shortwave magazine

March 1991 £1.60 ISSN 0037 - 4261

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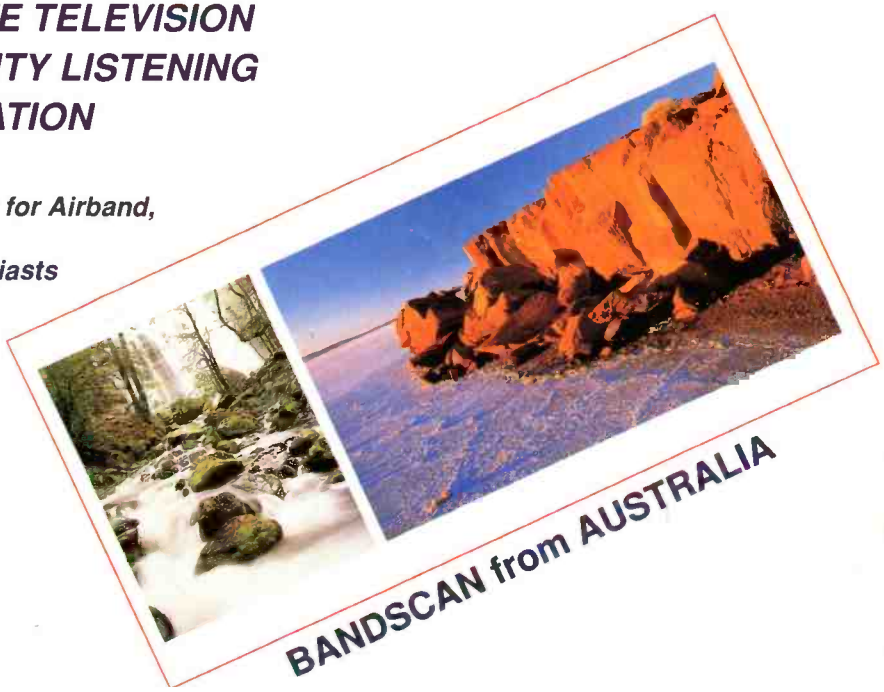

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short wave magazine

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ON SALE FEBRUARY 28

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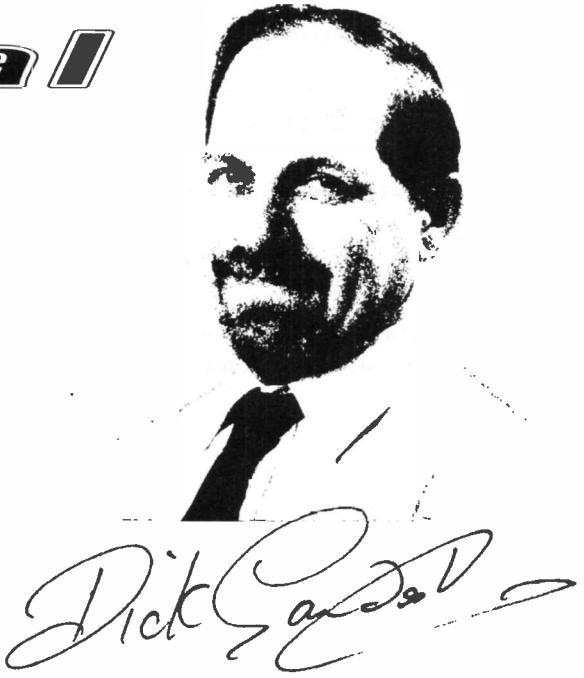
contents

REGULARS

Cover This month we look at Greyline DXing, particularly the Tropical Bands and review software for predicting the Greyline. Bandscan comes from 'down under'. The QSL card on the cover, from Radio Australia and The Wilderness Society, shows sunset on salt lake cliffs, South Australia and Little Fisher River, Tasmania.

...GOOD LISTENING

editorial



SWM SERVICES

Subscriptions

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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.

Back Numbers and Binders

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

Binders, each taking one volume of the new style SWM, are available price £4.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

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

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 665524. An answering machine will accept your order out of office hours.

Well, you have let me know that you are finding the new look to be just what you want - with one exception. The weight of the type used is too light. I do listen to what you, the readers, say to me and so, from this issue, you will find that the type is heavier.

Encouraging Youngsters?

Earlier this year myself, Rob Mannion from *Practical Wireless* and Chris Lorek made the journey to Cardiff Castle at the invitation of the RSGB to witness the inauguration of the new President of that august body. The main aim, however, was to get us to publicise the latest RSGB venture - a two-part television programme about amateur radio. The Society had persuaded Yorkshire Television to make the two programmes for them and Icom UK to duplicate some 700 copies for distribution to RSGB-affiliated radio clubs.

The programmes are aimed at anyone who doesn't already have an interest in radio and the RSGB is fortunate in having among its members TV weather presenter Jim Bacon G3YLA. It is his voice that viewers hear giving the commentary.

I am involved with the Brownie movement as the husband of a fanatical Brown Owl so I can try out ideas, such as this video, on her pack. Although I still have to show the Brownies the programme, Brown Owl has watched it and her comments are very interesting. The second part on how to become a radio amateur drew most criticism. Why has the RSGB persisted with its misguided attempts to make Morse a compulsory part of the Novice Licence, against the wishes of the DTI, and why did the programme not mention the easiest place for interested youngsters to get more information?

I can just see it now.

"That looks interesting, Dad, can we get some more information?"

"OK, son, I'll send off for the RSGB's Information Pack"

Weeks later "What's this, Dad?"

"It's a book on microwaves, from the RSGB."

Turning back to his newly acquired radio-controlled car "Will they make my car go faster, Dad?"

To me, the obvious thing to do after watching the video would be to nip down to the local newsagent and get a copy of *SWM* - or possibly one of the other two magazines on amateur radio. But did the RSGB even mention magazines? Of course not! And are they planning to distribute the video where it will do the most good? Of course they're not! Perhaps they are not really interested in getting at the age group that will form the s.w.l.s and amateurs of the 21st Century - the under-twelves. Unlike *SWM* which is trying to encourage them.

Dick Ganderton.

PS. You can get a copy of the video by donating at least £10 to Project YEAR. You do know what that is - don't you?

Dear Sir

The February issue of SWM *included a letter from Chris Carrington concerning the authenticity of reports incorporated in 'Seen & Heard'.*

As a subscriber to the column, may I clarify the position as far as I am concerned. I agree with the comment that WRTH *is only an indication of the frequencies used by various station, but this information is updated three times a year by the issue of* Downlink.

Regarding QSL cards, station verification may take anything up to twelve months to come back and by then is only a collector's item.

Finally, all stations heard for the first time on a new frequency, or even on a listed frequency, are checked over several days for long periods to make sure that not only is it the station listed in my log, but also is not an harmonic. If doubt exists, a note is entered in the log that it is not a positive identification or that the station cannot be identified. The logs are then submitted to Brian Oddy who checks through the information and eliminates any stations that have not been positively identified or appear dubious, bearing in mind the propagation conditions, etc., at the time. My own logs also include information on stations that cannot be heard and conditions on each band, e.g. band closed, with updates every half hour.

Mr. Carrington must appreciate that 'Seen & Heard' and in particular 'Long Medium & Short' is not a competition column, but simply information on stations heard. Short wave listening is a hobby which I take very seriously, spending anything up to eight hours each day either scanning the h.f. bands or listening to particular broadcasts.

KENNETH W. REECE, PRENTON

letters

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

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

Dear Sir

After reading the letter by Chris Carrington in the February issue I feel that I must reply. I do not just 'tune through the bands with WRTH *in my hand'. I have just started to send in reports to 'Seen & Heard" and anything I send in is genuine. The reason is simple - up to now all my receivers in the past have had 'pointer and dial' tuning, most have been purchased secondhand and none have been very accurate. So in order to send reports off I have had to listen for the station ID and its frequency. Many a time I have listened for half an hour or so only to find out that it was 'Radio Moscow' or 'VOA'. If we, as listeners, waited for QSL cards before sending in parts of our logs, how long would we have to wait? The information would be out of date and therefore useless. I have known QSL cards to take months to arrive, some not at all even though the reports were sent off. Anyone 'cheating' is fooling themselves as well, so what's the point?*

I am sorry Mr. Carrington, but I think that you are possibly making a bit of a 'mountain out of a mole hill' here. I feel that if the problem of cheating does exist then it's only a very small minority who would think of doing it. Luck and patience play a big part in getting some of the rare stations. The WRTH *does help as a starting point, but that's all. What do others think about this?*

Another point that I would like to bring up - the print is too small in a lot of cases. I sometimes need to use a magnifying glass and I am only in my forties!

Also this Subscribers' Club - there must be many readers who read SWM *every month and who buy it from their local newsagent because they feel, as I do, that by so doing they are helping to support small local businesses and keep at least part of the money in the locality. So let's have a bit of fair play here and open the Club up to all of us.*

I am sorry if this letter seems to be all moans, but I feel that the points I have made are valid ones. The magazine is excellent and I read all of it even if I only understand part of it. I am very non-technical in radio matters, how the sound comes from a box with bits of wire and things inside is still a mystery - it's probably magic really!

JOHN W. ROBERTSON, ALMWICK

To answer your point about the Subscription Club, if you think about it it is impractical for us to open it up to all readers. While I applaud your regular buying of *SWM* from your local newsagent - and I must admit that I myself prefer to do this rather than subscribe to the many British magazines that I buy - the Subscription Club is an attempt on our part to say 'thank you' to the thousands who actually part with their money to **us** twelve months in advance. In some respects they are helping to subsidise those readers who don't even place a regular order with their local newsagent.

You will notice that we have tried to make the print easier to read this month . **Editor.**

Dear Sir

I read with interest the letter from Chris Carrington in the February issue. While he makes several valid points, I feel that perhaps he has overstated the problem.

I indeed, do not seek QSLs from all of the station that I log, mainly because I do not speak the relevant language, but also because of the cost. This, however, makes me if anything more cautious in identifying a station.

For example, late last night I was tuned to 666kHz and heard 'Bodenseesender'. This was clearly identifiable because of the German language. However, another station was sharing the frequency and I was unable to solidly identify it as either the Greek, Portuguese, Spanish or Lithuanian stations listed for the frequency. Meanwhile, earlier in the night I had caught a station ID on 1431kHz for 'Breeze AM' and I was able to fix it as 'Essex R.' only by referring to the charts in SWM. *So the latter will go into this month's report, while the station on 666kHz will remain unlogged until I can properly identify it.*

Currently I am listening to 1557kHz and hearing at least two stations. One of them I know to be Chiltern R., because I have heard them ID as 'Super Gold' - in fact some hours later I heard it fined down to 'Super Gold Northants Radio'. The other station is probably R. Lancashire, but what if it is 'Ocean Sound'? I cannot rely on WRTH *alone, nor to be fair on* SWM. *As Chris says, they are only guides and in the end it's up to the good sense of the contributors to them as such.*

EDDIE McKEOWN
NEWRY, Co. DOWN

Dear Sir

I have noticed that occasionally the number of pages devoted to LM&S have been reduced. Have you considered reducing print size to enable somewhat more input to be allocated to this section?

J.F. COULTER
WINCHESTER

Dear Sir

I would like to contribute to two of your current talking points.

Firstly, I am pleased to notice that 'Junior Listener' has not been as embarrassing as it could have been. I am a DXer of two years now who has not met anyone else interested in radio in that time to exchange opinions with. I intend, therefore, to keep one eye on the JL page as I anticipate that some of the practical tips will at last fill in some of the gaps between the beginner and 'average SWM *listener' - a group which has not previously been catered for.*

Secondly, I would like to see all stations - official, clandestine and pirate alike - reported in SWM. *They are all of great interest to log and Sunday morning free radio DXing is fascinating. Whereas some city centre f.m. pirates are no more than an annoying nuisance, the s.w. 'pirates' are professional sounding in general and the programmes are certain to interest all s.w.l.s. As for Radio Caroline, I fear that it is finally dead as an offshore station. From official listings in* WRTH *last year to recently the relentless pressure from the DTI has finally left the* Ross Revenge *unmanned - what happened?*

TOM READ
NEWCASTLE-UPON-TYNE

We have received several letters commenting on the subject of pirate stations and what SWM's attitude to them should be. We would be interested in hearing more on this subject before we finally make our decision on whether to report such stations or not.

grassroots

rallies

***March 9/10**: The London Amateur Radio Show will be held in the Picketts Lock Centre, Picketts Lock Lane, Edmonton, London N9 0AS.

***March 17**: The Norbreck Radio, Electronics & Computing Exhibition will be held at the Norbreck Castle Hotel Exhibition Centre, Queens Promenade, North Shore, Blackpool. Admission is £1, OAPs 50 and under 14s free. Free raffle ticket and exhibition plan. **Peter Denton G6CGF. Tel: 051-630 5790.**

March 17: The Wythall Radio Club will be holding their 6th annual radio rally at Wythall Park, Silver Street, Wythall, Worcs., which is on the A435 near Junction 3 on the M42 south-west of Birmingham. Doors open 11am. There will be three halls plus a marquee, trade stands, flea market, Bring & Buy, a bar and snacks will be available, talk-in on S22 and admission is 50p. **Chris Pettitt G0EYD. Tel: 021-430 7267.**

March 17: Tiverton South West Radio Club have the 1991 Mid Devon Rally at the Pannier Market, Tiverton. Easy access, only minutes from junction 27 on the M5 with excellent free parking. Two halls of trade stands, Bring & Buy stall and mobile snack bar. Further displays and full refreshment facilities in the club room bar, which js open throughout the day. Doors open at 10am. Talk-in on S22. **G4TSW, Mid Devon Rally, PO Box 3, Tiverton, Devon.**

March 24: Bournemouth RS will be holding its fourth annual Amateur Electronics Sale at the Kinson Community Centre, Pelhams, Millhams Road, Kinson. Doors open 11am to 5pm. Talk-in by G1BRS on 144MHz on S22. Further details from **Vic Sievey G4PTC, 3 Stratton Road, Bournemouth BH9 3PG. Tel: (0202) 516593.**

March 24: Pontefract & District ARS have their 12th Annual Components Fair at the Carleton Community Centre, Carleton, Pontefract. Doors open 11am to 4.30pm. Trade stalls, bookstall, Bring & Buy, licenced bar and refreshments. Talk-in on S20. Admission by Prize programme (three prizes). **Colin G0AAO, QTHR. Tel: (0977) 615549.**

***March 24**: The RSGB VHF Convention will be held at Sandown Park Exhibition Centre, Esher, Surrey.

* Short Wave Magazine & Practical Wireless in attendance *

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. March 19 - Keys & Keyers Discussion. Paul Truitt G4WQO. Tel: 071-938 2561.

Bardswell ARS: Thursdays, Bardswell Social Club, Bardswell Close, Brentwood. Joe Wentworth, 5 St Charles Road, Brentwood.

Braintree & DARS: 1st & 3rd Mondays, 8pm. Community Centre, Victoria Street, Braintree. March 4 - Junk Sale, 8th - Social Evening with Braintree React. M J Andrews. Tel: (0376) 27431.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. Geoffrey Milne, 081-462 2689.

Bromsgrove ARS: 2nd & 4th Tuesdays, 8pm. Aston Fields Working Men's Club, Stoke Road, Astonfields, Bromsgrove. March 12 - Night on the Air, 26th - Construction Night. J. Yarnall G1JLQ. Tel: (0527) 503024.

Bromsgrove & District ARC: 2nd Fridays. Avoncroft Museum of Buildings & Arts Centre, Bromsgrove. March 8 - AGM. Trevor Harper, Bromsgrove 33173.

Chelmsford ARS: 1st Tuesdays, 7.30pm. Marconi College, Arbour Lane, Chelmsford. March 5 - Meeting at the Emergency Planning Section, County Hall.. Roy Martyr, Chelmsford 353221 ext 3815.

Coventry ARS: Fridays, 8pm. Baden Powell House, 121 St Nicholas St, Radford, Coventry. March 1, 15 & 29 - Night on the Air & Morse Tuition, 8th - Trip, 22nd - Mini-Lectures. Neil, Coventry 523629.

Delyn RC: Alternate Tuesdays, 8pm. Daniel Owen Centre, Mold. Feb 28 - Open forum preparing for AGM, March 12 - AGM. Steve Studdart, Deeside 819618.

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. March 6 - Junk Sale, 13th - The History of Computers by Denis Godfrey G0KIU, 20th - AGM, 27th - Using Ocilloscopes by Rex Beastall G1LRI. Richard Buckby, Ambergate 852475.

Hambleton ARS: Mondays, 7.30pm. Room A5, Northallerton Grammar School. Nick Whelan G7COC. Northallerton 780476.

Hastings E&RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 8.30pm. Ashdown Farm Community, Downey CLose, Hastings. March 20 - AGM. Reg Kemp, 7 Forewood Rise, Crowhurst.

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross (Off Catherington Lane), Horndean. March 7 - "Something Different". S.W. Swain. Tel: (0705) 472846).

Keighley ARS: **Thursdays**, 8pm. The Cricket Club, Ingrow, Nr Keighley. Feb 28 - Caribbean Experience by Julia Fearnside, March 7 & 14 - Natter Nights, 21st - Horse Racing at the Cricket CLub, 28th - Using Simple Test Equipment by G4TIV. Kathy Bradford (0274) 496222.

Lothians RS: 2nd & 4th Wednesdays, 7.30pm. The Orwell Lodge Hotel, Polwarth Terrace, Edinburgh. P.J. Dick GM4DTH, QTHR.

Loughton & DARS: 2nd & 4th Saturdays, 7.45pm. Loughton Hall, Rectory Lane, Loughton, Essex. March 9 - Novice Licence, 23rd - Solid State Amps by Ray G0LWF Mike Pilsbury G4KCK, 081-504 4581.

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. March 7 - Dowsing - A different type of twig! by H.E. Smith G3IUF. Mary G0NZA. Tel: (0623) 755288.

Midland ARS: 3rd Tuesdays, 7.30pm. Headquarters Unit 22, 60 Regent Place, off Caroline Street, Birmingham B1 3NJ. March 19 - Kites and Aerials by Norman Parker G4VMP. John Crane G0LAI. Tel: 021-742 8712 (evenings).

Mid-Warwickshire ARS: 2nd & 4th Tuesdays, 8pm. St John Ambulance HQ, 61 Emscote Road, Warwick. March 12 - v.h.f. QRP with an emphasis on home-brew by John G8SEQ, 26th - Video Night, the RSGB & Mick G0JMW provide the entertainment. Mike Newell, Kenilworth 513073.

No Airs & Graces RC: The Nautical College, Glasgow. A new club so contact Eddie GM0LKS. Tel: 041-885 0716.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. March 6 - Early Computers & Other Reminiscences by Peter Ives G3ASQ, 13th - Surplus Equipment Auction, 20th - Informal & Committee Evening, 27th - Inter-club quiz with Leiston & Felixstowe. Mike Cooke, (0362) 850591.

Preston ARS: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. March 7 - From Rio to Manaus by Mrs Brown, 21st - Preston Kaleidoscope by Mrs Crossley. Eric Eastwood G1WCQ. Tel: (0772) 686708.

Rhyl & District ARC: March 4 - Fitting Coaxial Connections Demo, 18th - Planning Permission by G4HFX. Edward Shipton. Tel: (0745) 336939.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. March 6 - Severnside TV Repeater Group Presentation, 13th - h.f. Activity Evening, 20th - Exhibition Model Radio Controlled Boats, 27th - Computer Activity Evening. Len Baker, Whitchurch 832222.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club Pavillion, Firs Lane, Winchmore Hill, London N21. Feb 28 - Antenna Noise Bridge Amnesty, March 14 - Phase Lock Looped by Steve Reynolds of Icom UK. Brian Shelton G0MEE. Tel: 081-360 2453.

Club Secretaries:
Send all details of your club's up-and-coming events to;
'Grassroots',
Lorna Mower
Short Wave Magazine,
Enefco House,
The Quay, Poole,
Dorset BH15 1PP

Stourbridge & DARS: 1st & 3rd Mondays. Robin Wood's Community Centre, Scotts Road, Stourbridge. March 4 - On Air & Natter Night, 18th - AGM. Dennis Body G0HTJ, QTHR.

Sutton & Cheam RS: 3rd Thursdays, 7.30. Downs Lawn Tennis Club, Holland Ave, Cheam. 1st Mondays in the Downs Bar. March 21 - Construction Contest. John Puttock G0BWV, QTHR.

Thornbury & DARC: 1st & 3rd Wednesdays, 7.30pm. United Reform Church, Chapel Street, Thornbury. March 20 - HF Activity/Natter Night.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. March 13 - Earth Imaging From Space by I. Thomas, 27th - Army Radio Equipment & Operation by Guildford TAVR. Dave G4VKC.

Todmorden & DARS: 1st & 3rd Mondays, 8pm. The Queen Hotel, Todmorden. March 4 - Trip to Brewery, 18th - Test Equipment by Tony G8LTC. Mrs E Tyler. Tel: (0422) 882038.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. March 9 - Annual Dinner & Dance, 22nd - Packet Radio. Walt G3HTX. Tel: (0803) 526762.

Trowbridge & DARC: 8pm. TA Club, Trowbridge. March 6 - A USA Experience with G0KRJ. G0GRI. (0380) 830383.

Verulam ARC: 2nd & 4th Tuesdays, 7.30pm. The RAF Association HQ, New Kent Road, St Albans. March 26 - Annual G3PAO Memorial Lecture.

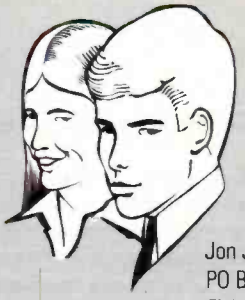
West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. Feb 15 - Local Radio Forthcoming Developments by Nigel Peacock.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. March 8 - General Activity Evening, 22nd - Local Radio (Jazz FM) by Martin Chapman G4FKK. Chris Frost, 081-397 0427.

Yeovil ARC: Thursdays, 7.30pm & Fridays, 7.30pm. The Recreation Centre, Chilton Grove, Yeovil. Feb 28 - Natter Night, March 7 - Entries for club construction contest & discussion night, 14th - My work? with the RSGB by Ken G3AIK, 21st - Club Construction Contest, 28th - Natter Night. David Bailey G0NMM, QTHR.

York ARS: Fridays, 7.30pm. York City Social Club, Bootham Crescent, York.

junior listener



Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

Antenna Notes

Following on from my description of an invisible antenna in the January issue, I've had a letter asking about insulators for the antenna.- an important point not covered in my first article. The most common type is known, for obvious reasons, as an 'egg' insulator and is popular because it combines strength with good insulating properties. Perhaps the best insulator is the glass type, **Fig. 1**. The increased insulation is mainly of use with transmitting antennas where high voltages can appear at the ends of an antenna. For the listener, however, the 'egg' is still the most popular choice.

Your next question, I'm sure, is how much do they cost and where can I buy them? A look through the adverts shows that 'eggs' are available from one or two regular advertisers at about 65p each for small ones and 85p for the large version - you should find that the small ones are fine for receiving antennas. Radio rallies are another source of insulators and all manner of other interesting items. These events are usually organised by amateur radio clubs around the country and are like large sales with lots of surplus and new equipment available. For details keep an eye on the Rallies section in *SWM* - usually round about page 4.

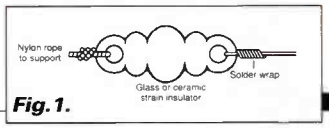


Fig. 1.

Competition News

We have two winners for the first competition, but I have a problem. One of the winners included full details of their station but no name! If that reader from Camberley would like to write with their name, I'll send off the prize! The other winner was Kit Dixon from Darlington. Both winners will be receiving their Science Fair Crystal Radio kits shortly.

One of the many problems facing the young listener is where to put that antenna. To help I've managed to get hold of a couple of Howes Active Antenna kits as this month's prize. Instead of two identical antennas, I have one AA-2 h.f. model and one AA-4 v.h.f./u.h.f. model. The great advantage with these excellent antennas is their small size, so they can be easily tucked away in the loft, or even outside. This is great for those situations when mum and dad won't allow wires all over their garden!

To win one all you have to do is write and tell me why you'd like an active antenna. I'll then send antennas to the two who give the best reason. If there are more than two, I'll pick them out of a hat. Incidentally, if you don't have a soldering iron to build the kit, I'll do it for you, providing you make that clear in your letter.

Here's what to do again:

1: Write saying why you would like an active antenna.
2: Say whether you want me to build the kit for you.
3: Say whether you want the h.f. or v.h.f. model.
4: Don't forget to include your name, address and age.

Good luck!

Pen Pals

In the first issue I said I'd be offering a Pen Pals Service to young listeners. Well, I think it would be a good idea to run through the way the service operates. Let's start by explaining that pen pals are a good idea as they help you make friends with others having similar interests. That way you can swap ideas as you learn more about the hobby.

So how do you get started? I've made it as simple as possible by doing some of the work for you. The first thing to do is write to me with the following details:

1: Name and address.
2: Age.
3: Interests, - any radio related areas from broadcast listening to home construction.

In addition you will need to send me a large, self-addressed envelope. I'll then print your name, age and interests on this page and ask people to write to me. Note that I won't print your address - this is for your protection. Anyway, as the replies come in from prospective pen pals I'll gather them together and send them all to you in your envelope. It's then up to you to decide who you want to take up as a pen pal. It's very simple, so why not have a go?

Don't forget that I'd like to give **you** a chance to have **your** say about what **you'd** like to see in the magazine and in particular this page. For this I need your letters but, rather than just sending your views, include details of your station. If you can manage a photo I'll do my best to print it. The address to write to is at the top of this column.

QSLing

You may be wondering just what QSL means. Well, QSL is actually part of the Q code, which is a sort of communications shorthand, created mainly for telegraphy operators using Morse code as a quick way to send common messages. So, back to QSL, which means 'to confirm reception'. QSLing is an interesting, but often forgotten part, of our hobby. To QSL with a station you write to them giving details of the quality of their signal. It's also useful to include information about your receiver and antennas. In return for this information you will usually get a QSL card and perhaps some interesting details about the station. A typical example from a commercial broadcast station would be a leaflet giving programme details and some background to their operation. You can see from this that a QSL is a useful way of finding out a lot more about the stations you monitor.

If QSLing appeals to you, your next question must be - how do you know where to write? There are several ways to solve this one. The cheapest is to keep an eye on the regular columns at the back of the magazine, which often have addresses of stations to help you QSL. If you are mainly interested in broadcast stations the column to watch is Brian Oddy's 'Long, Medium & Short'.

If you would rather buy a book, probably the best guide is the *World Radio TV Handbook*. The only problem with this book is the price. For cheaper alternatives you might like to try one of these: *Passport to World Band Radio, Dial Search* (Europe only), *Guide to Broadcasting Stations* and *International Radio Stations Guide*.

If you've received any QSLs please send me details and I will give a report in the column.

To stand the best chance of getting a reply from commercial stations it's a good idea to give them as much information as possible. One way to do this is to use one of the standard reporting codes. The most common one is SINPO, which stands for Signal, Interference, Noise, Propagation and Overall rating. You give each area a mark between 1 and 5. Here's a table to give you a better idea what the different marks mean.

The SINPO Reporting Code

	S	I	N	P	O
Rating scale	Signal strength	Interference	Noise	Propagation disturbance	Overall readability
5	Excellent	Nil	Nil	Nil	Excellent
4	Good	Slight	Slight	Slight	Good
3	Fair	Moderate	Moderate	Moderate	Fair
2	Poor	Severe	Severe	Severe	Poor
1	Barely audible	Extreme	Extreme	Extreme	Unusable

That's all for this month, but don't forget to keep those letters coming.

news

Sherwood Forest Award

The Sherwood Forest Award, issued by the Mansfield ARS, is available to all Licensed radio amateurs and a QSO basis and short wave listeners on a heard basis.

The award is worked on a points system and to claim the certificate, a minimum of 30 points must be collected and are awarded as follows:

5 points for working/hearing the Mansfield ARS club callsigns of G3GQC or G1GQC.

2 points for working/hearing any member of the Mansfield ARS.

1 point for working/hearing any other licensed radio amateur in the county of Nottinghamshire.

All permitted bands and modes may be worked. Each station may be entered into the log only once per clain irrespective of band or made. There is no time limit for starting or finishing the award. A list of the current members of the Mansfield ARS and their callsigns may be obtained by sending an s.a.e. to the Awards Manager.

A copy of your log entries of QSOs with stations in the county of Nottinghamshire should be certified by two other licensed amateurs and sent to the Awards manager along with a fee of £2, $4 or 7 IRCs.

G.W. Lowe G0NRA, Mansfield ARS Awards Manager, 25 Manor House Court, Kirkby in Ashfield, Nottinghamshire NG17 8LH.

CQ-TV

CQ-TV is the quarterly magazine of the British Amateur Television Club and is sent to all members four times a year, in February, May, August and November. The magazine is aimed at all television enthusiasts and covers amateur television, video engineering, digital techniques, TV production, satellite television, television communications and slow scan TV.

Because the BATC is the world's largest television club, *CQ-TV* benefits from a great deal of varied input from around the world. The constructional projects are backed up by a range of printed circuit boards that makes building television hardware simple and rewarding.

Besides publishing one of the world's best television magazines, the BATC organises annual events for all the members to meet and discuss the hobby of amateur television. Contests are also organised for active fast scan and slow scan enthusiasts. The club also undertakes liaison work with other similar bodies around the world and is a founder member of the European Amateur Television Working Group and is recognised by the International Amateur Radio Union.

