derby Road, Wirksworth, Derbys DE4 4BG. Tel: (0629) 825927.

AOR are also expected to launch two new products in the new year. The first is their long awaited high performance v.h.f./u.h.f. base station receiver which, like the AR-3030, will use direct digital synthesis to achieve 1Hz tuning steps and an unrivalled level of r.f. performance. The second product will be a new hand-held, which it is hoped will include some of the features readers submitted in the *SWM*/AOR win a scanner competition we held a little while back - so watch this space for future developments and start saving now!

Short Wave Scanning

Whilst we are on the subject of monitoring short wave transmissions **Pete Westbury** of Taunton has been experiencing problems when he connects an outdoor long wire antenna to his MVT-7100. He says that with the external antenna connected he can hear much more activity, especially on the higher frequency bands. However, at certain times, he can also hear what sounds like a mixture of different broadcast stations regardless of the frequency he is tuned to. These signals tend to block out anything else he is trying to listen to and he wonders if it is a fault with his receiver.

The clue to what is happening is the description of the broadcast station interference. This is typical of receiver overloading and may also suggest why Pete can hear so many additional signals when he has the external antenna connected. The problem of receiver overloading is one that I have mentioned before in this column, but usually only in connection with very strong local signals. The advent of scanners featuring short wave reception will almost inevitably mean that more readers will experience the same sort of problem as Pete.

Most hand-held scanning receivers with short wave frequency coverage have to compensate for the low signal levels that are produced by the very short (in terms of wavelength) antenna supplied with the receiver. The antenna is usually designed to provide maximum performance at v.h.f. and u.h.f., so the receiver has to have lots of additional gain on the short wave bands in order to compensate for the poor antenna. If a very large external antenna is connected the receiver can be presented with signal levels very much higher than those originally anticipated by the designer. In addition very few hand-helds have r.f. filter stages that operate over the short wave frequency range, so all the signals are simultaneously fed to the mixer stage of the receiver.

This can be a recipe for disaster, especially if there are a lot of strong signals present. The mixer stage of a receiver is intended to do just what the name suggests, it takes incoming signals and mixes them with an internally generated local oscillator to produce a new signal at the Intermediate or i.f. frequency. The i.f. signal is then amplified still further before being converted to an audio signal. If several strong signals reach the mixer stage at once they can mix with each other and produce several new frequencies that are permutations of the original signals.

This is what I suspect Pete is hearing on the higher frequency bands, not genuine signals but spurious combinations of other transmissions on different frequencies. You tend to notice these more on the high frequency bands because they normally don't contain that many signals, the lower frequency bands usually have lots of transmissions that can tend to mask the spurious ones.

One way of improving this situation is to reduce the signal level reaching the scanner. This may seem to defeat the purpose of using an external antenna, but this is not always the case. The main reason for using a better antenna is to improve the receiver signal-to-noise ratio. This means maximising the wanted signal whilst at the same time minimising any interference that may be present. If by using an external antenna you are able to reduce the pick-up of broadband interference generated by household appliances such as TV sets, computers, power lines, etc., you will have improved the signal-to-noise ratio. Even if you fit an attenuator and reduce the overall signal, both the wanted signal and the interference will have been reduced by the same amount, so the signal-to-noise ratio will remain constant.

You can buy attenuators that are specifically designed to present a 50Ω match to the antenna and receiver, but it is also possible to use a normal variable resistor without any really noticeable side effects. This can be built into a small metal box with a couple of BNC connectors to provide input and output connectors (**Fig.1.**). Tune the receiver to a weak broadcast station somewhere around 7MHz. Connect the attenuator in line and gradually increase the amount of attenuation until you begin to hear the signal disappearing, reduce the attenuation slightly and you now have approximately the correct setting. Try listening to a few other transmissions to make sure you were listening to a genuine signal when you made the first setting.

You may notice the signal actually starts to sound louder as you initially increase the attenuation, this is because the internally generated spurious signals stop being produced and you start to hear just the wanted signals. You may have to experiment a little to find the optimum setting and this may in turn vary with propagation conditions and the level of incoming signals but you should get the feel for it after a while. One handy hint is to turn the volume control on the receiver up just a bit higher than normal and use the attenuator

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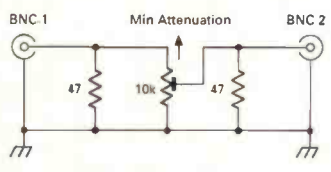

Fig. 1: Simple attenuator to reduce overloading.

control to adjust the listening level, this should ensure the correct setting at all times.

One other way to improve the performance is to use a tuned filter stage between the antenna and the scanner. This reduces the number of signals being presented to the receiver and so minimises the possibility of spurious mixing products being generated. Such filters are often referred to as pre-selectors, because they pre-select wanted signals before they reach the receiver. Some antenna tuning units can provide a certain amount of filtering, but it is much better to choose a purpose designed unit if you think have a problem due to overloading. One practical problem when using a pre-selector is that it requires manually tuning to the frequency in use, obviously if you only listen to a single narrow band of frequencies this is acceptable. If, however, you want to make use of the scan function to check lots of different frequencies you may have to resort to just using an attenuator.

Pre-selectors are made by a number of companies including MFJ, Grove, and Lowe, a pre-selector kit is available from Maplin. If you want to try building a compact directional antenna then the HFL328 tuned loop antenna kit from Malsor Kits, 21 Green Street, Milton Malsor, Northampton NN7 3AT is an excellent starting point and has produced good results for several readers.

Cellular Progress

Moving just a little bit higher in frequency several of the new cellular networks are starting to pick up momentum, with most of London, Birmingham, Manchester, Liverpool and the interconnecting motorways now being served. Vodaphone's Metro Digital and Euro Digital services are being advertised nationally, with the emphasis on a higher quality of service and protection against eavesdropping. Many of the new digital base stations can be heard operating in the 950-960MHz frequency range with digitally encrypted transmissions. One of the drawbacks of the new transmissions are that they use a very rapid time division multiplexing system that permits several transmissions to take place simultaneously on the same frequency. This requires the handset to very rapidly switch between transmit and receive, the resulting short duration pulses can cause severe interference to nearby electronic equipment. This is already causing problems for the hearing impaired as many sub-miniature hearing aids have proved to be particularly susceptible to the r.f. interference.

Still higher in frequency Mercury communications are offering their one-2-one PCN service in the Greater London area. This, too, uses digital transmission technology but in the 1700-1900MHz band. The service is intended to be very competitive and because it does not provide Europe-wide operation is aimed more at domestic rather than business users. As more of the services become operational you can expect prices of conventional analogue cellular services to fall.

One other form of wireless telephone service, CT2 better known as 'Rabbit' may well suffer from this increased competition. Many readers will have seen the distinctive 'Rabbit' signs dotted around most cities, but the take-up of the service has been rather slow and it may be that the inability to receive incoming calls will limit its future growth unless the system operators Hutchison Communications can somehow make use of their PCN licence to turn the situation around.

No, this is not a suggestion about how to raise funds to buy that new scanner you have been admiring, but a useful program to help you manage the contents of your scanner memory banks. Called 'Scanbase' the program runs on an IBM or compatible PC and can keep track of the contents of up to 10 000 memory channels. The program has been written by **Dave Shirley** who also produced the 'AmiScan' frequency database I mentioned in the April 93 column.

The program works very well and is a useful accessory for any enthusiast trying to keep track of a large number of memory contents. Useful features include the ability to cut and paste contents to different banks minimising the effort required to make changes. As an additional bonus Dave is including a 3000 frequency database to get users started, so this makes it a very attractive proposition at £10 inc P&P. You can obtain more information from Dave Shirley at 93 Alfred Road, Hastings, East Sussex TN35 5HZ.

Once again space has run out, but if you have any information you feel may be of interest to other readers why not drop me a line or alternatively leave a message or FAX on (0703) 262246. Until next month - Good Listening.

Airband

Continued from page 59

such as this, we might not have remained a 'free' country and able to exploit the sale of public property. I hope the developer will retain the character of the buildings by way of tribute to those who lost their lives in the fight to retain our freedom. I do wonder what will happen, though. Peter tells me that MoD may build on green-belt land without planning permission. Will this enable the rules to be bent if the property is sold into civilian hands?

Sidehead Please

Peter also asks about various military aspects. Unless a public display is in progress, spotters are not particularly welcome at military bases. There is always the problem that uninvited visitors block access roads or crash gates. A few airfields now have small public car-parks in an attempt to keep the inevitable visitors out of harm's way. As to what you might see at each base, in the majority of cases the fleets are too changeable to keep track of. Specialist publications and enthusiasts' societies can help with current news, and there's a good column each month in *Airstrip*, the magazine of the Midlands Branch of Air-Britain (contact: John Withers, 7 Nailers Drive, Burntwood, Staffordshire WS7 0ES).

For u.h.f. allocations, the public domain document is the *En Route Supplement, British Isles and North Atlantic* from RAF 1 AIDU. Send a self-addressed stamped envelope, capable of holding an A4 page, to the Broadstone editorial office, to receive *Airband Factsheet* which lists the addresses of 1 AIDU and other suppliers. This won't help track low-level sorties that don't fly high enough to communicate over any distance by radio. In any case, prolonged periods of radio silence are part of the procedure. There are no definite routes or fixed reporting points, but the general flow of low-level training exercises will appear on future issues of CAA charts such as RAC 5-0-1 (or 1.1) - see the *Factsheet* again.

Frequency and Operational News

The monthly *GASIL* from the CAA lists the new frequency of 118.35 for the relocated Derby aerodrome, and at Fowlmere 120.925 has replaced 123.25MHz. *AIC* 128/1993, also by the CAA, withdraws the small runway 03/21 at Bristol (Filton).

The next three deadlines (for topical information) are December 3, January 14 and February 11. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband,' c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely urgent information/enquiries: 081-958 5113 (before 21:30 local please).

Abbreviations

AAIB	Air Accidents Investigation Branch
AIC	*Aeronautical Information Circular*
B	Boeing
CAA	Civil Aviation Authority
DC	Douglas Commercial
ft	feet
GASIL	*General Aviation Safety Information Leaflet*
Il	Ilyushin
i.l.s.	instrument landing system
L	Lockheed
MHz	megahertz
MoD	Ministry of Defence
s	seconds
u.h.f.	ultra high frequency
v.h.f	very high frequency

Info in Orbit

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This column deals with WXSATs of all shapes and sizes, and includes extracts from letters received from correspondents, relating to the setting up of WXSAT equipment. In most cases queries are dealt with in the column, where other readers are likely to be interested. Experience shows that many problems experienced by readers, have been solved by others.

One recurrent question from newcomers is - METEOSAT or the NOAAs? - which is best? Frankly, 'you pay your money and you make your choice'! If you want pictures of moderate resolution, almost every four minutes, covering most of the visible side of our hemisphere, and with a generous portion of re-transmitted pictures of the USA and Australia - go for METEOSAT.

If you want the extra fascination of monitoring passing satellites, with a fair chance of spotting a newly launched CIS (Russian) WXSAT, or even an occasional Chinese WXSAT, then go for the polar orbiters.

Either way, most people find this to be a challenging and enjoyable hobby, and, as time and money permit, systems can be expanded to receive all WXSAT transmissions. Cost is extremely variable, depending to some extent on the picture quality required, the equipment already to hand, and the work that one is prepared to put in.

Current WXSATS

The National Oceanic and Atmospheric Administration (NOAA) is trying to re-activate the failed NOAA 13 WXSAT, on a daily basis. The loss resulted in a return to NOAA 9 operations, from which both visible and infra-red image quality appears to be good.

On September 29, I noticed that METEOR 2-21 had changed frequency and was transmitting on 137.85MHz instead of its original 137.40MHz. It continues to provide rather indifferent pictures, caused almost certainly by a mis-aligned transmitting antenna on the satellite itself. Pictures from this WXSAT, although weak, seem intrinsically stable and undistorted, as far as I can tell. One might speculate that the v.h.f. antenna may have been knocked out of position, causing reception to be received at lower strength than normal.

Mid-October saw the re-activation of METEOR 3-3 on 137.30MHz, though currently only transmitting during daylight passes - no infra-red data yet. This WXSAT passes south-bound during the daytime, coming out of north-polar darkness into sunshine, so it is not transmitting for the first few minutes, giving the impression of a 'late' a.o.s.

Fig. 1: METEOSAT-3 visible-light image showing the moon's disc from Brian Dudman.

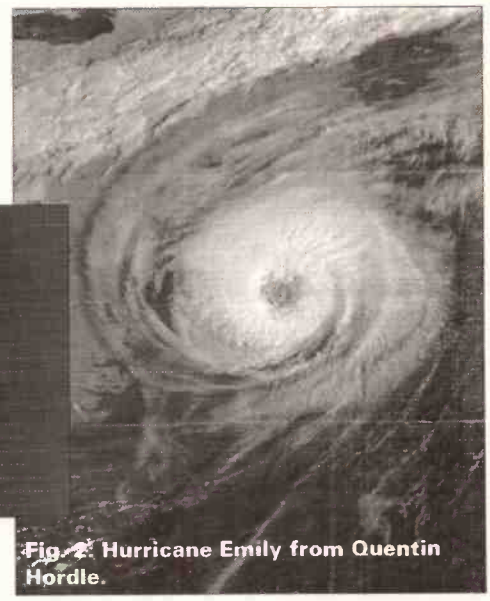

Fig. 2: Hurricane Emily from Quentin Hordle.

NOAA-12 Out-gassing

Periodically, both METEO-SAT and the NOAAs undergo a decontamination session. During October (12 to 20), NOAA 12 was put through an outgassing schedule for a few days, because the noise level in channel three had increased above its threshold. For those few days, no infra-red data was collected, so we had the unusual experience of seeing two visible channels side-by-side. Channel data was from sensors one and two, which cover slightly different parts of the visible spectrum - hence the difference in image content.

Geostationary WXSATs

As most 'Info' readers know, there are several of these WXSATs located along the Clarke belt, in positions allocated according to international agreement. Presently, MOPs 1 and 2 (also known as METEOSAT-4 and 5) are both near longitude 0°. Actual positions of those currently operational are as follows:

MOP-1	0°
MOP-2 (standby)	8°W
METEOSAT-3	75°W
GOES-2 (USA west)	135°W
GOES-3	176°W
GOES-6	75°W
GOES-7 (USA prime)	112°W
GMS-4	140°E

From the western part of Britain, some may be able to hear the 1691MHz WEFAX signal from METEOSAT-3 near the western horizon. METEOSAT-4 (MOP-1) currently disseminates selected WEFAX images from METEOSAT-3 and GMS-4, as well as its own. Primary Data images from METEOSAT-3 are also transmitted from MOP-1 in the schedule. MOP-2 still acts as standby, due to image imperfections - but see later.

The Chinese are expected to launch their geostationary WXSAT from February onwards - see later. The Commonwealth of Independent States are also scheduled to launch their geostationary GOMS at any time.

An unusual observation of METEOSAT imagery was made by **Brian Dudman** of Harrow on September 29. While monitoring the American infra-red and visible Primary Data images, disseminated at 1454 and 1456UTC by METEOSAT-4 (which are obtained from METEOSAT-3), he noticed the disc of the moon next to the limb of the earth. Brian saved both images and sent me copies of these files - see **Fig. 1**, which shows the moon adjacent to the western limb; The Californian coastline is also in the picture. I have been trying for one of these 'moon' images for years!

FENGYUN launch

The launch of a Chinese WXSAT in the FENGYUN-2 series is tentatively given as February 23 next year. The name FENG YUN translates as 'Wind and Clouds', and there are two distinct types. The FY-1 series of Chinese Meteorological satellite are polar orbiting, carrying the Chinese equivalent of the US AVHRR instruments. These are not unlike current TIROS-N series American WXSATs (such as NOAA 12). Each carries a set of large solar panels around the satellite's cubic structure, and they are launched by the Long March 4 booster rocket.

The Australian Bureau of Meteorology is working with the China Meteorological Administration on the Feng Yun 2A satellite. This series compares in appearance and operation with GOES, GMS and METEOSAT WXSATs, being cylindrical and spin stabilised. It will transmit analogue WEFAX, digital FAX and high resolution data (down to 1.25km). The new satellite (to be called FY-2A) is due to be positioned at 105°E, so will not be visible from Britain.

This information originates from a staff colloquium given in February by Yanping Chen at the American National Air and Space Museum, and posted on BBS.

METEOSAT News

EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites) operate the METEOSAT WXSATs and have kindly sent me some updates on forthcoming operations, for inclusion in this column.

METEOSAT 6 (MOP 3): Launch is now scheduled for early morning this November 20, so we must wish EUMETSAT well with this operation.

Minimum recommended dish sizes: At regular intervals METEOSAT 5 has its orbital parameters monitored. This is performed using a ranging signal, which has been accompanied by a p.s.k. modulated carrier to identify the centre frequency. For high precision, these measurements are often conducted over an extended period of time, which has the benefit of reducing fuel consumption and so extending the satellite's useful life.

Many SDUS (WEFAX - Secondary Data User Stations) are affected during these METEOSAT 5 operations because some systems do not incorporate a large enough dish for optimum reception of METEOSAT-4. EUMETSAT issue a specification list for WEFAX stations, that includes the recommendation that, for WEFAX operations, a 1.8m dish is required. For PDUS operations, a 2.4m dish is required. These correspond to antenna beam-widths of 6.8° (1.8m dish) and 5.1° (2.4m dish).

The WXSATs are normally separated greater than 7°. During normal operations, equipment below this specification may still receive good pictures from METEOSAT because the WXSAT is transmitting more power than the minimum.

The METEOSAT 4 'fish': In October 1989, an image anomaly was detected that deteriorates the image quality twice each year. The term 'fish' was coined because of the nature of the pixel corruptions. The anomaly occurs only in certain temperature ranges - the current season was due to start around October 20. For that period, METEOSAT 5 is manoeuvred to about 10°W, and is used to scan the

Fig. 3: METEOSAT-4 D2 image from Mark Pepper.

earth, images then being rectified and transmitted by METEOSAT 4.