If you would like to join the BATC and receive *CQ-TV*, then there is a special offer running at the moment, £17.50 for the next two years (eight issues of *CQ-TV*)., Send your subscription to:

Dave Lawton, Grenehurst, Pinewood Road, High Wycombe, Bucks HP12 4DD.

Digital Multi-Test

The Instrument Centre now has a new digital multi-tester available. It has a single recessed rotary switch linked with an easy-to-read colour coded front panel. The DM310 comes complete and ready for use with a battery, test leads, operating instructions and a sturdy carrying case that can be used as a tilt stand and enhance the extra-wide viewing angle liquid crystal display.

The 0.5in high three and a half digit display also indicates polarity, over-range, low battery and data hold as well as having auto zero. Both a.c. and d.c. voltages are measured in five ranges to 700V and 1000V respectively, while alternating and direct current are to 10A in seven ranges with 0 to 20µA as the lowest.

Resistance is to 20MΩ together with an audible continuity buzzer for circuits of less than 30Ω. A separate socket is used to indicate automatically the gain of both *pnp* and *npn* transistors.

Other features include diode test, data hold, an input impedance greater than 10MΩ on all voltage ranges and a basic d.c. voltage accuracy of 0.5% of reading.

The DM310 costs £69 excluding VAT and is guaranteed for 12 months.

The Instrument Centre, TIC Ltd., 53 Fairfax Road, Newport, Gwent NP9 0HR.

New Lowe Shop

On Wednesday January 16, the Editor was invited to attend the opening of the new Lowe Electronics Ltd Communications Centre near Heathrow.

The official opening was performed by Mr Patrick McLoughlin MP.

Lowe Electronics Ltd have felt for some time that there is a need for a communications centre west of London to serve specialised radio fields.

The new centre is at **6 Cherwell Close, Langley, Slough, Berks SL3 8XB. Tel: (0753) 45255** and is located just 17metres from the main A4, 200metres from Junction 5 of the M4.

Standing L to R (Lowe Directors). John Wilson, Richard Mclachlan, Roger Geeson, Ian Sneap.

Sitting. Patrick McLoughlin MP, Parliamentary Under Secretary of State for Transport.

ARE Communications

Brenda and Bernie Godfrey wish to point out that they are in no way connected with any other company and are still actively involved with ARE Communications.

HCJB Programmes

HCJB's *Ham Radio Today* programme features the latest news from the world of electronics and amateur radio, plus practical technical hints to help you get more enjoyment out of the hobby.

March 6: The Sun - Introduction and History. Antenna Notebook - Characteristic Impedance. Learning Morse Code.

March 13: The Sun - Photosphere. Antenn Notebook - Attenuation and Phase. Filters.

March 20: The Sun - Corona. Antenna Notebook - Proagation velocity. Metrics.

March 27: The Sun - Radiation Types. Antenna Notebook - VSWR and mis-match. QSL cards.

April 3 - Sunspots. Antenna Notebook - Basic Dipoles. QSL cards.

HCJB WORLD RADIO

Tidy-Up!

Maplin now have a new storage system available, which should be good news for all you constructors who never seem to have enough places to put the components away!

Each system comprises one 36-drawer plastic cabinet (405 x 330 x 140mm), a 405 x 330mm tool panel, twenty-eight assorted hooks and clips for attaching tools to the tool panel, a 405 x 330mm bin panel, three 50 x 100 x 125mm storage bins, three 75 x 130 x 125mm storage bins and three 100 x 180 x 125mm storage bins.

This system is available from all Maplin stores, including the new Brighton store, or by mail order. The unit costs £39.95 each or £37.09 each when ordering more than two units.

Maplin Electronics, PO Box 3, Rayleigh, Essex SS6 8LR. Tel: (0702) 554161.

news

Media Network

Jonathan Marks hosts this weekly award-winning survey of communications developments compiled with the assistance of over 180 monitors across the globe. The audio magazine runs on enthusiasm, building on more than 30 years of experience in this field of programming. *Media Network* reflects the trends within the media business both in The Netherlands and around the world.

In the coming months, on Thursdays, *Media Network* will bring you the latest communications developments surrounding the Gulf War and the problem facing the Baltic States. We shall be following up on broadcasting changes in The Netherlands, Austria and Hungary as well as tackling topics such as digital audio from satellites and the high definition TV developments. There is a regular mix of news editions and full-length documentaries.

Radio Netherlands broadcasts daily in seven languages. Although the timings of the English language broadcasts are not ideal for European audiences. They are currently negotiating better technical solutions, since they do not have the facilities to provide the kind of service they would like. Short wave is not the medium to reach English speaking target areas such as Britain. The Netherlands is too close and during the winter months, signals don't propagate reliably at all. The frequencies of 9.715 and 5.955MHz are theones to listen to, with the transmission at 1130UTC being beamed to Europe.

Free Holiday!!

In honour of 60 years of ministry, radio station HCJB is inviting listeners to visit them in Quito, Ecuador. Two lucky listeners will be able to do this free!.

When you write to **HCJB, Box 691, Quito, Ecuador**, just include the words "Happy 60th Birthday". Those words will make you eligible for a prize draw to be broadcast on Christmas Day 1991, the 60th anniversary of HCJB.

Two letters, or cards, with those words on them will be drawn. Each person will receive a free round-trip to Quito, from the country where they mailed the card, and will be the guest of HCJB for one week.

Just send your birthday greeting to HCJB, Box 691, Quito, Ecuador and include the words "Happy 60th Birthday".

The winners will be announced on Christmas Day 1991 and will also be contacted by post.

A New Scanning Receiver

The new Yupiteru MVT7000 scanning receiver gives continuous coverage from 100kHz-1300MHz with 200 memory channels.The tuning steps are are 5/10/12.5/25/50/100kHz on a.m. and n.b.f.m. and 50/100kHz on w.b.f.m.

The sensitivity is 12dB<0.5μV on n.b.f.m., 12dB = 0.75μV on w.b.f.m. and S/N10dB = 0.5μV on a.m.

Selectivity figures are 6dB: for n.b.f.m. and a.m. >15kHz and w.b.f.m. >300kHz.

The search rate on the new receiver is 20 steps/second and the scanning rate is 16 channels/second.

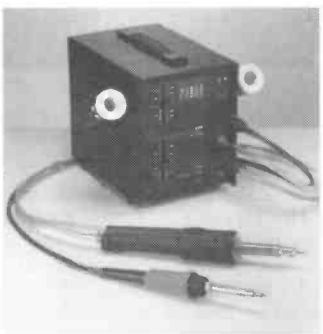
If you would like more details on this new scanner then contact the UK distributor for Yupiteru:

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

Soldering/Desoldering Station

The 2146 from Ungar is a combined de-soldering/re-work station. The handpices are rated at 60W and run from 24V. The unit features Ungar's zero-switching temperature control circuitry, whcih avoids spikes for safe soldering or de-soldering of even the most delicate components. The 2146 soldering hand-piece has a ceramic heater element with a very long life, which can be changed rapidly at the bench.

Desoldering handpieces are available in either pencil style, with high heat capacity, or the ergonomically-designed pistol-grip tool with super-longlife steel tip.



Ungar, Eldon Industries UK Ltd., Clifton Road, Shefford, Beds SG17 5AB. Tel: (0462) 814914.

Dundee 800 Award

The award has been designed as one of the many activities celebrating the 800th anniversary of the granting of the Royal Charter to the City of Dundee. It is sponsored by the Dundee Amateur Radio Club, which is celebrating its 21st anniversary during the year and will be available for contacts made at any time during the year 1991.

The certificate will be available to all licensed radio amateurs and, with an s.w.l. endorsement, to all interested short wave listeners.

A contact with a club member on one amateur band (not WARC) will count as one contact point. A club member may be worked on more than one band for extra points.

The qualifying requirements are: Stations outside Europe must obtain two contact points. Stations in Europe, outside the UK must obtain four contact points. Stations in the UK must obtain eight points and must include at least three club members.

The cost of the certificate is £1 or $2.

The applicant must list for each contact the following information: Date of the QSO, callsign of the station contacted, frequency band used, signal reports sent and received.

Enquiries and applications to the certificate manager.

W.S. Hall GM2AOL, 21 Seabourne Gardens, Monifieth Road, Broughty Ferry, Dundee DD5 2RT.

BBC World Service News

The BBC World Service broadcasts in four languages including Turkish are being increased from January 25 as a further response to the Gulf War.

The increases come on top of extra daily Arabic and Persian language transmissions announced in the middle of January. Now, BBC broadcasts in Turkish go up by 15 minutes a day, Hindi, Urdu and Bengali all get an extra ten minutes to make up a daily half hour programme. This special Gulf War broadcast will be audible at lunchtime in the Gulf, late afternoon in the Indian Subcontinent.

BBC World Service in English, which has been keeping its transmitters serving the Gulf on the air around the clock since last August, continues to provide a special schedule in response to the Gulf War. Longer news bulletins are being carried on the hour, every hour, with additional news summaries wherever possible at 30 and 45 minutes past. Detailed news and analysis is broadcast in special Gulf programmes three times a day.

BBC engineers report that World Service is still free of Iraqi jamming in all the languages it broadcasts, including Arabic.

The BBC World Service is also being re-broadcast around the clock in New Zealand's largest city starting January 14. The re-broadcasts on f.m. have been brought forward in response to the Gulf Crisis.

Until this new service, BBC World Service could only be heard by New Zealanders with short wave radio receivers. Now for the first time in Australasia, the network has been brought within reach of anyone using a standard radio 24 hours a day.

The service is initially on air in Auckaland on 91.8MHz f.m., a temporary frequency allocated to make the service available at this critical stage in the Gulf Crisis. By now the service should be available in Wellington, later this year it will be extended nationally on a.m. or f.m.

Manufactured in England by

When we first conceived the HF-235, the intention was to produce an HF monitor receiver for the professional market, and there is no doubt that we have succeeded in our aims because the HF-235 has now been bought by, among others, BBC Monitoring, Sky TV News, government monitoring stations, and universities. In all these applications the HF-235 has been greeted with enthusiasm for its performance and surprise at the relatively low cost compared to other professional receivers.

We originally thought that there would be little point in offering the HF-235 to the enthusiast market, since its price places it a little above the normal run of the mill HF receivers. However, it is precisely because the HF-235 is above the run of the mill receivers that I have to confess that we were wrong, and the serious short wave listeners are as keen as anyone to have one on their operating desk.

Those of you who know the top class HF receivers from companies such as Collins or Racal will know that they are classically simple when viewed from the front panel. The proliferation of multi coloured knobs and buttons so often admired by the less discerning user is markedly absent from top receivers. So it is with the HF-235, but in common with all other professional receivers, the HF-235 has all the functions and facilities necessary to squeeze the last atom of information from an incoming signal, including all IF filters fitted, optional FAX mode, continuously available conventional tuning and keypad frequency entry, 30 memories selected by tuning spin wheel, fully adjustable IF gain threshold, and so on.

In addition to these essential features, there are, of course, the hidden items of the specification such as the input overload protection up to 30V of RF, the six input bandpass filters, the fully floating chassis (demanded by marine specifications), and the range of options including a professional RS232C computer interface which allows not only remote control of the receiver, but also racks of multiple receivers to be built up for diversity and multi-channel reception. For driving 600 ohm lines, a fully isolated balanced audio output is a standard provision.

For those who require a professional receiver for serious listening, the HF-235 is the perfect answer. As Sky News said when they used one of their HF-235s for monitoring HF aircraft SSB channels from the Gulf "We simply could not have done without it. The HF-235 kept us in touch with the action night and day".

A full colour brochure is available on request, and the HF-235 can be seen in most of our branches.

SPECIFICATION

Frequency coverage

30kHz to 30MHz continuous coverage.

Reception modes

AM, LSB, USB, CW, Narrow band FM
Synchronous AM (AMS)

Receiver system

Microprocessor controlled PLL tuning, dual conversion superheterodyne receiver.
First intermediate frequency 44.999MHz to 45.000MHz.
Second intermediate frequency 455kHz.
RF Input tuning in six bands:-

1. below 500kHz
2. 500kHz to 1.7MHz
3. 1.7MHz to 4.2MHz
4. 4.2MHz to 10MHz
5. 10MHz to 19MHz
6. 19MHz to 30MHz

Displays

5-digit backlit LCD showing receiver frequency to the nearest kilohertz. Additional indicators show memory, mode and AMS detector lock.
Analogue signal strength meter, calibrated S1 to S9, +10dB, +30dB and +50dB.

Tuning

By Spin-wheel, MHz band buttons and Direct keypad frequency entry.
Tuning rates:-
CW, SSB and AMS modes - 8Hz

HEAD OFFICE & MAIL ORDER: Chesterfield Road, Matlock, Derbyshire DE4 5LE
Shops in **BOURNEMOUTH:** *0202 577760* **CAMBRIDGE:** *0223 311230* **DARLINGTON:** *0325 486121* **GLASGOW:** *041-945 2626*

LOWE ELECTRONICS LTD

steps, 1.6kHz per revolution.
AM mode - 50Hz steps, 9kHz per revolution.
FM mode - 125Hz steps, 25kHz per revolution.

Tuning step size increases with rapid spin-wheel rotation.
Keypad frequency entry is to 1kHz resolution.

Memories

30 frequency memories selected with tuning spin-wheel.
Data held with lithium battery backup for > 5 years.
Memories 1 to 10 can be selected from the keypad.
Memory functions: Store, Recall, Preview and Channel.
Two tunable frequency stores, A and B.
Receiver frequency is retained while switched off.

IF Filters

SSB and AM: Operator selectable 2.2, 4, 7 and 10kHz.
AMS: Operator selectable 2.2, 4, 7, and 12kHz.
CW: 2.2kHz.
FM: 12kHz. (750 *us* audio de-emphasis).

Audio Filter

200Hz wide audio peak filter centred on 800Hz, selectable in CW mode.

RF attenuator

Operator selectable 20dB attenuator.

Controls

Power on/off and Volume control.
Manual IF Gain/AGC off control.
Mode switch - CW, LSB, USB, AM, AMS, FM.
Memory mode select button.
RF attenuator/Memory CHANNEL button.
Filter select/Memory RECALL button.
MHz Down/Memory STORE button.
MHz Up/Memory STORE button.
Tuning/Memory select spin-wheel.
Numeric keypad (0 to 9, Enter and Cancel).
Line output level (on rear panel).
FM squelch level (on rear panel) (*).

Aerial input

50ohm input via BNC socket, isolated ground.

Audio outputs

Record output at approx 200mV (unbalanced).
Balanced 600ohm line output, adjustable level.
External loudspeaker.
Headphone output (mono or stereo headphones) (6.3mm jack socket).
The internal loudspeaker is connected via an external link.
Internal and external loudspeakers are disconnected when headphones are plugged in.

Power supply

AC mains 110-120 or 220-240V 50Hz.
DC supply 20 to 40V (with operating limits from 12V to 50V with slightly reduced RF performance at 12V).

Dimensions

Front panel: 483 × 88mm (19" × 2U)
Behind panel: 428 × 82 × 290mm (W × H × D)
Overall: 483 × 88 × 320mm (W × H × D)
Weight: approx 5.5kg

HF-235
Rack mount HF receiver 30kHz-30MHz **£1092.00**

HF-235/H
HF-235 with high stability TCXO reference **£1265.00**

HF-235/R
HF-235 with RS232 remote control **£1207.00**

C-235
Desktop enclosure **£98.70**

D-235
NBFM and Synchronous AM detector **£39.50**

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LONDON (Eastcote): *081-429 3256* **LONDON (Heathrow):** *0753 45255* **S. WALES (Barry):** *0446 721304*

Educational Software for Basic Electronics - Part 3

Examining waveforms is all very well, as long as you have access to to an oscilloscope. J.T. Beaumont G3NGD has written these two programs as a self-learning tutor for interpreting waveforms.

There are two versions of this cathode ray oscilloscope tutor. When the program is RUN, different screen presentations are displayed on a c.r.o. graticule, these include a mixture of sine, cosine, square, triangular and saw-tooth waveforms. The waveforms are presented at random and the student has to measure the 'peak-to-peak voltage', the 'periodic time' and finally calculate the 'frequency' of each in hertz.

Part 1 (Program 5a) draws the oscilloscope on the screen. When the program is RUN, the graphics are drawn on the screen. When complete, the whole screen is SAVED as a 'screen dump' called 'B.SCREEN'.

LINE 1480 *SA. "B.SCREEN" 3000,7FFF

This *SAVE command copies the complete graphics screen to disk (20Kbytes of memory) and is saved in the 'B' directory of the disk filing system. When the main program is RUN, these screen graphics are loaded directly to the screen.

When program 5a is typed into the computer correctly and RUN, the graphics should appear on the screen a shown in **Fig. 3.1**. Part 2 (Program 5) is the main program, it contains all the questions and answers. The questions, which are programed between line 250 and 480, can be changed and the following information will facilitate this task.

B=0 - draws a sine wave

B=2 - draws a cosine wave

B=2 - draws a square wave

B=3 - draws a saw-tooth wave

B=4 - draws a triangular wave.

The following data is that of the screen example S5.

R=24 - this is the question number 0 to 24

M=113 - this is the amplitude of the waveform in 'pixels' (there are 80 pixels per centimetre of amplitude)

P=56 - this is the 'real amplitude' (answer)

V$='V' volts (or 'mV' - millivolts)

F=3 - this is the number of cycles of waveform

Z=2 - this is the periodic time 'answer' (see also H$)

H=1 - this is the time-base setting

H$=CHR$(229) prints the micro (μ) symbol

H$="m" - this prompts the milli (m) for milliseconds

S=20 - this is the 'Y' amplitude scale setting in V/cm

Q=500000 - this is the frequency in Hz (answer)

W$="0.5MHz" gives the answer in kHz or MHz. **Note**: if answer is in Hz type a space, (" "). If this is not done, the string variable "W$" will assume its old value.

Using the Program

When the main program (Program 5) is "RUN", the command at line 130 loads the Screen Dump directly to the computer screen. This graphic display of the oscilloscope remains on the screen throughout, and is not affected during normal operation of the main program. This is achieved by setting up 'windows' on the screen. The different waveforms are drawn in a 'graphics window', and so does not corrupt the screen presentation.

The program, as listed, presents 24 questions in random order. This is achieved by randomising 'time'. The standard randomise (RND) command on the BBC Microcomputer randomises in the same order. This means that all the students will get the same order of random questions. When the program is randomised on TIME, then the selection depends upon when the computer was switched on.

200 LET Rr=R
- (R = last question)

210 REPEAT

220 R=RND(TIME)MOD24
- (to give 0 to 23)

230 R=INT(R+1)
- (not zero)

240 UNTIL R<>Rr
- (not last question)

If the student prefers the questions to be presented in sequence, then delete lines 200, 210, 220 and 240 and then type:

200 IF R>=24 THEN R=0

If the teacher needs help to answer the questions correctly (assuming a typing error when entering the program!), the answers can be found in the listing. If it is required to have the question number printed on the screen, the following line should be added to the program:

481 PRINT R: PROC_Cont

Remember to read the question!, and don't forget to press the RETURN key after entering the answer.

An Example

The following information is included as a student guide and should be read in conjunction with the screen example S5.

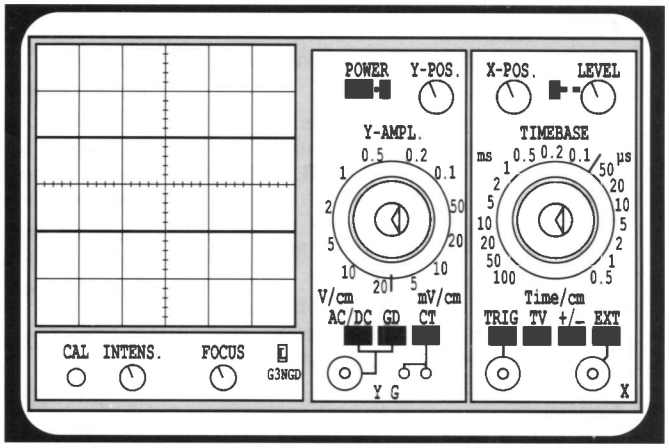

Fig. 1.

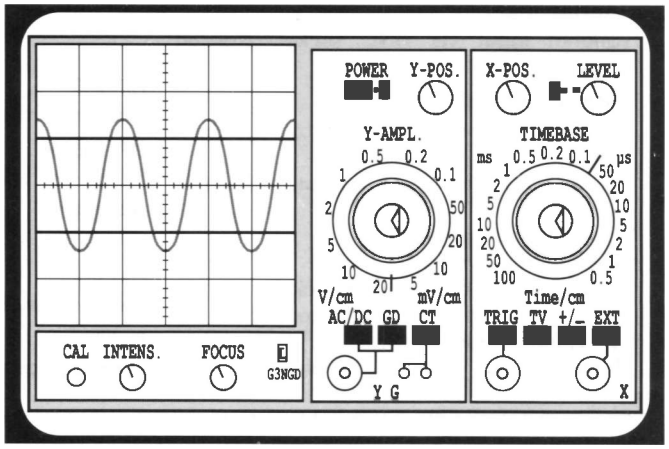

Fig. 2.

To calculate peak-to-peak voltage

Y-amplifier scale is given as 20V per centimetre. There are 2.8cm divisions between the top and bottom peaks of the sinewave. The peak-to-peak voltage is therefore:

2.8 x 20 = 56V p-p

To calculate the periodic-time

The time-base setting is given as 1µs/cm. There are 2cm divisions between two cycle peaks (or one whole cycle). The periodic time is therefore:

1 x 2 = 2µs = 1 x 2 x 10^{-6}s = 0.000002s

To calculate frequency

frequency (Hz) = 1/Time (seconds)

Hz = 1/0.000002 = 500000Hz = 0.5MHz

Oops!

The gremlins crept in and did their worst on the first four programs we printed (Jan and Feb 1991 issues). The corrections are as follows:

Program 1

```
80      *KEY10 OLD ¦ MRUN ¦ M
```

Program 2

```
70      *KEY10 OLD ¦ MRUN ¦ M
330     IF A=0 THEN FOR W=1 TO 4: LET A$="0":LET C$=A$+C$: NEXT W:GOTO 370
980     Dec=Dec+Z*2^Col
```

Program 4

```
60      *KEY10 OLD ¦ MRUN ¦ M
220     PRINT TAB(7,14);"5. Percentage Modulation"Modulation
330     IF G$="1" CLS:PROC_50
700     LET Y=carrier*SIN(X*2*PI*20/1260) + audio*SIN(X*2*PI*23/1260) +
audio*SIN(X*2*PI*17/1260)
1070    LET Y=carrier*SIN(X*2*PI*20/1260) + audio*SIN(X*2*PI*23/1260) +
audio*SIN(X*2*PI*17/1260)
1180    PRINT TAB(31,24);"1";TAB(31,26);"2"
1200    DEF PROC_Border
```

To obtain the programs described in Part 3, send a 5.25in disk and mailer, together with two 1st Class stamps, to the Editorial Offices. We will copy the relevent programs onto your disk and return it. Later on this year a set of disks will be available containing all the programs described in this series. However, if you cannot wait then send your disk now. Please note that we are only able to provide programs for the BBC computer.

The Russian Woodpecker -
Has it become an extinct species?

Woodpeckers are colourful little wild birds with strong, chisel-like beaks that they use to bore holes in trees to find insects. This activity produces quite a loud 'tock, tock, tock' sound. These particular woodpeckers are by no means extinct - not yet anyway! F.C. Judd G2BCX investigates the Russian Woodpecker.

The 'Russian Woodpeckers' were (are?) 'transmitters', located in the USSR that radiated high-power pulse transmissions on different frequencies in the h.f. bands. They could be received almost anywhere in the world and at all hours, day and night, but they are now thought to be extinct.

However, when demodulated and reproduced via a loudspeaker, the signals from these transmitters produced a loud, repetitive, 'tock, tock, tock' sound. It was for this reason they became known, by short wave listeners and radio amateurs, as well as commercial and broadcasting stations, as the Woodpecker.

During the past year or so, transmissions **thought** to be the Russian Woodpecker have been heard on the short wave (h.f.) bands. There have also been quite recent reports that these signals have appeared in, or near, the 21MHz amateur band. Could this be an indication that they are not completely extinct?

What the Transmitters Did

It is interesting to note that during the years of maximum activity by these very high-power Russian transmitters (late 70s/early 80s), the British media gave somewhat misleading information as to what these transmissions were really for.

"Controlling the world's weather". "Creating 'physiological' or 'psychological' effects on people outside of the USSR". "Deliberate jamming of Western short wave broadcasting", as well as suggestions "that the high power used was responsible for ozone depletion".

Operation During Solar Cycle 21

These stations began operating around 1975/6 at the start of the 11-year solar cycle 21, **Fig. 1**, with maximum activity occurring during the peak and therefore 'high sunspot numbers' period of the cycle (circa 1980). The pulse transmissions interfered very considerably with reception of commercial and amateur radio stations alike. It was at this time that I made an attempt to analyse the true nature of the signals. Details were included in an article called 'Over the Horizon Radar' published in *Practical Wireless*, September 1983.

Whilst there was less activity during the minimum of that 11-year solar period (circa 1986), observations during the first part of the present solar cycle, No. 22, i.e. over the past few years, revealed even fewer transmissions that now seem to have ceased altogether. Or have they?

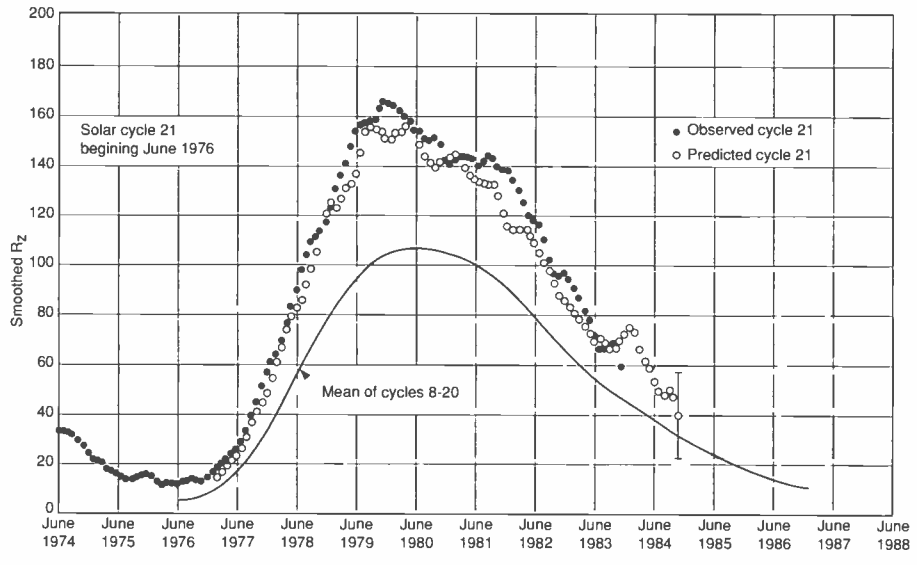

Fig. 1: 11-year solar cycle 21 sunspot counts from* Sunspot Bulletin No. 7 *Dr. Andre Koeckelenburg, Brussels.

The Original Analysis

The Russian (Woodpecker) transmissions were generally thought to be connected with an 'ionospheric' back-scatter radar system, similar to the American Conus B over-the-horizon-radar (OTHR) that was also operational in 1983 and maybe still is, on various frequencies within an h.f. spectrum approximately 6 to 30MHz. However, the nature of the American transmissions are quite different and were, or are, operated so as to cause minimal interference to commercial or amateur radio services operating within that spectrum. The same applies to the h.f. surface radar system developed by the Marconi Company a few years ago and which I was privileged to see in operation.

Information about the real purpose of the Russian transmissions was naturally unavailable directly from the USSR sources. However, the fact that the transmissions were within the h.f. spectrum 7 to 30MHz and the p.r.f. (pulse repetition frequency) was ten per second, (pulse width about 4ms) suggested an ionospherically propagated radar system. So, were these stations used for the location of aircraft or tracking ballistic missiles?

Ionospheric propagation

Since the characteristics of the transmitted pulse, as well as the frequency of transmissions, were often changed quite rapidly, they might have been used for remote control or telemetry. On the other hand, the sudden changes in frequency may have been made in order to secure an optimum ionospheric transmission/reception path and not, as

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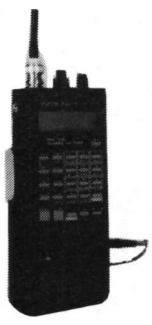

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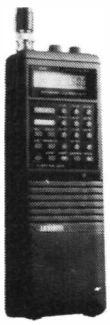

The **Bearcat 200XLT** is the cream of the Bearcat handheld scanner range. With 200 memory channels and simple operation these are proving very popular. Freq. coverage 66-88, 118-174, 406-512 and 806-956MHz.

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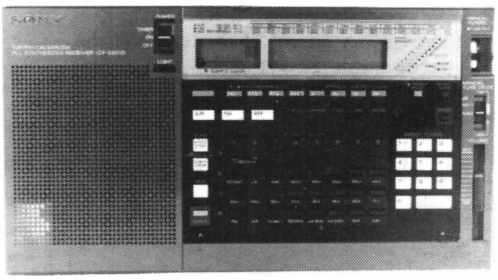

The **NRD525** is a high-class, general coverage receiver with expandability looking to the future. combining traditional technology unique to JRC with the most advanced digital technology gives superb performance whilst remaining extremely easy to use. The NRD525 covers 90kHz-34MHz and with an optional VHF/UHF converter also covers 34-60, 114-174 and 423-456MHz. Modes of operation CW, SSB (USB/LSB), AM, FM and RTTY with

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9.30-5.30, Tues.-Sat.

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some thought, to avoid deliberate jamming by radio amateurs and others. In any case, jamming seemed to have no effect on whatever was being received in Russia, or anywhere else for that matter, as the transmitter was quite likely to remain on the same frequency.

The control of, or communication with satellites was ruled out since these would be well above the ionospheric regions. For transmissions within the h.f. spectrum to propagate beyond the ionosphere would entail always using a frequency higher than the prevailing ionospheric 'critical frequency'.

Effective Radiated Pulse Power.

The r.f. pulse power radiated by these stations was in the region of 200 to 400MW. Not surprising that some transceivers and receivers used by radio amateurs and s.w.l.s were equipped with a 'Woodpecker blanker'. Unfortunately, this often proved to be ineffective.

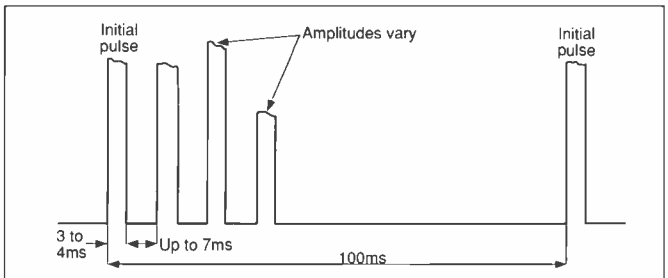

Fig. 2: Four-pulse Russian 'Woodpecker' transmission, unmodulated sequence (see text).

Although the transmissions did not always have the same pulse format, the pulse recurrence frequency of any transmissions was always the same, although there was another common factor. Virtually all transmissions, regardless of the frequency being used, began with a 'four pulse sequence' as shown in **Fig. 2**. What these signals were for is not known but after a short period they changed to 'single pulse' (p.r.f. same).

The antenna systems employed were almost certainly equipped for variable directivity since it was not unusual for signals to fall in level (not due to normal QSB) and just as suddenly return to former strength.

Location of Transmitters?

In order to positively identify and analyse these signals, a specially modified receiver and a double beam oscilloscope were employed.

Many photos were taken, each showing various aspects of these transmissions, e.g. from one transmission in the amateur 21MHz band, two 'round the world echoes' were recorded and photographed. One was via the longest Great Circle Path to my QTH in eastern England and the other via the shortest. This made it possible to approximate the distance of the transmitter from my QTH.

The fact that the receiving beam antenna heading was 080° for maximum signal put that particular Russian transmitter somewhere within a very large area known as the Pripet Marshes, north of Kiev. Flat dried out marshland, if this was the case, would be an ideal 'nesting' place for these Russian Woodpeckers as well as for the initial propagation of their transmissions.

The Woodpecker Signals Made Visible

Perhaps you think you may have heard them recently. Pulse transmissions of a similar nature, heard from a loudspeaker, or through headphones, would 'sound' very much the same.
The photos in **Fig. 3** show what actual Woodpecker signals 'looked' like on an oscilloscope. In (A) trace 1, the full r.f. pulse (PI) is on the left. Then follows ionospheric 'scatter' (Is) and then an echo (Ec) at about 35ms. Path distance to target? About 5250km. The end of the trace is at 100ms. The lower trace (2) shows the signals, plus noise, rectified.

In (B), the pulse in r.f. form wasn't bright enough to register on the photo because of the large amplitude. There is some ionospheric scatter (Is) and an echo (Ec) almost at the end of the trace (1) just before the occurrence of the next transmitted pulse (extreme right). This echo is at 90ms that puts the total earth/ionospheric path distance, transmitter to target **and back**, in the region of 27000km (approximately 16 700miles). Distance to target therefore 13500km (about 8350miles).

Note: The word 'target' refers to whatever caused the pulses to be reflected as an 'echo' and which may not necessarily be an aircraft or missile.

However, assuming the Woodpecker to be a back scatter radar system the ground distance to the target would something less, i.e. minus the extra distance used during earth/ionosphere propagation. A few other, but very weak, back scatter echos can be seen along the trace (1). The lower trace (2) shows the rectified versions of the signals.

➤➤ 37

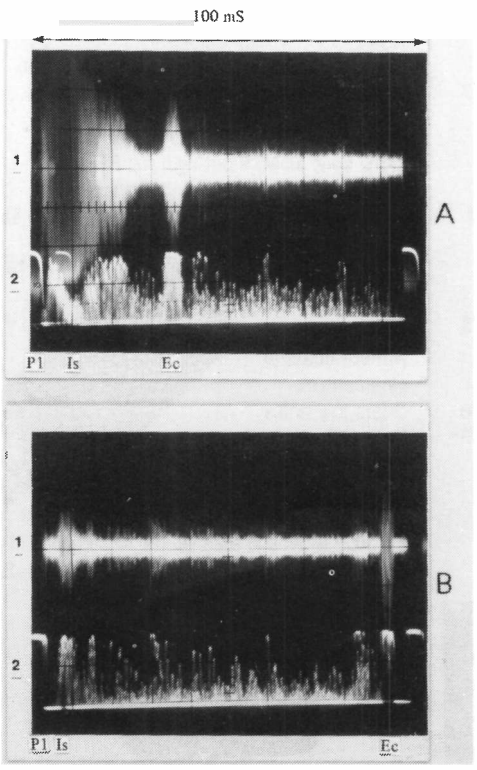

Fig. 3: (A) Upper trace 1. P1 - transitted pulse. Is - Ionospheroc scatter. Ec - echo. Lower trace 2. Rectified versions of the signals (and noise)
(B) Upper trace 1. P1 - transmitted pulse. Is - ionospheric scatter. Ec - echo at 90ms (see text).

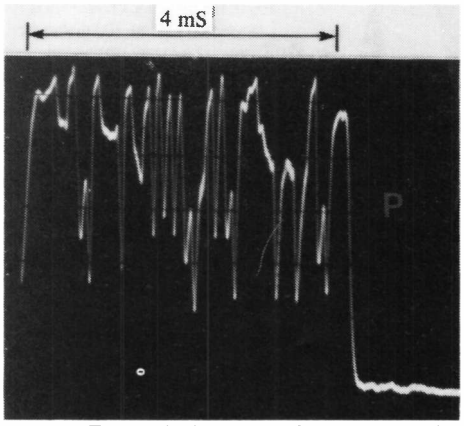

Fig. 4: Expanded photo of transmitted pulse showing modulated waveform (see text).

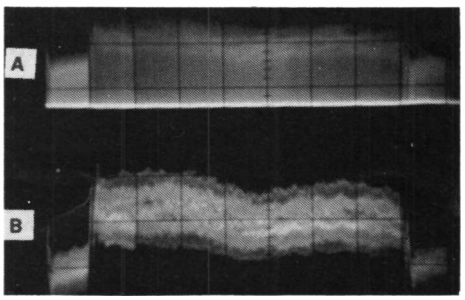

Fig. 5: Signals that appear around 20MHz and which 'sound' like those from a Russian 'Woodpecker' transmitter. (A) Carrier with negative-going pulse modulation (nP). (B) Rectified signals plus noise (see text).

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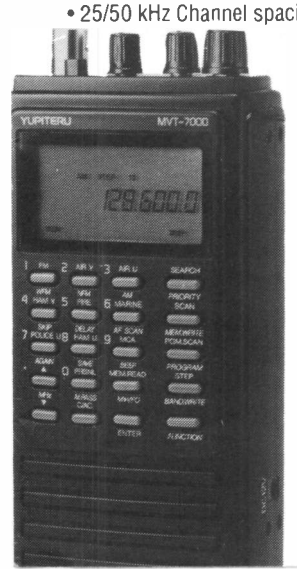

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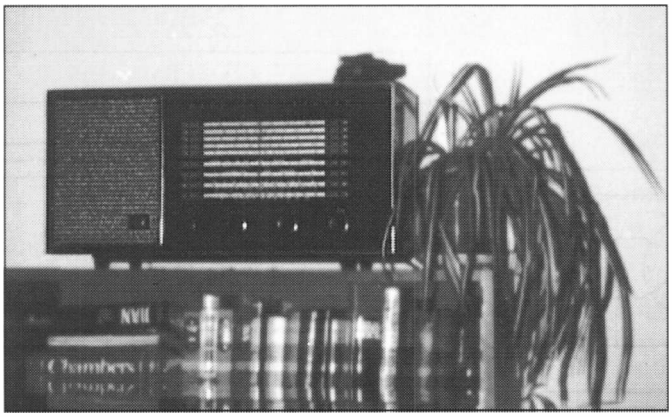


Richard Q. Marriss's faithful Pye 3017A (Export) receiver.

J. L. Lindsey Hood in his article 'Putting the quality back into a.m. radio' (*Wireless World* October 1986) when talking about the subject of post-war, valved radio design comments that, "considerable efforts were made, by the manufacturers, to achieve the highest practicable quality in the output signal, and this is normally vastly better than that given by their contempory equivalents".

It should be added that if one puts a modern, 'middle of the road', transistorised, a.m. radio alongside a still working, older, 'table', valved radio, then a number of things become apparent when inspecting them inside and out and for quality of performance.

Appearance

The older valved radio is usually a piece of furniture - often in a polished wooden cabinet; whereas its transistorised counterpart, though much smaller, is in black chrome, or some garish colour scheme and the whole effect looks cheap and cheerful. Inspect both for manufacturing origins and on the valved radio receiver you will easily find the British manufacturer's name quite proudly emblazoned. Look for the source of origin of a 'transistor' and hidden away, somewhere, you'll find a little label proclaiming 'Made in Taiwan, or Hong Kong, or Korea, or Japan, or...' Often, unfortunately, a well-known British trade mark appears on the front. Very few modern radios are now 'Made in Britain' but I am still proud and patriotic enough to regret the decline!

Construction

The valved radios were sturdily contructed on a metal chassis, with components well laid out, and easily get-at-able and repairable. There were, however, a few exceptions. Inside the transistorised radio you will find a veritable jungle of components - so that if it packs up then you'll have to throw it away.

Performance

All except the upper quality/price bracket, transistorised, a.m. radios are 'squawk boxes' when compared with the sound quality from an earlier table-top valved radio. Sacrilage?

It is still possible to find good, late-1930s and post-war, valved, table radio sets. If you can locate one, in an older person's home, or in a store specialising in house clearance, then it may well be working as well as the day it was born. It may only require a few simple jobs such as getting rid of the internal dust, polishing it up, changing the odd valve, applying switch cleaner and realigning if necessary. Sources of various service sheets are advertised in this magazine and *Practical Wireless*.

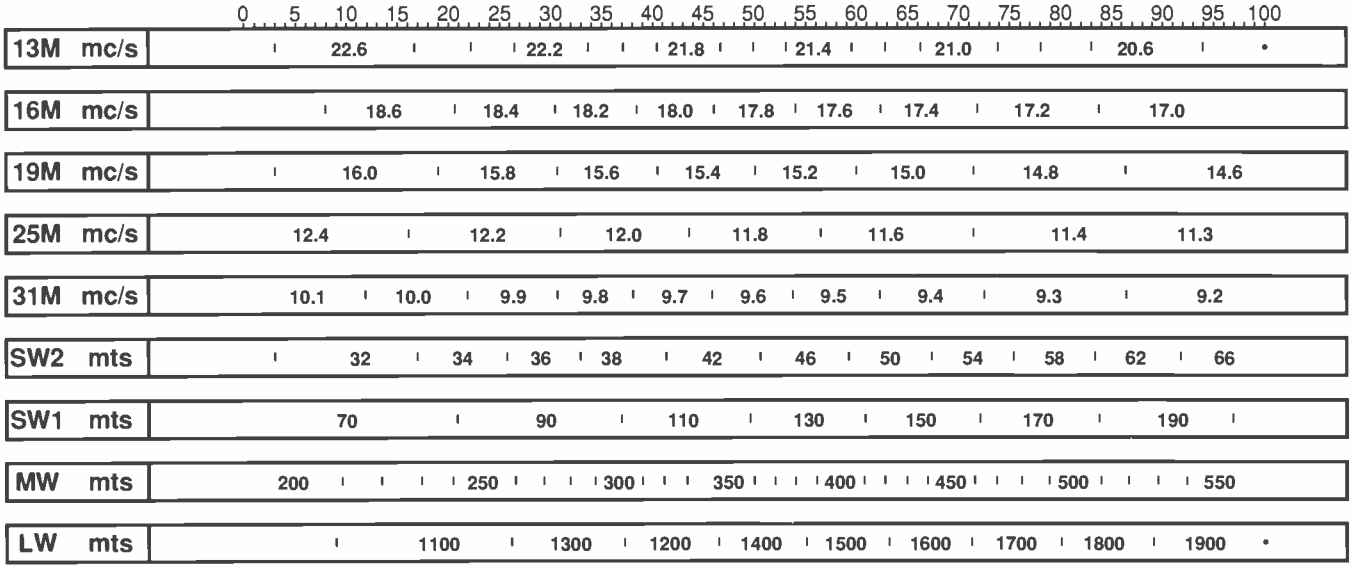
One of the valved radio 'classics' is the Pye 3017A (Export) all-wave, valved, table radio, with coverage from 13 to 2000 metres in nine bands. Proudly emblazoned on the front is the legend PYE CAMBRIDGE ENGLAND.

This receiver was purchased while living and working in the USA during the 1970s.

Flea Market

An annual weekend pilgrimage was always made to the huge, open-air, flea market at Spirit Lake, Iowa, to look for vintage toys and where, in a temperature of between 90 and 105°F, one could wander happily from stall to stall, looking at 'trash and treasures' - 'vintage cars and old Coke bottles' - 'junk and antiques' - and occasionally the odd radio. Everyone was very friendly, and the evening friendship and hospitality from complete strangers in the bar of the local Holiday Inn was embarassing.

On the first visit to the Spirit Lake, a filthy dirty old radio was noticed among a lot of junk furniture, and was recognised as a Pye. After haggling, it was bought for something under $5 ($2.43 to the £ then!) - dumped in the boot of the Mustang for the longish haul back

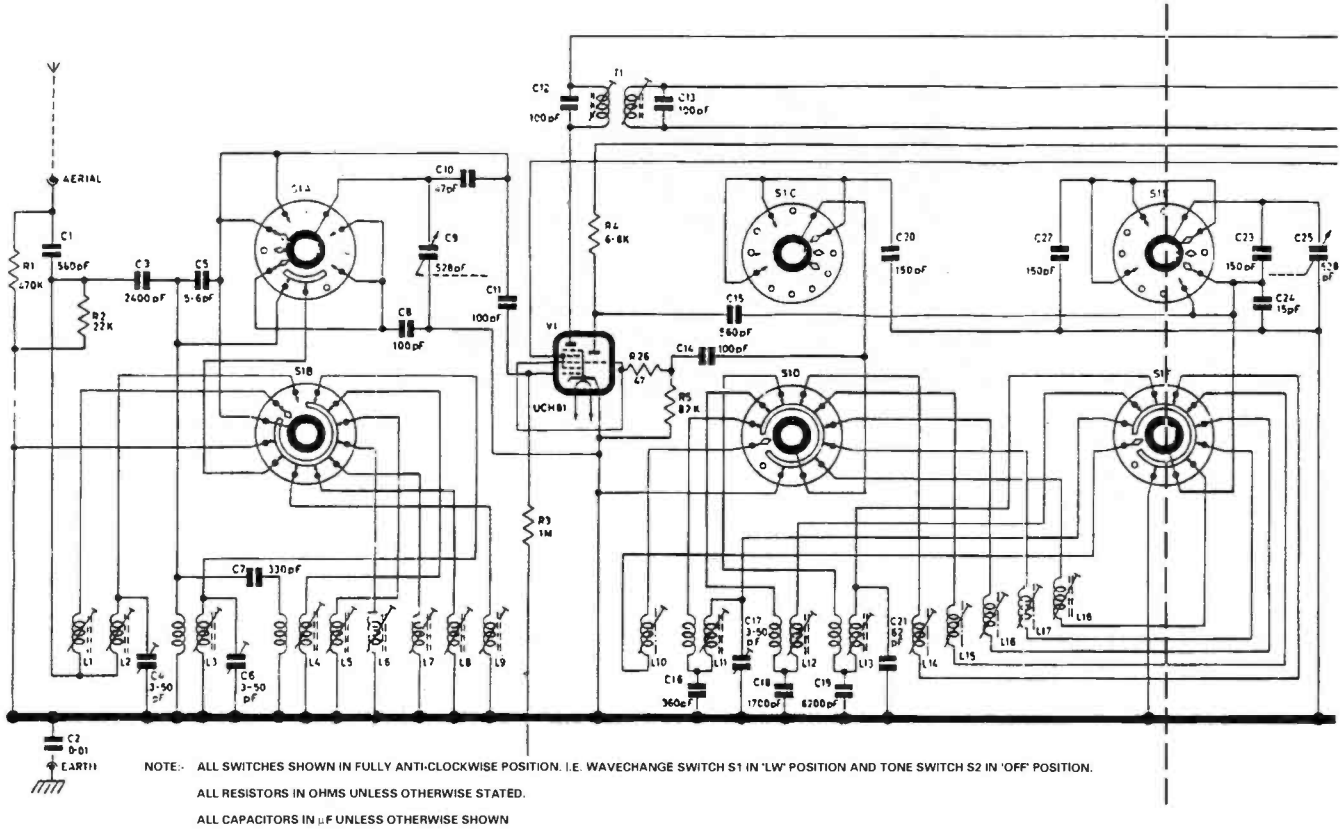


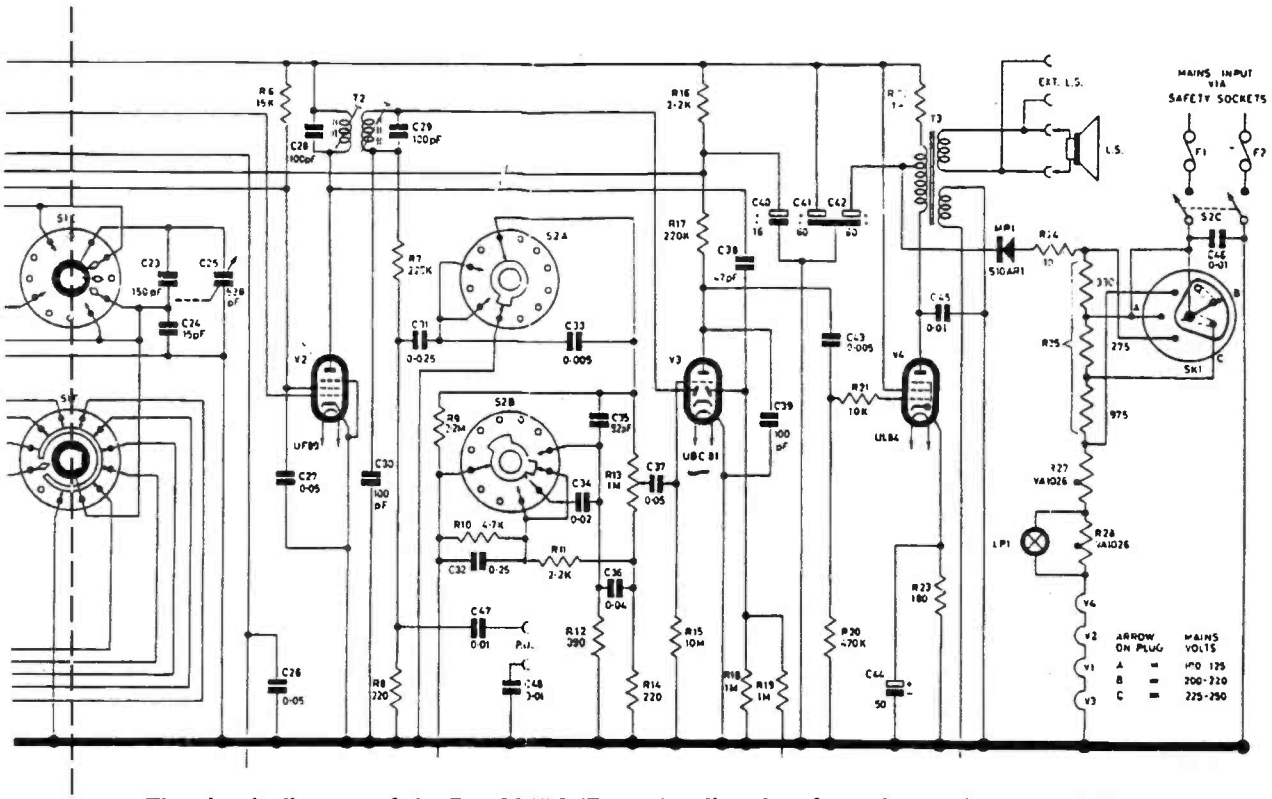
The nine-waveband tuning scale of the Pye 301A receiver. The logging scale is across the dial.

home to the Twin Cities. On arrival the exterior dirt and filth was wiped off - the set plugged into the mains without an antenna - and there, loud and clear, was the local station 'WCCO - in the twin-cities of Minneaplos and St Paul' That evening a length of wire was connected from the antenna socket to a very large double-glazed window frame, and there, on the 25 metre band, was "This is London" (the BBC). Loud and clear! This receiver has been in daily use, ever since, both in the USA and UK

This 'Spirit Lake' radio was a Pye 3017A (Export) table model, which was one of a series of high quality radios produced by Pye after WWII for both the home and export markets. Most of these radios had a handsome, polished wooden cabinet and black Perspex front with a large tuning scale and flywheel tuning drive. In addition a large speaker was usually fitted together with an effective 4-position switched Pye 'Fidelity' tone control.

The first production models apparantly used B8A valves, which were subsequently changed to the more sophisticated and reliable B9A types. This gave rise to type numbers for this particular receiver in the series 1017 (Home) and 3017 (Export) as far as can be





The circuit diagram of the Pye 3017A (Export) radio taken from the service manual. The diagram has been split into two, about the vertical broken lines, to enable it to be fitted onto this page.

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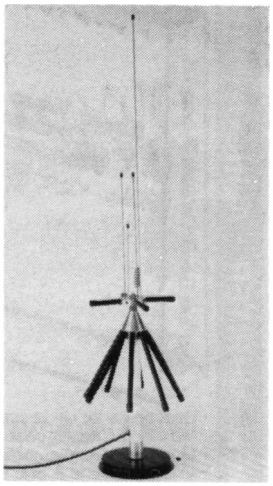

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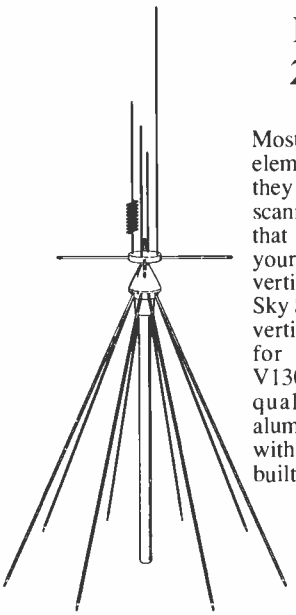

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ascertained.

My own EXPORT is a 3017A with B9A valves and the circuit line up is:

Frequency Changer (UCH81)

IF Amplifier (470kHz) (UF89)

Detector/AVC/AF Amplifier (UBC81)

AF Output (UL84)

Rectifier (Westinghouse S10AR1 in lieu of the usual valve rectifier)

Mains voltages could be adjusted to 100-125, 200-220 and 225-250V a.c. and from personal experience it works quite happily on 50 or 60Hz supplies. There is no inbuilt mains transformer, as can be seen from the circuit, and this produces a snag for any potential restorer that will be covered later.

There are nine wavebands with a large clear tuning scale 254mm long and 127mm high and the frequency ranges can be seen from the illustration. There is also a logging scale. The circuit shows that the receiver is designed for an end fed antenna and the input impedance appears to be approximately 400Ω from 4.5MHz upwards, though in practice this is not at all critical.

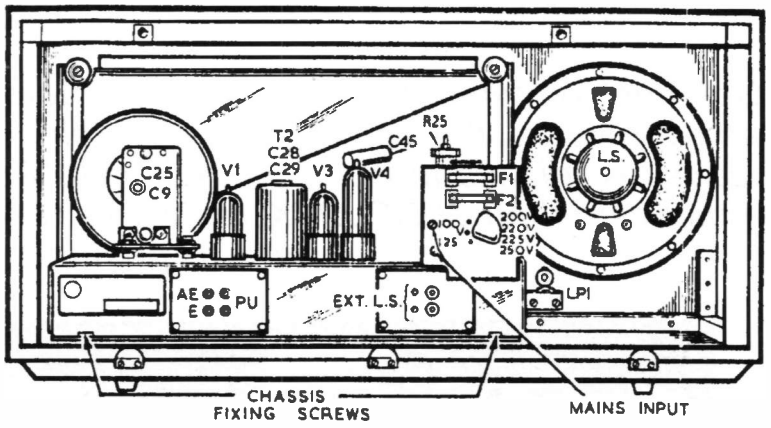
Reverting to my 'Spirit Lake' 3017A the procedure adopted may interest other readers who find one of these receivers, or other types and makes of the same era.

First, after the initial cleaning of the exterior dirt and testing, the chassis was removed from the cabinet and thoroughly cleaned of dust with a small paint brush and vacuum cleaner. Great care was taken to get rid of the dust between the tuning capacitor plates. This was done with the aid of a strip of thin, stiff card carefully slid between the plates when unmeshed. Wiring, components and safety were checked, and a new mains lead was fitted as the original was cracking. The cabinet was then polished. There was not a scratch on the cabinet or the chassis, both of which had been protected by all the dirt. This has been found with other old BC receivers, i.e. the more dust and dirt on the cabinet the more likely it is to be scratch free.

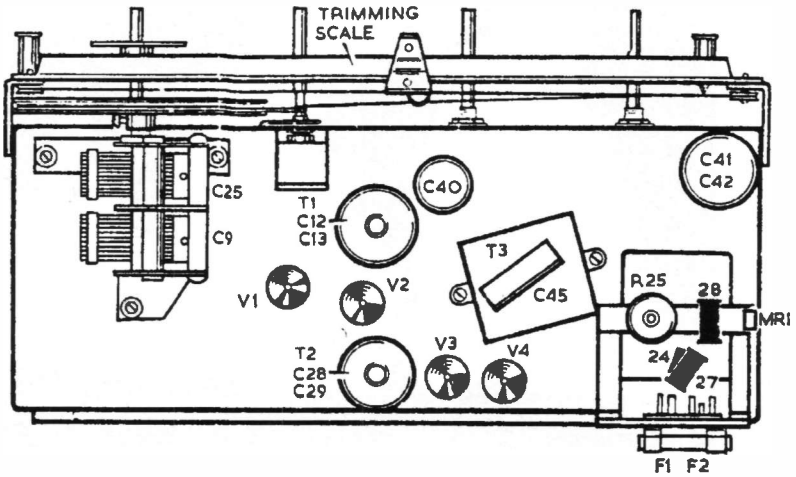
Courtesy and Service

A letter was sent to Pye of Cambridge requesting any available information and an invoice. A friendly letter was received by return of post, together with a fully illustrated service document, which they managed to find. This was 'with compliments and no charge' - in other words courtesy and service.

At the same time a spare set of valves was obtained from a UK source. In the event, substitution of the existing valves by new ones did absolutely nothing for the excellent performance and ultimately they were demolished by the 'expert' home contents shippers in their container, whereas the 3017A remained intact. So the original valves are still being used! However, all the valve types are still advertised at a reasonable price.



This drawing, from the Service Sheet, shows the inside of the set.



The inside of the set, again taken from the Service Sheet.

Isolating Transformer

There is a space behind the loudspeaker and a piece of thick, heavy chipboard was cut to slide into this space. A mains isolating transformer was screwed to the board, wired in, and the 'mains earth' connected to the chassis, thus making things a lot less lethal when working on the chassis which, in its original state, is connected to one side of the mains, as was usual with many radios of the era. Anyone carrying out a similar restoration exercise should ensure that the mains wall socket earth is actually connected to earth! Also remember that the h.t. line also has to be treated with respect.

The 3017A was taken into the 'office lab' one weekend to use the test equipment. The r.f. and i.f. alignment was checked as per the service sheet, with an a.f. check on the tone control. Nothing had to be done as it was all "spot on".

Throughout the years a variety of antennas have been used with this 3017A including end fed long wires and short wires - frame and ferrite loops. On m.w. and l.w. an external ferrite loop antenna is now used. First the antenna described in *Practical Wireless* February 1986, ultimately succeeded by the later DX version (see *PW* 1987). On short wave both end fed and a small loop are being used with success.