METEOSAT 5 to move westwards: It has been decided to replace METEOSAT 3 (currently positioned at longitude 75° over the east coast of the USA), with METEOSAT 5 in early 1994.

Encryption: As mentioned in previous months, Primary Data encryption tests are scheduled to start in early 1994. The Lannion uplink ground station will perform the test transmissions, and a second ground station (operated by ESOC near Darmstadt) will be upgraded next February.

When encryption is routine, authorised users will be provided with a key unit by EUMETSAT. Additionally, either extra hardware or dedicated software with additional CPU power is required to cope with the decryption.

My grateful thanks to **Jürgen Guttlich**, MOP Technical Officer at EUMETSAT for providing much of this information.

137MHz Transmissions

As mentioned occasionally in this column, there are many non-a.p.t. satellites transmitting various forms of telemetry near the 137MHz band. X3 (the UK's PROSPERO satellite), still transmits on 137.56MHz; listen out for TEMISAT, transmitting on 137.72MHz. MOS 1A and 1B can sometimes be heard on 136.11MHz, and I have heard two mystery signals - one on 136.50MHz that might be NIMBUS-4, and one on 137.04MHz that might be an unlisted American DOD satellite.

Letters & Disks

Several correspondents have sent disks with their letters. These show examples of pictures in various formats, (such as PCX), often of high quality, which I have been able to view. Unfortunately I do not have a facility to transfer these for inclusion in this column. If readers want the disks returned, please include an s.a.e.

Laurence Patton of Perth reminds me of the Bracknell GFL 26 RTTY (50 baud) broadcasts on 4.489MHz each day at about 2010UTC. These provide coded a.p.t. predictions data (not Kepler elements) for NOAA WXSATs. I sometimes collect this data from the h.f. band. Regular users know that it includes a text description of the status of each NOAA WXSAT and advises of future v.h.f. clashes, where one or other WXSAT is scheduled to be switched off.

Terry Grimbleby of Hull is searching for a predictions program for his Amiga or Spectrum computers. Any offers of help can be sent to him via my address for forwarding (but please stamp the envelope!).

Quentin Hordle of Poole has collected imagery from around the world and sent me an impressive set of prints. Unfortunately, I don't have a description of his receiving hardware, and because some of the pictures show gridded close-ups of Japan, I wondered whether these might be from the h.f. band, amongst others obtained perhaps from direct satellite reception.

One of Quentin's images is a superb, large format picture of hurricane Emily, collected during the period while just off the east coast of America - see **Fig. 2**. This visible-light image shows very good resolution, so may originate from Primary Data. There will be further pictures from Quentin in future months.

I received a disk from **Casoni Gianluca** of Rimini, Italy, containing two WXSAT images in GIF format, which I think are from the NOAA WXSATs. One included Denmark southwards, the other featured the Crimea. Grazie Casoni.

Dedicated WXSAT Receiver?

I sometimes mention the benefits of using a receiver specially designed for WXSAT use; this can be summarised by referring to the circuits that extract image data from the 2.4kHz sub-carrier that modulates the main r.f. carrier, transmitted in the 137MHz band. Because of factors such as paging interference and the wider-than-normal i.f. bandwidth used by WXSATs, a dedicated receiver is almost essential for optimum reception.

Mark Pepper of Camberley tested his Yaesu FRG-9600 on METEOSAT images, and obtained some good results. He found that f.m. narrow band gave the best results, but comments that blacks and whites were lost to noise, and that decoder synchronisation was difficult. He adds, "investing some £60 in a Cirkit receiver is well worth it, both for the superior results and for the experience of building and setting up the receiver". Mark's METEOSAT image (D2 format) in **Fig. 3** shows a surprisingly good quality infra-red picture, obtained from this set-up. Other large format pictures from Mark will appear in future months.

Antennas

WXSAT enthusiasts know that signals can be received on a variety of antenna, whether you use the 'recommended' right-circular crossed dipole or another variety. Satellite signals can be heard using a random length of wire, simple dipole, discone, Lindenblad, turnstile or a helix antenna! All of these have different responses to the actual WXSATs and to more locally generated interference from terrestrial sources.

A number of correspondents have experimented with different antenna under differing circumstances - for example, at various distances from the powerful transmitters used by paging systems. **Geoffrey Chance** of Redruth has found that his home-made 2-turn helix antenna, (slightly unusual, but very good for these frequencies,) mounted in his loft, is much less prone to interference than either his Cirkit turnstile or Lindenblad antenna, both of which are mounted externally. Geoffrey has been using a variety of software for image decoding, including JVFAX, then the METEO-PC system from Pixel-Plus, and the TH2 Imaging system reviewed earlier this year. His most recent purchase has been a METEOSAT down-converter and dish, the latter still awaiting mounting.

I am always interested to hear details of firms retailing WXSAT hardware, and a letter from **Julian Woolvin** of Liverpool mentions two that he saw at a radio rally in Bolton. Down East Microwave and SAS Aerials of South Wales may be new into the market.

In recent months Julian bought a 137MHz crossed dipole and fitted the phasing loop and other pieces as instructed, but found the resultant signals to be very weak. After test monitoring two WXSAT passes, both giving poor signals, he realised that the diagram might be showing the loop wired wrongly, so he reversed the connections and all is now well! It is always worth testing new antenna before final installation, particularly if they are going to be mounted in an inaccessible place.

Weather-Watch UK

A month or two ago, a correspondent asked the whereabouts of WeatherWatch UK, an organisation that was based at Lasham, and provided a telephone number for current NOAA WXSAT information. **Bill Hills** of Bournemouth, and **Bill Smithers** of Harrow both kindly wrote to give me the number - (0256) 381448. It is available **outside office hours during the week**, (and from 1730 Fridays until 0830 Mondays). NOAA data is given on Mondays, Wednesdays, Fridays and Saturdays, with METEO-SATs 4 and 5 being covered on Tuesdays, Thursdays and Sundays.

Information is updated on Fridays. During the working week, you can ring (0256) 381444 and ask the receptionist for 'WeatherWatch recording'. Polar orbiter predictions are given in the equator crossing format for subsequent calculation. My thanks to both correspondents.

The Cheapest System

I have had a number of letters from readers who class themselves as 'long-term unemployed', who are very keen to try to set-up some sort of receiving/decoding system in the cheapest possible way. It is not really feasible for me to provide a complete list of 'recommended' pieces of equipment to individual readers, for which I am sometimes asked.

Until recently I found it difficult to know what to suggest. The advent of Public Domain and Shareware programs, together with do-it-yourself modules, that can be attached to reasonably standard computers, now means that one or two possible solutions are becoming available. I plan to run a special feature on this topic when enquiries are completed and permissions obtained.

Next Month

A review of the PROsatII upgrade from Timestep Weather Systems and the notes on producing Kepler elements from your own observations have been moved to next month due to the extended METEOSAT news section. My apologies to those waiting for these items.

Kepler Elements

I will send a print-out of the latest elements on receiving an s.a.e. and extra stamp (which goes towards the cost of data collection).

All known weather satellites, plus MIR, can be included, together with transmission frequencies if operating. This data originates from NASA.

Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; NOAA beacons on 136.77 and 137.77MHz; METEOR 2-21 on 137.85MHz; METEOR 3-3 on 137.30MHz.

Timestep

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

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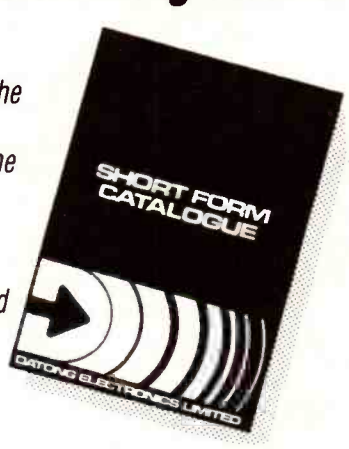

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Decode

Mike Richards G4WNC
PO BOX 1863, Ringwood, Hampshire BH24 3XD

Let's start with a plea for help from **B. Parks** of Leigh on Sea. He has a Telereader CD-600 decoder and would like to be able to obtain a print of the decoded information on his Panasonic KXP-1170 printer. So far he's been unable to get hold of a suitable lead - can anyone help? If so please write to the **NEW** address at the head of the column.

Alan Taylor of Whitwell on the Isle of Wight is fairly new to utility monitoring but has already established a focal point for his monitoring. He is fascinated by tropical storms and uses the received information to track the movement of these weather systems. Do you have any specific uses for your utility decoding? If you do, please write and let me know.

Dave Woods is a regular contributor who works in the marine surveying so is able to send me reports from many areas. His latest move sees his land base in Malta, whilst his maritime work is based in the northern North Sea. His receive equipment comprises the excellent JRC NRD-535 receiver feeding into a Mitac 3025D notebook computer. The decoding systems is the latest (v.4.1) of Hoka Code 3 that includes the SYNOP and alphabet options. The antenna is currently a very short wire, but Dave is awaiting a new active antenna. I assume this is because he has limited space at his Malta home.

Many readers are now using IBM compatible computers and the latest to write is **Les Crossan** from Wallsend. He currently runs a Intel 486DX-33 based machine with 8Mb RAM, Super VGA and twin hard disks with capacities of 250Mb and 125Mb respectively. For decoding utilities he uses Lowe's excellent Modemaster package connected to the COM-2 serial port. For hard copy he uses a twenty-four-pin Panasonic unit and the receiver is a modest Sangean ATS-803A. One unusual aspect of his decoding is the use he makes of the best decoded images. These are saved as PCX files and then transformed into bitmap (.BMP) files for use as background wallpaper in Microsoft Windows. If you run Windows 3.1. this can be achieved by first saving your FAX image as a .PCX file. You then need to open this file using the Paintbrush program that you will normally find in with your accessories. Don't forget to change the paintbrush file type to .PCX. At this stage you can edit the image to remove interference, etc. To make the final image available to Windows you need to save it as a 256 colour bitmap file in the Windows root directory. To select this as the wallpaper, open up the control panel and select Desktop. When you open-up the Wallpaper drop down you should find your new file sitting there ready for use.

Bracknell Update

Geoff Haligey of Bridgend and **Bill Clark** of Aspatria have both written this month with important changes to this popular FAX station. The main point is that the two stations, GFA and GFE, have now combined and use the call GFE. The frequencies and transmission periods have change to: 2.6185MHz (1800-0600), 4.61MHz (24hr). The FAX output from this station is aimed very much at the aviation user with a wide variety of charts showing winds and turbulence at various heights. Although these are not particularly relevant to many readers, there are still a number of interesting charts being sent. To save you having to plough through all the aviation charts, Bill Clark has prepared the following summary of surface based charts.

ASXX Surface Analysis
(speed/IOC = 120/288, duration = 6mins)

TX Time	Data Time
0341	0000
0941	0600
1541	1200
2141	1800

FSXX Surface Chart - 24hr Forecast
(speed/IOC = 120/288, duration = 6mins)

TX Time	Data Time
0431	00+24hr
1031	06+24hr
1631	12+24hr
2231	18+24hr

FSXX/FUXX Forecast charts for surface & 100/500mB thickness for 2 & 3 days
(speed/IOC = 120/288, duration = 6mins)

TX Time	Data Time
0806	0000 + 48 & 72hr
1045	0000 + 48 & 72hr
2222	1200 + 48 & 72hr

Plain language WAF amendments & general notices Tuesday & Wednesday if anything to report
(speed/IOC = 120/576)

TX Time	Duration
0300	6mins
0924	6mins
1536	6mins
1622	6mins
2147	6mins

There is also a plain language general inference for the next 2/3 days giving positions of pressure systems. If you have a interest in significant weather charts they can be received at: 0824, 0848, 1424, 1448, 2024 and 2048UTC. Each of these charts takes twelve minutes to send. For ice charts you need to tune in at 1602 for a twenty minute chart sent using a speed/IOC of 120/576. My thanks to Bill for supplying this useful summary. A final note from Geoff Halligey reports that GFL (RTTY) is now being transmitted by the Navy from Inskip near Preston, though the data is still supplied by Bracknell.

Bracknell Appeal

Paul Harrison of Blackburn has written in expressing his concern at the possible demise of the Bracknell h.f. weather transmissions. Paul has developed a keen interest in weather studies and is worried that the loss of this station will curtail his hobby. Whilst he could get charts from Bracknell's phone FAX system, this would be a very much more expensive alternative. Paul's suggestion is that all us radio users should write to Bracknell both to make them aware of the hobby interest in their service and to appeal for a continuation of that service. If you decide to write, please make sure your letter concentrates on the benefits the service gives and how the proposed changes to satellite working effectively make the service inaccessible to the hobbyist.

Whilst I fully understand Bracknell's requirement to charge for their commercial services, I'm sure there is a great educational benefit in having the information in the public domain for amateur use. The address to contact for your appeal is Bracknell Meteorological Office, Met 05B, London Road, Bracknell RG12 2SZ.

JVFAX News

Geoff Chance of Redruth has written to let me know that version 6.0 of this popular FAX program is now available. Geoff had written to Eberhard Backeshoff (the author) asking if he was aware that his software was being sold by a UK advertiser. The reply was very clearly no! Eberhard went on to explain that the conditions of use distributed with the program, state quite clearly that the maximum fee chargeable for the distribution of his program is the equivalent of $4.00US. The adverts in question appear to have disappeared from magazines such as *Short Wave*, but readers should be aware of the author's wishes. I've yet to see a copy of version 6, but I'll print a full report as soon I get my hands on one.

Many users of JVFAX have written asking if I know of any suppliers of the more complex interfaces. Whilst the simple comparator works surprisingly well, (providing your PC is fast enough) many would like to take advantage of the wider grey scale available when using a more complex interface. Whilst the construction enthusiast can have a go at building the design that's distributed with the program, this is well beyond the means of most listeners. What we really need is a compact, ready made unit that will plug straight in. This could all now become a reality thanks to a new development under way at **Martelec Communications Systems** in Alton. They are currently working on a dual microprocessor design that will interface with JVFAX. The unit is fully controlled via the serial port and has been specially designed for minimum r.f. noise. An extra attraction for those with an interest in satellite reception is that it can remotely control Martelec's MSR40 satellite receiver via a second port on the interface. Managing Director Chris Pretty reports that he does not plan to offer the unit as a kit as it would be difficult to offer a worthwhile price saving.

The current plan is to sell the interface as a stand alone diecast box measuring approximately 100 x 130 x 25mm. The expected selling price is a very reasonable £60 exclusive of VAT. If you'd like to register your interest in one of these decoders, I'm sure Martelec would be very pleased to hear from you. The address to write to is Martelec Communications Systems, The Acorns, Wyck Lane, East Worldham, Alton, Hants GU34 3AW. My thanks to Geoff Chance for supplying the contact.

Press QSLs

Knowing that many readers are keen to QSL with stations, I took special note of a letter from **Andy Kettle** of North Hykeham. He is just thinking about sending off a QSL and wonders just what should he send to secure a reply. Specifically, he asks if he needs to send a print-out or summary report from the station.

This points me to one of the most important points about QSLing. When sending a QSL, rather than thinking of what's in it for you, try putting yourself in the place of the recipient and consider

what is likely to be of interest. The utility listener has a distinct advantage here as we can usually send a printout of the received station. This can be extremely useful to the originator as it gives them a very clear indication of the reception quality at the receive site. It would also be useful to supply a number of prints received on different days at different times. This all helps to build a more complete picture of the quality of the received signal and so give the transmitting authority some evidence to support the claimed coverage of their network. It's also well worth including a full description of the equipment used to receive the station.

You can also improve your chances of a reply by including International Reply Coupons to cover the return postage. In my experience it's not generally worth including an envelope as many stations have a standard QSL pack complete with envelope. That covers most of the basics but if you have any other tips please drop me a line to the new address at the head of the column.

FAX Database

Jan Nieuwenhuis of The Netherlands has been a regular contributor to Decode for many years supplying a wide range of useful information. His latest project is the production of a comprehensive Weather FAX database program for IBM compatible computers. The first release of version 1.0 is now available and Jan has sent me a copy to evaluate. The program is supplied on a 3.5in high density floppy disk ready to run on any PC compatible that meets the following criteria: AT 286, 386 or 486 processor, DOS v3.0 to 6.0, Hercules, CGA, EGA or VGA graphics system. If you want to be able to display the sample maps you will need also need a VGA card however, these maps are an add-on extra not a vital part of the main program.

Once installed and running, you are presented with a main menu with five options. These enable you to choose between: general listings, printouts, station information, and sample weather maps. The fifth option is simply to leave the program! When the general display menu is selected, you have the option to display the database content sorted either by frequency, station, callsign or country. This provides excellent access to the information.

Although the on-screen display is very clear, it doesn't compare with the convenience of browsing through and annotating a paper copy. This need is met through the second menu option which gives access to a number of printout selections. In addition to a straightforward sorted print of the entire database there were three other choices available. These were ITU country list, station address list and station transmission information. This latter alternative gave a printout of the chart types transmitted by every station in the list. This was an extensive printout totalling some 26 pages on my system. For those of you that like to send QSLs the address list will prove particularly useful.

The station information choice from the main menu was a very convenient way to view the station information and address on the same screen. I've included a screen dump of this option in the column.

The final main menu alternative was the sample charts. In order to display these you will need at least a VGA graphics card in your computer. The review copy contained six sample charts that covered some of the more common types of h.f. FAX transmission. This included a couple of rebroadcast Meteosat images of northern Europe.

So what's the verdict? I thought WXFAX was a very useful package for the FAX enthusiast and well worth the investment. If you would like to register for a copy, the price is 25 Dutch Guilders (approx. £9.10 at current rates) and it's available from Jan Nieuwenhuis, Vloedlyn 12, NL-1791 HH Den Burg (Texel)I The Netherlands. My thanks to Jan for supplying the review copy.