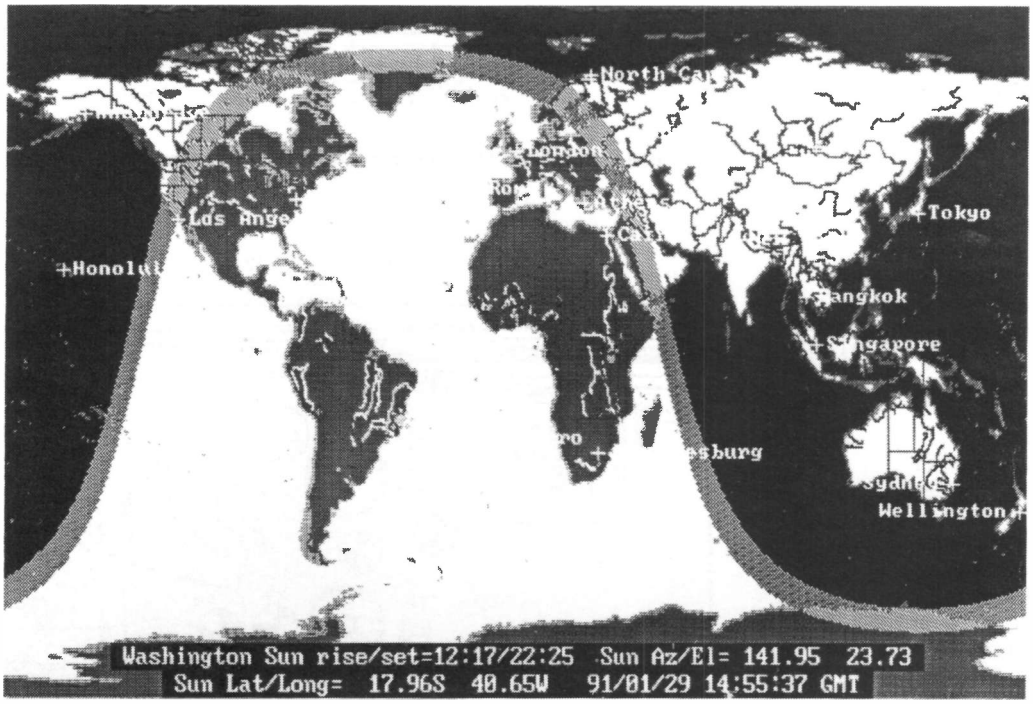
It is hoped that this story may give some ideas and guidance to those lucky enough to find an old, good quality, valved table radio. In conclusion it must be said that, over the years, I have received several very good offers from people wishing to buy my Pye 3017A but I would not sell it at any price! ■

Abbreviations

a.f.	audio frequency
a.m.	amplitude modulation
a.v.c.	automatic volume control
BC	broadcast
DX	'long distance'
Hz	hertz
i.f.	intermediate frequency
kHz	kilohertz
l.f.	low frequency
l.w.	long wave
m.w.	meduim wave
MHz	megahertz
mm	millimetre
r.f.	radio frequency
s.w.	short wave
WW2	World War 2
Ω	ohms

Geoclock Program

The 'Greyline', or twilight zone, is of great interest to short wave listeners and radio amateurs. Knowing its position helps in predicting propagation between radio stations. If you have an IBM compatible PC with a graphics card then GEOCLOCK, reviewed by Martin Saul G8XGT, will show you its position.



Printout of file GEOCLOCK01.PCX showing the daylight areas and the Greyline at high resolution.

Geoclock shows the current time (based on the system clock) with a high resolution map of the earth. The current sun position is displayed and the part of the earth in sunlight is highlighted along with the Greyline area. Normally this display is automatically updated, every second for an 8MHz AT with an 80287 co-processor, up to 20 seconds for a 5MHz PC without a co-processor. The time scale can be altered to speed the display up if required. Local sunrise, sunset, and the sun's azimuth and elevation are also displayed. A variety of map backgrounds and other options are available. Selected cities can be displayed in their correct positions on the map and the display can be speeded up from the default real time plot. The sun position can be shown and on colour displays the twilight zone is shown to full effect. The display time can be set to any time zone in the world and a city can be selected to show local time or GMT as required. Other features such as Latitude and Longitude lines and lines drawn between points can be shown.

Two other maps were supplied with the colour version, these were a state map of the USA and a Polar map centred on the North Pole. For registered users there is a 'HAM' option available that includes a customised map, centred at your own location, with a database of key call sign information. Geoclock has many other features available, these can be implemented in a variety of ways, either from the command line or via configuration files. The configuration files are simple text files that can be edited with a text editor or a word processor in non-document mode.

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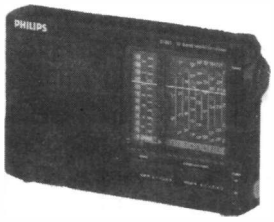

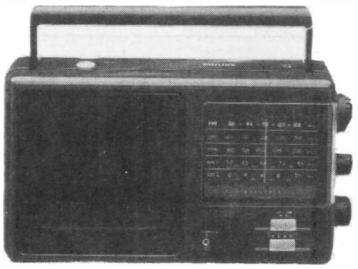

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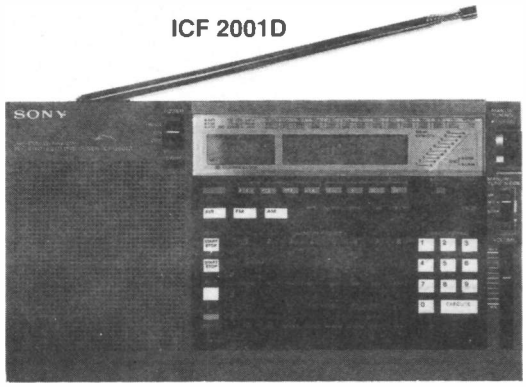

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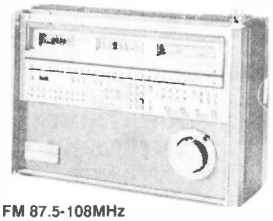

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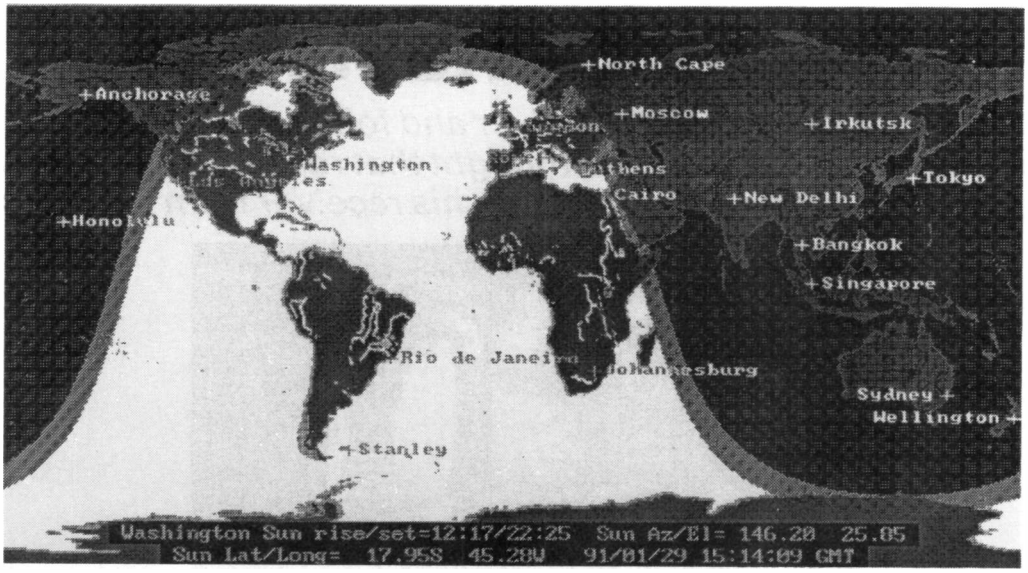

Printout of file GEOCLOCK02.PCX showing the daylight areas of the earth's surface and the Greyline, at a lower resolution than the previous printout.

System Requirements

A graphics adapter and a hard disk are required to run Geoclock. Geoclock is primarily an EGA/VGA/SVGA program, although CGA, Hercules, MCGA, AT&T 640x400, and PC3270 are supported with some limitations. The EGA/VGA/SVGA version of GEOCLOCK requires an EGA, VGA, super VGA (800 x 600) or close compatible with at least 256K memory, and an EGA, VGA, or multi-scanning colour monitor. The program uses 640 x 350, 640 x 480, and 800 x 600 16-colour graphics. The distribution GEOCLK42.ZIP file contains all the required programs and data bases. The main program file is named GEOCLK.EXE. It will automatically determine whether or not you have a maths co-processor (8087,80287, 80387), and use it if you do, or emulate it if you do not. If you have a normal EGA, the program is already configured properly and can be run with no additional setting up. For those of you with VGA displays the EGA mode will work quite satisfactorily, however much improved resolution is available so the documentation needs to be studied to determine the optimum configuration for your VGA card.

Easy to Use

From my own point of view I found the program easy to install and use, although I would strongly recommend printing out and carefully reading the documentation before attempting to proceed with any customising of the program. On my super VGA display (800 x 600) the display quality was excellent and the contrast between the various areas was superb. The display colours can be customised if required, although the default scheme is quite adequate.

For those of you with CGA or Hercules displays there is an alternative version of Geoclock available, currently version 3 is the highest I have found. This gives a perfectly satisfactory display on a Hercules monochrome display, which is more than adequate for the study of the position of the Greyline position.

Installation is slightly tricky in that the map data files have to be converted to monochrome format, however a special program is included to assist this procedure. The Geoclock distribution disk will generally contain the program in compressed form to save disk space and this will need to be uncompressed before the program is usable. Your shareware vendor should provide instructions on this procedure. Having got the program and associated files onto your hard disk, the first step is to read the documentation.

On shareware disks such files commonly have the extension .DOC or .TXT. Most libraries will provide a text viewing program to aid the reading of these files.

Shareware

Geoclock is distributed as **Shareware**. The Shareware concept is quite straightforward. Put simply it is a system where the software is obtainable from a distributor or library for a small copying fee, thus enabling an evaluation to be carried out at low cost. If you use and enjoy the product, you are expected to register (or buy) the program with the author or his representative and obtain a registered version of the program.

The registered software will normally include additional features, in the case of Geoclock more maps as well. Registration of the basic program costs $35, additional maps can be had for a further $20. The Ham add-on costs a further $30. Registration is only through the author in the USA at present.

The disks used in this review were obtained from:

The Public Domain
Software Library
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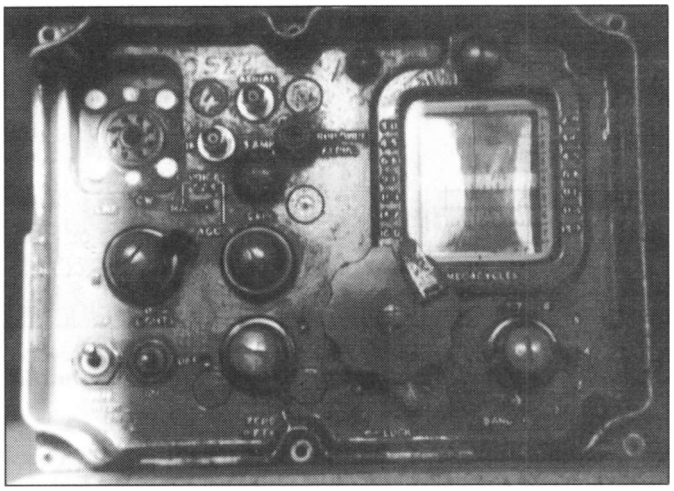
They can supply you with a copy of GEOCLOCK at £4.50 on a 5.25in disk or £5.30 on a 3.5in. Don't forget to specify if you have a Hercules graphics adaptor. The library will be pleased to provide a catalogue on receipt of a large stamped addressed envelope. ■

Abbreviations

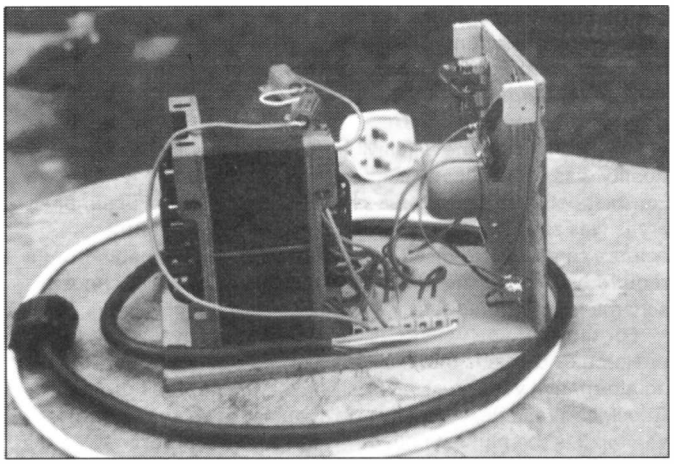
CGA	Colour Graphics Adaptor
EGA	Extended Graphics Adaptor
in	inch
K	1024 bytes
MCVGA	Multi-Colour Versatile Graphics Adaptor
MHz	megahertz
SVGA	Super Versatile Graphics Adaptor
VGA	Versatile Graphics Adaptor

The R210 Revisited

Having obtained an R210 receiver and followed the articles by Tom Harrison, C.M. Lindars thought that readers might like to hear how he got on with powering his receiver from the mains.



The R210 front panel with the new Octal socket fitted.



The power supply and external loudspeaker unit.

The first job was to remove the Plessey connector on the front panel and substitute an Octal socket. This was wired up as shown in **Fig. 1**. Some redundant capacitors, etc., were removed and a 50 + 50µF twin capacitor placed in circuit to act as reservoir and smoothing around the l.f. choke. Two 1N4007 silicon diodes were used for the nominal 175V h.t. and as the lower resistance of these diodes gave a higher voltage, a 220Ω series resistor was added to lower the line volts.

External Power Pack

It was decided to have an external power pack with a speaker built in and a transformer with two secondary windings, each giving 24V at 3A was chosen. However, one or two problems arose. In the first place the internal transformer in the R210 was designed for a frequency of 130Hz - that of the vibrator in the R210's internal power unit - so, of course, there is insufficient copper and iron for use at the lower mains frequency of 50Hz and the magnetising current is high. In fact, this transformer acted as a saturable reactor with the current at 48V very much higher than that at 24V!

The answer is to tame the output of the transformer a bit. This was done by adding a total of 8.6Ω, made up from two suitable 25W resistors, in series with the 48V output of the transformer. The actual value of resistance needed was arrived at empirically by monitoring the heater voltage, which should be held at 6.3-6.5V.

The output transformer was wound for a nominal impedance of 50Ω, but I found that a 30Ω loudspeaker worked very well. The

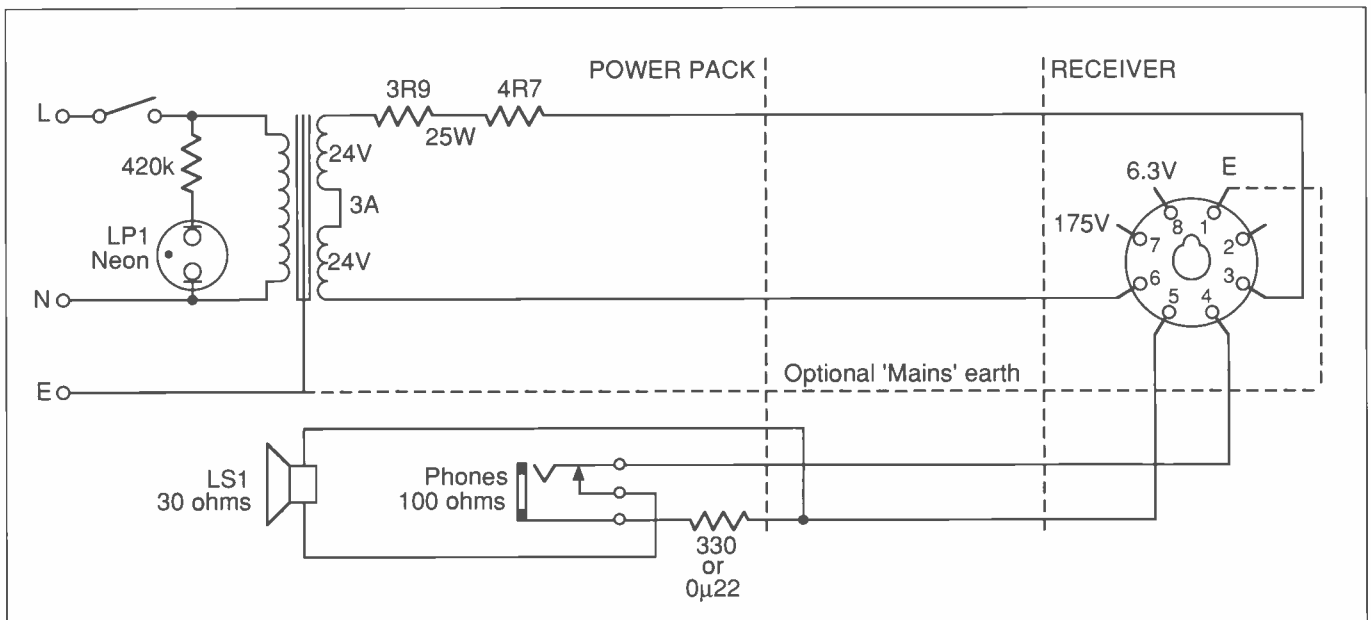


Fig. 1: The wiring diagram for the new Octal socket fitted to the front panel.

headphone socket cuts off the loudspeaker when the plug is inserted and either a 330Ω resistor or a 0.22μF capacitor is brought into circuit when the phones are used in order to cut down the residual hum.

Selectivity

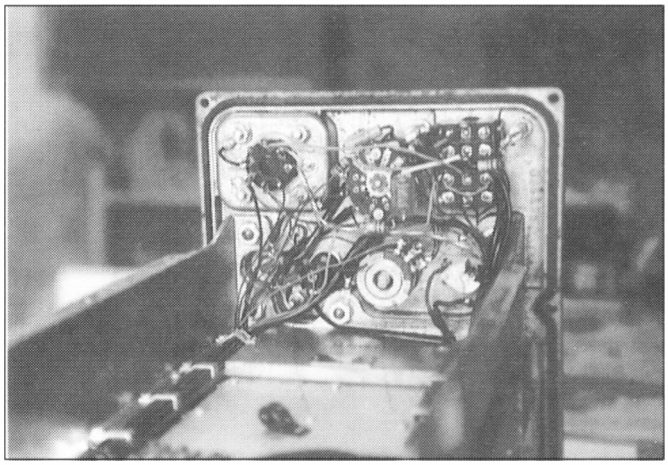
The selectivity is not really good enough for the 7.5MHz band and some consideration is being given to modifying one of the i.f. transformers to permit it to be peaked. If this is done and some resistance is introduced between the suppressor and ground of the relevant i.f. valve, some sharpening up may well be possible.

The sensitivity of the R210 is very good and I am able to receive a lot of amateur signals and commercial ones around 7.5MHz with 300mm or so of wire as an antenna.

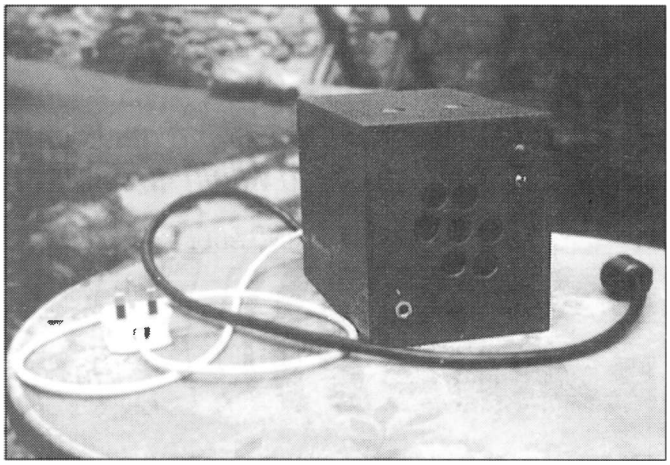
Backlash

On my R210 there is some backlash evident in the tuning control bevel gears and I am now looking for a way to eliminate this. The converter published in *SWM* July 1990 is a welcome bit of additional gear and I hope to build one sometime in the near future. It would be interesting to have some feed-back from other readers who have had experience with modifying and using this excellent ex-MOD receiver.

Manuals for the R210 receiver can still be obtained from Mr. Bentley, 27 DeVere Gardens, Ilford, Essex IG1 3EB. Send a stamped addressed envelope for details. ■



The inside of the R210 showing the back of the front panel with the new Octal socket and its wiring.



The completed power supply unit and loudspeaker for the R210 ex-MOD receiver.

Greyline DXing

One of the more challenging facets of short wave listening is the reception and identification of Tropical Band stations. Dick Moon describes how to make use of the Greyline path to better your DX record.

The Tropical Band stations are usually fairly low powered stations designed mainly for local listening and are situated, as their name implies, between the Tropic of Cancer in the northern hemisphere and the Tropic of Capricorn in the southern hemisphere. Their transmissions fall within the 120, 90, 75 and 60m bands and their frequencies range between 2.3 and 5.9MHz.

The main difficulty in the reception of these stations lies in the fact that their fairly low frequencies make their signals highly susceptible to absorption by the 'D' layer. This is present at a height of approximately 60km above the earth's surface during the daylight hours. It is for this reason that Tropical Band stations may only be heard under dark, or near-dark, conditions at both ends of the transmission path, when the signals are reflected off the higher 'F' layer.

The height of this layer is such that the distance between the transmitter and the point of return to earth for one hop is approximately 2500km. Each time a radio wave is reflected off the 'F' layer, some energy is lost by absorption, and again more energy is lost from the earth reflection, so that each 'bounce' attenuates the signal. As the ionosphere is very unstable both in its density and outer surface condition, the absorption rate and refracting properties are continually changing.

The absorption factor of the 'F' layer is of great importance to the Tropical Band DXer as any increase in density leads to an increase in the maximum usable frequency (m.u.f.). This is the frequency that has minimum absorption by the 'F' layer. As the difference between the m.u.f. and the tropical band frequencies increases, so will the absorption rate of these latter bands also increase, with a loss of signal strength. As Cycle 22 proceeds towards its predicted peak in 1992, we can expect Tropical Band DXing to become more difficult due to the increase in solar activity with the resulting higher m.u.f.s.

Twilight

All is not lost, however, as it is now that the Greyline propagation method may be taken advantage of to improve reception conditions. The Greyline, so called because it occurs during periods of twilight, can have the effect of increasing the length of a 'hop', thus reducing the number of refractions and accompanying loss of energy. It can also improve refraction by flattening the angle that the waves reach the 'F' layer.

We know that during daylight, the 'D' layer is omnipresent and effectively absorbs all the long and medium waves. As the sun sets, however, this layer begins to dissipate and as it becomes less dense the tropical band waves tend to be deflected rather than absorbed. This is a bonus for the listener because the angle at which the waves now meet the higher 'F' layer is reduced, thus resulting in a longer transmission path, see **Fig. 1**. A further beneficial result is a reduction of absorption by the 'F' layer; the flatter the angle at which the waves strike this layer, the less they have to penetrate before refraction, thus reducing energy loss, see **Fig. 2**.

It can now be seen that there are three ways in which tropical frequencies may be received.

1: Along a path of total darkness, where the waves reflect from the 'F' layer and the surface of the earth.

2: Along a partial Greyline path, where either the TX or the RX is in twilight.

3: Along a total Greyline path where both TX and RX are in twilight periods.

Of these conditions, number three is the most favourable as all the conditions mentioned previously are present.

Limits

Every Greyline period has its limits, depending on the latitude and season of the year. We know that twilight time varies from winter to summer and also on the distance from the equator. At 0° latitude, the sun rises and sets more or less at 0600 and 1800UTC respectively the whole year round and twilight periods are very short. This results in a very rapid build-up of the 'D' layer in the mornings and a slow dissipation in the evenings, which makes life very difficult for the DXer living in these regions. On the other hand, the listener living closer to the poles is able to take full advantage of the Greyline during the winter months, as the very low angle of the sun produces very little ionisation and an expected period of twilight is experienced. It is in the winter then that Tropical Band DXing is at its best, particularly for the reception of stations in the same hemisphere.

It is now apparent that the width of the Greyline is not constant. For example, the UK may have a Greyline period during the winter of 45 minutes, whilst Indonesia, situated on the equator, will have a much shorter period, perhaps only 20 minutes. Stations in the southern hemisphere will have even shorter periods. In order to take advantage of the Greyline method it will be necessary to calculate, either by computer or from tables, the sunrise/sunset times for your own location and for the location you are hoping to receive. It will then become clear whether a full or only partial Greyline is in existence.

Occasionally, other 'freak' conditions occur which enhance propagation even further, but these are totally unpredictable, but when they do occur they can produce some remarkable loggings. The only answer is to listen as often as possible and perhaps one day you may hear a 0.5kW station from some remote island in the Pacific Ocean - but don't forget to tape it or no-one will believe you! ■

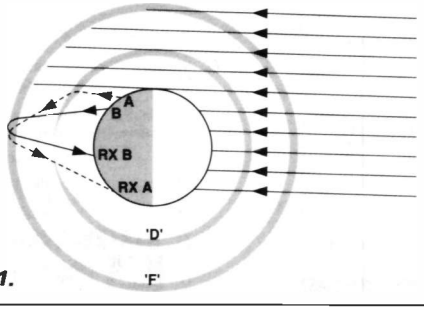


Fig. 1.

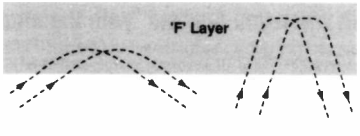
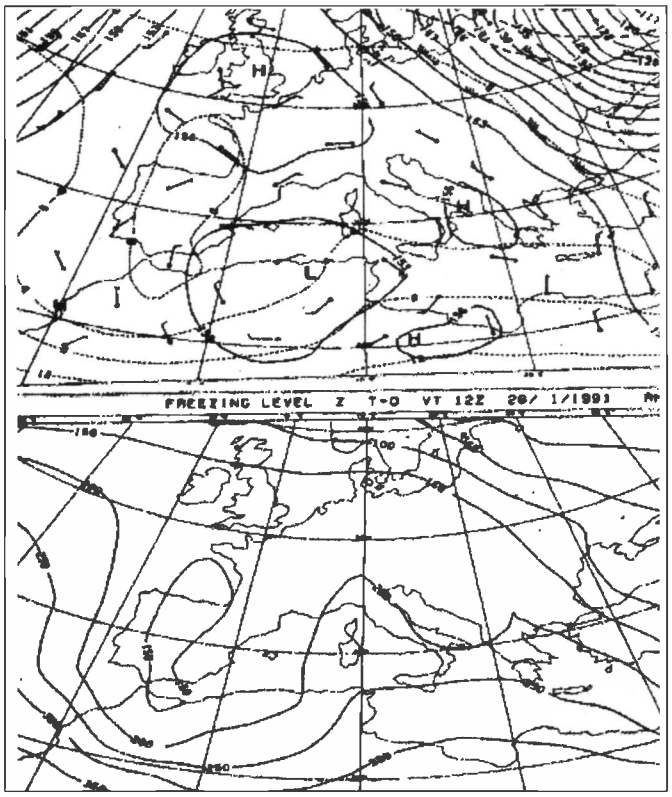


Fig. 2.

Review ICS-Fax Software

The ICS-FAX program, reviewed here by Mike Richards, is the latest utility product to be released onto the market by ICS Electronics.



ICS-FAX printout of an image received from Rome Meteo.

The reception of h.f. FAX transmissions is an area of our hobby that is expanding rapidly. In the early days, the only way to resolve these transmissions was to use an electro-mechanical FAX machine. The advent of the modern personal computer has changed that, particularly for the short wave listener. The ICS-FAX has been designed decode and display most of the standard FAX formats used on the h.f. bands. The only other equipment needed is an IBM compatible computer and a suitable h.f. receiver. So, without further ado, let's take a closer look at the ICS-FAX.

Installation

The ICS-FAX was very well presented and arrived in a neat plastics case very similar to a video tape box. Inside was the software (on both 5.25in and 3.5in disks), the interface unit and an instruction manual. The interface unit was very compact with all the electronics contained within the 25-way D plug. This is designed to plug into the serial port of the computer. The other end of the lead is terminated with a 3.5mm jack for connection to the external speaker socket of the receiver.

The system demands of the ICS-FAX are moderate requiring a PC/XT/AT/386 running MS DOS version 2.11 or higher. In addition, at least 512K of RAM and either CGA, Hercules, EGA or VGA graphics adaptor are required. Although the program is workable with dual disk drives, a hard disk is desirable for the storage of FAX images.

With a sophisticated package such as this, a good manual is important if the user is to get the best out of it. The manual supplied with the ICS-FAX comprised a spiral bound, 31-page, A-5 booklet. This was very well laid out with 24 chapters. This started with a very useful quick start section for those, like myself, who can't wait to get started. All aspects of the program were well covered and there was a section at the rear containing sample images.

If you should get stuck whilst the program is running the best way to get help was to use the on-line help feature. This could be called on at any time by pressing the F1 key. The level of help provided was very good and negated the need to keep refering to the manual.

The installation of the ICS-FAX on to a hard disk was made very simple thanks to an install program. This created a new sub-directory on the hard disk and transfered all the files from the supplied floppy disk. Once this was complete, starting the program was simply a case of typing FAX from within the appropriate sub-directory.

Of course, before any images could be received the connection to the receiver had to be completed. As I mentioned earlier this way simply a case of plugging the connecting lead into the external speaker jack your receiver. The only problem with this is that it usually disconnects the internal speaker so you are left with silence. The solution is easy, you need an external speaker and a 3.5mm Y adaptor. This enables you to monitor the signal on the external speaker whilst still feeding the ICS-FAX.

The selection of an appropriate receiver is also very important and has a large bearing on the overall results. Probably one of the most important points is that the receiver must be very stable. The reason for this is that a single FAX image can take 15 minutes to transmit and the receiver should remain within 10 or 20Hz during this period. These demands become even more critical if you want to use the automatic reception facilities of the ICS-FAX. For this you would need to have the same degree of stability but over a much longer period of perhaps several hours. Having said that, most of the better communications receivers on the amateur market will provide the required level of performance.

FAX Reception

When ICS-FAX is run you are presented with a clear and informative main menu. I have included a screen dump of this in **Fig. 1**. This screen is divided into four main areas. The first is the main menu and, as the name implies, gives access to the main operational features of the program. The next section was the system settings that gave the operator a clear indication of the main parameters that affect FAX reception. I thought having this easily available on the main entry screen to be particularly useful. Another useful feature was the picture directory. This could display up to 64 entries, so it should prove more than adequate. The final element of the main display was the status bars - one at the top of the screen and another at the bottom. These were used for a variety of communications between the operator and the computer.

To start receiving a FAX image the Input option is chosen from the main menu. You are then presented with a blank screen and the received image is displayed line by line as it is received. Experienced FAX operators are now

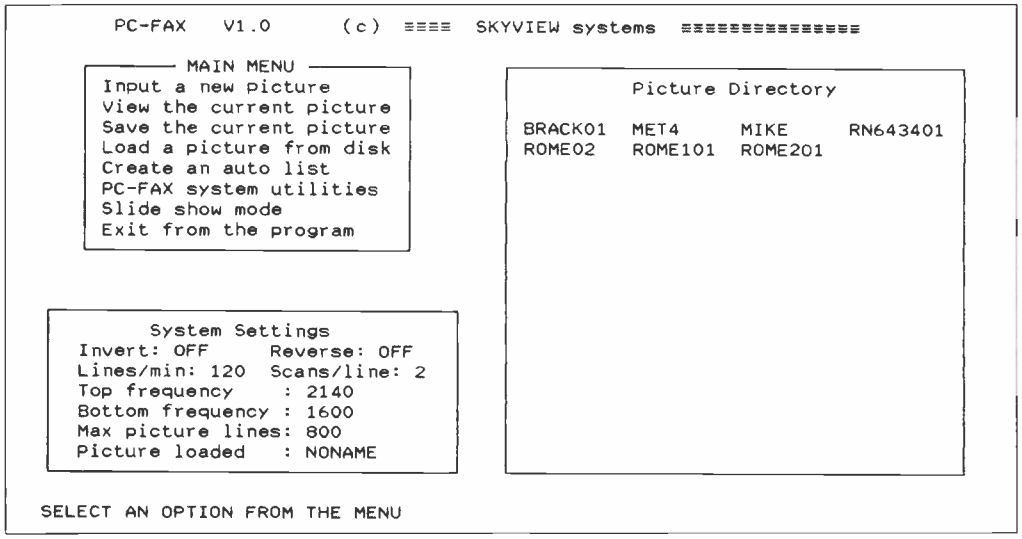


Fig. 1: Screen dump of the ICS-FAX Main Menu Screen.

wondering how the drum speed and IOC are set. Well the drum speed is set using a function key to cycle through 60, 120 and 240r.p.m. The only weakness I can see here is that the 90r.p.m. used by most Russian FAX stations is missing. No doubt this will be corrected in a later version (please, ICS). The review version had two additional settings called SS and SS2, but there was no explanation of these in the manual.

Adjustment of the IOC was achieved by manipulating the lines per scan setting but, surprisingly, this was not mentioned in the manual. The lines per scan setting determined the degree of compression. For example a setting of 3 meant that three lines of the transmitted signal were combined to make each displayed line. The normal or default settings gave a good representation of FAX images with an IOC of 576. However, to receive the 288 IOC, often used by amateurs and press stations, this setting had to be halved.

Besides the basic settings, there was a very comprehensive range of features provided to improve reception. The first and most useful of these was the Mini-scope. This was a sophisticated on-screen tuning aid. When activated an oscilliscope display appeared at the bottom of the screen. This comprised two horizontal lines that represented the black and white thresholds and another line for the received signal. The receiver tuning is then adjusted so that the trace for the received signal crosses the black and white thresholds evenly. An additional benefit with this implementation is that the black and white threshold frequencies can be independantly adjusted. This adjustment lets the operator tailor the demodulator to suit individual signals. This can be of great benefit when receiving for reducing the effects of interfering signals. A slightly more obscure use of this faciity would be with receivers having coarse tunings steps of say 100Hz. Here the threshold adjustment could be used as a fine tune control.

Another handy feature enabled the operator to re-synchronise the received image. This was useful when first tuning into a signal where more often than not the picture edge does not align with the screen edge. By using re-sync, the program analyses the incoming signal and automatically aligns the picture edges.

Other useful features were image reversal, inversion and pallette selection. You also had the option to adjust the grey scale ranges. The timing correction, which ensures that the received image is vertical, could also be adjusted during reception.

Automatic Reception

Because FAX reception is generally a time consuming affair some form of automatic reception is almost a necessity. The ICS-FAX provides this in the form of the Autolist Feature. Using this the operator can automatically capture either a group of images from a particular station or individual images over a long period. Of course, if you want to capture images from several stations, control of the receiver is down to the operator. Another point to note is that, during group reception, the image parameters such as drum speed and lines per scan cannot be altered.

Once an Autolist has been created it is started by entering the input mode and hitting Alt L. By entering 99:99 as the time, the capture starts immediately instead of waiting for a preset time. You could also set the ICS-FAX to capture a set of images everyday by entering a date of 01/01/01.

Having captured several images, there was a very useful slide show facility to simplify the display of these images. With this option you could choose to display any number of images in whatever order you liked. You could even adjust the length of time that each image was displayed. Once started, the slide show continued until the escape key was pressed.

FAX Processing

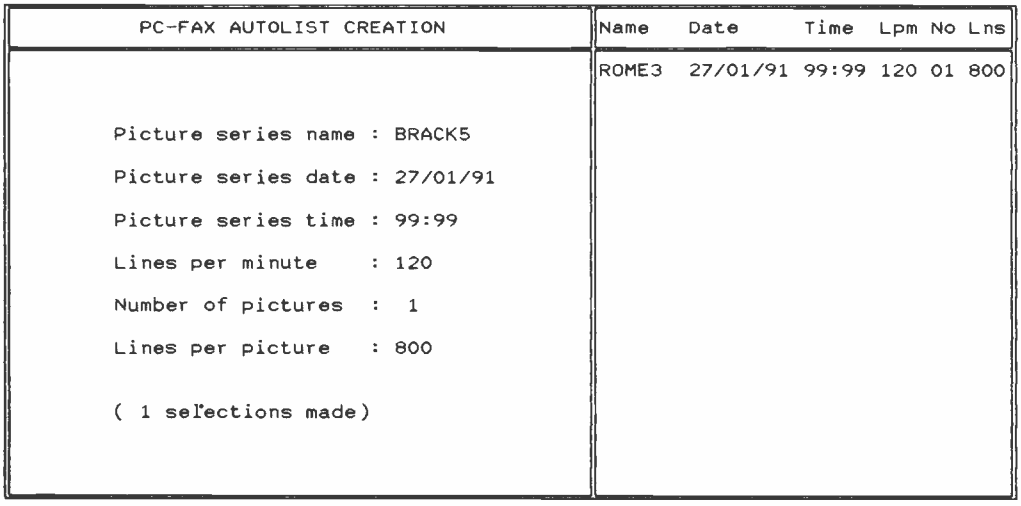
So far I have only covered the basic features of image reception, but the ICS-FAX had several advanced refinements. If you are using an EGA or VGA screen you can scroll long charts up and down so that the whole image can be viewed. You also have the option to flip the image top to bottom and left to right. This is very useful for correcting images with unusual orientations. If you want to examine a chart in more detail there is a handy zoom facility. As the name implies this lets you take a closer look at selected areas of the image. If a single zoom didn't resolve the required level of detail, you could continue to zoom in on the already zoomed image. Although in principle very powerful, this process is limited by the detail of the stored image. There was also an option to save the zoomed image.

On The Air

For the review the ICS-FAX was installed on my Amstrad PC-2086 computer with VGA graphics and a hard disk. The only problem I encountered was that the input mode would not operate if the Amstrad bus mouse was installed. New users must watch this, as the bus mouse is often installed by the AUTOEXEC.BAT file on power-up.

With the ICS-FAX running and connected to my Icom IC-720A I was ready to start capturing images. I started with an old favourite of mine - Rome meteo on 13.595MHz. This station usually puts in a strong daytime signal and transmits clear charts with not too much confusing detail. The ICS-FAX proved to be very easy to operate and I was quickly capturing good quality images. The combination of the mini-scope tuning indicator and adjustable

Fig. 2: ICS-FAX Autolist Screen.



thresholds meant that the very best could be made of any image. For the sake of those readers with receivers having coarse tuning steps, I tried an experiment. The Icom was set to 100Hz tuning steps and I used the adjustable thresholds of the ICS-FAX for fine tuning. This proved to be very successful, confirming that this program is usable with receivers having 100Hz tuning steps. The only point you will need to watch is the frequency stability. The re-sync facility was also very effective, enabling the simple reception of correctly aligned images.

Various aspects of the automatic reception were tried out with great success. The only problem I found was that it would only recognise a 300Hz start tone and not the 675Hz associated with transmissions having an IOC of 288. Having said that these transmissions would require an alteration to the scans per line so perhaps it's just as well they were ignored.

In general, the screen image produced by the ICS-FAX was very good, especially when using a VGA graphics system. Although the facility to zoom in on an image was attractive, the image quality reduced considerably with each successive zoom. But there were times when the zoom helped to resolve detail that was not clear on the full size image.

Like most PC-based FAX syatems the ICS-FAX was designed around screen images but could provide a screen dump. A typical screen print is included with the review. As you can see the resolution is not as good as that available from dedicated hardcopy FAX systems. Nevertheless, the quality was quite acceptable. The only problem I could see was that, when using EGA or VGA graphics, it was not possible to print long charts. this was because the program only printed a screen at a time. To make a long chart you had to print two screens and join them together.

Summary

The ICS-FAX certainly does its job well and should prove very popular in the amateur market. The range of facilities provided was very comprehensive and gave the operator some powerful tools for general FAX reception. I also thought that the on-line help facility was extremely useful and well presented. The displayed image quality was also very good and compared well with the competition. The only niggles were comparitively minor and I'm sure that they can be solved with software updates.

So, to conclude, the ICS-FAX is a strong contender in the market and should prove to be very popular among PC users.

The ICS-FAX costs £89.95 + £3 P&P and is available from **ICS Electronics Ltd, Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD**. My thanks to ICS for the loan of the review copy. ■

Abbreviations

CGA	Colour Graphics Adaptor
FAX	facsimile
h.f.	high frequency
Hz	hertz
IOC	Index of Co-operation
K	1024 bytes
MHz	megahertz
mm	millimetres
r.p.m.	revolutions per minute
RAM	Random Access Memory
VGA	Versatile Graphics Adaptor

➤➤ 15

Encoded Information

Whilst 'back scatter radar' may have been the primary purpose of the Woodpecker transmissions there still remained the fact that the actual r.f. pulses were frequently 'modulated' by irregular waveforms, as shown in **Fig. 4**, these may have been encoded information, for aircraft, etc. This was also thought to be the case by another observer who carried out spectrum analysis of the signals. This encoded information might also have been for the receviing stations, to convey instructions or for identification of the transmitter.

Have They Really Become Extinct?

The answer is almost certainly YES, although the claims made by some listeners and amateur radio operators that the 'Woodpecker' signals have been heard very recently around 21MHz might suggest otherwise.

Remember that pulse transmissions having a pulse repetition frequency (p.r.f.) in the region of 10 pulses per second and with a pulse width of around 5 to 10ms would 'sound', when heard over a loudspeaker or headphones, very much like the Russian pulse transmissions.

What has almost certainly been heard are transmissions on different frequencies between about 18 and 22MHz. They have a continuous carrier, but are modulated with negative-going pulses with a p.r.f. and duration as previously detailed.

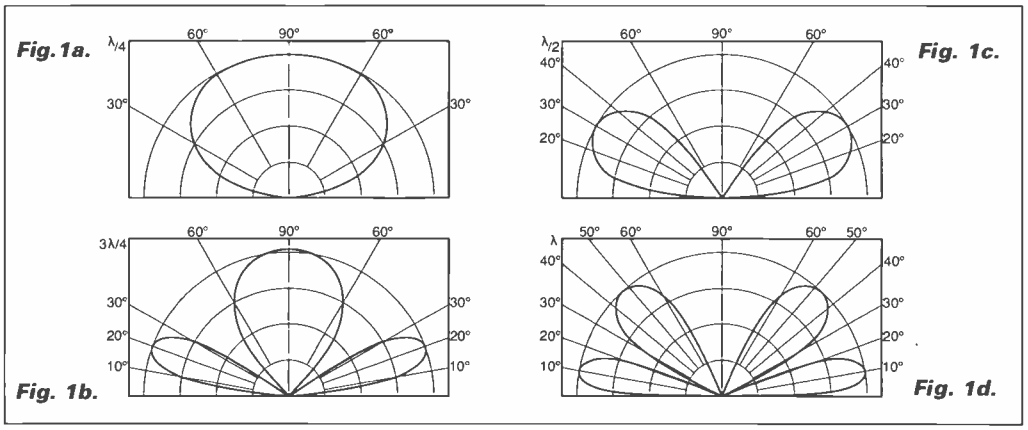
The oscillogram (**Fig. 5**) shows these signals which, after a period, are additionally modulated with other, irregular waveforms. It is definitely **not** a Russian Woodpecker. ■

Starting Out

Ideally, a short wave receiving antenna should be erected so as to provide the best reception from a chosen area. So how can this be achieved? Brian Oddy G3FEX explains.

The reception of radio signals from a particular short wave transmitting station, located anywhere in the world, can be optimised by taking advantage of the inherent directional properties of the receiving antenna. At least two kinds of directivity are associated with any type of antenna. The horizontal directivity patterns of antennas λ/2, λ and 3λ/2 long were depicted on page 39 of the Oct & Nov '90 *SWM*. Although they showed the directions of maximum response to incoming signals in the horizontal plane and those where there is a null, they gave no indication of the directivity in the vertical plane.

The response in the vertical plane is primarily dependent upon the height at which a horizontal antenna is suspended above the surface of the earth. The angle of the lobes of maximum response for a horizontal half-wave antenna at heights of λ/4, λ/2, 3λ/4 and λ above perfectly conducting ground are shown in **Figs.1a-1d**. In practice, the effective electrical ground is likely to be just below the surface of the earth. Consequently, the responses may not be exactly as shown. Before deciding to erect an antenna at any of these heights, it is important to consider the angle at which the signals are likely to arrive from the ionosphere.



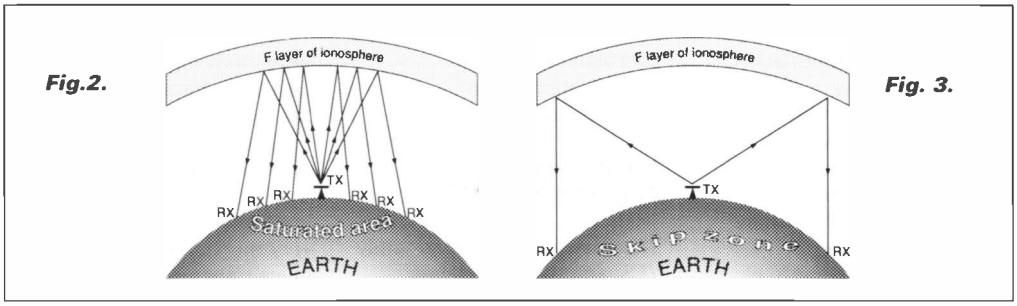
Reflections

In one of the earliest articles in this series (July '87 *SWM*), it was explained that the signals from a short wave transmitting station reach the point of reception by means of one or more reflections between the ionosphere and the surface of the earth. By using a suitable frequency and an antenna with a high **angle of radiation** at the transmitter site, it is possible to saturate an area with the signal up to a distance of several hundred kilometres from the transmitter - **Fig. 2**. This technique is used extensively for broadcasting in the tropical areas of the world. It also enables stations in Europe, for example, to reach listeners in Europe in the 75, 49 and 41m bands. Because the reflected signals arrive in the saturated area almost perpendicular to the surface of the earth it is advisable to use a receiving antenna which has a high angle of acceptance, e.g. a dipole mounted horizontally λ/4 or less above the ground - see **Fig. 1a.**

Depending upon the prevailing propagation conditions and the frequency chosen for the transmission, it is possible to reach listeners in more distant target areas via a single reflection or 'hop' by using an antenna with a lower angle of radiation at the transmitting station - **Fig. 3**. The angle at which the reflected signals arrive at the receiving point may be fairly low, consequently a horizontal dipole erected λ/2 above the ground and orientated for maximum response in the horizontal plane may prove to be suitable - see **Fig. 1b**. Owing to the diameter of the earth and the maximum height of the reflecting F layer in the ionosphere, the greatest distance that can be covered by a single reflection or 'hop' is about 4000km.

Providing the propagation conditions and the frequency of transmission are suitable, much longer distances can be covered by means of multiple reflections between the F layer and the surface of the earth. Each time the signal is reflected it is attenuated, so it is important to minimise the number of hops involved. This can be achieved by using a transmitting antenna which has a low angle of radiation. An angle of 7° is commonly used for very long distance high frequency transmissions. Such a low angle can be obtained by stacking four horizontal half-wave elements one above the other with a spacing of λ/2 and then feeding them in phase. Unfortunately, very tall masts are required to support 'stacked arrays' of that type, so their use for receiving purposes cannot be contemplated by s.w.l.s.

To ensure that the reception of such low angle long distance signals will be optimised it is necessary to employ an antenna with a low angle of acceptance. A horizontal dipole suspended λ above the ground and correctly orientated will respond to incoming signals at 12° (see **Fig.1d**), but an even lower response can be obtained by erecting a dipole vertically, so that its centre is 3λ/8 above the ground - see **Fig.4**. This will result in an omni-directional response in the horizontal plane. Another way of lowering the angle is to construct a centre fed antenna which has an overall length of 3λ/2, 5λ/2 or 7λ/2 at the frequency of operation and erect it in the inverted V configuration. The angle at the apex should be about 120°. If a 1:1 balun is attached to the feed-point, the incoming signals can be conveyed to the receiver via any length of 50Ω coaxial cable.



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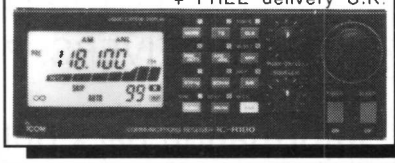

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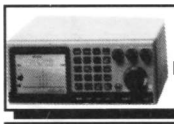

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Antenna Orientation

Having decided upon the most suitable height for the antenna, the next step is to establish the direction in which the desired signals can be expected to arrive, so that the antenna can be erected in the most favourable direction. At first it may seem that the world map in a school atlas will provide the answer. World maps of that type use a method of indicating meridians and parallels of latitudes that was introduced by **Mercator** in the 16th Century. Those used in the UK show the Pacific Ocean on the left hand side of the map. The Atlantic Ocean, flanked by North and South America, Europe and Africa are drawn over the central part. The Indian Ocean, along with India, the USSR, China and Japan are shown to the right. Australia, New Zealand and Tasmania are near the bottom right hand corner of the map.

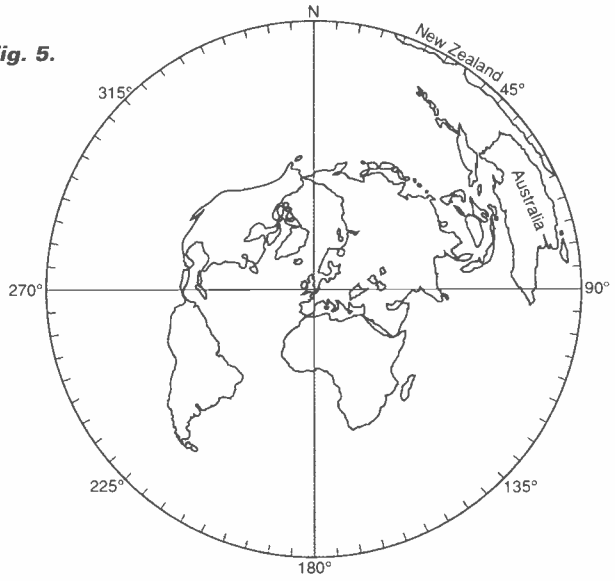
If a pencil line is drawn between Sydney, Australia and London on such a map it will suggest that a radio signal from Sydney would arrive in London from a south easterly direction. A line drawn between Midway Island in the north Pacific and London gives the impression that signals from there would arrive from the west south west. However, strange as it may seem, both directions are quite wrong! The truth is that if we want to determine the path taken by radio signal from some distant place to reach a receiving location, such maps are useless.

True Bearings

Although the real earth is not strictly a true sphere, for most practical purposes it can be considered as such, consequently a **terrestrial globe**, which is a spherical representation of the land, sea and political divisions of the earth, can be used to determine the true direction of a distant place and its distance from any given location. Terrestrial globes are mounted at the North and South Poles so that they can be rotated.

A few preparations are required before fairly accurate bearings can be taken with a globe, which ideally should be at least 300mm in diameter. The first requirement is to cut out a paper disc about 80mm in diameter and then draw a straight line from its centre to any point on its circumference. Next, pass a map pin* through the centre of this disc and then use it to hold the disc in place on the surface of the globe at exactly the location of the receiving site. Use a temporary strip of paper as a straight edge between this map pin and the North Pole at the top of the globe and then rotate the paper disc so that the line drawn on its surface coincides with the straight edge and points to the north pole. Use a second map pin* to prevent the paper disc from rotating.

Fig. 5.



(*Blutak can be used to hold the disc in place if the construction of the globe does not permit a couple of map pins to be lightly pressed into its surface.)

To find the true direction of any distant place, hold the strip of paper as a straight edge between the map pin at the disc centre and the desired location on the globe and draw in a line on the paper disc. Use a protractor to measure the angle between north and this line - this is the bearing in **degrees true**. It is important to understand that **true north** and **magnetic north** as shown by a compass, are not one and the same thing. There is a difference between them which is quoted in degrees and is known as the **variation**. The variation becomes slightly less each year. A good prismatic compass will enable the direction of magnetic north to be established to within one degree or so, provided care is taken to avoid the effects of nearby magnetic objects. From this, true north may be determined by allowing for the variation.

It is also possible to establish true north in other ways, which avoid the use of a compass. On bright sunny days it will be possible to study the shadow cast by a perpendicular stick. At exactly noon (1200UTC) it will point to true north. This method will only be accurate if the stick is truly perpendicular, so be sure to check it with a plumb-line. An alternative approach, which can only be used on a clear night, is to look for the **Pole Star**, around which all other constellations appear to revolve. Unfortunately it is not a very bright star, but it can be easily located by using a widely known group of stars called **The Plough** as a pointer. The Pole Star is almost directly over the North Pole. When viewed from the UK it appears to be roughly half-way between the zenith (over-head) and the northern horizon.

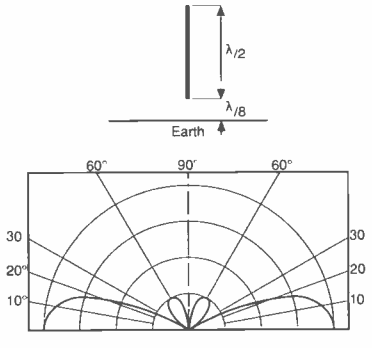
Great Circle Route

By simply looking at a globe it will be obvious that although a radio signal may take the direct path between any two places on the surface of the earth, this is not a straight line, but part of a circle! The direct path is therefore referred to as a **great circle** route, which are centred on a particular location, e.g. London. Anyone unfamiliar with them may well be surprised by their strange appearance - see **Fig. 5**. The true bearing and distance of any place in the world from London can be quickly ascertained by simply placing a ruler between the centre of this map and the chosen location. The bearing in degrees true can be read off the 360° scale around the outer periphery of the map and the distance can be measured from the centre of the map to the chosen place with a ruler. Placing a ruler between the centre of this map and Sydney shows the bearing to be 66°T, i.e. to the north east from London and not to the south east as the Mercator map implied, while Midway Island lies on a bearing of 358°T which is almost over the north pole!

Having established the direction of true north and used either a globe or a great circle map to ascertain the bearing of the distant transmitter location in degrees true, all that remains is to study the response of the antenna in the horizontal plane and then erect it in the most favourable direction at a suitable height.

Great Circle Maps, centred on London, which were given free with the April 1989 issue of *SWM*, are available from the *SWM* Offices in Poole for £1 including post and packing

Fig. 4.



propagation

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

Was it the activity from the group of sunspots, observed & drawn by **Patrick Moore** (Selsey) at 1209 on November 23, **Fig. 1**, or the group he observed at 1000 on December 5, **Fig. 2**, which caused the big aurora on November 27? This event lasted throughout the evening & was observed in many forms from Herstmonceux in Sussex, Co Clare in Ireland & many parts of Scotland. **Doug Smillie** (Wishaw) logged tone-A signals on 50 & 144MHz from stations in France & the UK on the 27th & weak effects on the signals from the beacons GB3LER & GB3RMK on the 28th. Similar signals were logged by **Tony Hopwood** (Upton on Severn) on the 27th, 28th, 30th & on December 4. Did any of you log anything unusual on those days?

Solar

During the latter half of November, **Ron Livesey** (Edinburgh), using his projection apparatus, located 3 active areas on the sun on the 19th & 26th & 4 on days 20, 21, 22, 24 & 27. In December, he observed 4 on days 5, 9, 19, 23, 24 & 28; 5 on the 10th, 13th, 25th & 29th & 6 on the 3rd.

"It now seems certain that the maximum occurred in July 1989 with a smoothed sunspot number of 158.0", wrote **Neil Clarke G0CAS** (Ferrybridge). He reports that the mean solar flux for November & December was 183 & 204 units respectively. The daily variations for each month are shown in **Fig. 4a & b**. It is worth looking at the sunspot groups as seen by Patrick Moore at 1145 on the 18th & compare its passage with Neil's chart, **Fig. 3**, between the 1st & 20th.

Cmdr. Henry Hatfield (Sevenoaks), using his spectrohelioscope, located 2 sunspot groups on December 5; 4 on the 6th, 7th & 27th & 3 on the 12th & 14th. Despite cloud on the 24th he saw a large extended spot group in the south-east quadrant with an active plage & groups with long chains of spots on the 14th & 27th. Henry's radio telescope recorded individual bursts of solar noise, at 136MHz, on days 14, 23, 24 & 27 & 'noise storm' conditions on the 7th, 17th, 19th & 24th.

Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of visual aurorae from observers in Scotland for the overnight periods on November 8, 14, 17, 18, 25, 26, 27, December 8, 12, 13, 18, 21, 24 & 26. Ern Warwick reports that the German beacon, DK0WCY (10.144MHz) was giving weak auroral warning signals at 1730 on December 12, 1000-1130 on the 13th & 1900 on the 24th. At times he heard "fast fading" on the signals from the 28MHz beacon in Australia (VK2RSY) on the 21st & 22nd, "echos" on the Eurpoean beacons (DF0AAB, DL0IGI, IY4M & OH2TEN) on days 1, 2, 3, 4, 7, 8, 9, 20 & 25 & from the USA (WA4DJS) on days 1, 2, 7, 10, 18, 20, 21 & 25. He noted echos on the 14.100MHz signals from LU4AA (Argentina) on the 22nd & 25th.

Magnetic

Along with his Ap magnetic index graphs for November & December, **Fig. 5a & b**, Neil Clarke points out that both months were generally quiet with the index below 10 on 22 days in November & 26 days in December. The various magnetometers used by Tony Hopwood, **Karl Lewes** (Saltash), Ron Livesey, **David Pettitt** (Carlisle) & Doug Smillie between them recorded 'unsettled' conditions on November 17th & 'storm' on the 27th & 28th and, apart from 'storm' activity on the 24th, December was also "a quiet month".

International Beacons

Thanks to **Chris van den Berg** (The Hague), Henry Hatfield, **Ted Owen** (Maldon), **Fred Pallant G3RNM** (Storrington), **Ted Waring** (Bristol) & Ern Warwick for their 28MHz beacon observations from November 26 to December 25.

Gordon Foote (Abingdon), equipped with a Kenwood 2000 receiver & v.h.f. converter, ERA microreader, AT1000 a.t.u. & a long wire antenna, is joining our beacon team & is preparing a log for our next issue. Ern Warwick added new beacons to the list when he copied signals from K0HTF/BCN (Iowa - 28.250MHz), KB8JVH/BCN (Ohio - 28.241MHz), KB9DJA/BCN (Beacon of Radio Joppa, Nr Mooresvilles, Indiana - 28.295MHz), KE0UL/B (Greely Co - 28.294MHz), N8KUH (Detroit? - 28.275MHz, PT2IBM (Nr Brasilia - 28.222MHz), WA4SZE/4 (28.205MHz) & WJ9Z/B (28.251MHz). Looking at other amateur bands during this period, he often copied signals from IK6BAK (24.915MHz), PY2AMI (24.931 & 18.100MHz), LU4AA, ZS6DN/B, 4X6TU/B & 4U1UN/B on 14.100MHz & DK0WCY on 10.144MHz.

Band II

The highs & lows for the period Nov 26 to Dec 25 can be seen on the barograph chart in 'dxtv round-up' on page 00. While in Laurencekirk on Dec 1, **George Garden** (Edinburgh) heard ILR R. Clyde from the Black Hill transmitter. However, among the DX was a signal above 95MHz, varying violently in strength over five minute periods. Eventually, after about six hours of checking, he found that it was BBC Radio Cumbria from Carlisle. George was there again early on the 15th, when he found v.h.f. conditions good and, with his Sony receiver & indoor dipole, logged a fair signal from BBC R. Newcastle, ILR R. Borders "at phenomenal strength" & a weak R. Tay from Perth.