Frequency Lists

Following my recent request for more logs, things are starting to pick-up. However, I still welcome contributions from all readers - it doesn't have to be exotic reports as I need confirmation that the more common stations are still there!

If you would like a copy of my *Decode Frequency List* or *Day Watson's Beginners List* just send three first or second class stamps to the address at the head of the column.

Below is the table for this month's readers selection of reports.

Finally I'd like to thank you for your contributions during the year and wish you all a very happy Christmas and a peaceful New Year.

0.518MHz	FEC	100	170	-	0929	NAVTEX Rogland
5.2373MHz	FAX	120	576	AJE	1040	USAF Met
6.8595MHz	CW	-	-	FDC	0905	Metz, French Air Force
7.64MHz	FAX	90	576	RST76	1315	Mensk Met
7.65MHz	RTTY	75	400	BZR67	1950	Xinhua press
7.887MHz	RTTY	75	400	BZS27	1940	Xinhua China
7.996MHz	RTTY	50	400	YZD9	1600	Tanjug
8.083MHz	FAX	90	576	RIJ75	1520	Tashkent Met
9.19MHz	FAX	50	950	RDZ75	1730	Moscow Met
9.395MHz	RTTY	50	400	HMF84	1835	Pyongyang press
10.1625MHz	RTTY	50	400	YIL71	1323	INA Baghdad
10.634MHz	RTTY	50	400	CNM37	1530	RABAT Press
11.1235MHz	FEC-100	96	170	DFL26	1525	German Gov Info service
11.453MHz	RTTY	50	850	IMB3	1745	Rome Met
12.165MHz	FAX	120	576	RKB78	1755	Moscow Radio
12.186MHz	RTTY	50	400	SAQ62	1745	JANA News
12.228MHz	RTTY	50	425	YZO7	1600	Tanjug
14.405MHz	SITOR-A	100	170	-	0700	Geneva
14.76MHz	RTTY	50	400	CNM61	1000	MAP News
14.88MHz	RTTY	50	850	JMG4	1630	Tokyo Met
15.935MHz	RTTY	50	400	SUA291	1340	Mena News

Long Medium & Short

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

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, logs compiled during the four week period ending September 30.

Medium Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
520	Hof/Hurzburg	Germany	0.2	P*,Q*
526	Vatican City	Italy	5	Q*
531	Ain Beida	Algeria	600	G*,K*,M*,T*
531	Leipzig	Germany	100	G*,K*,M*,P*, R*,T*,U*
531	Oviedo(RNE5)	Spain	20	G*,M*,P*,R*,T*
531	Beromunster	Switzerland	500	G*,Q*
540	Wavre	Belgium	150/50	G*,K,M*,P*,R,S,T*,U*
540	Solt	Hungary	2000	G*,T*
540	Conamara	Ireland (S)	2	G*,M*
540	Sidi Bennour	Morocco	600	P*,R*,T*
540	Vitoria(EI)	Spain	10	A*
549	Les Trembles	Algeria	600	G*,K*,R*,T*
549	Bayreuth(DLF)	Germany	200	E*,G*,K*,M*, P*,R,S,T*,U*
549	St.Petersburg	Russia	1000	G*,P*,Q*
549	Quarayyat	Saudi Arabia	2000	Q*
558	Espoo	Finland	100	P*
558	Rostock(NDR)	Germany	20	Q*
558	Tirgu Jiu	Romania	200	M*,R*
558	Valencia(RNE5)	Spain	20	E*,G*,N,P*,R*,T*
567	Berlin	Germany	100	G*,P*
567	Tullamore(RTE1)	Ireland (S)	500	C*,E*,G*,K, M*,N,R,S,U*,V
567	RNE5 via ?	Spain	?	A*,G*,M*,R*,T*
576	Bechar	Algeria	400	Q*
576	Muhlacker(SDR)	Germany	500	G*,M*,P*,R*
576	Barcelona(RNE5)	Spain	50	A*,E*,G*,M*,P*,R*,T*
585	Orf Wien	Austria	600	G*
585	Paris(FIP)	France	8	G,K,P*,R
585	Madrid(RNE1)	Spain	200	E*,G*,M*,P*, R*,S*,T*,U*
585	Gafsa	Tunisia	350	M*
585	Dumfries(BBCScot)	UK	2	T
594	Frankfurt(HR)	Germany	1000/400	G*,K*,M*,P*, R*,T*,U*,V
594	Oujda-1	Morocco	100	G*,M*,Q*,R*,U*
594	Muge	Portugal	100	G*,K*,P*,R*
594	Duba	Saudi Arabia	2000	Q*
603	Lyon	France	300	P*,R*
603	Sevilla(RNE5)	Spain	50	G*,M*,P*,R*,T*
603	Newcastle(BBC4)	UK	2	N,P,U*
612	Kiel(NDR)	Germany	10	Q
612	Athlone(RTE2)	Ireland (S)	100	E*,G*,I,M*,N, R*,S,T,U*,V
612	RNE1 via ?	Spain	10	A*,G*,M*,P*,R*
621	Wavre	Belgium	80	E*,G*,K,P*,R,T*,U*
621	Barcelona(OCR)	Spain	50	A*,G*,P*,R*
630	Dannenberg(NDR)	Germany	100	G*,T*
630	Vigra	Norway	100	M*,P*,R*
630	Tunis-Djedeida	Tunisia	600	G*,P*,R*,U*
639	Praha(Liblice)	Czech	1500	G*,P*
639	La Coruna(RNE1)	Spain	100	E*,G*,N,P*,R*,T*,U*
648	RNE1 via ?	Spain	10	G*,M*,P*
648	Orfordness(BBC)	UK	500	C,E*,K*,M*,P*,R,S,U*
657	Neubrandenburg(NDR)	Germany	250	G,M*,P*,Q*,R*,U*
657	Napoli	Italy	120	G*
657	Madrid(RNE5)	Spain	20	A*,E*,G*,M*,P*,R*,U*
657	Wrexham(BBCWales)	UK	2	E,M*,S
666	Bodensees'dr(SWF)	Germany	300/180	G*,P*,T*
666	Lisboa	Portugal	135	G*,R*,T*,U*
666	Barcelona(COPE)	Spain	10	G*
666	R.Vilnius	Lithuania	500	P*
675	Marseille	France	600	G*,P*,R*,T*,U*
684	Sevilla(RNE1)	Spain	500	E*,G*,K*,P*,R*,T*
684	Beograd	Yugoslavia	2000	G*,K*,P*,R*,U*
693	Tortosa(RNE1)	Spain	2	Q*
693	Droitwich(BBC5)	UK	150	E,M*,N,S,U*,V
702	Flensburg(NDR)	Germany	5	A*,P*,R*,T*
702	Monte Carlo	Monaco	300	G*,K*
702	Presov	Slovak Rep.	400	G*,M*,R*,U*
702	Zamora(RNE1)	Spain	10	A*,G*,M*,P*,R*
711	Rennes 1	France	300	G*,I,J,M*,N,R
711	Heidelberg	Germany	5	P*,Q*,T*
711	Laayoune	Morocco	600	G*,K*,M*,Q*,R*
711	Murcia(COPE)	Spain	5	G*,M*
720	Holzkirchen(RFE)	Germany	250	M*,Q*
720	Langenberg	Germany	200	Q
720	Lisnagarvey(BBC4)	Ireland (N)	10	E*,N,V
720	Norte	Portugal	100	G*,M*,P*,T*
720	Sfax	Tunisia	200	R*
720	Lots Rd,Ldn(BBC4)	UK	0.5	G*,R,U*
729	Cork(RTE1)	Ireland (S)	10	C*,G*,N,P,R*,S,T,U*,V
729	Oviedo(RNE1)	Spain	50	G*,M*,P,R*,T*,U*
738	Paris	France	4	G*,K,P*,R
738	Poznan	Poland	300	G*,R*
738	Barcelona (RNE1)	Spain	500	C*,E*,G*,K*, P*,R*,T*,U*
747	Flevo (Hilv2)	Holland	400	C*,E*,G*,K*, P*,R,S,T*,U*
747	Cadiz (RNE5)	Spain	10	A*,G*
756	Braunschweig (DLF)	Germany	800/200	C*,G*,P*,R*,T*,U*
756	Lugoj	Romania	400	Q*
756	Bilbao (EI)	Spain	5	A*,G*
756	Redruth (BBC4)	UK	2	E*,J,N,P*,R*
765	Sottens	Switzerland	500	E*,G*,P*,R*,U*
774	Bonn (WDR2)	Germany	5	Q*
774	Enniskillen (BBC4)	Ireland (N)	1	P*
774	Agadir	Morocco	50	G*
774	S.Sebastian (RNE1)	Spain	50	G*,P*,R*,T*,U*
774	Plymouth (BBC4)	UK	1	N
783	Burg	Germany	1000	G*,P*,R*,T*,U*
783	Miramar (R.Porto)	Portugal	100	G*,P*,R*
783	Dammam	Saudi Arabia	100	R*
783	Tartus	Syria	600	Q*
792	Limoges	France	300	G*,P*,R*
792	Lingen (NDR)	Germany	5	P*,Q*
792	Sevilla (SER)	Spain	20	G*,M*,P*,R*,T*,U*
792	Londonderry (BBC)	UK	1	M*,V
801	Munchen-Ismaning	Germany	300	E*,G*,M*,P*,T*,U*
801	RNE1 via ?	Spain	?	G*,M*,P*,R*,T*,U*
810	Voru	Estonia	5	R*
810	Madrid (SER)	Spain	20	G*,M*,P*,R*,T*
810	Westerglen (BBC)	UK	100	G*,M*,N,P,R*,S,T,U*,V
819	Batra	Egypt	450	P*,R*
819	Toulouse	France	50	G*,M*,P*
819	Trieste	Italy	25	R*
819	Warsaw	Poland	300	G*,R*,U*
819	S.Sebastian (EI)	Spain	5	G*,M*
828	Hannover (NDR)	Germany	100/5	P*,T*
828	Barcelona (SER)	Spain	50	G*,R*,T*
837	Nancy	France	200	G*,P*,R*
837	COPE via ?	Spain	?	A*,G*,P*,R*,T*,U*
846	Rome	Italy	540	G*,P*,R*,S*
855	Berlin	Germany	100	P*
855	R.Bucharest	Roumania	750	G*
855	Murcia (RNE1)	Spain	125	G*,P*,R*,U*
864	Santah	Egypt	500	G*,Q*
864	Paris	France	300	G,P*
864	Socuellamos (RNE1)	Spain	2	G*,R*,T*
873	Frankfurt (AFN)	Germany	150	G*,P*,R*,S,T*,U*
873	Zaragoza (SER)	Spain	20	G*,P*,R*,T*
882	COPE via ?	Spain	?	G*,P*,R*
882	Washford (BBC)	UK	100	C,G*,J,K,N,P,R,S,U*,V
891	Algiers	Algeria	600/300	G*,K*,P*,R*,T*,U*
891	Huisberg	Netherlands	20	G*,P*,R*
891	Uzhgorod	Ukraine	150	G*
900	Milan	Italy	600	E*,G*,P*,R*,T*,U*
900	COPE via ?	Spain	?	G*,R*,T*
900	Qurayyat	Saudi Arabia	1000	R*
909	Mallorca (RNE5)	Spain	10	A*,P*,T*
909	B'mans Pk (BBC2)	UK	140	R,S,V
909	M'side Edge (BBC2)	UK	200	E,N,U*
918	R.Ljubljana	Slovenia	600/100	G*,P*,R*,T*
918	Madrid (R.Int)	Spain	20	G*,P*,R*,T*,U*
927	Wolvertem	Belgium	300	C,G*,P*,R,S,U*
936	Bremen	Germany	100	G*,P*,R*,U*
936	Venezia	Italy	20	C*,G*,R*
936	RNE5 via ?	Spain	?	G*,P*
945	Toulouse	France	300	E*,G*,P*,R*
954	Brno (Dobrochov)	Czech Rep.	200	G*
954	Madrid (CI)	Spain	20	A*,E*,G*,R*,U*
963	Pori	Finland	600	G*,P*,R*
963	Paris	France	8	G,P*
963	Tir Chonaill	Ireland (S)	10	R*
963	Seixal (RRE)	Portugal	10	G*
963	Tunis-Djedeida	Tunisia	200	U*
972	Marrakech	Morocco	1	G*
972	RNE1 via ?	Spain	?	G*,R*,T*
981	Alger	Algeria	600/300	F*,G*,K*,P*,R*,T*,U*
981	Megara	Greece	200	P*
981	Coimbra	Portugal	10	G*,R*
990	Berlin	Germany	300	G*,P*,Q*
990	R.Bilbao (SER)	Spain	10	A*,G*,P*
990	Redmoss (BBCScot)	UK	1	G
990	Tywyn (BBC2)	UK	1	G,N
999	Schwerin (RIAS)	Germany	20	P*,Q*,U*
999	Torino	Italy	20	G*
999	Madrid (COPE)	Spain	50	A*,G*,P*,T*,U*
1008	Las Palmas (SER)	Gran Canaria	?	G*,Q*,R*
1008	Flevo (Hilv-5)	Holland	400	G*,P*,R,S*,T*,U*
1017	Rheinsender (SWF)	Germany	600	C*,E*,G*,P*,R*,S*,U*
1017	Burgos (RNE5)	Spain	10	G*,P*
1017	Istanbul	Turkey	1200	G*
1026	Graz-Dobl	Austria	100	G*,P*,R*
1026	SER via ?	Spain	?	G*,R*
1035	Tallinn	Estonia	500	G*,R*
1035	Lisbon (Prog3)	Portugal	120	G*,P*,R*
1044	Dresden	Germany	250	K*,P*,R*,T*,U*
1044	Thessaloniki	Greece	150	G*
1044	Sebaa-Aioun	Morocco	300	G*
1044	S.Sebastian (SER)	Spain	10	G*,K*,P*,R*,T*
1053	Zarogoza (COPE)	Spain	10	G*,P*,T*
1053	Droitwich (BBC1)	UK	150	E,N,S,T*,U*,V
1062	Kalundborg	Denmark	250	G*,K*,P*,R*,T*,U*
1062	Norte	Portugal	100	G*
1071	Brest	France	20	P*,R,U*
1071	Lille	France	40	G*
1071	Bilbao (EI)	Spain	5	A*,G*,T*
1080	Katowice	Poland	1500	G*,P*,R*,T*,U*
1080	SER via ?	Spain	?	A*,G*,P*,R*,T*
1089	B'mans Pk (BBC1)	UK	150	R,S,V
1089	M'side Edge (BBC1)	UK	150	E,N,U*
1089	Krasnodar	Russia	300	P*
1098	Nitra (Jarok)	Slovakia	1500	G*,P*,R*,T*,U*
1098	RNE5 via ?	Spain	?	G*,P*,R*,T*
1107	Munich (AFN)	Germany	40	G*,I*,P*,R*,S*,T*
1107	RNE5 via ?	Spain	?	G*,P*,R*,T*
1107	Wallasey (BBC1)	UK	0.5	B,E,N
1116	Bari	Italy	150	G*,R*
1116	Pontevedra (SER)	Spain	5	G,P*,T*
1125	La Louviere	Belgium	20	G*,P*
1125	RNE5 via ?	Spain	?	G*,R*,T*,U*
1134	Zadar	Croatia	600/1200	E*,G*,P*,R*,S*,U*
1134	COPE via ?	Spain	2	G*,P*,R*,T*
1143	Stuttgart (AFN)	Germany	10	G*,P*,T*
1143	Messina	Italy	6	P*,R*
1143	COPE via ?	Spain	2	G*,R*,T*
1152	Lerida (RNE5)	Spain	10	P*
1161	Strasbourg (Flnt)	France	200	G*,P*,R*,T*
1161	S.Sebastian (EI)	Spain	50	R*
1170	Vila Real	Portugal	10	G*
1179	SER via ?	Spain	?	A*,G*
1179	Solvesborg	Sweden	600	G*,H*,I*,P*,R*,S*,T*,U*
1188	Kuurne	Belgium	5	A*,G*,P*,R
1188	Reichenbach (MDR)	Germany	5	Q*
1188	Szolnok	Hungary	135	G*,R*,T*
1197	Munich (VOA)	Germany	300	G*,P*
1197	Virgin via ?	UK	?	G*,P*,R,U*
1197	Wallasey (V)	UK	2	N
1206	Bordeaux	France	100	G*,P*,R*
1206	Wroclaw	Poland	200	G*,P*,R*,U*
1215	Santander (COPE)	Spain	2	Q*
1215	Virgin via ?	UK		E,M*,O,R,V
1215	Droitwich (V)	UK	105	N,S
1215	Hull (V)	UK	0.3	U*
1215	Lisnagarvey (V)	UK	16	N,P*
1224	Vidin	Bulgaria	500	P*,R*
1224	COPE via ?	Spain	?	G*,R*
1224	Virgin via ?	UK		G*
1233	Liege	Belgium	5	G*,P*,R*
1233	Plzen (Pilsen)	Czech Rep.	40	A*
1233	Nitra	Slovakia	40	P*,T*,U*
1233	Tanger	Morocco	200	Q*
1242	Marseille	France	150	G*,P*
1242	Virgin via ?	UK		G*,P*
1242	Stockton (V)	Uk	1	U*
1251	Marcali	Hungary	500	G*,P*,R*,T*,U*
1251	Huisberg	Netherlands	10	G*,P*,R*
1251	Porto	Portugal	10	G*
1260	Rhodes (VOA)	Greece	500	G*
1260	SER via ?	Spain	?	G*,P*,R*
1269	Neumunster (DLF)	Germany	600	E*,G*,L*,P*, R*,S*,T*,U*
1269	COPE via ?	Spain	?	G*
1278	Strasbourg	France	300	G*
1278	Dublin/Cork (RTE2)	Ireland (S)	10	G,L*,N,P,R*,S,T,V
1287	Melnik/Litomysl (RFE)	Czech Rep.	400/200	G*,P*,R*,T*,U*
1287	Lerida (SER)	Spain	10	G*,Q*,R*
1296	Valencia (COPE)	Spain	10	G*,P*,R*,T*,U*
1296	Rebia	Sudan	1500	Q*
1296	Orfordness (BBC)	UK	500	E*,G*,P*,R*
1305	Marche	Belgium	10/5	P*
1305	Rzeszow	Poland	100	G*,P*,R*,T*
1305	RNE5 via ?	Spain	?	G*,R*
1314	Kvitsoy	Norway	1200	C*,E*,G*,P*, R*,S*,T*,U*,V
1314	Valladolid (RNE5)	Spain	10	G*
1323	Leipzig (RMWS)	Germany	150	G*,P*
1332	Rome	Italy	300	G*,P*,R*,U*
1341	Lakihegy	Hungary	300	P*
1341	Lisnagarvey (BBC)	Ireland (N)	100	E*,G,H*,N,R*,S,T,U*,V
1341	Almeria (OCR)	Spain	2	G*
1341	Terrasa (SER)	Spain	2	G*,R*
1350	Nancy/Nice	France	100	G*,P*,R*,U*
1359	Berlin	Germany	250/100	P*
1359	Melilla	Morocco	5	R*,U*
1359	Arganda (RNE-FS)	Spain	600	G*
1368	Foxdale (Manx R)	I.O.M.	20	G*,N,P,S*,T,V
1377	Lille	France	300	G*,P*,R,U*,V
1386	Athens	Greece	50	A*
1386	Kaliningrad	Russia	500	G*,I*,P*,T*
1395	Lushnje (Tirana)	Albania	1000	C*,E*,G*,K*, P*,R*,T*,U*
1395	RNE5 via ?	Spain	2	T*
1404	Brest	France	20	G*,P*,R,T*,U*
1413	RNE5 via ?	Spain	?	G*,P*,R*,T*
1413	Pristina	Yugoslavia	1000	T*
1422	Alger	Algeria	50/25	G*,R*
1422	Heusweiler (SR)	Germany	1200/600	G*,P*,R*,S*,T*,U*
1440	Marnach (RTL)	Luxembourg	1200	E*,G*,P*,R*,S,T*,U*
1440	Damman	Saudi Arabia	1600	P*,Q*,R*,U*
1449	Berlin	Germany	5	A*,P*,U*
1449	Squinzano	Italy	50	G*
1449	Redmoss (BBC4)	UK	2	P*
1467	Esfahan	Iran	200	F*,R*,T*
1467	Grigoriopol	Moldovia	500	G*
1467	Monte Carlo (TWR)	Monaco	1000/400	G*,K*,P*,R*,S*,U*
1476	Wien-Bisamberg	Austria	600	C*,G*,P*,R*,U*
1485	Augsburg (AFN)	Germany	1	A*,D*,P*,Q*
1485	Baden-Baden (SWF)	Germany	1	Q*
1485	SER via ?	Spain	?	G*
1485	Bournemouth (BBC1)	UK	2	V
1494	Clermont-Ferrand	France	20	E*,G*,P*,R*,S*
1494	St.Petersburg	Russia	1000	P*
1503	Stargard	Poland	300	E*,G*,P*,R*,T*,U*
1512	Wolvertem	Belgium	600	E*,G*,K*,P*,R*, S,T*,U*,V
1512	Jeddah	Saudi Arabia	1000	Q*
1512	R.Ukraine Int.	Ukraine	?	Q*
1521	R.Beijing	China	500	Q*
1521	Kosice (Cizatice)	Slovakia	600	G*,P*,R*
1521	Duba	Saudi Arabia	2000	G*,Q*
1521	R.Manresa (SER)	Spain	2	G*,R*,T*,U*
1530	Vatican R	Italy	150/450	G*,K*,L*,P*,R*,T*,U*
1539	Malmflingen (DLF)	Germany	700	G*,P*,R*,S*,T*,U*
1539	Valladolid (SER)	Spain	5	P*
1557	Nice	France	300	G,P*
1557	Kaunas (R Vilnius)	Lithuania	75	U*
1566	Sarnen	Switzerland	300	G*,U*
1566	Sfax	Tunisia	1200	G*
1575	Burg	Germany	250	G*,T*,U*
1575	Genova	Italy	50	G*,P*,R*,T*
1575	SER via ?	Spain	5	G*,R*,T*
1584	SER via ?	Spain	2	G*,R*
1593	Langenberg (WDR)	Germany	400/800	G*,M*,P*,R*,S*,T*,U*
1602	Bolzano	Italy	2	G*
1602	SER via ?	Spain	?	G*,R*
1602	Vitoria (EI)	Spain	10	G*
1611	Vatican R	Italy	15	G*