The most interesting was finding ILR Metro Radio, not previously heard in Laurencekirk jammed between the strong signals of North Sound Radio from Aberdeen & Radio Forth from nearby Craigkelly. By carefully rotating his dipole he managed to reduce the signal of Radio Forth sufficiently to identify Metro. That's known as keen DXing George.

Simon Hamer (New Radnor) logged BBC Radio Newcastle, BFBS from Germany, Denmark's DR-2 & Radio Kerry, a new Irish independant station, on the 2nd and, at 1200 on the 15th I received strong signals from BBC R. Bristol, Shropshire & WM & Radio Wales plus about 8 continental voices & a few cochannel 'warbles'.

Rhoderick Illman (Oxted) tuned the band on the 24th with his ICF-7600DS & its own telescopic antenna & logged the idents Captial, County Sound, GLR, Invicta, Jazz FM, Kiss FM, LBC, Melody, Mercury, Radio Kent, Southern Sound & Radio Sussex.

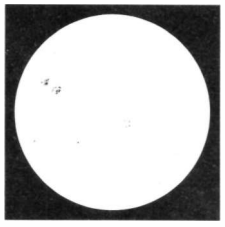


Fig. 1.

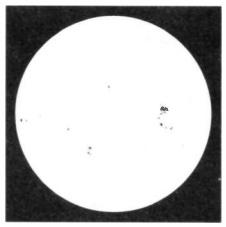


Fig. 2.

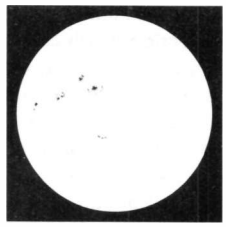


Fig. 3.

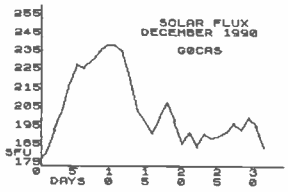


Fig. 4a.

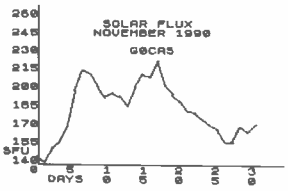


Fig. 4b.

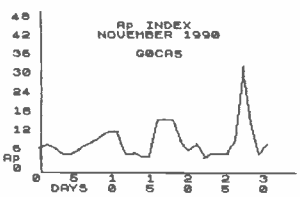


Fig. 5a.

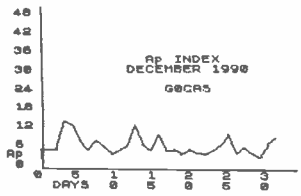


Fig. 5a.

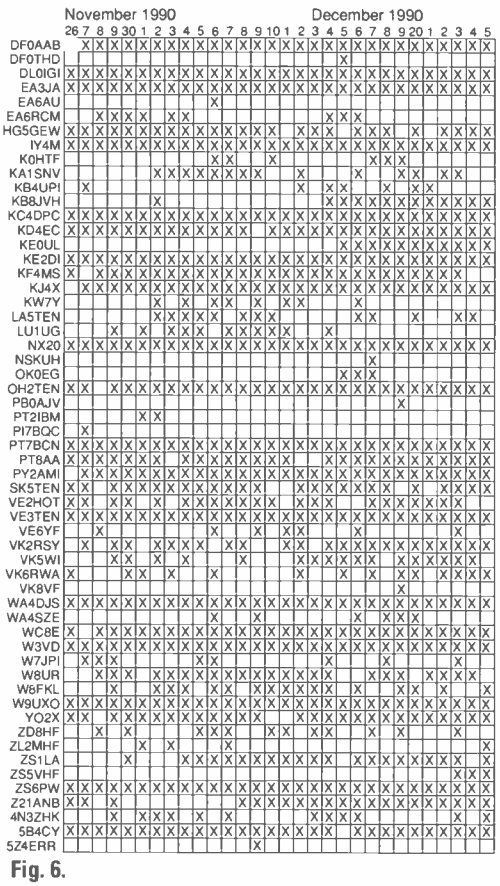


Fig. 6.

ssb utility listening

Peter Rouse GU1DKD
Barcroft, Rohais de Bas, St Andrews, Guernsey, C.I.

Thank you for your letters, it is now quite clear from your comments that a column like this one is long overdue. Several readers queried why we had waited so long to cover non-amateur communications and all I can say is that *SWM* has been a little wary in the past because of Britain's highly restrictive laws on who can listen to what.

It is my intention to publish a book in due course that will be based on this column. A vast amount of interesting data has already been gathered and I hope to add to it any snippets that readers submit for publication. I mention this now so that no one comes to me later and accuses me of pirating their material. So if you submit any frequencies it should be on the understanding that I can publish them in the book as well as the column.

Publication at earliest will be towards the latter part of this year but I hope that it will provide a useful reference work and be far better than some previous efforts, where authors have simply published their logs. My own book will contain only voice communication listings of stations that use or partly use the English language and lists will be cross referenced by frequency, allocation, station name and country.

More on Space

Last month we looked at h.f. used by NASA and I would like to round off coverage of space launches with a further source of transmissions. These days amateur activity in space is quite considerable and is co-ordinated through a world-wide organisation called AMSAT. AMSAT has now put several satellites into earth orbit which not only provide scientific experiments but also act as relays for amateur voice traffic. I have taken the liberty of including amateur information in this column because some AMSAT transmissions cover the launches of shuttles and the European Ariane rockets. This service is provided by ALINS (AMSAT Live Information Network System). ALINS operates a network of stations to relay information during space flights not only by NASA but also by the European Space Agency, ESA, with their Ariane rockets which are used to put satellites into orbit. The stations in the ALINS net often relay the count-down sequences and occasionally, in the case of the Shuttle, the voice traffic between the crew and ground.

The Ariane launches are from Kourou in French Guyana and occasionally an amateur station operates from the site transmitting launch information.

The following frequencies are used by ALINS:

W1AW, Newington, Connecticut, USA (beaming to Europe)
1.890; 3.990; 7.290; 14.290; 21.390; 28.590MHz

WA3NAN, Goddard SFC, Greenbelt, Maryland, USA (beaming USA)
3.860; 7.185; 14.295MHz

W5RRR, Johnson SFC, Houston, Texas, USA (beaming C. & S. America)
3.840; 14.280MHz

W6VIO, Jet propulsion Laboratory, Pasadena, California, US
3.850; 21.280MHz
Transmission from South Africa on:
3.718; 7.080; 14.282MHz (s.s.b.)
3.665; 7.094MHz(a.m.)

Other Frequencies

Up to date information on the activities of AMSAT can be heard on the UK AMSAT net on Sunday mornings on 3.780MHz starting at 1015UTC and on Monday and Wednesday evenings at 1900UTC. If there is interference on the spot frequency then the net tends to move up or down slightly in frequency to find a clear area. The same frequency also carries live count-downs of Ariane launches when they are carrying amateur payloads.

The amateur club station at Kourou also occasionally goes on air prior to and during a launch and is usually found on 14.282 and 21.382MHz.

RS (Radiosport) Series

Although several frequencies are in use in the 28MHz amateur band by these Russian satellites some are only for beacons and data. However, you may hear s.s.b. voice traffic between 29.410 and 29.500MHz.

Desert Storm

I write these final words just 7 hours after the first raids on Iraq and Kuwait. During the last few weeks activity on some s.w. frequencies has increased as more and more aircraft were routed down through the Mediterranean and Egypt and then onto Saudi Arabia. Some h.f. traffic though has virtually disappeared. The early warning radar aircraft (AWACS) have not been heard and it must be assumed that as more sophisticated equipment has arrived in Saudi Arabia they have switched to using more secure forms of communication.

There has also been a reduction in the use of the American military communication satellites (Fleetsatcom, Leasat, etc.) for voice communication although encrypted digital and RTTY traffic remains high. Channel X-ray (261.675MHz) on Fleetsatcom West has been silent for weeks now even though it normally carries a large amount of telephone patch traffic using wide-band f.m. Regular satcom watchers believe it's possible that these links are being avoided in case users inadvertently give away information that could be useful to the Iraqis. However, there is now a further mystery surrounding these satcoms in that several new channels appear to be in use and and are interleaved between the existing 25kHz spaced channels. The operators are using a language that sounds like Russian but has not been positively identified so far. Frequencies noted to date are:

248.0125, 249.8125, 249.8875, 249.9625, 251.9350, 260.6550, 260.7500, 266.8400 and 266.860MHz.

Signal strength suggests that these transmissions are coming from both the Atlantic and Indian Ocean geostationary satellites. If you have equipment to monitor these frequencies and can identify the language then let me know so I can pass it on to readers. I would also like to hear any theories on why the US forces should suddenly start allowing others to use their satellites.

Finally a point concerning the list that appeared in the January issue (which seemed to excite certain members of the national press). **Bob Biggart** of Ayrshire rightly points out that the callsign 'Logis' should have been 'Lajes'. This is the American base on the island of Terceira in the Azores and known operational frequencies are 6.750, 8.967, 8.970 and 13.244MHz.

Next month we will be looking at some of the frequencies used for search and rescue and helicopter operations in the North Sea. If there are any particular topics you would like to see covered in the future or if you have any snippets of information that may be of use to other readers then please drop me a line at the above address.

Abbreviations

a.m.	amplitude modulation
ALINS	AMSAT Live Information Network System
AMSAT	
ESA	European Space Agency
f.m.	frequency modulation
h.f.	high frequency
MHz	megahertz
NASA	National Aeronautics & Space Administration
RTTY	Radio TeleType
s.a.e.	stamped adressed envelope
s.s.b.	single sideband
s.w.	short wave
UTC	Universal Co-ordinated Time (= GMT)

NASA: National Aeronautics & Space Administration responsible for civil space activities in the US, both research and development.

AMSAT-UK. For details on this organisation, send an s.a.e. to: AMSAT-UK, 94 Herongate Road, Wanstead Park, London E12 5EQ.

ESA: European Space Agency, formed in 1975 combining the activities of the European Space Research Organisation and the European Launcher Development Organisation. ESA, an inter-governmental agency, co-ordinates European space activities and related technologies. In particular, it instigates and manages international space programmes on behalf of its thirteen members states.

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TS940s HF Transceiver	£1995.00
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SP940 Speaker with Filters	£87.55
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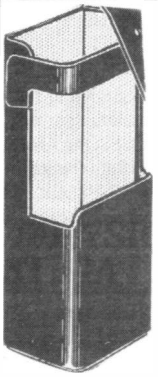

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bandscan

Greg Baker

PO Box 208, Braidwood, NSW 2622, Australia

It's the beginning of autumn here and after a long hot summer, notable for it's bush fires, that's welcome relief. Frequency spectrum news doesn't stop for fires, of course, so here goes.

Radio Australia

After 49 years, Radio Australia (RA) ceased its Japanese language service on 31 December 1990. Keith Synnott, Publicity Officer with RA, says that along with the BBC and other s.w. broadcasters, RA found that its Japanese audience was low and falling.

Japanese language listeners' mail to RA has been running at around 2% compared to 40% in Indonesian, 30% in Chinese and 15% in English.

To replace the Japanese service, RA is developing other forms of communications. It has reached broad agreement with Japanese radio stations to provide short items about Australia to broadcast through their outlets on a regular basis. Keith Synnott beleives that the audience reach will be greater than via the traditional s.w. listener.

On other fronts, RA continues to transmit in English, Indonesian, Standard Chinese, Cantonese, Tok Pisin (Papua New Guinea pidgin), French, Tai and Vietnamese. Though RA beams into the Asia Pacific region, subject to propagation conditions and frequency congestion, transmissions can be heard worldwide. RA publishes guides as to which frequencies are worth trying from other areas including the UK and Europe. Reports, schedules and other information from **Radio Australia, GPO Box 428G, Melbourne, Victoria 3001, Australia.**

The number of Australian broadcast transmitters increased by 259 to 1559 in the period July 1989 to June 1990. These transmitters are used to broadcast Australian Broadcasting Corporation (ABC) and commercial radio and television services as well as Special Broadcasting Service (SBS) and public radio services throughout Australia. Public radio services are those operated by community organisations and special interest groups. Currently they number around 100 Australia-wide.

Special Broadcasting Service

SBS is sometimes perceived as an 'ethnic' network broadcasting in languages other than English to that part of Australia's population from non-English speaking backgrounds. According to SBS publicist David Flynn, however, 'the SBS philosophy is to open up a whole world of viewing with quality material from all over the globe. This allows SBS-TV to compliment those services provided by the ABC and commercial networks, at the same time reflecting a contemporary Austalian society which is inherently multicultural'.

The upshot is a television service in around forty languages with English taking up around 50% of on-air time. Non-English language programmes are sub-titles in-house.

Operating from facilities in Sydney SBS transmits television nation-wide from 36 u.h.f. transmitters with plans in the period to 1994 for a further nine transmitters.

In addition SBS operates a.m. m.w. radio stations 2EA and 3EA in Sydney and Melbourne respecitvely. Unlike the television network, 2EA and 3EA broadcast exclusively in languages other than English. The current language mix heavily favours Europe, Australia's traditional migrant source. With increasing levels of immigration from the Asia/Pacific region, SBS Radio recognises the need to target more the newly arrived groups than the established ethnic communities. Studies are currently underway to decide the most appropriate language mix for the 1990s and in 1991 a new schedule of on-air time will be put into effect.

Australian Broadcasting Corporation

The ABC itself operates not only a.m., m.w. and f.m. v.h.f. radio and v.h.f. and u.h.f. television services, but also internal 10kW h.f. radio services to cover areas of the continent out of touch with local coverage transmitters.

Radio stations VLM and VLQ operate from Brisbane on 4.920 and 9.66MHz respectively, VLW operates out of Perth on 9.610, 15.425 and 6.14MHz. There are three s.w. transmitters in the Northern Territory: VL8A operating from Alice Springs on 4.910, 3.315 and 2.325MHz and VL8K from Katherine on 5.025, 3.370 and 2.485MHz.

The Brisbane and Perth transmitters feed into slope incidence antennas while the Northern Territory transmitters use antennas designed for forward scatter propagation. No hope of hearing those in the UK but you can always try! Reports to ABC Radio, GPO Box 9994 in Darwin 0801, Perth 6001 or Brisbane 4001, Australia.

Television Stations Moving Frequency

Clearing of television stations from the lower end of the v.h.f. band continues. Because of a 1950s decision that f.m. radio would not be widely demanded or used in Australia, parts of the v.h.f. spectrum internationally used for f.m. radio was allocated to v.h.f. television.

However, f.m. radio has taken off in Australia and stations using Channel 3 on 85-92MHz, Channel 4 on 94-101MHz and Channel 5 on 101-108MHz are being moved, most to u.h.f., but some to within the remaining v.h.f. television allocation and to a restructured upper end including a new Channel 9A. Though not in the v.h.f. f.m. band Channel 5A 137-144 is also being moved because of competing nearby uses of the spectrum.

Though I'm more of radio than a television person, I'm particularly interested in these moves. For years our main television has been from Channels 4 and 5A and by the time you read this I guess I'll have moved the old v.h.f. television set to be a computer monitor full-time and we'll be the owners of a brand new shiny u.h.f. set.

Aussat

Following a special conference of Australia's ruling Australian Labour Party, Australia's national satellite system, Aussat, will be sold to private enterprise.

Aussat currently has three satellites in geostationary orbits. Aussat-1 is at 160°E, Aussat-2 at 156°E and Aussat-3 at 164°E. They transmit and receive in the Ku-band: receive 14-14.5GHz, transmit 12.25-12.75GHz.

Each satellite has seven transmit beams: National A, Papua New Guinea, South-eastern Australia and Western Australia on vertical polarisation and National B, North-eastern Australia and Central Australia on horizontal polarisation. In addition, Aussat-3 has a south-west Pacific transmit beam. Of the fifteen transponders on each satellite, four are high power at 30W and eleven are low power at 12W.

The two second generation Aussat satellites go into orbit in 1991-92. In addition to a range of low and high power transponders, the second generation satellites will include a very high power 150W transponder operating on L band (1.5-1.6GHz). This transponder will be available to provide telecommunications services to those areas of the continent currently beyond the reach of terrestrial and mobile systems. Targeted industries include emergency services, railways and the long-haul trucking industry.

Pay television capabilities are to be provided too to push out a beam with sufficient signal strength to enable reception by small, flat plate, antennas about 500mm square. Up to six channels will be available.

News and comments are welcome, but for replies please send 2 IRCs.

Abbreviations

a.m.	amplitude modulation
f.m.	frequency modulation
GHz	gigahertz
h.f.	high frequency
IRC	International Reply Coupon
kW	kilowatt
m	millimetre
m.w.	medium wave
MHz	megahertz
s.w.	short wave
u.h.f.	ultra high frequency
v.h.f.	very high frequency
W	watt
%	percent

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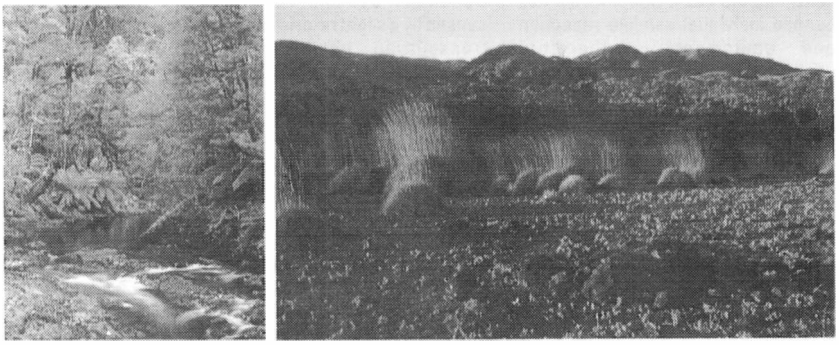

RADIO AUSTRALIA ▲ THE WILDERNESS SOCIETY

satellite tv news

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

Dominating the news in mid-January are, of course, the events in the Gulf and this is being reflected in many satellite news feeds in both C and Ku bands. The former 27.5°W Intelsat VA F11 has been positioned at 57°E to provide easy access for ground-located SNG (satellite news gathering) portable stations, output for the UK is spotted into London at 11.498GHz and is relatively strong on a 2m diameter dish (I'm told). The exclusive news feed is leased by the BBC and pooled for other UK broadcasters such as ITN and Sky.

I personally have noted Middle Eastern news feeds incoming on my 1.5m dish on Eutelsat 1 F5 10°E at 10.97GHz ex-Jerusalem (the JCS caption stands for Jerusalem Capital Studios) and the favoured EBU bird - Eutelsat 1 F1 - a vintage craft still giving good service despite its inclined orbit. JTV Jordan favours this craft with its news feeds into Europe though sound in sync is mainly used resulting in unsteady pictures. The Gulf Crisis has overshadowed the USSR and her own internal problems in Lithuania, Gorizont craft at 11/14°W have carried Visnews material, often a pristine Russian test card can be seen at the end of the late evening circuit. Developments on Intelsat 1°W and the NorNet (TV Ruta) transponder (10.969GHz horizontal) and tests using D2MAC have been carried out during January, some days the TV4 programme service is carried as test material in the MAC standard - though as yet its in the clear, no scrambling test have been seen.

VISEUROPE is a permanent circuit carried on the Eutelsat II F1 satellite at 13°E in the Telecom band at 12.52GHz vertical. Material is carried for all European broadcasters starting at 0530-0550 'Dawn Feed' and then at varying times throughout the day up to the 'Europe Extra' feed at 1700-1514UTC. I first noted the material being transmitted on January 2 though the Gulf again has lead to 'specials' throughout the day.

Ken Kirkley (Botswana) is a distant reader in deepest Africa and is using a 4.9m dish - there's no problem with neighbours and from the pictures sent in, the garden seems to stretch for miles into the bush! South Africa has banned individual satellite reception and equipment is therefore unobtainable in local shops, any spares and components have to be shipped in from the UK. His VHS video shows a vast number of C Band (3.7-4.2GHz) reception channels including BBC-TV News though for who its intended is not known. Most active satellite for Ken is Intelsat VF6 F10 at 18.5°W with many English feeds. Intelsat at 60°E also carries many UK transmissions including ITV football (possibly the feed to Australia).

For those jaded TVDXers (such as myself) that always seem to miss all of the very few winter-time signals, a touch of exotic reception can be enjoyed daily since Eutelsat I F2 (7°E), at 11.05GHz horizontal with Greece on PM5534 test-card prior to programme commencement at 1600-1630UTC and Cyprus also on PM5544 1730-1800 thence to programmes - though the times have varied a little since first logged.

From time to time the 27.5°W Intelsat VA F12 over its EBU news circuit on 11.47GHz vertical lapses into more informal pictures showing its New York staff at play. Fellow writer **Alan Gardner** ('Scanning') noticed on January 20 that the EBU feed was carrying shots of its staff alongside a rack of h.f. receiving gear. A close up of one such receiver showed it tuned to 11.99MHz - one of Kuwait's former frequencies and audio over the satellite feed indicated heavy jamming on top of the main short wave programme. Alan quickly tuned his own receiver (at Eastleigh, Hants) and also heard the same transmission but jamming was at minimal level only. Alan is using a basic Amstrad SRX100 and 650mm dish on a tripod and successfully receiving - albeit with some 'sparklies' - many of the weaker Ku band signals.

Orbital Slot News

EUROPESAT is the Eutelsat answer to Direct Broadcasting by Satellite (DBS) and Eutelsat is currently at an advanced stage of preparing paperwork for contract tendering - currently some 9 countries have requested transponders and some 39 t.d.r. are currently requested (for Austria, France, Germany, Italy, Netherlands, Portugal, Sweden, Switzerland and Yugoslavia). Europesat will slot at 19°W comprising 3 satellites plus in-orbit spare with t.w.t.s of 125W and covering all of Europe via steerable zone and spot beams, intended for 1996 commencement, its possible that 1993 could see a modified Eutelsat II type craft pressed into DBS service. If 20 transponders are 'booked', a go-ahead for the project will be OKed. It's now official, the Scandinavian cable feeds down-linking over 1°W that during December became very noisy is caused by a slight re-orientation of the transmitting beams to favour Scandinavia more, which in turn has reduced signal levels in Western Europe.

South Korea is also getting into the DBS act and intends to launch her own bird in April 1995 for operation in the Autumn of that year, this is to counteract the increasing number of folk intending (or currently) viewing the Japanese DBS satellites.

Tele-X the Nordic satellite that was intended to offer DBS to Scandinavia and generally has been a failure is now being leased by Denmark to provide telecommunications circuits with Poland. Tele-X is used occasionally for relaying football and has a single cable user TV4. Interesting to note comments in the press that a private group are considering making an offer to buy the soon to be redundant Marco Polo birds used for the original BSB service at 31°W. India intends to launch her INSAT-II satellite this coming year and a second in the series in 1992, providing TV transmission facilities, interesting to note that India intends to use her own launch rocket for orbiting the birds.

A Dutch programme service is planning to commence October 1991 over the Eutelsat II F1 bird using the PTT transponder 11.181GHz horizontal, all programmes will be in Dutch *BBC Television International* - a television version of the World Service hopes to air from March 1991 initially over Intelsat VI F4 at 27.5°W and hopes to extend service to other satellites in due course. MTV meanwhile is being aired in Moscow several hours a week. MTV will possibly have a rival on the Astra 1B craft as a new consortium lead by the chairman of Palace Pictures is planning the new service, popularity of 1B, however, may mean a wait until 1C goes up. Media rumours suggest that the SES Astra operators in Luxembourg are now considering a future Astra 1D!

PanAmSAt are also planning new facilities with another Atlantic satellite at 39.5°W carrying on-board 18 Ku and 24 C Band transponders, hopefully during late 1993 and at a later stage yet a further craft to be located at 43°W.

Turksat is likely to launch mid-1993 using a modified Eutelsat II bird with 12 channels covering central Europe.

Mongolia is now using a transponder on ASIASAT 1 for relaying her TV service and also for improving her general communication facilities. China meanwhile is becoming 'twitchy' over the use of individual satellite dishes, seeking to prevent her population from enjoying the video fare of the west and learning a little too much about what is happening in the real world.

Finally, it looks like France has opted to cease her involvement with the high-powered TOF series of satellites - there have been several failures of the high powered travelling wave tube amplifiers- and she is now opting to go aboard the Eutelsat EUROPESAT series - though with perhaps a long wait. The French broadcasters are viewing this with mixed feelings, relieved that spare capacity will be available when faults occur - there is virtually no back-up on the TDF1, 2 craft. The TOF series have become high powered failures and generally are now used for network distribution only - with the departure of Germany onto Astra and Kopernikus following the TV SAT failures, transmitting in the clear (i.e. non-encrypted) and without the D2MAC standard so there have been suggestions that the D2MAC standard could fall. The PAL PLUS system it seems offers the potential of HDTV and the 16:9 format whilst retaining compatibility with standard PAL receivers, yet a further nail in the D2MAC coffin after the demise of the D2MAC BSB over Marco Polo.

Eutelsat II F2 launched successfully from Kourou Space Centre (French Guiana) the night of January 15 and antennas with solar panels have deployed. Over the next few weeks, the satellite will be positioned into her new home at 10°E to replace the existing and rather elderly Eutelsat I F5 bird. Some 16 high-powered Ku band transponders are on board (50W TST), fur of which will be used in digital business communications. The new 'wide-beam' coverage will provide a greater European coverage than the present incumbent F5. Operation should commence in March.

Stop Press

With current hostilities in the Gulf region so many satellites are now employed with news material (news feeds) uplinking from that region via several appropriate satellites and down into the UK and Europe. One frequency news source is the Jordon Television Centre who provide uplink and playout facilities. The photograph at the top of this column shows the identification caption from JTV AMMAN and feeding into the EBU (European Broadcasting Union) network centre in Brussels. This particular transmission is via the Eutelsat I F1 bird at 16°E. Interesting to note that sound in syncs (SIS) transmission is used, the result on picture with a conventional TV is that the image moves relating to the accompanying sound and in turn disturbs the picture sync information. To stabilise the video, incoming syncs are stripped off and locally generated syncs inserted. Result, a stable picture.

The former 13°E Eutelsat I F4 repositioning for Euteltracs mobile land services at 4°E is now in position and has been seen on test with black level and syncs at 11.1584GHz.

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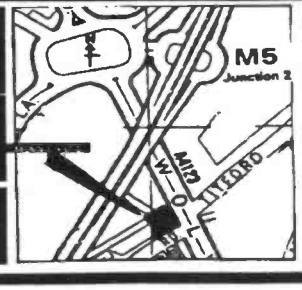

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amateur bands round-up

Paul Essery GW3KFE
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Last month, **Mr J. Scott** of Glasgow wrote in with some SSTV pictures, copied using a Kenwood R2000 and a 20m wire antenna; the receiver's output being fed to a Spectrum Plus 3 computer and a Star IC10 printer. John has a G1FTU SSTV program, software for RTTY and c.w.and awaits FAX decoding software. I apologise for not mentioning him - blame the paper-clip under which the letter got hooked! In a second letter John logged on s.s.b. PJ1B, 8P9X, VK5EK, KC4RHW in Antarctica, C53GH in The Gambia, HK5FWW, TA5C and YI1BGD from Iraq.

At the moment just about the only news that rates is from the Gulf or Lithuania. In the latter context an amateur friend tells me that, although he sent four food parcels to his pal in Russia in good time for Christmas, by January-end none had reached their destination!

J Kavanagh BRS 26053 (Swindon), an s.w.l. since 1936 but 'in-and-out' since 1966 with an FR-101, sent a batch of QSL cards dating from then - don't they remind me of big changes in the world!

Harold Wood from Gorton uses a home-brew a.t.u. to match 10m of wire, as an inverted-L, into a Philips D2935. On 14MHz this yielded LX150L for a special and A71BK in Qatar. Turning to 28MHz it's VE3VIV, HK2MKQ, 4N4MAX, YV5KNS, SV9AKI, YQ3R, the Romanian Himalayas Expedition, KC4QBP, an OD5RH who said he was in Tripoli (a phoney who didn't know his geography, or what?), HK0TCN, UD6GF, PT7BI, WP4YG, WP4CLZ (both Puerto Rico), VE3YRF, VE3DKZ, VO1JU, KC4SSK/M in Florida running 5W and W8LTXZ using 10W from Michigan.

Next, **B. D. Lucas** writes on behalf of a school club in the Bromley area, where they have gear and home-brew antennas for the bands from below Top Band to above 1296MHz, used on a systematic basis as part of a training programme. I have broken the list back down to bands, but it must be stressed this is a composite offering. Let's look at 28MHz first; on December 9, between 1406UTC and 1758, some ten pages of log, at 18 QSOs to the page, were booked in covering N America, S America, Europe, Asia, Africa - some 350 station calls logged with hardly a dip into the contest and very few Europeans. The missing continent was filled in with VK8HN on 24MHz; others on this band of interest included C31UA, 9J2EG, VK3NRG, VU2OO, YL and LY stations, A22JH, W9ZR, AP2JZB, W1DW, VE3ICR, OD5QE, A61AD (calling QRZ with not a nibble, would you believe?) K3UA, N9DEO, HK5LEX, PT7OO, K2JSO, N2JBD, JH1RFR, VK2APV, W8AH and shoals of EU stations.