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

Listeners:
A: Ted Bardy, N.London.
B: Leo Barr, Sunderland.
C: Vera Brindley, Woodhall Spa.
D: Tim Bucknall, Congleton.
E: Martin Dale, Stockport.
F: John Eaton, Woking.
G: Gerry Haynes, Bushey Heath.
H: Francis Hearne, N.Bristol.
I: Simon Hockenhull, E.Bristol.
J: Simon Hockenhull, Torquay.
K: Sheila Hughes, Morden.
L: Rhoderick Illman, Oxted.
M: Stephen Jones, Oswestry.
N: Peter Kay, near St.David's.
O: Ronald Kilgore, Co.Londonderry.
P: Eddie McKeown, Newry.
Q: Roy Merrall, Dunstable.
R: George Millmore, Wootton IOW.
S: Sid Morris, Rowley Regis.
T: Martin Price, Shrewsbury.
U: Harry Richards, Barton-on-Humber.
V: Tom Smyth, Co.Fermanagh

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	D,N,O,P,Q,U
585	R.Solway	B	2.00	D*,K,M,O,R
603	Cheltenham (CD603)	I	?	D,E*,N,O,Q,U
603	Invicta SG (Coast)	I	0.10	D,N,U
630	R.Bedfordshire (3CR)	B	0.20	D,E,N,O,Q,R,U
630	R.Cornwall	B	2.00	G,K,N,U
657	R.Clwyd	B	2.00	B,D,H,K,M*,N,O,Q,R,S,U
657	R.Cornwall	B	0.50	G,H,K,N,U
666	DevonAir R	I	0.34	D,E,F,H,K,N,U
666	R.York	B	0.80	D,M*,Q,R,U
729	BBC Essex	B	0.20	D,N,Q,R,U
738	Hereford/Worcester	B	0.037	D,F,H,N,D,Q,R,U
756	R.Cumbria	B	1.00	C,D,K,M,R
756	R.Maldwyn	I	0.63	D,F,H,N,D,Q,U
765	BBC Essex	B	0.50	A,B,D,M*,N,O,Q,R,U
774	R.Kent	B	0.70	D,N,U
774	R.Leeds	B	0.50	B,C,D*,R
774	Gloucester (3CSG)	I	0.14	E*,N,O,Q
792	Chiltern (S.Gold)	I	0.27	B,D,N,D,Q,R,U
792	R.Foyle	B	1.00	S
801	R.Devon	B	2.00	D,E,F,G,H,K,N,Q,U
828	Chiltern (S.Gold)	I	0.20	D,E,U
828	R.Aire (Magic828)	I	0.12	C,R
828	R.WM	B	0.20	Q
828	2CR (Cl.Gold)	I	0.27	D*,F,N,U
837	R.Cumbria/Furness	B	1.50	K,M*,Q,S
837	R.Leicester	B	0.45	D,N,O,Q,R,U
855	R.Devon	B	1.00	K,N
855	R.Lancashire	B	1.50	C,K,L,M,R
855	R.Norfolk	B	1.50	D,H,R,U
855	Sunshine R	I	0.15	D,E,F,H,Q,Q,U
873	R.Norfolk	B	0.30	D,H,N,R,U
936	Brunel R (Cl.Gold)	I	0.18	D,N,Q,S,U
945	R.Trent (Gem AM)	I	0.20	C,D,M*,N,D,Q,R,U
954	DevonAir (Cl.Gld)	I	0.32	D,H,N,Q,U
954	R.Wyvern (WYVN)	I	0.16	D,H,O,Q,R,U
990	WABC (Nice & Easy)	I	0.09	D,J*,O,Q,U
990	R.Aberdeen	B	1.00	D,M*
990	R.Devon	B	1.00	D,H,N,U
990	Hallam R. (Gt.Yks)	I	0.25	D,R,U
999	R.Solent	B	1.00	D,F,G,N,S,U
999	R.Trent (Gem AM)	I	0.25	D,R,U
999	Red Rose (Gold)	I	0.80	A,M,Q
1017	Beacon R (WABC)	I	0.70	C,D,H,K,N,O,Q,R,S,U
1026	Downtown R	I	1.70	K,Q,S
1026	R.Cambridgeshire	B	0.50	D,H,R,U
1026	R.Jersey	B	1.00	D,G,H,N,U
1035	NorthSound R	I	0.78	D,L*
1035	R.Kent	B	0.50	D,N,U
1035	R.Sheffield	B	1.00	D,Q,R
1035	West Sound R	I	0.32	M
1107	Moray Firth R	I	1.50	M
1116	R.Derby	B	1.20	C*,D,L,M*,O,Q,R,U
1116	R.Guernsey	B	0.50	D,G,N,U
1152	BRMB (Xtra-AM)	I	3.00	E*,O,Q
1152	LBC (L.Talkback R)	I	23.50	D,N,S,U
1152	Piccadilly R (Gold)	I	1.50	C,Q
1152	R.Broadland	I	0.83	B,E*,M*,Q,U
1152	R.Clyde (Clyde 2)	I	3.06	L
1161	Brunel R.(Cl.Gold)	I	0.16	D,E*,Q,U
1161	R.Bedfordshire (3CR)	B	0.10	D,Q
1161	R.Sussex	B	1.00	D,N,U
1161	R.Tay	I	1.40	M*
1161	Humberside (Gt.Yks)	I	0.35	A,B,L*,M*,R
1170	GNR Teeside	I	0.32	L*,M*
1170	Portsmouth (SCR)	I	0.12	D,N,U
1170	R.Orwell (SGR)	I	0.28	D,U
1170	Signal R. (S.Gold)	I	0.20	C,D,O,Q
1170	Swansea Sound	I	0.58	K,M*
1242	Invicta Snd (Coast)	I	0.32	D,U
1242	Isle of Wight R	I	0.50	D,M*,N,U
1251	Saxon R. (SGR)	I	0.76	D,H,M*,Q,U
1260	Brunel R. (Cl.Gold)	I	1.60	D,M*,N,U
1260	R.York	B	0.50	R
1260	Sunrise R	I	0.29	D,D,U
1260	Mercher Snd (Gold)	I	0.64	C,Q
1278	Bradford (Gt.Yks)	I	0.43	D*,M*,R,S
1305	Barnsley (Gt.Yks)	I	0.15	D,R
1305	Red Dragon (Touch)	I	0.20	C,O,E*,I,N,Q,U
1323	R.Bristol (Som.Snd)	B	0.63	D,K,U
1323	Brighton (S2R)	I	0.50	D,N,S,U
1332	Hereward R.(WGMS)	I	0.80	B,D,H,M*,R,U
1332	Wiltshire Sound	B	0.30	D,H,M*,N,Q,U
1359	Essex R. (BreezeAM)	I	0.28	D,M*,U
1359	Mercia Snd (Xtra-AM)	I	0.27	D*,O,Q
1359	Red Dragon (Touch)	I	0.20	E*,M*
1359	R.Solent	B	0.85	N
1368	R.Lincolnshire	B	2.00	D,M*,Q,R,S,U
1368	R.Sussex	B	0.50	D,N,U
1368	Wiltshire Sound	B	0.10	D,N,Q
1413	Sunrise R	I	0.125	D,N,S,U
1431	Essex R. (BreezeAM)	I	0.35	A*,D,L,M*,N,Q,U
1431	R 210 (Cl.Gold)	I	0.14	D,N,R,U
1449	R.Peterboro/Cambs	B	0.15	D*,H,M*,Q,R,U
1458	GLR	B	50.00	D,E*,N,Q,R,S,U
1458	GMR	B	5.00	C,K,M*,Q,R
1458	R.Cumbria	B	0.50	M
1458	R.Devon	B	2.00	N,U
1458	R.Newcastle	B	2.00	M*
1458	Radio WM	B	5.00	E*,O,Q
1476	County Sound	I	0.50	A,D,M*,N,P*,U
1485	R.Humberside	B	1.00	B,D*,M*,R
1485	R.Merseyside	B	1.20	K,M*,O,S,U
1485	R.Sussex	B	1.00	D,N,U
1503	R.Stoke-on-Trent	B	1.00	D*,L,M*,O,R,U
1521	Reigate (Cty Snd)	I	0.64	A,D,L,M*,N,P,Q,U
1530	Sheffield (Gt.Yks)	I	0.74	D,M*,Q,R
1530	R.Essex	B	0.15	D*,I,Q,U
1530	R.Wyvern (WYVN)	I	0.52	D,L,N,O,Q
1548	Capital R (Cap G)	I	97.50	N,S,U
1548	R.Bristol	B	5.00	G,K,M
1548	Liverpool (City G)	I	4.40	K,Q
1548	R.Forth (Max AM)	I	2.20	M*
1548	R.Hallam (Gt.Yks)	I	0.74	B,Q,R
1557	Chiltern R. (Gold)	I	0.76	D,I,L,O,Q,R,U
1557	R.Lancashire	B	0.25	K,Q
1557	Southampton (SCR)	I	0.50	D,N,U
1557	Tendring (Mellow)	I	?	D*,U
1584	Kettering (KCBC)	I	0.04	D,U
1584	R.Nottingham	B	1.00	D,Q,R,U
1584	R.Shropshire	B	0.50	D,O,Q,U
1584	R.Tay	I	0.21	D,L
1602	R.Kent	B	0.25	A,D,M*,N,P,Q,T,U

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

Listeners:
A: Leo Barr, Sunderland.
B: Vera Brindley, Woodhall Spa.
C: Martin Dale, Stockport.
D: Gerry Haynes, Bushey Heath.
E: Francis Hearne, N.Bristol.
F: Simon Hockenhull, E.Bristol.
G: Simon Hockenhull, Torquay.
H: Sheila Hughes, Morden.
I: Rhoderick Illman, Oxted.
J: Stephen Jones, Oswestry.
K: Peter Kay, near St.David's.
L: Ross Lockley, Stirling.
M: Eddie McKeown, Newry.
N: George Millmore, Wootton, IOW.
O: Sid Morris, Rowley Regis.
P: Roy Patrick, Derby.
Q: Martin Price, Shrewsbury.
R: Harry Richards, Barton-on-Humber.
S: Tom Smyth, Co.Fermanagh.
T: John Stevens, Largs.
U: John Wells, East Grinstead.

This series is very dependent upon the reports I receive from listeners and I feel sure the readers will want to join me in thanking them for their support during the year. Happy Christmas and good listening in the New Year!

Long Wave Reports

The 10kW signals from Caltanisseta, Italy on 189kHz have reach the UK after dark! Their signals were heard intermittently throughout September by **Roy Merrall** in Dunstable, but the best was on Sept 12, when the signal was SIO342 at 2012UTC. Whilst checking the band in Redhill, **Michael Williams** heard their signal at 2139. After setting the bandwidth of his Lowe HF-225 receiver to 2.2kHz he listened to a talk in Italian. He rated their signal SIO222.

Medium Wave Reports

An improvement in conditions for m.w. transatlantic reception was noted by DXers during September. While checking the band in N.London on Sept 1, **Ted Bardy** heard WBBR in New York on 1130. Their signal was SINPO 23232 at 0420. At 0430 he heard a news bulletin in French on 1375, that proved to be from RFO St.Pierre & Miquelon. On Sept 8 he logged CJYQ in St.John's on 930 as 22222 at 0220; WBBR as 22222 at 0223; also RFO as 12232 at 0227. Only CJYQ was heard on the next two nights, which were 23222 at 0023.

On Sept 9 **Ron Damp** (E.Worthing) logged CJYQ as 22332 at 0116; WEVO in New York 1050 as 33333 at 0222; WINS in New York 1010 as 22222 at 0243. He also heard a station on 1130 (probably WBBR), that peaked 32322 at 0129, but it faded out before giving an ident! Towards the end of the month, Ron found that CJYQ could be heard much earlier. At 2328 on Sept 28 their signal was peaking 33233. The broadcasts from CJYQ were also heard by Roy Merrall. On Sept 29 he rated them SIO232 at 0405.

Good reception from stations in N.Africa, Italy, Spain and Portugal was noted after dark by **George Millmore** in Wootton, IOW. He logged Sfax-Sidi Mansour, Tunisia 720 (100kW) as SIO222; Alger, Algeria 1422 (50kW) as SIO222; Damman, Saudi Arabia 1440 (1600kW) as SIO222; Esfahan, Iran 1467 (200kW) as SIO211. Several of the BSKSA outlets in Saudi Arabia were heard by Roy Merrall. He heard Jeddah on 1512 (1000kW) at 1812, Duba 1521 (2000kW) at 2007, Oamman 1440 at 2333, Qurayyat 549 (2000kW) at 0259 and Ouba 594 (2000kW) at 0302.

Some of the signals from Algeria and Morocco were heard after dark by **Sheila Hughes** in Morden. She rated the signal from Alger on 981 (600/300kW) as 33333 at 2325, but most were 22222. A number of the stations in Spain were heard by **Stephen Jones** in Oswestry.

When searching for local radio stations, DXers should bear in mind the advantages of using a good loop. The directional properties of a spiral loop, which **Leo Barr** (Sunderland) built on a 500 X 500mm wooden frame, enabled him to receive for the first time ILR Humberside (Gt.Yorks) on 1152, which is co-channel with ILR Dundee (R.Tay). It is sandwiched between ILR Newcastle (GNR) on 1152 and ILR Teeside (GNR) on 1170, both put strong signals into Sunderland at 0716.

An impressive first local radio list was compiled during daylight by **Martin Price** in Shrewsbury. After many attempts, **John Wells** (E.Grinstead) logged BBC R.Cornwall via Bodmin on 657. Occasionally he has heard their Redruth outlet on 630 - both were received at 0900. Up in Largs, **John Stevens** picked up the 0.25kW transmission from BBC R.Kent via Rusthall on 1602 - it peaked SIO212 at 0840 and was audible for about 20 minutes before fading out!

Short Wave Reports

Those on the **25MHz (11m)** band have been rejoined by R.Norway Int, R.Oenmark and R.Nederlands, but Oeutsche Welle has discontinued its broadcasts to E.Asia from Julich on 25.740. It is not known how well any of the broadcasts to distant places are heard there, but they have reached the UK via back scatter and other modes. At best, UAE R. Abu Dhabi 25.690 (Ar to Far East 0900-1100) was 15232 at 1000 by **Simon Hockenhull** in E.Bristol; R.Norway Int 25.730 (Norw to ? 1300-1329) 25432 at 1315 by **Fred Pallant** in Storrington; R.Denmark via RNI 25.730 (Da to ? 1330-1355) 25432 at 1345 in Storrington; RFI via Issoudun 25.820 (Fr to Af 0900-1545) 33333 at 1030 by **Robert Connolly** in Kilkeel; R.Nederlands via Flevo 25.970 (Du to Af 1030-1125, Sun only) 35433 at 1120 in Storrington.

Some of R.Australia's **21MHz (13m)** signals have reached here in the morning. Their signals to SE.Asia via Oarwin 21.525 (Eng 0100-0900) was 44433 at 0755 in E.Worthing; to Pacific areas via Carnarvon 21.595 (Eng 0100-0900) 43233 at 0826 by **Eddie McKeown** in Newry; to Asia via Darwin 21.745 (Eng 0900-1100) 44333 at 0900 by **Gerry Haynes** in Bushey Heath.

Also noted in the morning were the BBC via Tsang Tsui 21.715 (Eng to F.East 0330-0900) 13231 at 0830 by **Eric Shaw** in Chester; R.Pakistan, Islamabad 21.520 (Eng to Eu 0800-0845) 35433 at 0835 by **Vera Brindley** in Woodhall Spa; R.Slovakia Int 21.705 (Eng to Australia 0830-0900) 44444 at 0836 in Sunderland; R.Japan via Moyabi 21.575 (Eng to Eu, M.East 0700-0900) SIO333 at 0858 by **Bill Clark** in Rotherham; BBC via Ascension Is 21.660 (Eng to Af 0730-1745) 45444 at 0945 by **John Eaton** in Woking & via Kranji 21.715 (Eng to Far East 0900-1030) 25242 at 1023 by **Harry Richards** in Barton-on-Humber; UAE R. Abu Ohabi 21.735 (Ar to ? 0800-1155) SIO233 at 1015 by **Phil Townsend** in E.London; UAE R.Dubai 21.605 (Eng to Eu 1030-1055) 33333 at 1038 by **Michael Griffin** in Ross-on-Wye; Vatican R, Italy 21.850 (Port, Sp to S.Am 1100-1210) SIO212 at 1100 in Largs; R.Pakistan, Islamabad 21.520 (Eng to Eu 1100-1120) 53544 at 1103 by **Darren Beasley** in Bridgwater.

After mid-day, UAE R.Oubai 21.605 (Eng to Eu 1330-1400) was SIO212 at 1330 by **Tom Smyth** in Co.Fermanagh; HCJB, Ecuador 21.455 (Eng, u.s.b.+ p.c.) SIO354 at 1615 by **Kenneth Buck** in Edinburgh & 21.480 (Eng to Eu, Af 1900-2000) 54344 at 1911 by **Chris Shorten** in Norwich; WYFR via Okeechobee 21.615 (Eng to Eu 1600-1700) 44444 at 1645 in Morden, 21.525 (Eng to W.Af 1600-1700) 34343 at 1645 in Storrington, 21.525 (Eng to Eu 2000-2200?) SIO333 at 2000 by **Julian Wood** in Elgin & 21.500 (Eng, Ger to Eu, Af 1700-1900) 33333 at 1848 by **Rhoderick Illman** in Oxted; R.Nederlands via

Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	I*
153	Donebach	Germany	500	A*,B*,C,D,F*,H*,I,K*, M*,N*,O,P*,Q*,R*,S*
153	Brasov	Romania	1200	A*,K*,L*
162	Allouis	France	2000	A*,B*,C,D,H*,I,K*,M*,N,O,P*,Q*,R*
171	Kaliningrad	Russia	1000	A*,C,D*,H*,K*,M*,N,O*,P*,Q*,R*,S*
171	Medi 1-Nador	Morocco	2000	C*,S*
177	Oranienburg	Germany	750	A*,C,D*,H*,K*,M*,N*,O,P*,Q,R*,S*
180	Polati	Turkey	1200	L*
183	Saarlouis	Germany	2000	A*,B*,C,D,H,I*,K*,M*,N,O,P*,Q,R*,S*
189	Caltanissetta	Italy	10	L*,S*
189	Tbilisi	Georgia	500	A*
198	Warsaw 3	Poland	200	F*,K*
198	BBC Droitwich	UK	500	A*,B,C,D,H,I,K*,M*,N,P*,Q,R*,S*
198	BBC Westerglen	UK	50	C
207	Munich	Germany	500	A*,C,D*,F*,K*,M*,O,P*,Q,R*,S*
207	Kiev	Ukraine	500	A*
216	RMC Roumoules	S.France	1400	A*,C,H*,K*,M*,N,O,P*,Q*,R*,S*
216	Oslo	Norway	200	C*,H*,K*,S*
225	Raszyn Resv TX	Poland	?	A*,C,H*,K*,M*,N*,P*,Q,R*,S*
234	Beidweiler	Luxembourg	2000	A*,C,D,H*,K*,M*,N,O,P*,Q,R*,S*
234	St.Petersburg	Russia	1000	K*,L*,P*
243	Kalundborg	Denmark	300	A*,C,F*,H*,I*,K*,M*,N*,O,P*,Q*,R*,S*
252	Tipaza	Algeria	1500	C,H*,M*,S*
252	Atlantic 252	S.Ireland	500	A*,B*,D,F,G,H*,I,J,K*,M,N,O,P*,Q,R*,S*
261	Burg	Germany	200	A*,C,F,M*,O*,P
261	Taldom(Moscow)	Russia	2000	H*,K*,N,O,P*,R*,S*
270	Topolna	Slovak Rep	1500	A*,C,F*,K*,M*,N
279	Minsk	Belarus	500	A*,E*,H*,K*,N*,O*,P*,R*,S*

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

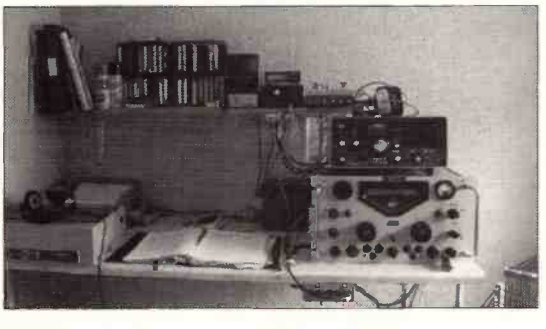
Listeners:
A: Ted Bardy, N.London.
B: Vera Brindley, Woodhall Spa.
C: Tim Bucknall, Congleton.
D: Martin Dale, Stockport.
E: John Eaton, Woking.
F: Simon Hockenhull, E.Bristol.
G: Simon Hockenhull, Torquay.
H: Sheila Hughes, Morden.
I: Stephen Jones, Oswestry.
J: Ronald Kilgore, C.Londonderry.
K: Eddie McKeown, Newry.
L: Roy Merrall, Dunstable.
M: George Millmore, Wootton, IOW.
N: Sid Morris, Rowley Regis.
O: Fred Pallant, Storrington.
P: Harry Richards, Barton-on-Humber.
Q: Tom Smyth, Co.Fermanagh.
R: Phil Townsend, E.London.
S: Michael Williams, Redhill.

Bonaire 21.590 (Eng to Af 1730-2025) 55544 at 1915 by **Ross Lockley** in Stirling.

R.Australia's **17MHz (16m)** broadcasts to Asia have been heard here quite well most mornings. Their signal from Darwin on 17.695 (Eng 0700-0900) was 32432 at 0831 in Sunderland; from Carnarvon on 17.750 (Eng 0700-0900) 34333 at 0850 in Bushey Heath.

Many other 16m broadcasts may be heard in the day. Among those noted in the morning were the BBC via Masirah Isle 17.790 (Eng to India, Asia 0600-0815) SIO222 at 0700 in Co.Fermanagh; R.Yerevan, Armenia 17.770 (Eng, Fr to ? 0830-0900) SIO322 at 0837 by **Richard Howard** in Northampton; R.Pakistan, Islamabad 17.900 (Eng to Eu 0800-0845) 35333 at 0837 in Woodhall Spa; R.Japan via Yamata 17.860 (Eng to Oceania 0900-1000) SIO222 at 0910 in Rotherham; R.Norway Int, Oslo 17.840 (Norw to Af? 1000-1030) 33333 at 1012 in Oxted; Africa No.1, Gabon 17.630 (Fr, Eng to W.Af 0700-1600) 45544 at 1025 in E.Worthing; AIR via ? 17.387 (Eng to Australia, NZ 1000-1100) 32332 at 1040 in Bridgwater.

Later, AWR Africa via Moyabi, 17.890 (Eng to Af 1200-1300, Sun only) 33333 at 1225 in Newry; RCI via Sackville 17.820 (Eng to Caribbean? 1300-1400) 54434 at 1345 in Barton-on-Humber; WEWN, Birmingham 17.510 (Fr, Eng to Eu 1530?-1655) 44344 at 1551 in Woking; VOA via Morocco 17.785 (Eng, Port, Fr, Ha to Af 1700?-2200) 44444 at 1815 by **John O'Halloran** in Harrogate; HCJB Quito 17.490 (Eng, u.s.b.+ p.c.) 34333 at 1900 in Storrington; also 17.790 (Eng to Eu 1900-2000) 54344 at 1920 in Norwich; R.Algiers Int via Bouchaoui 17.745 (Eng to Eu, E/C.Af 1900-2000) SIO555 at 1935 in Edinburgh; R.Nederlands via Bonaire, 17.605 (Eng to W.Af 1930-2030) 35444 at 2000 in Chester; R.Havana, Cuba 17.760 (Eng to Eu, M.East,Af 2100-2200) 44444 at 2130 in Ross-on-Wye; VOFC Taiwan via Okeechobee 17.750 (Eng to Eu 2200-2300) 44443 at 2200 by **George Tebbitts** in Penmaenmawr.



Ron Damp's listening post in East Worthing.

Good reception from many areas has been evident in the **15MHz (19m)** band. Although intended for other areas, some of R.Australia's signals have reached the UK. Their transmission to Pacific areas via Shepparton 15.240 (Eng 0030-0900) was 23222 at 0630 in Bushey Heath; to N.Asia via Carnarvon 15.170 (Eng, Chin, Cant 0900-1400) 12221 at 0945 in E.Worthing; to S.Asia via ? 15.630 (Eng 1100-1300) 35333 at 1200 by **Roy Patrick** in Derby.

In daylight, R.Austria Int via Moosbrunn 15.450 (Ger, Eng to Australia 0800?-1100) was 55555 at 1044 by **Ronald Kilgore** in Co.Londonderry; BBC via Antigua 15.220 (Eng to N/S.Am 1100-1400) SIO212 at 1124 by **Philip Rambaut** in Macclesfield; WWCR Nashville 15.685 (Eng to Eu 1100-0000) **44444** at 1225 by **Peter Pollard** in Rugby; China R.Int, Beijing 15.165 (Eng to S.Asia 1400-1557) 44444 at 1420 in Oxted; Israel R, Jerusalem 15.640 (Eng to Eu, USA 1400-1425 Sun-Thurs) 55554 at 1420 in Penmaenmawr; KTWR Agana, Guam 15.610 (Eng to S.Asia, India 1500-1700) 42333 at 1500 in Bridgwater; Voice of Greece via Avlis 15.630 (Gr, Eng, Sw to USA 1500-1550) 45344 at 1532 in Woodhall Spa; Channel Africa, Johannesburg 15.240 (Eng to Af 1600-1755?) 43443 at 1740 in Bridgwater; VOA via Tangier 15.245 (Eng to Eu 1630-1700) 23332 at 1640 by **Peter Polson** in St.Andrews.

After sunset, the Voice of Vietnam, Hanoi 15.009 (Eng to Eu 1800-1830) was 45444 at 1805 in Newry; RTM Tanger, Morocco 15.330/15.345 (Ar 1700-2000?) 43443 at 1850 in Harrogate; RNB Brasilia, Brazil 15.265 (Eng, Ger to Eu 1800-2100), noted as fair in Largs; R.Portugal, Lisbon 15.515 (Port to Af 1900-1930?) SIO455 at 1915 in Edinburgh; R.Romania Int, Bucharest 15.365 (Fr to Eu 1900-1930) 55555 at 1920 in Norwich; VOA via Morocco 15.410 (Eng to Af 1600-2200) 33433 at 2000 in Chester; R.Rwanda, Kigali 15.340 (Fr to Af 1800-2100?) 44544 at 2030 in Stirling; RTL via Junglinster 15.350 (Ger to USA 24hrs) 54444 at 2040 in Barton-on-Humber; BBC via Ascension Is 15.400 (Eng to Af 1500-2315) 34233 at 2150 by **Ron Galliers** in Islington & 15.260 (Eng to S.Am 2000-0330) 33233 at 2232 by **Robin Harvey** in Bourne; RCI via Sackville? 15.305 (Eng to ? 2200-0000) SIO444 at 2215 in Rotherham; KTBN via Salt Lake City 15.590 (Eng to USA 1600-0200) 44344 at 2218 in Woking; WINB Red Lion 15.185 (Eng to Eu 2100-2245) 35433 at 2240 in Ross-on-Wye; R.Bulgaria, Sophia 15.330 (Eng to Eu 2145-2315) 43443 at 2245 in Kilkeel.

The occupants of the **13MHz (22m)** band have now been joined by WJCR in Upton, Kentucky. Their transmission on 13.595 was 24122 at 1644 in Bushey Heath. Some of the signals to Eu in this band stem from Croatian R, Zagreb 13.640/13.830 (Cr [Home service] 24hrs) rated 45444 at 0845 in Derby; R.Austria Int via Moosbrunn 13.730 (Eng, Fr, Sp 0500?-1900) 44444 at 1140 in Oxted and 55555 at 1555 in Bridgwater; R.Prague, Czech Rep 13.580 (Eng 1600-1625) 45244 at 1604 in Newry; UAE R.Dubai 13.675 (Eng 1600-1640) 43333 at 1608 in Woodhall Spa; R.Pyongyang, N.Korea 13.785 (Eng 1700-1750, also to M.East, Af) 23222 at 1740 in Bridgwater; R.Kuwait, Kbad 13.620 (Eng 1800-2100) 45444 at 1830 in Chester; WHRI South Bend 13.760 (Eng 1700-0000) 44333 at 2137 in Islington; WCSN Scotts Corner 13.770 (Eng 2000-0000?) 55545 at 2145 in Bourne.

Among those noted to other areas were SRI via Sottens 13.635 (Eng, Fr to SE.Asia, Far East 1100-1200) rated 34433 at 1104 in St.Andrews; R.Australia via Darwin 13.605 (Eng, Chin to Asia 0900-1430) SIO222 at 1115 in Macclesfield and SIO333 at 1330 in Largs & to S.Asia via Carnarvon 13.755 (Thai, Eng 1230-1428) 33333 at 1300 in Newry; R.Nederlands via Flevo 13.700 (Eng to S.Asia 1330-1725) 54444 at 1530 in Norwich; R.Pakistan, Islamabad 13.590 (Eng to M.East 1600-?) 43333 at 1600 in Storrington; VOA via Selebi-Phikwe 13.710 (Eng to Af 1600-2200) SIO211 at 1700 in Co.Fermanagh; DW via Julich 13.690 (Eng to Af 1900-1950) 44333 at 1912 in Sunderland; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp to Af 1900-2200) SIO455 at 2150 in Edinburgh.

In the **11MHz (25m)** band HCJB Quito 11.835 (Ger, Fr, Eng 0600-0830) was 54444 at 0810 in E.Worthing & 11.925 (Eng to USA 1130-?) 23222 at 1130 in Storrington; R.Prague, Czech Rep 11.990 (Eng to Eu 1130-1157) 44444 at 1130 in Morden; R.Romania Int, Bucharest 11.940 (Eng to Eu 1300-1400) 55555 at 1305 in Co.Londonderry; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Af 1400-1600) 43333 at 1405 in Penmaenmawr; WYFR via Taiwan 11.550 (Eng to Indonesia 1302-1502) 33333 at 1425 in Harrogate; R.Australia via Carnarvon? 11.695 (Eng to Pacific 1600-?) 44333 at 1601 in Woodhall Spa; R.Pakistan, Islamabad 11.570 (Eng to M.East 1600-1630) 33333 at 1620 in St.Andrews; KHBI, N.Mariana Is 11.580 (Eng to Asia 1600-1755) 22222 at 1653 in Barton-on-Humber; Channel Africa, Johannesburg 11.750 (Eng to Af 1700-1755) 44554 at 1702 in Woking; R.Nac da Amazonia, Brazil 11.780 (Port 0900-0200) SIO212 at 2000 in Largs; AIR via Bangalore? 11.620 (Eng, Hi to Eu 1745-2230) SIO444 at 2126 in Rotherham; China R, Beijing 11.500 (Eng to Eu 2000-2157) SIO444 at 2140 in Edinburgh; R.Tirana, Albania 11.825 (Eng to Eu 2200-2215) SIO433 at 2200 by **Francis Hearne** in N.Bristol; R.Japan via Moyabi 11.925 (Eng to Eu 2200-2300) 54554 at 2222 in Bridgwater.