G. Bramwell is at Swinton and wants to thank Phil Trippear G6GLD for help on possible modifications to the Trio 9R59DS. As for the log; on 28MHz W2/4X4FN, WD9HEB/P/5, KP4CLZ, KP4DQ, K6GJD/7, WD9FLI, VE3FWQ, T77C, 9H1FBS, SU5TS, OY9JD and IT9PRV. On 21MHz, it's NJ1J, VE3PDD, LU2NI and Europeans, while 14MHz yielded NP2CM, HK1HVG, KC4GCI, W2MRA, KD2KI, VE7ARS, W2JA, VE7LJ, VE7IAP, EA8/G0KPW, Z21HD, 9Q5UN, VK2APA, 4X6UO and 4X6YY. On 7MHz he logged VE2VOG, VE1XJ, VE3MRN/MM, VE1DX, VE5RX, TA4A, EA8IT, IT9KDA, CQ7DVV, PY5CC, JA3BLC, JA6GT, FG5FC, A92BE, FM5CD, PT7AUT, PP7JR, FM7WE, 9X5NH, 9N1MR, 6W1PZ, YS1EJ, FM5WD and VP2EXK. Finally, on 3.5MHz, it's KX1XK, VE1YX, K3GD/MM, VO1FG, VE2AFJ, KC1KQ, VE3EJ, VO1SA, OY9JD, TF1MM, EA8/G0KPW, 5N0MRD, JF4GEN, JF6DPM, JA6IEF, HL1UA, VS6BX, YC0WLL, CN1DE, A92BE, YB6GR, VS6VO, 5N0ET, TA2AI, JA5QC, JA1DYY and JH1HGC. I've not seen an s.w.l. log of that calibre for a long time!

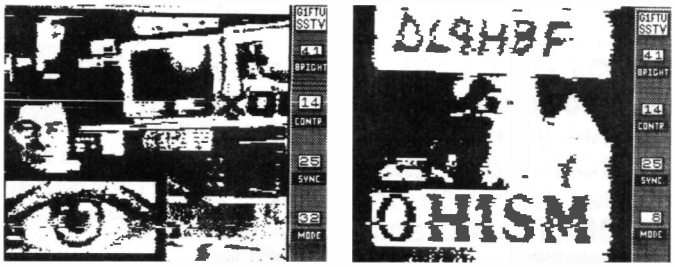
Now to **R. D. Williams** of Gloucester, who also mention five bands; starting with 3.5MHz it's JA2LU, HL1IUA, HV3SJ, JA1JRK, JA5RQT, JG1MUY, KC1SJ, KO1F, VK6ATG, VK6HE, VK6LK and W4OEP. Obviously 7MHz wasn't too popular since only JA1OYY and JA6XMM are recorded, 14MHz yielded just V85CA before attention was turned to 21MHz, where N7DF/P/NH2 on Guam was winkled out, with PT7SY, YC1HDR and YV5ENI. Finally on 28MHz there were BV2FA, V47KP and XU2AA.

"Does anyone know of, or have, a decent logging program for an Amiga 500 with a good search facility?" is the cry from **Vince Cutajar**. If anyone out there knows of one, please contact Vince direct, at 'Tikka', Mintba Street, M'Scala, Malta. On the radio front Vince notes 18MHz logging of OD5QX, A61AD and UA2WJ, while on 24MHz KBNL, A61AD, WCM (Kansas), W5SAL (N Mexico), KP4LY, KHA (Nebraska), TK/DL7HZ, GU2FRO, HI8A, V51KC and PJ2MI.

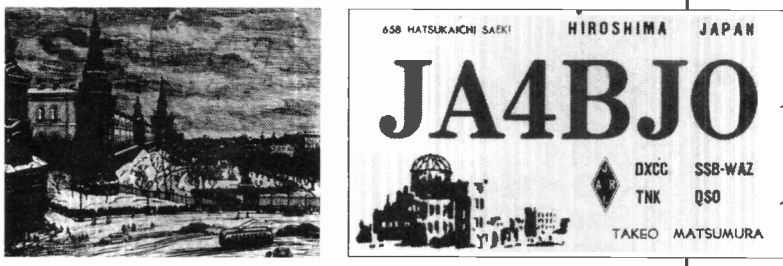
Another to look at 18MHz was **A. Marriott** (Bath) who found WA7ARU, XM3AT and W7EXR on 18MHz, WD4LGE, PT2DMS, PY2DW, K6AA on 14MHz and NF0S, VE7CV and W4YSK - all on c.w.

Eric Masters (Welling) is a QRP exponent who uses the Lake DTR3 to work all round Europe with around 1W; Eric says he doesn't hook a lot of DX with this power level, but - and this is the important bit - he does find that he can't get much joy unless his end-fed wire is operated against a counterpoise arrangement.

Only this morning, I was chatting to GM0EXN up in Dunnet Head. John has an end-fed wire for the lower bands and he finds that a long counterpoise tied at the far end to a rock at sea-level is enough to bring a 3S-point profit all round over a simple earth spike.



SSTV pictures from J. Scott.



QSLs from J. Kavanagh.

Roy Merrall (Dunstable) spent the first fifteen years of his life almost under the antennas of GNF, North Foreland Radio, which resulted in his main s.w.l. interest for many years being the bands, between 1.635 and 2.8MHz! Even now Roy listens to Top Band, and he logged these in four, one-hour sessions recently between 18-1900 or 21-2300Z: on s.s.b., G0ICC, G0IKI, G3EES, G4PC, G3JMG, IN3DZC in QSO with RB4ICK, UA6YE, UF6FIM, several OEs, G3ZWL, G0CMH, G3MJW, GW4OGP, G4XJZ, G4XPO, G3AGN, G8LC, G5KC and G6GOG - doubtless operating 'under supervision.' Turning to the c.w. stuff, G4ENA, G3KKQ, G0GMS, ON7SM, HB9ZEB, I4EML, OM1DOZ, DJ7WL, DK2MR, various DJs, OZ, UA2, OH, RA1; the antenna some 40m, end-fed at 12m and the receiver a 'hot' R5000. Roy says his c.w. 'ain't what it used ter be' but he still takes no aid.

As though to confirm this, **Ted Trowell** (Minster) comments on spending fifteen minutes waiting on what he thinks was XU8AA without hearing the callsign; in the end he gave up! However, ON7BW on s.s.b. and Y34SE on c.w. were copied on Top Band, 10MHz c.w. yielded N2DHW, K4II, J6LRR, AB4RI, ZP6XDW, W2NS, EA8AB, SM6AOU, YO3CD, W3EER, W1JIY, W1HMD, and W2GW. On 14MHz ZL3FV on s.s.b. and EA8QO on c.w. left 28MHz to include c.w. to KY7M, WO0G, K5NA, N6TIB, K5MA.

Pat Permentier (Kortrijk) is a c.w. specialist and a real DX-addict. Pat has a CBM 64 with a suitable TNC to catch the ON1CED DX-Cluster on packet, linked to PA, DL, LX, HB9, YU and so on through about ten nodes. In addition he has gear for 144MHz and 432MHz, and reception is by FT-101E and TS-940S. Outside, there is a TH3 for the h.f. Bands, a Delta Loop on 7MHz, and an inverted-V for 3.5MHz, used also for the WARC bands. A trapped dipole for these last bands is 'in the works' - traps made but too much interest in the bands to get around to finishing it! 3.5MHz first: EA9IE, JA3KYC, ZF2PT, J8/K3IPK, K6UA, N7RK, W6CCP, OY1CT, 8P9HT, J82A, PJ9A, J82A, K7EG, JK6GEW, ZD8Z, TA3D, HC8U, P40GD, J6DX, ZF2PR, VP5VAA, D44BC, HI8A, JW0AFA, 3W4DX, 8Q7AJ, UJ8JI, 4X4YM, 6W1QB, JH1RES, 3W4DZ, and JE7RJS at 0728UTC by long path propagation. As for 28MHz that came up with AH0/JO1CRA, KH0AM, D44BC, CN5N, ZP0Y, N3AD/VP9, FG/F6EPY, FH5EJ, PJ9A, J82A, 8P9HT, HC2G, VS1Z, D68GA, 9M2AX, KG4DD, C56/G4ODV, ZS9Z/1, SV5/SM0CMH, IL/OH7XM, FS/W2QM, XU0AA, 6Y5/W9GHY, and 3W4DZ. Pat has similar lists for each band, but we will have to omit them on space grounds!

QSL Bureau

I hear that the inwards QSL Bureau for VK3 (the State of Victoria) is no longer operating, and that all incoming cards which were in the box at the time of closure were destroyed. The reason given was 'the poor state of the Australian economy which precludes WIA from offering such 'luxuries.' It would therefore seem likely there is no inwards Bureau facility to any part of VK.

Eric Pickering (Blackburn) **is a** 7MHz c.w. exponent with 262 countries and WAZ confirmed on this band; on all bands this goes up to 306. The point of his letter is that he uses a quarter-wave folded monopole with coaxial feeder and some 80 radials varying in length between 4.5 and 24m. In the shack is an HRO Senior receiver, now in its third rebuild with three more in reserve! Between antenna and receiver is an attenuator (10, 20 or 30dB). For the other bands there is a 40m long end-fed.

Finis

That's all for this time. Deadline date is to reach me by April 1 or May 1, as always to the address above. Meantime, good DX!

dxtv round-up

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

First I would like to thank one of our readers from the Pulborough Ambulance station who helped rush me to Worthing Hospital on December 5 for an emergency operation. I don't know your name Sir, but thanks a million to yourself and your colleague. It was obvious from the moment you arrived at my home and throughout the journey, that I was in the hands of experts. Thanks also to the *PW* and *SWM* editorial teams at Poole for their good wishes and assistance in enabling my outstanding work to meet the magazine deadlines. Also to the medical staff at the hospital for the way I was looked after and to Joan for the weeks of aftercare.

The coincidence was that I was 'repaired' in the same surgical ward where Joan was a night nurse 38 years ago, shortly before we were married. Because of my incapacity some of your reports for Television and 'propagation', elsewhere in this issue, did not make the month they were intended for, however, with a bit of juggling, we should be back on course now.

Band I

Short periods of winter Sporadic-E were observed by **Bob Brooks** (Great Sutton) on October 2, 3, 8, 10, 16, 24 and 31 and November 2, 4, 6, 11, 12, 19 and 20. Spread among these events he logged test-cards from Czechoslovakia (ISR-P) and the USSR on Ch.R1 (49.75MHz), Denmark (DR) on Chs. E3 (55.25MHz) and E4 (62.25MHz) and Sweden (SVT) on Chs. E2 (48.25MHz) and E4, basketball from Hungary (MTV) and an Orchestra from the USSR on Ch. R1, films from Italy on Ch. Ia (53.75MHz) and the logo Teledario and a quiz from Spain (TVE) on Chs. E3 and 4.

David Glenday (Arbroath) caught a glimpes of the Russian caption KNHOMPORPAMMA 20 (Cinema Programme 20), on Ch. R2 (59.25MHz), during a brief bout of Sporadic-E at 1050 on December 1. Do remember, it is always worth checking the Chs. E2/R1 area of your dial for brief periods of DX, via Sporadice-E, during the mornings, while we are outside of the main Sporadic-E season.

Ionospheric

John Woodcock (Basingstoke) heard official mobile signals, at the lower end of Band I on December 8, 9, 18, 24 and 27 and Bob Brooks saw the typical unidentifiable pictures around Ch. E2, via 'F2' openings early on October 20 and November 11. Under similar conditions **Simon Hamer** (New Radnor) logged pictures from Australia (DDQ-10) on Ch. A0 (46.25MHz), unidentifiable 525-line pictures in the close proximity of Chs. E2/R1/C1 (Ch. C1 is also 49.75MHz) and heard synchronising pulses from New Zealand on 45.25MHz and China Ch. C2 (57.75MHz) at 1000 on January 3.

Meteor Scatter

Simon saw 'pings' (a sudden flash) of pictures from Czechoslovakia (CST) on Ch. R1 and Denmark (DR) on Ch. E3 during the Geminds meteor shower on December 15 and on January 3/4 he saw such 'pings' again, via the Quadrantids, from Denmark (DR) on Ch. E3, France (TDF & Canal+) on Ch. L2 (49.25MHz), Germany (ARD1) on Ch. E2, Iceland (RUV) on Ch. E4, Italy (RAI-UNO) on Ch. Ia, Spain (TVE1) on Ch. E2 and the USSR (TSS) on Chs. R1 and R2. In addition he identified 'pings' in Band III from Denmark and Norway (NRK) on Ch. E5 (175.25MHz) and Sweden (SVT) on Ch. E8 (196.25MHz).

Keep an eye open on these bands, typically around Chs. E2/R1, for similar conditions as the earth encounters the Lyrids between April 19 and 25, especially at the predicted peak on the 22nd. After that make a note in your diary for the peak of the a-Capricornids on August 2, Perseids on August 13, Orionids on October 22, Taurids and Leonids on November 4 and 18 respectively and the Geminids and Ursids on December 14 and 23. Each shower is named after the constellation of stars from which the radiant of the meteors appears to come. Therefore should you decide to watch the shower and the night sky is clear, then, for example, look towards the constellation of Leo for the Leonids.

Picture Archives

Thanks are due to **Francisco Gonzalez** (Malaga) for information about the Canal Sur caption, received by **Russ Burke** in Northampton and published in the January column. "Apart from the two TVE1 and TVE2 national networks we have what we call 'Autonomy TV and Radio Stations'," said Francisco. He explained, "The Catalans have TV3 (Televisio de Catalunya) and C33 (Canal 33) and so, in the south of Spain from Huelva (Portugal's border) to Almeris including Sevilla, Cadiz, Jaeh, Cordoba, Granada and Malaga there is what we call "Comunidao Autonoma Andaluza" - Andalucia - and Canal Sur is the TV station for the area." Although Francisco has not seen the 'EFE-TV card before he thinks it is the test-card transmission from the news agency (EFE) in Madrid sending info to the main studio of 'Canal Sur' in Seville.

Thanks also to **John Coulter** (Winchester) for his card saying Canal Sur (in both pictures) [Jan Figs. 4&5] is Spanish for Channel South and for pointing out that the Spanish flag is in the background of Fig. 5 and to **Mr. A. Molloy** (San Sebastian) who wrote, "Canal Sur" is the private TV channel for the region of Andalucia in S. Spain". He continued, 'TVE1 and 2' are "state national channels", 'Canal+' is a "new national private. Scrambled", 'Tele 5' is as 'Canal+' but not scrambled, 'Antenna 3' is like 'Tele 5', 'ETB1 and 2' are "regional govt. channels for the Basque Country"; 'TV3' & 'Canal 33', 'TVG' and 'Telemadrid' are, as 'ETB1&2', but for Cataluna, Galicia and the Madrid areas respectively.

Lt. Col. Rana Roy (Meerut, India) received captions from Bangkok TV, on Ch. E3, **Figs. 1 & 2**, on October 11 and again on the 13th, **Fig. 3** and on Ch. E2 on the 20th, **Fig. 4.** The reception times ranged between 1820 and 1935. At 2225 on August 2 and 0610 on August 3, David Glenday saw an ARD1 announcer, **Fig. 5** and a SAT.1 weather presenter, **Fig. 6**, on the u.h.f. Chs. E41 and E52 respectively and at 2105 and 2110 on October 22 he logged a DFF2 programme caption ('tomorrow 2105'), with the East Berlin transmitter tower in the background, on Ch. E34, **Fig. 7**

Fig. 1: Bangkok

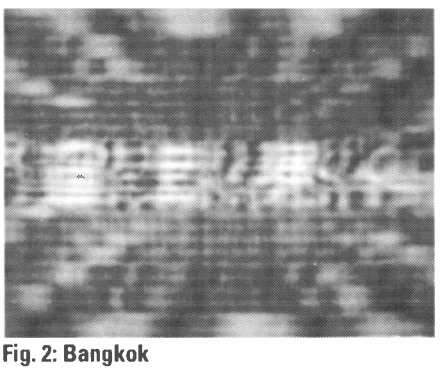


Fig. 2: Bangkok

Fig. 3: Bangkok

Fig. 4: Bangkok

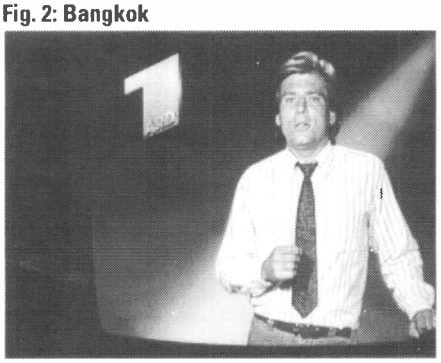


Fig. 5: ARD1

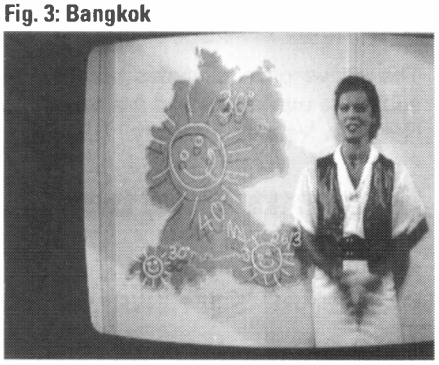


Fig. 6: SAT.1

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Abbreviations:

Svce	Service
Man	Manual
Train	Training
Suppl.	Supplement
Port.	Portable
CTV	Colour TV

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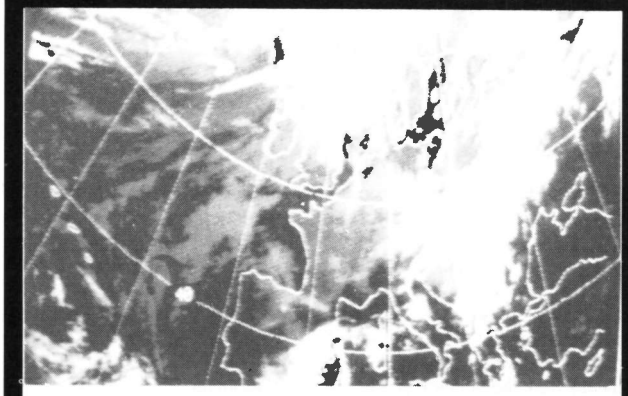

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and Paul Newman in 'The Hustler', with subtitles, **Fig. 8**, from Poland's (TVP2) Jelenia Gora transmitter on Ch. R35. Refering to **Fig. 6**, David said that August 3 was "a sunny day over much of Europe!" and he points out the stylised 'D.II' to the right of the text in **Fig. 7**.

Tropospheric

The slightly rounded atmospheric pressure readings, for the period November 26 to December 25, **Fig. 13** were taken at noon and midnight from the recording chart of the Short & Mason barograph installed at my home in Sussex.

Bob Brooks received pictures in Band III (175-230MHz) from Denmark (DR) and Ireland (RTE1 and Network 2) on November 6 and Denmark and France (Canal+) on the 8th. "November 7th brought a high of 30.4in [1029mb] and a large opening to Denmark. It was about mid-afternoon when I decided to tune through the u.h.f. band and in doing so I found a near noise free test-card from Denmark (TV2), Nibe, on Ch. 35," wrote Andrew Jackson from Birkenhead. Further tuning revealed signals from Hedensted Ch. 30, Varde Ch. 33 and Videbaek on Ch. 40. At 1600, Andrew found it rewarding when he ventured out in the cold and turned his Band III array toward the North-East and received very strong Danish (DR) test-cards from Alborg Ch. E5, Arhus Ch. E8 and So. and We. Jutland on Chs. E7 and E10 respectively. These signals had gone by late evening. Next morning, Andrew noted that the pressure had dropped to 30.2in (1022mb) and in the u.h.f. band he found strong test-cards from Denmark (Abenra. Hedensted, Nibe, Odense and Vidibaek) and strong colour pictures, including news (Heute) and test-cards from Germany (ARD3, DFF2, HR3-FFTM, NDR3, SDR, SW3-BADN and ZDF). Around this time he was receiving strong signals in Band III from Denmark (So. & We, Jutland), France (Canal+) and Germany (ARD/ZDF, BR and RTL+). Later in the afternoon he added pictures in both bands from Belgium (BRT & RTBF), France (Antene 2 and TF1) and Holland (PTT-NED1,2&3). That was a super tropo-log Andrew and I will certainly look forward to hearing about your results with that new 5-element array for Band I which you are installing for the forthcoming Sporadic-E season. Simon Hamer had a good haul during that very high pressure (30.5in - 1032mb) on December 2/3 when he logged pictures from Belgium, Denmark, Eire, France, Germany (ARD/DFF1, BR1, HR1, RTL+ and WDR1), Holland, Norway and Sweden (SVT1) in Band III and Denmark (TV2/Danmark) and Germany (ARD/DFF1&2, Hessen3, NDR1&3, RTL+, West3 WDR1 and ZDF) and Sweden (SVT1&2) in the u.h.f. band. David Glenday received u.h.f. pictures from Crystal Palace and Emley Moor on November 30 and Band III signals from Ireland's RTE (Radio Telefis Eireann), throughout the daytime on December 5, 13 and 14.

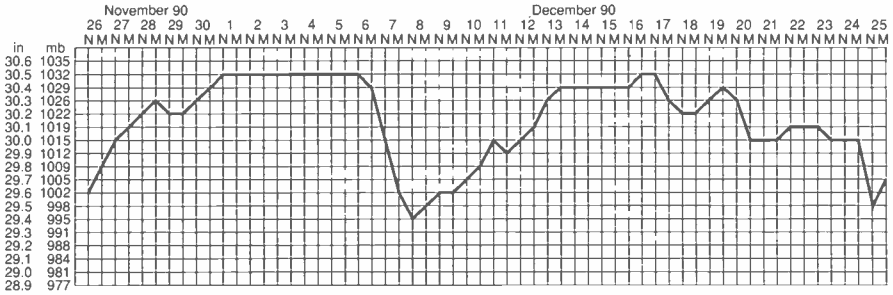


Fig. 13.


Fig. 7: DFF2 Germany

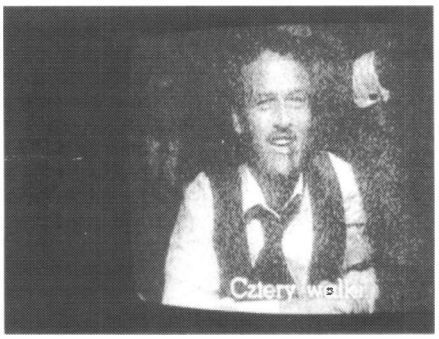


Fig. 8: Poland

Fig. 9: Special SSTV caption by GW3LJP

Fig. 10: SSTV Germany

Fig. 11: SSTV Spain

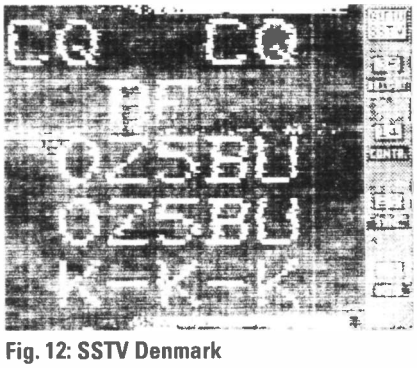


Fig. 12: SSTV Denmark

SSTV

One of the keen home-constructors of slow-scan television equipment is **Bert Mills GW3LJP** (Rhayader) who not only builds the equipment but, like many enthusiasts, designs his own special captions, one of which I was delighted to receive on behalf of us all at *SWM* at Christmas, **Fig. 9**. During the month prior to December 5, **John Scott** (Glasgow), using a spectrum computer with G1FTV software to decode those 'twittering' audio signals, received SSTV pictures, between 14.277 and 14.235MHz, from stations in Germany and Spain, **Figs. 10 & 11** and toward the end of the month he added Austria, Denmark, **Fig. 12**, Germany, Italy, Jersey and Poland. The partially dotted line just above the call-sign in **Fig. 12** is usually caused by a 'crack' of interference which briefly interupts the slow-scan process.

Abbreviations

Ch.	Channel
in	inches
mb	millibars
MHz	megahertz
SSTV	slow scan television
u.h.f.	ultra high frequency

airband

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

G-AZE is a DH89A Dragon Rapide vintage airliner. *Photo Chris Mlynek.*

Here's a good opportunity to summarise the objectives of this column. It is to provide the technical and operational background knowledge that will enable the enthusiast to understand all aspects of modern flying. These days so much of what goes on in the air is influenced by radio (whether by liaison with ground controllers or by following the guidance of navigational aids) that it is appropriate for this column to examine the technicalities of flying with particular reference to the typical ways in which radio is used.

I carry out these objectives by handling readers' questions, publishing topical information, describing certain key areas, and generally providing a forum for exchanges of ideas. Nothing in this column will stray outside of the public domain. For this reason, if you are submitting information then please make sure its source is obvious, and remember there's a war on.

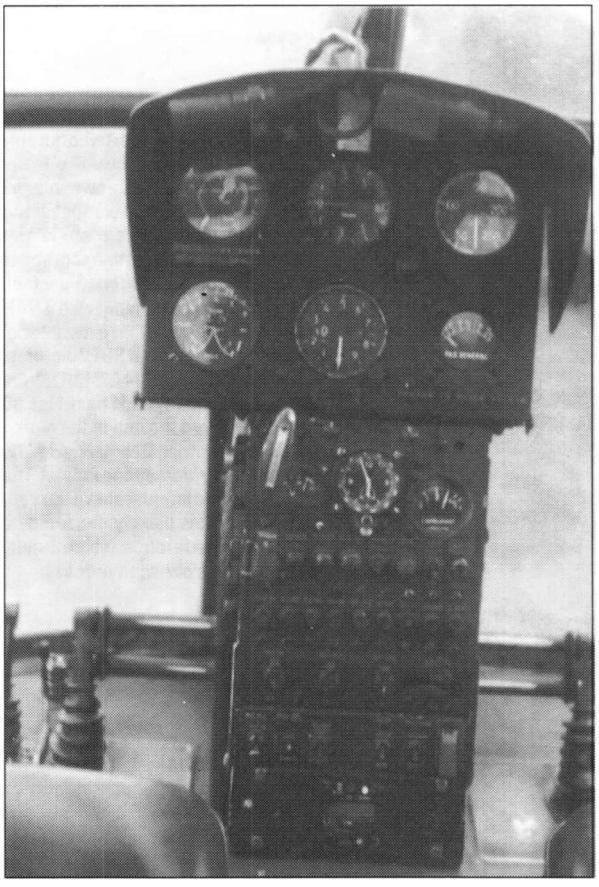
Quiz Progress

It seems so long since Christmas! Thanks to the readers who sent me Christmas cards, one of which showed a DH.34 in a seasonal setting at Croydon Aerodrome over 60 years ago. This issue was written before the quiz closing date but I've already had some correct answers which will be entered in to a draw. By the time this is read the winner will be in possession of the prize: a Victor tanker's jet pipe temperature gauge. Results will appear next month.

Nav Aids

Another mystery (no prizes this time!) is posed by a radio mast, complete with solar panel and wind generator, in Powys at National Grid 897635 on Ordnance Survey sheet 147 (1:50000 series). **A. Harris** (West Bromwich, West Midlands) wonders if this has anything to do with aeronautical radio. It certainly isn't a navigational beacon; I've compared an Ordnance map's index to sheets with a radio navigation chart and there's nothing in the sheet 147 area. The Radnor n.d.b. is the nearest beacon to this sheet but is well off it to the east. There aren't any coms relays in the area - Clee Hill is the nearest. So I conclude this to be non-aeronautical. Who knows what it really is? May I request that future queries about locations refer to the latitude and longitude. These can also be read off Ordnance maps if you place a straight edge to span the entire sheet. Remember that the National Grid lines aren't parallel to the lat/long lines!

Another unidentifiable source was found by **J. Cooper** (Bransholme, Hull). What's in the 440-460kHz allocation? I can't find any n.d.b.s here, either aeronautical or marine. One possibility on the Saisho SW5000 receiver (and no doubt others) is that the i.f. lies in this range, giving rise to strange effects. The signal might be internally generated. See if the signal stays the same even if the antenna is unplugged (or the set turned slowly round if it has an internal ferrite rod).



The instrument binnacle of SE.313B Alouette II helicopter F-GCQX (1720). *Photo Godfrey Manning.*

An Enthusiast's View

Anne Reed RS87871 (Cheltenham, Gloucestershire) always writes with unmistakable enthusiasm. Let's see what she's been up to recently. Cargolux celebrate their 20th anniversary; thanks for the commemorative sticker. I find it sobering that many airlines (such as Orion and Novair) don't last that long and even established ones (like Dan-Air and Pan Am) can encounter financial difficulties. It's bad enough now; with the recession deepening, can the industry really stand the final straw of some form of so-called deregulation?

Anne survived Christmas withdrawal symptoms (not much happening in the air!) and cheered herself up with *From the Flightdeck 5: Concorde* (Ian Allan, £7.95). I'm sure Anne has read every book in this series! A complete flight from New York to Heathrow is described. Anne suggests this typical schedule of radio calls (MHz @ time): 5.598 @ 11:20 & 16:50; 5.649 @ 16:30 & 21:40; 8.879 @ 11:45 & 14:00. 8.825MHz is also used. When coasting in, subsonic deceleration is required 55nm from Coombe Martin; supersonic flight is only permitted at least 35nm from the nearest land.

One consolation over Christmas was a present of *Giants of Lockheed*, a video tape from The Airband Shop (see adverts in *SWM*). Anne enjoyed 70 minutes of Galaxy, Starlifter, Hercules and Blackbird.