The **9MHz (31m)** signals to Europe include BBC via Limassol 9.740 (Eng 0700-1515) 34333 at 0925 in St.Andrews; R.Norway Int, Oslo 9.590 (Eng 1300-1330, Sun) SIO333 at 1300 in Co.Fermanagh; Polish R, Warsaw 9.525 (Eng 1600-1655) 54444 at 1635 in Penmaenmawr; R.Portugal via Sines? 9.780 (Port 1700-

Tropical Bands

Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	1830	F,G,I,R
2.325	ABC Tennant Creek	Australia	1842	F,G,I,N,R
2.485	ABC Katherine	Australia	1829	I,R
2.850	KCBS Pyongyang	N.Korea	1749	I
3.200	TWR Ndebele	Swaziland	1755	G,I,O
3.210	Em.Nacional, Maputo	Mozambique	1938	B,I,N
3.220	R.Togo, Lome	Togo	2251	G
3.230	R.Oranje	S.Africa	1750	I,O
3.240	TWR Shona	Swaziland	2000	G,I,N,O
3.245	AIR Itangar	India	1720	I,O
3.255	BBC via Moseru	Lesotho	2011	B,G,I
3.270	SWABC 1, Namibia	SW.Africa	1836	G,I,Q,R
3.275	TWR	Swaziland	1824	O
3.277	AIR Srinagar	India	1707	I,O
3.280	R.Beira	Mozambique	1750	I,O
3.300	R.Cultural	Guatemala	2055	Q
3.315	AIR Bhopal	India	1722	I,O
3.318	SLBS Goderich	Sierra Leone	2200	B,E,G,I,M,Q,S
3.320	R.Allegro	S.Africa	2020	N,Q
3.320	R.Suid Afrika	S.Africa	1839	G,I,O
3.325	FRCN Lagos	Nigeria	2125	B,G,I,N,P
3.330	R.Kigali	Rwanda	1935	G
3.338	R.Maputo	Mozambique	1944	G
3.355	AIR Kurseong	India	1720	G,I,O
3.356	R.Botswana	Gabarone	1840	B,G,I,P,R
3.359	RTV Malagasy	Madagascar	1730	O
3.365	AIR New Delhi	India	1735	I,O
3.365	GBC R-2	Ghana	2016	B,D,E,F,G,I,N,P,R,S
3.375	R.Nacional	Brazil	2234	O
3.380	R.Malawi	Malawi	1903	G,I
3.905	AIR Delhi	India	1734	G,I
3.915	BBC Kranji	Singapore	1708	G,I
3.950	Qinghei PBS, Xining	China	2301	F
3.955	BBC Skelton	England	0505	D,I,J,N
3.955	Novosibirsk rfy A.Ata	Kazakhstan	2339	I,N
3.965	RFI Paris	France	1800	D,I,J,N,P,Q,T,V
3.975	BBC Skelton	England	0415	N
3.980	VOA Munich	Germany	2145	A,D,I,J,L,N,P,Q,T,V
3.985	China R via SRI	Switzerland	2118	O,H,N
3.985	SRI Beromunster	Switzerland	2100	D,I,J,N,P,Q,T,V
3.995	DW via Julich	Germany	2310	D,J,N,P,Q
3.995	Channel Africa	S.Africa	0417	N
4.000	Bofoussam	Cameroon	2010	P
4.130	V of the Strait 1	China	1340	E
4.220	Xinjiang PBS, Urumqi	China	2330	O
4.500	Xinjiang BS, Urumqi	China	2315	F,N
4.735	Xinjiang, Urumqi	China	2325	F,N,D
4.750	Xizang BS, Lhasa	Tibet	2335	J,O
4.755	Caracol Neiva	Columbia	0124	N
4.760	Yunnan PBS,Kunming	China	2241	G,O
4.760	AIR Port Blair	India	1658	O
4.750	ELWA Monrovia	Liberia	1850	G,J,M,O,Q,U
4.760	TWR	Swaziland	1742	A,O,I,D,Q
4.765	Brazzaville	PR.Congo	1930	I,P
4.770	FRCN Kaduna	Nigeria	1859	A,B,C,D,E,F,G,I,J, M,N,P,Q,R,T,U
4.775	R.Gabon, Libreville	Gabon	2150	B,G,I,N
4.775	AIR Gauhati	India	1705	I
4.780	RTD	Djibouti	1919	I
4.783	RTM Bamako	Mali	2146	B,E,G
4.785	R.Tanzania	Tanzania	1820	R
4.790	Azad Kashmir R	Pakistan	1814	I,Q
4.790	TWR Manzini	Swaziland	1742	I,O,R
4.795	R.Douala	Cameroon	2104	B
4.795	La Voz de los Caras	Ecuador	0615	I
4.800	CPBS 2 Beijing	China	2244	G,I
4.800	AIR Hyderabad	India	1655	G,O
4.800	LNBS Lesotho	Maseru	2003	B,G,I,R
4.805	R.Nac.Amazonas	Brazil	2344	N,T

Freq MHz	Station	Country	UTC	DXer
4.810	R.San Martin Tara	Peru	2356	O
4.810	R.South-Africa	S.Africa	1713	I,Q
4.815	R.diff TV Burkina	Ouagadougou	2037	B,D,G,I,R,T
4.820	E.Prov.Huila	Angola	1824	O
4.820	La Voz Evangelica	Honduras	2346	N,T
4.820	AIR Calcutta	India	2352	N
4.825	R.Cancao Nova	Brazil	0505	D,I,Q
4.830	R.Botswana, Gaborone	Botswana	1817	B,D,G,I,J,N,P,R,T
4.830	R.Tachira	Venezuela	2300	M,N,P,Q
4.835	RTM Bamako	Mali	2014	A,B,D,G,I,M,Q,R
4.845	ORTM Nouakchott	Mauritania	2002	B,D,F,G,I,N,P,Q,R,T
4.850	R.Yaounde	Cameroon	2055	B,D,E,I,N,Q
4.865	PBS Lanzhou	China	2320	E,F,G,Q
4.865	L.V. del Cinaruco	Colombia	0613	F,I,J,N,Q
4.870	R.Cotonou	Benin	2120	B,D,E,G,I,P,Q
4.880	AIR Lucknow	India	1532	G
4.885	R.Clube do Para	Brazil	0204	N
4.885	Voice of Kenya	Kenya	1823	B,G,I,P,Q,R,T
4.890	RFI Paris	via Gabon	0412	N
4.895	Voz del Rio Arauca	Colombia	0045	N,Q,T
4.905	R.Nat.N'djamena	Chad	2035	B,D,G,I,M,N,P,Q,R
4.905	CPBS 1, Beijing	China	1710	I
4.910	AIR Jaipur	India	1725	G,I,O
4.910	R.Zambia, Lusaka	Zambia	1812	I,R
4.915	GBC-1, Accra	Ghana	2035	B,C,D,G,H,I, J,N,P,Q,R,S,T
4.915	Voice of Kenya	Kenya	1920	B,D,I,K,Q
4.920	AIR Madras	India	1736	G,I,O
4.926	R.Cobriza 2000	Peru	0045	T
4.935	Voice of Kenya	Kenya	1818	B,C,G,I,N,P,R
4.940	AIR Gauhati	India	1710	I
4.940	R.Abidjan	Ivory Coast	2200	D,Q
4.945	Channel Africa	S.Africa	1745	G,D,Q
4.950	R.Madre de Dios	Peru	0045	T
4.965	R.Alvorada	Brazil	0611	I
4.970	AIR Itanagar	India	1638	I
4.970	R.Rumbos, Caracas	Venezuela	0535	O
4.975	R.Uganda, Kampala	Uganda	2034	B,G,I,R,T
4.980	Ecos del Torbes	Venezuela	0053	F,N,T
4.985	R.Brazil Central	Brazil	0129	N
4.990	Hunan 1, Changsha	China	1712	I
4.990	AIR via Madras	India	0009	A,N
4.990	FRCN Lagos	Nigeria	2008	B,C,E,G,I,K,M,N,P,Q,R,T
4.990	R.Barquisimeto	Venezuela	2330	S
5.005	R.Nacional, Bata	Eq.Guinea	2015	B,I,P
5.005	R.Nepal, Kathmandu	Nepal	1703	I,O
5.010	R.Garoua	Cameroon	2033	B,D,G,I,N,R
5.015	R.Brazil Tropical	Brazil	0053	T
5.020	ORTN Niamey	Niger	2103	G,I
5.021	Hanoi	Vietnam	2315	D
5.025	R.Parakou	Benin	2041	E,R
5.025	BBS Thimpu	Bhutan	2136	G
5.025	R.Uganda, Kampala	Uganda	2053	G,I,R
5.035	R.Aparecida	Brazil	0445	Q
5.035	R.Bangui	C.Africa	2056	B,C,D,E,G,I,J, M,N,P,Q,R,T
5.040	EP de Benguela	Angola	1920	Q
5.045	R.Cultura do Para	Brazil	2354	N
5.047	R.Togo, Lome	Togo	2013	A,B,C,D,F,G,I, J,K,N,Q,R,T
5.050	Voz de Yopal, Yopal	Colombia	2215	N,Q
5.050	R.Tanzania	Tanzania	2032	C,G,I,Q,R
5.055	Faro del Caribe	Costa Rica	0608	I
5.055	RFO Cayenne(Matoury)	French Guiana	0535	D,I,T
5.060	Sist de Em Progreso	Ecuador	0037	O
5.065	R.Candip, Bunia	Zaire	1725	O
5.075	Caracol Bogata	Colombia	0607	A,D,F,I,J,N,Q
5.320	CPBS 1, Beijing	China	2210	O

DXers:
A: Leo Barr, Sunderland.
B: Darren Beasley, Bridgwater.
C: Vera Brindley, Woodhall Spa.
D: Robert Connolly, Kilkeel.
E: John Eaton, Woking.
F: David Edwardson, Wallsend.
G: P. Gordon Smith, Kingston, Moray.
H: Robin Harvey, Bourne.
I: Gerry Haynes, Bushey Heath.
J: Sheila Hughes, Morden.
K: Rhodenck Illman, Oxted.
L: Ronald Kilgore, Co.Londonderry.
M: Ross Lockley, Stirling.
N: Eddie McKeown, Newry.
O: Roy Merrall, Dunstable.
P: Sid Morris, Rowley Regis.
Q: John O'Halloran, Harrogate.
R: Fred Pallant, Storrington.
S: Roy Patrick, Derby.
T: Harry Richards, Barton-on-Humber,
U: Eric Shaw, Chester.
V: Phil Townsend, E.London.

2000?) SIO323 at 1740 in Macclesfield; SNBC Omdurman, Sudan 9.165 (Eng 1800-1900) 35233 at 1808 in Newry; VOIRI Tehran 9.022 (Eng 1930-2030) 45333 at 2019 in Barton-on-Humber; R.Romania Int, Bucharest 9.690 (Eng 2100-2200) 55545 at 2109 in Bourne; R.Cairo via Abis 9.900 (Eng 2100-2230) 23432 at 2115 in Chester; VOA via Woofferton, UK 9.760 (Eng 2100-2200) SIO333 at 2127 in Rotherham; BSKSA Riyadh 9.870 (Ar to Eu 1800-2300) 44444 at 2155 in Rugby; Voice of Turkey, Ankara 9.445 (Fr 2200-2300) SIO322 at 2200 in N.Bristol; RCI via Sackville 9.760 (Eng 2200-2300) 45444 at 2255 in E.Bristol.

Whilst beaming to other areas, R.New Zealand Int 9.700 (Eng to Pacific areas 0659-1206) was 33443 at 0700 in Stirling and 34333 at 1040 in Storrington; BBC via Antigua 9.640 (Eng to C.Am 0500-0815) 32232 at 0759 in Islington & via Kranji, 9.740 (Eng to S.E.Asia, Far East, Australia 0900-1830) 55544 at 1500 in Harrogate; R.Australia via Carnarvon 9.510 (Eng to S.Asia 0900-1200) SIO222 at 0915 in E.London & Shepparton 9.770 (Eng to Asia 1430-1600) 42322 at 1430 in Bushey Heath; SRI via Schwarzenburg 9.885 (Eng, Fr, It, Ger to M.East, E.Af 1700-1845) 54444 at 1714 in Co.Londonderry; R.Nac del Paraguay 9.735 (Sp 0800-0400) 35543 at 2310 by **David Edwardson** in Wallsend.

Despite the congestion in the **7MHz (41m)** band several broadcasts from distant places were heard here: KTBN via Salt Lake City 7.510 (Eng to USA 0200-1600), rated SIO222 at 0537 in Woking; WJCR Upton7.490 (Eng to E.USA 2100-1000) 34333 at 0600 in Morden; WHRI South Bend 7.315 (Eng to E.USA 0000-1300) 34333 at 0712 in Islington; R.Australia via Carnarvon 7.260 (Eng to Asia 1600-2000) 44544 at 1611 in Wallsend; Voice of Nigeria, Ikorodu 7.255 (Eng to W.Af) 43333 at 1934 in Woodhall Spa; WRNO New Orleans 7.355 (Eng to E.USA 2300-0400) 33333 at 0053 in Newry.

Those to Europe include WYFR via Okeechobee 7.355 (Eng 0600-0730?) at 43443 at 0615 in Kilkeel; R.Japan via Skelton 7.230 (Jap, Eng, Ger 0700-0830) SIO444 at 0715 in N.Bristol; IRRS Milan, Italy 7.125 (UN relay) **44444** at 0855 in Rugby; Int Red Cross BS via SRI 7.210 (Eng 1100-1130, last Sun of month) 34333 at 1100 in Ross-on-Wye; Polish R, Warsaw 7.285 (Ger 1500-1525) **44444** at 1519 in St.Andrews; AIR via Aligarh 7.412 (Eng, Hi 1745-2230) 55533 at 1753 in Co.Londonderry; R.Yugoslavia, Belgrade 7.200 (Eng 2100-?) 54444 at 2100 in Norwich; R.Romania Int, Bucharest 7.195 (Eng, Ger 2100-2200) 32323 at 2156 in Bourne; R.Ukraine Int, Kiev 7.240 (Eng 2200-2300, also on 7.195) 54554 at 2230 in Bridgwater.

Direct or relayed transmissions in the **6MHz (49m)** band usually provide European listeners with good reception from R.Japan via Skelton 6.050 (Eng, Ger 0700-0830) at SIO444 at 0715 in N.Bristol; R.Austria Int via Moosbrunn 6.155 (Ger, Eng, Fr, Sp 0400?-2300) 44444 at 0850 in Rugby; R.Nederlands via Flevo 5.955 (Eng 1130-1325) 55555 at 1150 in Morden; Croatian R, Zargreb 5.920 (Cr, Eng? 24hrs) 35444 at 1500 in Derby; VOA via Woofferton, UK 6.040 (Eng 1700-2200?) 55555 at 1710 in Co.Londonderry; R.Sweden via Karlsborg? 6.065 (Eng, Sw? 1730-1800) 54444 at 1800 in Chester; R.Alma-Ata, Kazakhstan 5.960 (Eng 1800?-?) 32542 at 1825 in Bridgwater; R.Finland via Pori 6.120 (Fin, Eng, Russ, Sw, Ger, Fr 0300-2200) 33333 at 1854 in Oxted; R.Vlaanderen Int, Belgium 5.910 (Eng 1900-1925) 33232 at 1900 in Ross-on-Wye; R.Prague, Czech Rep 6.055 (Eng 2100-2127?) SIO434 at 2106 in Redhill; R.Ukraine Int, Kiev 5.960 (Eng 2200-2300) 33333 at 2200 in Storrington; RCI via Skelton 5.995 (Eng 2200-2230, also to N.Af, M.East) 34433 at 2215 in E.Bristol.

Some broadcasts to other areas may also be received here. Among those noted were Kenya BC, Nairobi 6.045 (Eng to E.Af 0200-0815) at 32222 at 0550 in Kilkeel; R.Australia via Shepparton 6.020 (Eng to Pacific areas 0800-1230) 33222 at 0801 in Bushey Heath; & via Carnarvon 5.960 (Eng to S.Asia 1800-2055?) 34553 at 2045 in Wallsend; R.Nac da Amazonia, Brazil 6.180 (Port 0900-0200) 34444 at 2245 in Harrogate; CKZN St.John's, Newfoundland 6.160 (Eng to E.Canada 0930-0500) 34132 at 2341 in Newry.

Maritime Beacons

LW MARITIME RADIO-BEACON CHART

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

A surprising number of the l.w. maritime radiobeacons around the coast of the UK and other countries were logged by DXers during July, August and September. The chart gives a clear indication of their reception during daylight and after dark.

Listeners who search this band on a regular basis will be familiar with the differences in propagation during daylight and after dark, but those who are new to this apect of our hobby may be unaware of them.

During daylight, only the radiation that leaves a beacon antenna at low angles can reach a receiving point. Any high angle radiation travels upwards to the ionosphere and is absorbed by the lowest (D) layer, which is highly ionised by the radiation from the sun. The low angle 'ground waves' follow the natural contours of the earth as they travel away from the beacon site. In so doing they loose energy and become attenuated. The amount of attenuation is dependent upon the nature of the terrain over which they pass - granite or old sandstone (Dartmoor, Snowdonia, N.Highlands) results in the greatest loss, decreasing through old limestone (S.Uplands, most of Wales), new limestone or chalk (Chilterns, Cotswolds, N & S Downs), clay (Midlands), recent deposits or fresh water (Vale of York, Fen district) to sea water, which causes the least attenuation.

Good signals from beacons along the coast of France and the Channel Is were received during the morning by **Ron Damp** in Worthing. No doubt the clear sea paths resulted in little attenuation. However, the extensive logs which **Kenneth Buck** (Edinburgh), **Peter Pollard** (Rugby), **Phil Townsend** (E.London) and **John Wells** (E.Grinstead) compiled during daylight should help to dispel any suggestion that you need to live near the coast to engage in beacon DXing!

Soon after sunset, the D layer quickly disappears to expose the E layer, which acts like a giant mirror in the sky. It may reflect the high angle radiation from the beacon antenna back towards earth. The reflected 'sky waves' may arrive within or well outside the area covered by the ground waves.

As an experiment, **Darren Beasley** (Bridgwater) decided to check the band just before dusk to see if it made any difference to reception. An improvement in some signals was noted and he heard for the first time the Ostend beacon (OE) on 312.0.

The logs compiled by **David Edwardson** (Wallsend), **Viv Doidge** (Gunnislake), **John O'Halloran** (Harrogate), **Robert Moore** (Holywell); **Peter Polson** (St.Andrews) and **Michael Wright** (Hoyland) clearly show that the more distant signals arrive after dark. Some quite distant beacons were received at night by **Robert Connolly** (Kilkeel), **Chris Edwards** (Inverurie) and **Jim Edwards** (Wigan).

Sometimes reception at night is impaired by high static levels and thunderstorms, but a more common problem is man-made electrical interference - it prevented **Tom Smyth** (Co.Fermanagh) from receiving the weaker beacon signals. Similar difficulties were encountered by **George Millmore** (Wootton, IOW), but he overcame them by powering his Sangean ATS-803A portable from batteries.

Some DXers seize the opportunity to check the band whilst in a quiet location away from home. During a visit to Aberystwyth, W.Wales **Sid Morris** (Rowley Regis) took his Sangean ATS-803A portable to a vantage point on Pumlumon Fawr (752m a.s.l.) and picked up signals from 24 beacons located around the UK and Ireland!

Whilst on holiday in Elgin, **Peter Rycroft** (Wickham Market) used his AR-3000 scanner plus 2m whip to log beacons along the north coast of Scotland and some from Norway. **John Stevens** (Largs) took his Icom R-70 receiver with him on holiday to Melvich. He was unable to erect an efficient antenna but a short wire around a window enabled him to receive the beacons on the Isle of Lewis (BL) and the Sheltand Is (SB), which are inaudible in Largs.

If you use a loop or ferrite rod antenna ahead of your receiver you may find the list of l.w. beacons (maritime and aero) that **Michael Welsh** (Anstruther) has prepared useful, since he can customise it to show the true bearing and range of each beacon from your location! For more information, write to him via me, enclosing an s.a.e.

A supplement to the 34-page l.w. radiobeacon booklet produced by Robert Connolly (see page 75 Sept '93 *SWM*) is now available. It details some of the less frequently listed maritime beacons along the coast of Algeria, Artic Russia, Bulgaria; Corsica, Croatia, Denmark, Egypt, Estonia, S.France, Georgia, Germany, Greece, Greenland, Iceland, Israel, Italy, Latvia, Lebanon, Libya, Majorca, Poland, Sardinia, Sicily, S.Spain, Sweden, Syria, Tunisia, Turkey and Ukraine. For details, send an s.a.e. to him via me.

Freq kHz	Call	Station Name	Location	DXer
284.5	LZ	Lizard Lt	S.Cornwall	A,B,E,I,K,M,N,O*,T,W
284.5	MA	Cabo Machichaco	N.Spain	C*,E*,F*,G*,T*,W,X*
285.0	NO	Cabo de la Nao Lt	S.Spain	C*,E*,G*,W
285.0	NP	Nieupoort W.Pier	Belgium	C*,E*,G,V,W,X
286.0	TR	Tuskar Rock Lt	S.Ireland	A,B,C,E,F,H,K,L*,M,N,T,W,X
286.5	AL	Almagrundet Lt	Sweden	F*,G*,N,X*
286.5	BY	#Baily Lt	S.Ireland	C,S,T,X
286.5	FE	Cap Frehel Lt	N.France	E*,G*,T*
286.5	FT	Cap Ferret Lt	W.France	C*,E*,F*,G,P*,W,X
286.5	NK	Inchkeith Lt	F of Forth	B,F,Q*
287.3	JA	Jaroslawiec	Poland	F*
287.3	MD	Cabo Mondego	N.Spain	C*
287.5	DO	Rosedo Lt	France	E
287.5	FR	Faerder Lt	Norway	B,C*,E*,F,G,X
288.0	HH	Hoek van Holland	Holland	C*,N,V
288.0	KL	Sklinna Lt	Norway	C*,F,G*,H*,Q*
288.0	OH	Old Hd of Kinsale	S.Ireland	A,B,E,M,N,T
288.5	FI	Cabo Finisterre Lt	NW.Spain	C*,E,F*,G*,P*,T,X
288.5	YM	IJmuiden Front Lt	Holland	B,C*,F,G*,N,V,W,X
289.0	BL	Butt of Lewis Lt	Is of Lewis	B,S,U
289.0	BY	Baily Lt	S.Ireland	A,B,C,E,F,H,K,L*,M,N,P,S*,W,X
289.0	MN	Hammerodde	Denmark	C*,F*,G*
289.5	KY	Oksoy Lt	Norway	C*
289.5	LO	Landsort S Lt	Sweden	C*,G*
289.5	SN	Ile de Sein NW Lt	France	C*,E*,W
290.0	BS	Port en Bessin Lt	France	K,N,W
290.0	FD	Fidra Lt	F of Forth	B,C*,F,Q*,T
290.5	DY	Duncansby Hd Lt	N.E.Scotland	B,F,R*,U
290.5	SB	S.Bishop Lt	Pembroke	A,B,C,E,K,L*,M,N,P,Q*,T,V,W,X
290.5	VI	Cabo Villano Lt	N.Spain	C*,F*,G*,N*,P*,T*,W,X*
291.5	SU	South Rock LV	Co.Down	A,B,C,E,F,H*,L*,M,N,P*,T,V,W,X
291.9	LT	La Isleta	Canaries	C*
291.9	MR	Montedor Lt	Portugal	C*,E*,G*
291.9	NA	Punta Lantailla	Canaries	C*
292.0	MH	Mahon, Minorca	Balearic Is	C*,E*
292.0	SJ	Souter Lt	Sunderland	A,B,C,F,H,M,N,P,Q*,T,V,W,X
292.5	SM	Pt St.Mathieu Lt	France	A,B,C,E,F*,G,N,P*,V,W,X
293.0	CP	St.Catherine's Lt	IOW	A,E,K,M*,N,O*,P,V,W,X
293.0	RN	Rhinns of Islay Lt	Is of Islay	B,C,Q*,S,T
293.0	SY	Sviny Lt	Norway	B,C*,F,N*,Q*
293.5	RO	Cabo Silleiro Lt	N.Spain	C*
294.0	KU	Kullen High Lt	Sweden	B,C*,E*,F,G*,X*
294.0	PH	Cap d'Alprech	France	A,B,C*,D,E,F,G,H,K,L*,N,O*,P*,V,W,X
294.5	BA	#Black Hd Lt	N.Ireland	C*
294.5	KA	Kaybolovo Lt	Estonia	F*
294.5	KC	#Old Hd of Kinsale	S.Ireland	C*
294.5	MH	Mohni Lt	Estonia	F*
294.5	NG	Pikasaare Ots	Estonia	C*,F*
294.5	PA	Pakrineem Lt	Estonia	C*,F*,X*
294.5	PS	#Pt.Lynas Lt	Anglesey	C*,E,N,W*,X*
294.5	PT	#Souter Lt	Durham	B,F,H,N
294.5	SN	Sletnes Lt	Norway	C*
294.5	UK	Sunk Lt V	Off Essex	C*,D,P,V,W,X
295.5	CB	La Corbiere Lt	Jersey CI	A,D,E,V,W,X
295.5	RE	La Rochelle	France	C*
296.0	BH	Blavandshuk Lt	Denmark	B,C*,E*,F,G,N,P*,Q*,W,X
296.0	GR	Georee Lt	Holland	E*,G,V,W
296.0	KN	Skrova Lt	Norway	C*,F*,G*
297.0	FG	Pt de Barfleur Lt	France	A,C*,D,E,F,G*,K,N,O*,P*,V,W,X
297.5	MA	Mantyluoto Lt	Finland	C*,F*
297.5	PS	Cabo Penas Lt	N.Spain	C*,E*,F*,G,P*,S,W
298.0	EL	Elbe Lt F	?	F
298.0	GX	Ille de Groix	France	C*,D,E,F*,G,K,V,W,X
298.5	RR	Round Is Lt	Is of Scilly	A,B,C,D,E,F*,H,K,L*,N,O*,P,Q*,S,T,V,W,X
298.5	SW	Skagen	Denmark	B,C*,F,G
298.8	DV	Djupivogur	Iceland	F*
298.8	HO	Hornbjarg	Iceland	C*,F*
299.0	AD	Ameland Lt	Holland	B,C*,F,G,H*,N,V,W,X
299.0	BN	Les Baleines	W.France	C*,E*,K
299.0	HB	Hals Barre Lt	Denmark	B,F
299.0	O	Tarifa	S.Spain	C*
299.0	UN	Understen Lt	Sweden	F*
299,5	NP	Nash Pt Lt	S.Wales	A,C,D,E,H,K,M*,N,P,V,W,X
299.5	SK	Skomvaer Lt, Rost	Norway	C*,F*,G*,X*
299.5	VR	Utvaer Lt	Norway	B,C*,F,G*
300.0	MZ	Mizen Head	S.Ireland	A,C*,E*,M,T,W
300.0	TI	Cap d'Antifer Lt	N.France	A,E,G,K,O*,V,W,X
300.5	DU	Dungeness Lt	Kent	B,D,E,F,K,M*,N,O*,P,V,W,X
300.5	LA	Lista	Norway	B,C*,E*,F,H,Q*
301.0	CA	Pt de Creach	France	A,C,D,E*,G,N,W
301.0	ER	Eierland Lt	Holland	B,C*,F,G,X
301.1	HA	Pt. del Hank	Morocco	C*
301.5	KD	Kinnards Hd Lt	NE.Scotland	B,C*,F,H,M*,N,Q*,R*,U,V,W,X
301.5	L	Torre de Hercules	N.Spain	C*,E*,G*
301.5	OB	Hoburg	Sweden	C*,E*,G*
302.0	RB	Cherbourg Ft W Lt	France	A,C,D,E,G,K,O*,P*,V,W,X
302.5	FB	Flamborough Hd Lt	Yorkshire	A,B,C,E,F,H,K,M,N,P,Q*,T,V,W,X
303.0	D	Rota	S.W.Spain	C*,E*
303.0	FV	Falsterborev Lt	Sweden	B,C*,F*
303.0	YE	Ile d'Yeu Main Lt	France	C*,E,F*,W
303.5	BJ	Bjornsund Lt	Norway	B,C*,G*,Q*,R*
303.5	FN	Feisteln Lt	Norway	B,F
303.5	IA	Llanes Lt	N.Spain	C*,E*,G*,W
303.5	VL	Vlieland Lt	Holland	C*,G,N,V,W,X
304.0	PS	Pt Lynas Lt	Anglesey	A,B,C,E,H*,L*,M,N*,P,T,V,W,X
304.0	SB	Sumburgh Hd Lt	Shetland Is	B,F,R*,U
304.5	MY	Cabo Mayer Lt	N.Spain	C*,E*,F*,W
305.0	C	Cabo Priorino Lt	N.Spain	C*
305.0	FP	Fife Ness Lt	SE.Scotland	B,F,H*,J*,M*,N*,Q*,T,W,X
305.5	AL	Pt d'Ailly Lt	France	A,B,C*,D,E*,F,G,H,K,N*,O*,P,V,W,X
305.7	AK	Table d'Oukacha	NW.Morocco	C*
305.7	DA	Dalatangi Lt	Iceland	C*,G*,X*
306.0	EC	Elizabeth Castle	Jersey CI	E,M*,W
306.0	FN	Walney Is Lt	Off Lancs	B,C,E,G*,L*,M,N*,P*,T,W,X
306.0	TN	Thyboron	Denmark	B,F,G
306.5	GJ	Le Grand Jardin Lt	France	E*
306.5	KL	Kolkasrags	Estonia	C*,F*
306.5	KR	Kubassaar	Estonia	C*,F*
306.5	MV	Morzhovskiy	Arctic	W
306.5	OR	O.Osmussaar	Estonia	C*,F*
306.5	RS	Ristna	Estonia	C*,F*
306.5	SY	Sorve	Estonia	C*,F*
306.5	UT	Utsira	Norway	B,C*,F,G,H*,N*,R*,W,X
307.0	GL	Eagle Is Lt	Ireland	A,B,C,M,S,T,X
308.0	RC	Cabo Roca	N.Spain	C*,G,N,T*
308.0	RD	Roches Douvres Lt	France	A,C,D,E,G,K,O*,P,V,W,X
308.5	NZ	St Nazaire	France	E*,F*,G*,W
309.0	WW	Ventspils Lt	Latvia	C*,X
309.5	BA	Punta Estaca Bares	N.Spain	A,C*,E*,F*,G,N*,P,Q*,T*,W
309.5	FH	Fruholmen Lt	Norway	C*
309.5	MA	Marstein Lt	Norway	B,C*,E*,F,G,H,N,Q*,T*,U,X
310.0	ER	Pt de Ver Lt	N.France	A,C*,E*,G,K,O*,V,W
310.5	BO	Bokfjord Lt	Norway	C*
310.5	SG	Sjaellands N Lt	Denmark	C*,G*
311.0	GD	Girdle Ness Lt	NE.Scotland	B,C*,F,H,M*,Q*,R*,T,U
311.0	NF	N.Foreland Lt	Kent	A,D,E,K,M,O*,P,V,W,X
311.5	LP	Loop Hd Lt	S.Ireland	A,C*,M,S,T,X
312.0	HO	Tennholmen Lt	Norway	C*
312.0	OE	Oostende	Belgium	A,C*,E*,G*,H,K,N,O*,P*,S,V,W,X
312.0	UH	Eckmuhl Lt	France	C*,E*
312.5	AK	Akmenrags	Latvia	C*,F*,X*
312.5	BK	Baltijsk	Latvia	C*,F*,X*
312.5	BT	Mys Taran Lt	Latvia	C*,F*,X*
312.5	CS	Calais Main Lt	France	B,P*,W,X
312.5	KA	Klaipeda Rear Lt	Lithuania	C*,F*,X*
312.5	LB	Liepaja	Latvia	C*,F*,X*
312.5	VS	Cabo Estay Lt	N.Spain	F,P
312.6	SR	Skardhsfjara Lt	Iceland	C*,F*
313.0	HA	Halten Lt	Norway	C*,F*
313.0	PB	Portland Bill Lt	Dorset	A,E,K,M*,N,O*,P,V,W
313.0	TY	Tory Is Lt	N.Ireland	B,C,F,M,N,Q*,T
313.5	CM	Cromer Lt	Norfolk	B,E,F,G,M*,N,P,W,X
313.5	OG	Olands Sodra Grund	Sweden	C*,F*
313.5	PQ	Porquerolles	S.France	C*
314.0	HK	Hekkingen Lt	Norway	C*
314.0	PQ	Porquerolles Lt	S.France	E*,F*,G*
314.0	VG	Ile Vierge Lt	France	A,C,E,F*,G,K,L*,N,O*,P,T*,V,W,X
315.0	SL	Sletterhage	Denmark	C*,E*,F*,G*,L*,O*,P,Q*,T*
316.0	IN	Ingolfshofdhi Lt	Iceland	C*,F*
319.0	LEC	Stavanger	Norway	A,B,C,E,F,H,J*,K,N*,P,Q*,R*,S*,T,V,W,X

Note: Entries marked # are calibration stations. Entries marked * were logged during darkness. All other entries were logged during daylight.

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A: Darren Beasley, Bridgwater.
B: Kenneth Buck, Edinburgh.
C: Robert Connolly, Kilkeel.
D: Ron Damp, Worthing.
E: Viv Doidge, Gunnislake.
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H: David Edwardson, Wallsend.
I: Gordon Garraway, Bristol.
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K: George Millmore, Wootton, IOW.
L: Robert Moore, Holywell.
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O: Fred Pallant, Storrington.
P: Peter Pollard, Rugby.
Q: Peter Polson, St.Andrews.
R: Peter Rycraft, Elgin.
S: Tom Smyth, Co.Fermanagh.
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Sony PRO-80 scanner, 150kHz to 108MHz, plus converter for 115 to 223MHz, a.m./f.m., wide/narrow, s.s.b., manual, g.w.o., £160. Also Realistic DX302 h.f. receiver, 150kHz to 30MHz, g.w.o., £95 plus postage. Tel: Essex (0245) 322082 after 6.30pm.

Sony SW-7600 world band receiver, l.w., m.w., s.w., f.m., s.s.b., covers 0-30MHz, 10 memory pre-sets, 10 memories built-in, clock, timer, portable or mains, new in box, cost new, £169, except, £100. Tel: Middlesex (0459) 119119, page no 7186, leave number to phone back on at any time.

Transmitting triodes EC157/8108 (PA 12.5W, f 9GHz, never used) to be sold for 1/3 price. Zbig Krosgulski, Middlesex. Tel: 081-977 7935.

Wavecom W4010 data decoder, manual, £530 o.n.o. Microreader MkII version 4.1, backlit l.c.d., manual, boxed, new, £130. Alinco DJ-500T/E, dual band hand-held, extended receive, 20 memories, two NiCads, charger, as new, £275. Tel: Kenilworth (0926) 54556 anytime.

Win-108 airband scanner, range 108-135.975MHz, modes-direct/scan/search, 20 memories, battery powered, ear piece, boxed, as new. Airband radio handbook included, £100. Tel: Wem (0939) 234641.

Yaesu FRG-7 RX manual, £110. Datong active indoor antenna, £20. Lake a.t.u., £15. All good condition. Tel: Lancaster (0524) 735211.

Yaesu FRG-8800 receiver. FRV-8800 v.h.f. converter. FRT-7700 tuner. FIF 232C computer interface with control software. DC conversion. Operating and service manual, mint condition, original packing, £550. No splitting. Peter G3XTC, Surrey. Tel: 081-644 3698 anytime.

Yaesu FRG-9600 scanner, mint condition, very little used. Offered complete with manual and boxed, £360 o.v.n.o. Genuine reason for sale, (bereavement). Doreen or Brian, Redditch. Tel: (0527) 25063.

Yaesu FRG-9600, 50-950MHz receiver, £225. Tel: Hants (0705) 594438.

Yaesu FRG-9600, 60-905MHz, fine scanner but plastic knob cover missing, hence only £175 o.v.n.o. Alinco DJX1 hand-held with charger and carry case, £150 no offers. Chris, London. Tel: 071-228 6158 evenings.

Yupiteru 7100 scanner, new, boxed with carry case etc. complete, mistaken present, £300. Tel: Lymington (0590) 642811.

Yupiteru MVT-5000 hand-held scanner, 25-1300 a.m./f.m., NiCads, still under guarantee, £160 o.n.o. RX-4 decode interface for C64 tape drive, £40 o.n.o. Steve, Sussex. Tel: (0444) 416072 after 12am.

Yupiteru MVT-7000 hand-held scanner with leather case, NiCads, mains adapter/charger, Pooley's flight guide, airband radio handbook, 100kHz to 1300MHz, easy to use, £200. No offers. Tim, Staffs. Tel: (0283) 65797.

Yupiteru MVT-7000 scanner with accessories, boxed, excellent condition with telescopic and rubber aerials and two frequency guides, £245. Sangean ATS-803A boxed, also excellent, £75. Tel: Kent (0689) 821901.

Yupiteru MVT-8000 includes UK scan directory and magazines, approx 1 year old, £250, boxed, no offers and buyer to collect. Tel: Derby (0602) 322991.

Exchange

Alinco DJxX1 hand-held scanner. **Wanted Sony ICF-2001D**. Tel: Lancs (0204) 398844 after 5pm.

AOR-2000 hand-held mint NiCads case etc., c.w. JIM M75 plus Diamond RH-900, 5 band antenna, will exchange for Signal 535 in similar condition. Bob Taylor, The Berries, Hall Lane, Stickney, Lincs PE22 8BA. Tel: (0205) 480042.

Hitachi camcorder, 8X zoom with 0.05 wide angle - 2X-5X tele lenses, image senorator - Bait's-titeling kit etc., cost, £1300, under 10 hours use. Swap for good quality scanner/receiver. Tel: East Sussex (0424) 755593.

Notebook computer 386SX 25MHz 8MB RAM, 85Mb hard disk 3.5" floppy drive, PCMCIA modem, track-man VGA port, two batteries and carryall, cost, £1750 accept, £800 or high quality receiver. Tel: Leicester (0860) 223597.

Radio controlled plane including everything needed to fly, plus spares, worth over £300, will swap for either a AR-2800, AR2500 or a Nevada MS1000. David, Scotland. Tel: (0290) 550988.

Sangean ATS-803A and Akai SX400D 4 track stereo tape deck, both as new, for a Sony PR80 or w.h.y.?. Tel: Blandford (0258) 453933 anytime.

Wanted

B48 radio equipment including a.t.u. and harness, plugs, ancillary equipment for installation in Abbot a.f.v. Also user handbook, good prices paid. J. Barnes, 6 Cross-a-Moor, Ulverston, Cumbria LA12 0RT. Tel: (0229) 584466.

Datong FL3 audio filter, must be in excellent condition. Tel: Norfolk (0603) 783422.

Eddystone 358, 556, EC10, EC10 MkII, 870, 960, 1000-1/2 pan. unit. EP20, speakers, 652, 1419. Edometer ED902, any condition for cash. Collection possible. Also scrap sets for spares, ring now. Peter Lepino, Surrey. Tel: (0374) 128170 or FAX (0372) 454381 anytime.

Grundig s.s.b. adapter for Satellit 2100. Tel: York (0904) 627448 evenings.

Grundig Satellit 3400, also Sony ICF-2001D. Tel: Herts 081-449 3921.

Realistic Patrolman PRO-2025, 16 channel programmable scanner, must be in good condition. Peter, Isle of Man. Tel: (0624) 623350.

Sony CRF-220 for spares, condition not important, but short wave section must work. Also Eddystone valve general coverage receiver in mint condition, also quality double beam scope, must be perfect. Judith Webber, Devon. Tel: (0392) 215898 after 6pm or weekends.

Closing Date for Adverts: January 1994 Issue - 1st December 1993, February 1994 - 1 January 1994

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Please insert this advertisement in the next available issue of *Short Wave Magazine*.

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The books listed have been selected as being of special interest to our readers. They are supplied direct to your door. Some titles are overseas in origin.

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LISTENING GUIDES

AIR BAND RADIO HANDBOOK
4th Edition
David J. Smith
Extensively revised & updated (October 1992). Air band radio listening enables you to listen-in on the conversations between aircraft and those on the ground who control them, and is an increasingly popular and fascinating hobby. A new chapter on military air band has been added. The author, an air traffic controller, explains more about this listening hobby. *190 pages.* **£7.99**

THE COMPLETE SHORT WAVE LISTENER'S HANDBOOK 3RD EDITION
Hank Bennett, Harry Helms & David Hardy
This book is a comprehensive guide to the basics of short wave listening. Everything you need to get started as an s.w.l. is explained in a clear and easily understood manner. Receivers, antennas, frequencies, propagation, Q-codes, etc. are all covered.
294 pages. **£13.95**

DIAL SEARCH 1992/94
George Wilcox
The listener's check list and guide to European radio broadcasting. Covers m.w., l.w., v.h.f. & s.w., including two special fold-out maps. Also includes a full list of British stations, a select list of European stations, broadcasts in English and 'Making the Most of Your Portable'. *46 pages.* **£4.25**

FLIGHT ROUTINGS 1993
Compiled by T.T. & S.J. Williams
This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America. *122 pages.* **£5.95**

FERRELL'S CONFIDENTIAL FREQUENCY LIST 8th Edition
Compiled by Geoff Halligey
Spirally bound, this easy-to-use reference book covers 1.6 - 28MHz in great depth, all modes and utility services, with new reverse frequency listing showing every known frequency against each callsign, who's using what frequency and mode, what's that callsign? These are some of the answers this book will help you find. *544 pages.* **£17.95**

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Joerg Klingenfuss
The new edition of this super reference book covers the world's facsimile stations, their frequencies and methods of working. There is a section covering the equipment needed to receive FAXes over the radio. To give you an idea of what is available there are many pages of off-air received FAX pictures.
392 pages. **£18.00**

GUIDE TO UTILITY STATIONS
11th Edition
Joerg Klingenfuss
This book covers the complete short wave range from 3 to 30MHz together with the adjacent frequency bands from 0 to 150kHz and from 1.6 to 3MHz. It includes details on all types of utility stations including FAX and RTTY. There are 19549 entries in the frequency list and 3590 in the alphabetical callsign list plus press services and meteorological stations. Included are RTTY & FAX press and meteor schedules. There are 11800 changes since the 10th edition.
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Bill Laver
HF aircraft channels by frequency and band, main ground radio stations, European R/T networks and North Atlantic control frequencies.
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INTERNATIONAL RADIO STATIONS GUIDE *BP255*
Peter Shore
As in 'Broadcast Roundup', his column in *PW*, Peter Shore has laid this book out in world areas, providing the listener with a reference work designed to guide around the ever-more complex radio bands. There are sections covering English language transmissions, programmes for DXers and s.w.l.s. Along with sections on European medium wave and UK f.m. stations. *266 pages.* **£5.95**

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Julian Baldwin G3UHK & Kris Partridge G8AUU
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Langley Pierce
A guide to movitoring the Yugoslav radio transmissions of the UN, aircraft and shipping engaged in the civil war in the former Yugoslavia.
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Joe Pritchard G1UQW
A technical guide for all short wave listeners. Covers construction and use of sets for the s.w.l. who wants to explore the bands up to 30MHz. Also covers the technical side of the hobby from simple electrical principles all the way to simple receivers.
276 pages. **£15.95**

POCKET GUIDE TO RTTY AND FAX STATIONS
Bill Laver
A handy reference book listing RTTY and FAX stations, together with modes and other essential information. The listing is in ascending frequency order, from 1.6 to 26.8MHz.
57 pages. **£3.95**

RADIO LISTENERS GUIOE 1993
Clive Woodyear
This is the third edition of this radio listener's guide. Simple-to-use maps and charts show the frequencies for radio stations in the UK. Organised so that the various station types are listed separately, the maps are useful for the travelling listener. Articles included in the guide discuss v.h.f aerials, RDS, the Radio Authority and developments from Blaupunkt.
56 pages. **£2.95**

SHORT WAVE INTERNATIONAL FREQUENCY HANDBOOK
Formerly the Confidential Frequency List and re-published in April 93, this book covers 500kHz-30MHz. It contains duplex and channel lists, callsigns, times and modes, broadcast listing and times. *192 pages.* **£9.95**

UK SCANNING DIRECTORY
3rd Edition
This spiral bound book lists over 12000 UK spot frequencies from 25MHz to 1.213GHz. Articles on scanning in the UK. *250 pages.* **£16.95**

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A complete guide to civil & military airband frequencies including how to receive the signals, the frequencies and services. VOLMET, receiver requirements, aerials and much more about the interesting subject of airband radio are included.
123 pages. **£6.95**

VHF/UHF SCANNING FREQUENCY GUIDE
This book gives details of frequencies from 26MHz to 12GHz with no gaps and who uses what. Completely revised and enlarged (February 1993), there are chapters on equipment requirements as well as antennas, the aeronautical bands, as well as the legal aspect of listening using a scanner. *156 pages.* **£9.95**

WORLD RADIO TV HANDBOOK 1993
Country-by-country listing of l.w., m.w. & s.w. broadcast and TV stations. Receiver test reports, English language broadcasts. The s.w.l.'s 'bible'. **£15.95.**

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ANTENNA EXPERIMENTER'S GUIDE
Peter Oodd G3LDO
Although written for radio amateurs, this book will be of interest to anyone who enjoys experimenting with antennas. You only need a very basic knowledge of radio & electronics to get the most from this book. Chapters include details on measuring resonance, impedance, field strength and performance, mats and materials and experimental antennas.
200 pages. £8.90

ANTENNA IMPEOANCE MATCHING
Wilfred N. Caron
Proper impedance matching of an antenna to a transmission line is of concern to antenna engineers and to every radio amateur. A properly matched antenna as the termination for a line minimises feed-line losses. Power can be fed to such a line without the need for a matching network at the line input. There is no mystique involved in designing even the most complex multi-element networks for broadband coverage.
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Edited by Jerry Hall K1TD
As the title suggests, this book is the third in the continuing series on practical antennas, theory and accessories produced by the ARRL. The book reflects the tremendous interest and activity in antenna work, and provides a further selection of antennas and related projects you can build. *236 pages.* **£9.50**

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Design, construction, adjustment and installation of h.f. beam antennas. The information this book contains has been complied from the data obtained in experiments conducted by the authors, and from information provided by scientists and engineers working on commercial and military antenna ranges. *268 pages.* **£7.50**

G-QRP CLUB ANTENNA HANDBOOK
Compiled and edited by P. Linsley G3POL & T. Nicholson KA9WRI/GW0LNQ.
This book is a collection of antenna and related circuits taken from *Sprat*, the G-QRP Club's journal. Although most of the circuits are aimed at the low-power fraternity, many of the interesting projects are also useful for general use. Not intended as a text book, but offers practical and proven circuits. *155 pages.* **£5.00**

HF ANTENNA COLLECTION (RSGB)
Edited by Erwin David G4LQI
This book contains a collection of useful, and interesting h.f. antenna articles, first published in the RSGB's *Radio Communication* magazine, between 1968 and 1989, along with other useful information on ancillary topics such as feeders, tuners, baluns, testing and mechanics for the antenna builder. *233 pages.* **£9.50.**

INTRODUCTION TO ANTENNA THEORY *BP198*
H. C. Wright
This book deals with the basic concepts relevant to receiving and transmitting antennas, with emphasis on the mechanics and minimal use of mathematics. Lots of diagrams help with the understanding of the subjects dealt with. Chapters include information on efficiency, impedance, parasitic elements and a variety of different antennas. *86 pages.* **£2.95**

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Doug DeMaw W1FB
Another book from the pen of W1FB, this time offering 'new ideas for beginning hams'. All the drawings are large and clear and each chapter ends with a glossary of terms. It is written in plain language and you don't need to be a mathematician to build and erect the support structures that are presented in this book.
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As the name suggests, this book offers a practical guide at everything to do with antennas, from h.f. to microwaves. It also has sections on propagation, transmission lines, antenna fundamentals and a helpful introduction to radio broadcasting and communication. The book neatly balances a practical approach with the minimum of mathematics, good diagrams and a lively text.
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Doug DeMaw W1FB
This book provides lots of designs, in simple and easy to read terms, for simple wire and tubing antennas. All drawings are large and clear making construction much easier. There is no high-level mathematics in this book, just simple equations only when necessary to calculate the length of an antenna element or its matching section.
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Dr James. L. Lawson W2PV
This book is a polished and expanded version of a series of articles first published in *Ham Radio* following on from a series of lectures by the author, who was well-known as the expert on Yagi design. Chapters include simple Yagi antennas, loop antennas, effect of ground, stacking and practical antenna design.
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Mark Francis
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Derek Stephenson
This book, the 2nd edition, is a hard bound volume, printed on high quality paper. The author is a satellite repair and installation engineer and the book covers all information needed by the installation engineer, the hobbyist and the service engineer to understand the theoretical and practical aspects of satellite reception with dish installation and how to trouble-shoot when picture quality is not up to anticipated reception. Mathematics has been kept to a minimum.
284 pages. **£17.95**

SATELLITE BOOK - A Complete Guide to Satellite TV Theory and Practice
John Breeds
This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by a expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology.
280 pages. **£30.00**

SATELLITE EXPERIMENTER'S HANDBOOK 2nd Edition
Martin Davidoff K2UBC
The book is divided into four main sections - History, Getting Started, Technical Topics and Appendices. It provides information on spacecraft built by, and for, radio amateurs. In addition, it discusses weather, TV-broadcast and other satellites of interest to amateurs.
313 pages. **£14.50**

SATELLITE TELEVISION
A layman's guide
Peter Pearson
Pictures from space, that's what satellite television is all about. Orbiting satellites, 35000km high, receive TV signals from stations on the earth and re-transmit them back again. This book explains all you need to know to set up your own satellite TV terminal at home, dish and accessories, cable and tuner.
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Written in non-technical language, this book provides information covering important aspects of v.h.f. radio and tells you where you can find additional data. If you have a scanner, you'll find a lot of interesting signals in the huge span of frequencies covered, 100-300MHz & 50, 420, 902 & 1250MHz bands.
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Various Authors
A truly excellent manual for the keen microwave enthusiast and for the budding 'microwaver'. With contributions from over 20 specialist authors. Chapters covering techniques, theory, projects, methods and mathematics.
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Bob Locher
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HINTS AND KINKS FOR THE RADIO AMATEUR
Edited by Charles L. Hutchinson and David Newkirk
A collection of practical ideas gleaned from the pages of *QST* magazine. Plenty of projects to build, hints and tips on interference, c.w. and operating and snippets of information from amateurs who've tried and tested the idea.
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Clive Smith G4FZH and George Benbow G3HB
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88 pages. **£6.70.**

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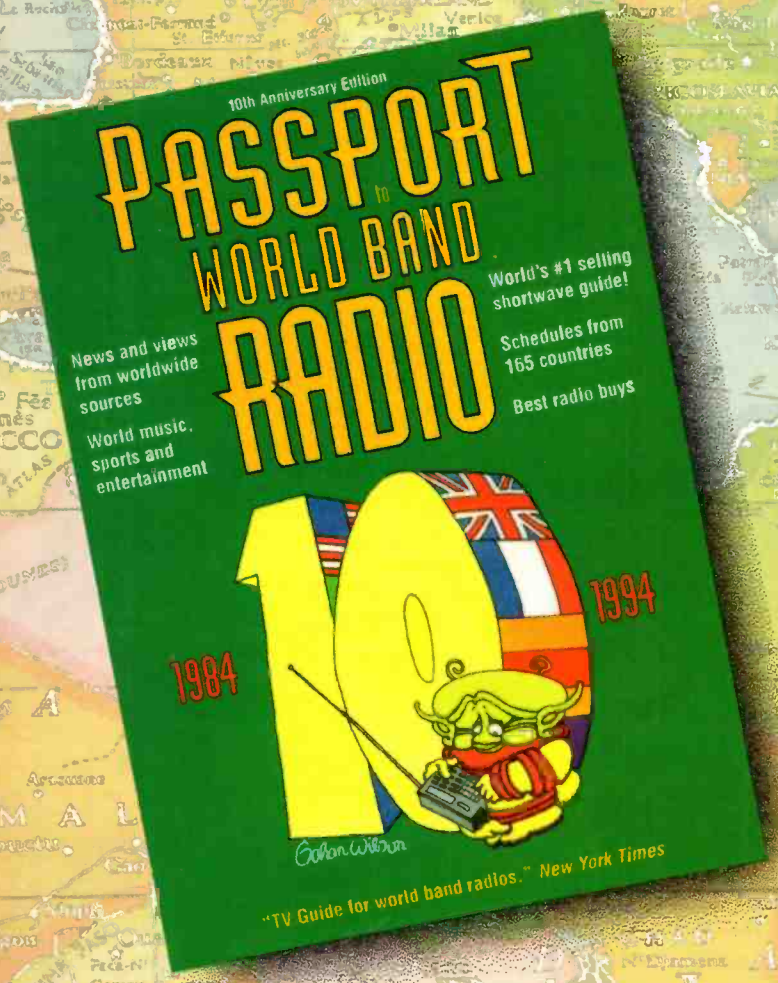

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