Your Flying Experiences

Lucky **David C.P. Smith** (Tattenhall, Cheshire) flew across the Atlantic from Gatwick to Newark (what aircraft type was it, David?). After expressing deep interest in the actual North Atlantic track being flown David was invited to occupy the supernumerary seat during the landing. Sitting next to the flight engineer, David observed him carrying out fuel management (including cross-feeding between tanks to preserve balance), selecting flap settings and reading out checklists. David takes up the story in his own words:

"It was still light as we began to descend through the cloud, however by the time we cleared the cloud base it was beginning to go dusk. The New York City skyscrapers were all illuminated and the headlights of the cars could clearly be seen crossing the many bridges over the Hudson River." The Captain called when establishing the i.l.s. localiser and just prior to touchdown the first officer called out 100 and then 50 feet. This really was a special treat; readers should, unfortunately, note that they cannot expect this sort of invitation routinely!

For Vulcan Fans

Encouraging news from **Steve Mildoon G0KXM** (Willenhall, West Midlands) who decided to go straight to the source for news of XH558. The Waddington ground crew told him on the 'phone that the Vulcan Display Flight would be in the air again this year. It can still be seen (and heard!) operating regular crew currency flights out of Waddington. The white Vulcan

XM603 at Woodford was looking good when your author met its team last year and Steve says there is hope that it may yet fly. Being civil owned, though, a CAA Permit to Fly (at the least) will be required and here lie many problems.

On this subject let me draw attention to two more Vulcan B2s under civilian ownership. XM655 G-VULC is at Wellesbourne Mountford Airfield (Warwickshire) and XL426 G-VJET is at Southend Airport. Both examples have been in open storage for some time and in my opinion the maintenance requirement that this would impose makes it financially improbable that either aircraft will fly again.

Frequency News

A contribution from **Alan Page** (Loughborough) reminds us of the new North Atlantic E frequencies used by Shanwick, New York and Santa Maria for aircraft registered east of 30°W. Alan adds 17.946MHz to the list in the January issue. Have all of NAT A,B,C & D been retained? If you want a budget h.f. receiver, Alan suggests you go to Comet and try the Sangean ATS803A whose price does not reach treble figures! Haven't tried it myself. (*I have - as the Matsui MR-4099 - see* SWM *Sep 87 issue Ed*)

On v.h.f. Maastricht now use 127.625MHz; does this replace 134.375?

Information Sources

John Ware (Redhill) appears to work for a well-known aviation organisation in the area; is my reading of your FAX heading right, or do two companies share the same name? John wants listings of u.h.f. allocations and has tried a couple of 'hobby' level publications. These are useful as summary sources but I always suggest buying something official if you want complete and up-to-date information. After all, the 'hobby' guides will be compiled from the official sources. In the case of u.h.f. my favourite would be the *RAF Flight Information Publications (FLIPs)* from No. 1 Aeronautical Information Documents Unit (AIDU), RAF Northolt, West End Road, Ruislip, Middlesex HA4 6NG (Tel: 081-845 2300 Ext 209). Order the *En Route Supplement* for your area (e.g. British Isles and North Atlantic). One of the functions of 1AIDU is sales to the public.

And lastly a quick follow-up from John about the An-225 at Farnborough (see January). On the Friday the special tow-bar broke! Some deft taxying under its own power was necessary to enable the aircraft to clear the runway and reach dispersal. My thanks to all for your letters and information.

The next three deadlines are March 15, April 12 & May 17. All correspondence to 'Airband,' c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS.

AIRBAND TITLES FOR YOUR BOOKSHELF

RESCUE
by Paul Beaver & Paul Berriff
published by Patrick Stephens
192 pages, 196 x 255mm. £9.99 plus 85p P&P
Available from the SWM Book Service.
ISBN 1-85260-291-0

Anyone who watched the television series accompanying this book (made in association with Scottish Television) will have sensed the life and conditions of rescue helicopter crew. There was no formal technical information, viewers had to contend with 'needles split' in checklists, 'winch to pilot' during rescues, engine failure planning, 'quarter-mil topos' for navigation and much more. If you already knew about flying, then you could apply your knowledge, otherwise the finer points were lost.

Make no mistake, the book is written along the same lines. You won't learn to fly helicopters by reading it, but the atmosphere is there. This is not drama, this is real life and makes a true impression on an audience now hardened by seeing misfortune and violence acted out every day in the media. The success of the book is that it can bring this message home without fading in to the background of routine excitement to which the average television viewer has become accustomed.

'Airband' column readers will especially like the transcriptions of air/ground and between-crew dialogue. Also, there is a summary of the main distress and rescue radio frequency and helicopter base locations.

Don't get this book as a technical exercise. Read it for the experience and then think just what the rescue crews really do in each day's work.

NORTH ATLANTIC ROUTE CHART
29 x 20.5in folded, £4.50 plus 85p P&P

A five-colour chart designed for use of Air Traffic Controllers in monitoring transatlantic flights and for FAA planners. Oceanic control areas, coastal navigational aids, major coastal airports and oceanic reporting points are depicted. Geographic co-ordinates for NAVAIDS and reporting points are included. The chart may be used for pre- and in-flight planning. Revised every 24 weeks.

MECHANICS OF FLIGHT
by A.C. Kermode
published by Pitman
507 pages
ISBN 0-273-31623-0

If you want to know what keeps aeroplanes up there, what happens aerodynamically every time the pilot makes a manoeuvre, this is the book to get you started. Some ability at mathematical formulae will definitely enable much more to be gained from the text but none of it would bother an A-level student and calculus is mercifully avoided. There's even a section on orbiting spacecraft, an invaluable asset to those of you who also listen to satellites. This book will give the more technically-minded a deeper understanding of what really happens each time you observe an aeroplane alter direction, speed or height with such apparent ease.

scanning

Alan Gardener
PO Box 1000, Eastleigh, Hants SO5 5HB.

First some news from AOR. Yes, the designers have been busy yet again - news reaches me of two new models in the pipeline. The first is a mobile scanner based on the AR1000 hand-held. The main feature of the new design is the inclusion of a b.f.o. circuit permitting reception of s.s.b. transmissions on the short wave bands. In the UK the model is likely to be called the AR2800 and should be very similar to the AR2500 which, at the time of writing, has just been announced in America.

Although I do not have the full specification of the UK model, the AR2500 features 2016 memory channels in 64 banks, 16 search banks, continuous frequency coverage from 1MHz to 1.5GHz, a.m., n.b.f.m., w.b.f.m. and s.s.b. modes, search and scan speeds of 38 channels per second and finally a built-in RS232 port for computer control.

Physically, the unit looks very similar to the AR950 but with the addition of a rotary b.f.o. fine tune control to the right of the squelch control and a vertical l.e.d. signal strength bargraph to the right of the l.c.d. The price is expected to be in the region of £350, which should ensure its popularity.

The other unit is rumoured to be a smaller version of the popular AR1000 hand-held. Few details are known so far, but it is expected to retain all the existing features with a frequency coverage of 500kHz to 1.3GHz and have a layout similar to the AR900. The price is anticipated to be around £280.

Confused?

By now you may be more than a little confused by all the different models of scanning receiver available - I know I am! Quite a few readers have written to me expressing their disgust when they discover that the model they have just purchased has been superseded by a MkII version with more facilities. I'm afraid there is no simple answer to this problem. In a competitive market place, manufacturers have to try and keep one step ahead of their rivals. New designs cost a lot of money to develop, so if a particular model starts to lose its popularity the manufacturer has to decide what to do in order to maintain sales. The most obvious choice being to reduce the price.

Alternatively, new features can be added and the unit re-syled. This has the advantage of being easy to implement in small production runs and keeps the design up-to-date with the competition. Most of these changes can be made by simply fitting a differently programed microprocessor controller i.c. into existing circuit boards.

Because of the costs involved in designing a scanner from scratch, it is not that often that real innovation occurs. I would suggest that the only landmarks in the development of scanning receivers so far have been the introduction of programmable frequency synthesisers, microprocessor control circuits, high frequency first i.f. stages and surface mount production techniques. The main differences between current models being the degree to which each of these has been refined.

My own point of view is that I would rather have a good receiver with limited operating functions, than a poor receiver with hundreds of different facilities. Let's face it, if you can't hear the signals because the r.f. stages are deaf or prone to spurious responses then there is not much point in having all the other 'bells and whistles'.

One other alternative is to keep your current model and buy a cheap second-hand unit for use as an additional receiver. I find this particularly useful for monitoring both frequencies simultaneously when stations use duplex operation, or checking out activity on newly discovered channels whilst the main receiver continues searching. I know that several readers have obtained scanners such as the discontinued AOR2001 or its equivalent for this purpose. These are particularly suitable as they are almost as sensitive as current models and the limited number of memory channels does not matter too much in this application - what's more the second-hand price is reasonable as many dealers have units taken in part exchange.

The Next Generation

Many readers have asked what I believe the next generation of scanners will be like. I would imagine that most of the developments will be in terms of size and the type of scan/search facilities available. I do not see the basic r.f. performance of designs improving in the near future as this would first require the development of much higher performance semiconductor devices.

However, it should be possible to add features such as combined search and scan functions, automatic detection and storage of active frequencies with logging of the time, date and signal strength and perhaps have the first few seconds of audio digitally recorded and stored in RAM. The ability to customise scan banks would also be useful, as would a built-in second receiver, rather like current dual-band amateur equipment.

What are your views? For example, have you ever used functions such as slower scan speed, priority channel, clock and keyboard 'beep' or moaned about the 'audio scan stop', squelch control, l.c.d. and backlight, membrane keypad, sensitivity/spurious responses. Well, jot it all down and I will print the best suggestions, along with your pet hates.

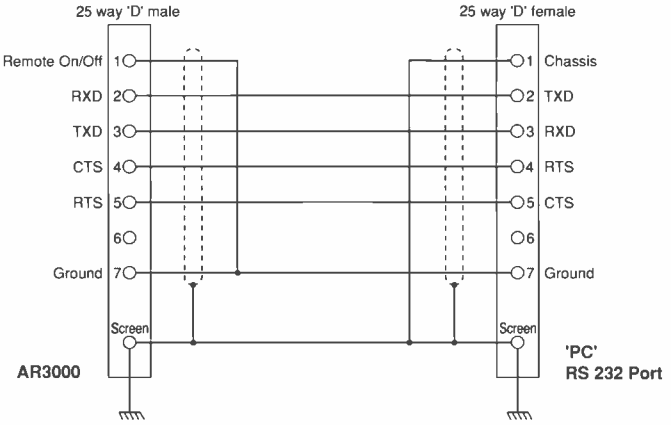


Fig. 1.

AOR AR3000 Update

A few readers have reported this scanner as displaying the phrase "PLL ERROR" on the l.c.d. This seems to happen fairly infrequently but it does seem to stop the scanner from continuing to operate correctly. The cure is simple - just switch the receiver off and then back on again. This should clear the problem. If the receiver refuses to operate then the only solution seems to be opening the receiver up and pressing the small push button on the control board which is labelled 'RESET'. This does have disadvantage of erasing all the memory contents but it should restore normal operation.

In order to save a lot of heartache if you have to do this I would suggest that you try storing the memory contents on a computer if you have one available. I have been able to download frequencies into the memory banks fairly easily by creating an ASCII text file with a word processing package. I can then dump the file into the receiver with a comms package such as Procomm.

From the number of conflicting comments I have heard regarding the RS232 port on this receiver I suspect that the internal software has gone through one or two design changes during production. One other point to note is that many computers do not have true RS232 ports or non-standard timing parameters. Most of the problems I have experienced have been due to the implementation of the RTS and CTS handshake signals.

Along these lines **C. Putney** from Ireland has been experimenting with the control port and passes on the following comments.

1: The RS232 connections shown in the handbook are switched. CTS is RTS, TXD is RXD and vice versa. (see **Fig. 1**)

2: The port is supposed to use pin 1 to select remote operation, but both pin 1 and pin 7 need to be isolated before local operation is allowed.

3: The receiver does not like Carriage Returns or Line Feeds as these cause the receiver to pause for a second before the next command can be sent.

4: Frequency commands must contain a decimal point.

5: When a frequency command is sent the signal strength value returned is that for the previous frequency. So the first set of values should be ignored.

Some of these comments do not seem to apply to the AR3000 I have tested, but it may be worthwhile following these guidelines in any software you may be developing, this should avoid problems with any rogue 3000s which may be around.

Commercial Software

Very little commercial software seems to be available for this receiver so far but in America ACE Communications are offering a software package which combines a spectrum display and database for $295. I understand that the some of the functions provided in the spectrum display are not quite as useful as they could be, but expect other packages to become available in time as the advantages of computer control become more apparent.

If any one else has been experimenting with the RS232 port or control programs why not share your findings with other AR3000 owners?

Signal 535 Computer Port

Along similar lines, **Dave Todd** of Dyfed wonders if anyone has experimented with the computer port on the Signal 535 Airband receiver. He is not sure if this is a genuine RS232 interface as the user handbook does not seem to offer many clues. In particular, he is interested in using a computer to load the memory banks instead of having to do it by hand every time, but any other information would be useful. I must admit that I didn't realise that this receiver actually had a computer port but I am sure that someone out there

must have experimented with it. As usual I will pass on any details that I receive.

And Finally

Thanks for all your letters regarding the pros and cons of your favourite scanners. I hope to be able to include your findings in a few months time. In the meantime I would particularly like to hear from more owners of the following models: AOR AR950, Icom IC-R100, JIL SX400, Jupiter MVT-6000, Nevada MS-1000, Revco RS-2000/3000, Standard AX700, Uniden UBC760XLT and Yaesu FRG-9600 so why not drop me a line? Until next month - Good Listening.

Abbreviations

a.m.	amplitude modulation
ASCII	American Standard Code for Information Interchange
b.f.o.	beat frequency oscillator
GHz	gigahertz
i.c.	integrated circuit
i.f.	intermediate frequency
kHz	kilohertz
l.c.d.	liquid crystal display
l.e.d.	light emitting diode
MHz	megahertz
n.b.f.m.	narrow band frequency modulation
RAM	Random Access Memory
s.s.b.	single sideband
s.s.b.	single sideband
w.b.f.m.	wideband frequency modulation

l.c.d. A display consisting of a very thin layer of crystals, suspended in a liquid, sandwiched between two conducting glass plates across which the control voltage is applied. The conducting areas of the plates are such that by applying voltages to specified areas, the crystals can be changed from transparent to opaque as desired. Any desired pattern can be produced.

search: Often confused with scan, this is the other main feature on most receiviers or scanners, If you don't know the exact frequency that a particular service operates upon, but you have a rough idea, then use can be made of the search facility. The user programmes into the scanner the upper and lower frequency limits of the band to be searched and also the frequency step size that the receiver is to search with. The scanner then automaticaly searches over the set range and stops when a signal is detected.

FIRST AID

I have recently bought a Sanyo RP8880 radio that is a 9-waveband receiver. I am quite pleased with it and have put up an 80ft long copper wire antenna. Can anyone tell me when this radio was brought out and how much was it and has anyone read a test report on it. Also any ideas on the best book for me to read. I am 67 years of age and was a train driver for 45 years before retirement. I started short wave DXing six months ago.
T.V. Sallis. c/o Short Wave Magazine.

Old fashioned epicyclic reduction gear (planet) 0.25in spindle required to enable search on a fine scale in a set under construction with limited space! Will defray costs of post and packing. I've tried nearly every trader without success. **J.L. Bonfils. 73 Cedar Park, Leixlip, Co. Kildare, Ireland.**

I have a Daiwa Search 9 144MHz scanner, is there anyone out there who can tell me how I can make any improvements to the scanner to get a better performance - apart from adding crystals. There must be someone who knows how to convert it.
N. Evans,
11 Clovelly Walk, Burslem, Stoke-on-Trent ST6 3NY.

If you have any radio problems, write to First Aid at our Editorial Office in Poole.

Further to my 'First Aid' letter in the December 1990 issue, I have found out that Cirkit do an l.c.d. readout, DFM7 Mk II stock no 40-17701 for £49.85 including P&P. The five digits cover 10kHz to 150MHz with selective i.f. off-sets, including setting-up instructions.
A complete service manual for the R210 can be obtained from Mr Bentley, 27 DeVere Gardens, Ilford, Essex IG1 3EB. **J.W. Gernert.**

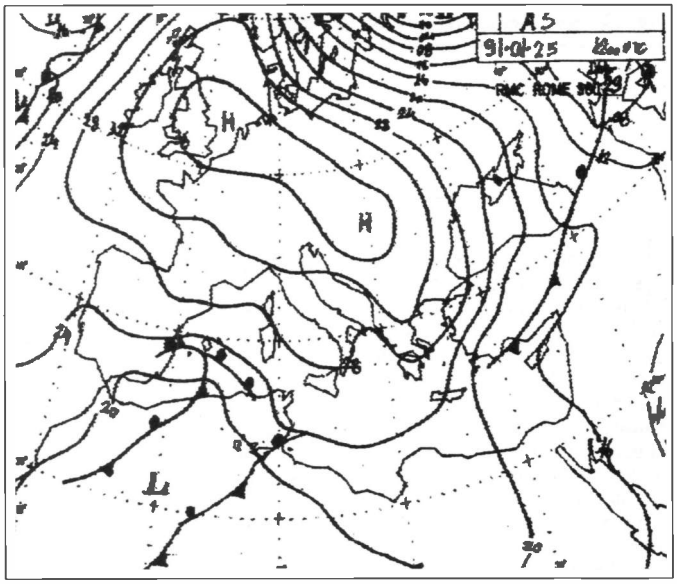
I have a Pye Seafarer Model No. 1112. On the back cover it says Ref No. EB04928, chassis No. 539912. The set covers nine bands. I've had the set for about six years and would like any information about it.
I've written to other places with no joy.
Mr J Paice, 25 Stanley Close, Elson Gosport, Hants PO12 4AS

I have all the components to perform the modifications to my Sony as per the article 'Hot Rodding the Sony ICF-2001D'. Has anyone done these modifications and what results did they get? Does anyone know where I can get my set brought up to the modification standard? I can't find anyone willing to tackle the job so far. Help! **Basil L. Grayson. 'Nelba', Grayshott, Pengwern Estate, Efailnewydd, Pwllheli, Gwynedd L53 5TW.**

Help, Help, Help!
I'm trying to run my ERA Microreader RS232 port to a Centronics serial printer (ITOH F10/55) via a home-brew RS232 to Centronics converter (circuit published in *Practical Electronics* September 1985).
Is there anyone out these using this, or a similar combination or anyone can offer assistance?
A.J. Harding. 10 Oakfields Close, Stevenage, Herts SG2 8NQ.

decode

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



FAX print-out from Code-3 Rome Meteo 13.595MHz 25.1.91 1700UTC.

Trevor Guy of Goring by Sea wants to know how he can feed the decoded output of his ERA Microreader into a BBC computer. He's made the lead and set up the Microreader, but he needs to know what to enter on the BBC. What's required is a command that will start the computer accepting data from the RS-432 port and displaying it on the screen. I'm afraid I disposed of my BBC books when I sold mine, so I'll have to rely on a response from readers. If anyone can help with this please drop me a line and I will pass the details on to Trevor (and print it in the column). Although I'm sure this can be done with a simple one-line command you will find that a communications program is far more powerful. The main advantage is that you can usually save the received text to a disk file. You can then edit the text with a word processor and print out the result, if required. So for the moment Trevor, you will need to be patient.

Mike Worsley of Fareham has written asking about the problems associated with recording utility signals. He has successfully written a program to decode RTTY on his Amstrad 6128 and would now like to try his hand at FEC. The only problem is that he suffers from severe interference and has to resort to recording signals for decoding later. Mike has also been told that FEC signals cannot be decoded after recording. Well let's sort that problem first. It is possible to record and decode FEC providing you have a cassette recorder of reasonable quality. The important points are that the speed should be well regulated and there should be a minimum of 'drop-outs' or gaps in the signal.

Most cassette decks that can reproduce music without any detectable 'wowing' will suffice. The elimination of drop-outs is usually just a matter of using good quality tapes and making sure the tape heads are not dirty or excessively worn. One extra that can prove to be very useful is variable playback speed. If you're familiar with tape recorder electronics you will find that this facility is usually very simple to provide. All that is normally required is a small modification to the motor speed regulator board. The reason variable speed is useful is that by varing the speed you can alter the frequency of the RTTY tones for optimum match with your decoder. This mimics the procedure you use when tuning in a signal on a receiver.

A second question from Trevor concerns FAX transmissions. Having been successful writing his RTTY program he would like to move onto FAX. The first problem is where to find out all the technical details of the mode. You might try looking through back copies of the magazine, as I have covered this area more than once. An alternative would be to get hold of the *Guide to Facsimile Stations* by Klingenfuss, this gives some detail on the variety of FAX standards and their specifications. This book is available from the *SWM* Book Service.

Kevin Delve of Barnstaple has been a keen listener for about eighteen months and has decided to write with his experiences. Kevin's present station comprises a Yaesu FRG-8800 receiver that interfaces to his 43m long wire antenna via an FRG-7700 a.t.u. For decoding he uses a PK-232MBX multi-mode decoder that feeds into an Atari 1040STE computer. The monitor is a Sony 14in colour TV and he also has a Panasonic KX-P1081 printer for hard copy. An early problem he suffered from was r.f. interference. Although the computer was blamed for this, it turned out to be coming from the lead between the computer and the colour TV The cure for this was very cheap and simple. A friend gave him an 8in length of ferrite rod and he wound the lead around it for a total of about 30 turns. When he reconnected the lead, the interference was cured.

During his time monitoring press stations Kevin has found a new aspect to the hobby. If you monitor press stations you will notice that some of them, notably TASS, start the news item with the reporter's name. Well, it's this aspect that caught Kevins interest and he now tracks the whereabouts of reporters by monitoring press transmissions. A recent highlight occurred when Andrei Orlov appeared on the BBC *Nine O'clock News* in January. He could then put a face to the name.

If you've built up a specialist interest such as this, why not drop me a line with the details.

Gulf News

The outbreak of war in the Gulf has created an enormous interest in many aspects of short wave listening. I know that the editorial office has been inundated with calls from the media. Most have been asking for details of the range of information that can be gleaned from our hobby. It was impossible for the office to handle all the queries, so many contributors were contacted to help.

The television stations wanted to contact listeners who were prepared to monitor of behalf of the station. In at least one case they wanted someone to appear on screen with all the gear. Once the dust had settled most of the interest centred around the reception of satellite images and press RTTY broadcasts. Some stations approached local radio equipment suppliers to borrow the necessary equipment so they could monitor for themselves!

Moving on to a little more detail of where to find information, **Maurice Lloyd** of Blackpool has written with the latest frequencies and times. The format used is frequency, mode, speed, shift, time, notes.

1.404MHz, CW, -, -, 1930UTC-2030UTC, IRNA Iran
6.035MHz, CW, -, -, 1930UTC-2030UTC, IRNA Iran
7.25MHz, CW, -, -, 2300UTC-2400UTC, Turkey
9.022MHz, CW, -, -, 1930UTC-2030UTC, IRNA Iran
9.705MHz, CW, -, -, 1600UTC-2100UTC, Saudi Arabia
9.720MHz, CW, -, -, 1600UTC-2100UTC, Saudi Arabia
9.825MHz, CW, -, -, 2100UTC-2200UTC, Turkey
9.950MHz, CW, -, -, 2005UTC-2105UTC, Syria
11.585MHz, CW, -, -, 0500UTC; 1100UTC; 1800UTC, KOL Israel
12.186MHz, RTTY, 50, 400, 1700UTC to 1800UTC, JANA Tripoli
13.660MHz, CW, -, -, 2100UTC-2300UTC, Radio Baghdad
15.935MHz, RTTY, 50, 400, 1230UTC; 1600UTC, MENA Cairo
17.575MHz, CW, -, -, 0500UTC; 1100UTC; 1800UTC; 2000UTC
19.171MHz, RTTY, 50, 400, 1300UTC, MAP Rabat
19.98MHz, RTTY, 50, 400, 1500UTC, IRNA Iran

If you have any news on frequencies used during the crisis please drop me a line with the details.

Amiga 500 Tip

Regular readers will know that the ERA Microreader decoder is widely used by readers of this column. One frequently asked questions is how to link the Microreader to computer. By doing this the text can be displayed on the large screen of the computer or in some cases saved to disk or printed out. **Peter Rehill** of Wallasey in Cheshire has written with the details of how to make this connection with an Amiga 500 computer.

The first task is to enter and save a short program that opens up the serial port. Here's the listing:

```
OPEN "com 1:4800 ,n 8, 1 " AS 1
WHILE 1
WHILE LOC (1) <> 0
PRINT INPUT$ (1 , 1) ;
WEND
i$ = INKEY$
IF i$ <> "" THEN PRINT # 1, i$;
WEND
```

When this program is run, the decoded signal from the Microreader is displayed on the screen. If you want to get a print out you will need to include an LPRINT statement.

With the program entered, the next stage is to make up the connecting lead between the Microreader and the Amiga. This is a simple two-wire lead and I would recommend that you use screened cable. At the Microreader end of the lead connect the centre conductor to the tip of the plug and the screen to the outer. For the computer you will need a 25-way D-type plug. On this, pins 4 and 5 should first be shorted together. The centre conductor of the cable then connects to pin 3 while the outer or screen goes to pin 7. While making these connections it's important to make sure that the screen doesn't touch any other pins.

That completes the operation and you should find that you can now see the decoded text from the Microreader appearing on the computer display.

If you have an interest in programming you could expand this simple program to perform many more sophisticated functions.

My thanks to Peter for taking the trouble to write and don't forget, if you've written any simple but helpful programs drop me a line and I will publish them for all to see.

FAX - Press Broadcasts

There always seems to be a keen interest in FAX images among readers of this column. Judging by your letters, the greatest interest centres on photographic images. The only problem is that photographs are often hard to find. Although some weather FAX stations do transmit satellite images by far the best stations for photographs are Press agencies. So

to help locate these **Jan Nieuwenhuis** has recently sent me a list of all known Press FAX stations. Before you build up your hopes too much, I ought to point out that many of these stations only send FAX very occasionally, their main transmissions being RTTY or c.w. However, probably the most active of these are the Associated Press stations in Argentina.

So here goes with the list that I have grouped in station rather than frequency order.

AP Buenos Aires

5.7775MHz (LRD26), 6.874MHz (LRB79), 10.677MHz (LRN2), 17.672MHz (LQZ67), 20.736MHz (LSA600)

Central News Agency CNA Taipei, Taiwan

5.117MHz (3MA29), 7.33MHz (3MA30), 9.430MHz (3MA34), 13.766MHz (3MA26), 14.685MHz (3MA25), 15.878MHz, (3MA24), 19.68MHz (3MA23), 22.85MHz (3MA36)

Dario y Noticias (DyN) Buenos Aires, Argentina

8.1675MHz (LQB9), 9.242MHz (LRO64)

JIJI Singapore

8.14MHz (9VF44)

JIJI Tokyo, Japan

6.82MHz (JKA2), 9.135MHz (JKB4), 9.26MHz (JKA3), 9.4105MHz (JKE6)

Korean Central News Agency (KCNA) Pyongyang, Korea

7.3637MHz (HMF88), 9.4397MHz, 11.4117MHz (HMG62), 11.4757MHz (HMF52), 12.1697MHz, 13.58MHz (HMF36)

KYODO Singapore

16.270MHz (9VF207), 23.865MHz (9VF235)

KYODO Tokyo, Japan

16.230MHz (JAQ66)

Noticias Argentinas (NA) Buenos Aires, Argentina

7.931MHz (LRO48)

Reuter Buenos Aries, Argentina

13.7535MHz (LRB75), 18.433MHz (LRO83), 21.77MHz (LRO89)

Xinhua Beijing, China

5.815MHz (BUA21), 7.656MHz, 9.324MHz (BZZ28)

Yonhap Soul, Korea

6.915MHz (6MK53), 6.983MHz (6MK60), 11.6025MHz (6MK64), 17.373MHz (6MK58)

If any of you manage to receive off-air schedules for any of these stations, I would be very interested to hear from you. I'd also like to hear of any other stations that transmit photographic images.

Hoka Code 3 Tip

I recently received a useful tip from Hoka UK for users of their Code-3 decoding package. Like many packages with FAX capabilities the program is optimised for best resolution on the screen rather than the printer. Although this is fine most of the time it would be useful if a good quality printed output could be obtained as well.

The tip from Hoka gives a significant improvement in the printed output. The trick is to select the CGA screen driver and set the screen IOC to 176. This gives the maximum resolution on the printer. The only snag is that the screen output is awful, but at least you have the choice! I have shown an example of the improved image with a chart from Rome Meteo.

QSL Addresses

As I've just received some new addresses from Maurice Lloyd I thought all you QSL fans would appreciate my including them in the column. So, here we go.

Boufarik Radio/7TF/ Station Radiomaritime, Attention Le Chef de Centre, BP234, 09400 Boufarik, Algeria.

Algerie Press Service APS, Attention Le Directeur Technique, 7 Blvd Che Guevara, Algier, Algeria

Oostende Radio/OST-OSU, RegieVan Telephonie en Telegraphie, Gewest van de Radiomaritieme Diensten, Aartshertoginnenstraat 27, B8400 Ostende, Belgium.

Junccao Radio/PRI/Estacao Costeira de Rio Grande, Rua Otacilio Charao 199, 96200 Rio Grande RS, Brazil.

Canadian Coast Guard, Garde Cotiere Canadienne, Halifax Coast Guard Radio/VCS, Ketch Harbour, Halifax County, Nova Scotia NSBOJ1XO, Canada, Attn: Robert Ward.

The Director, Beijing International Communications Station, Government Radio Administration, Si Chang An Chieh, Beijing, Peoples Republic of China.

Xinhua New China Press Agency, 30 Hsuanwumen Hsi Chieh, Beijing, Peoples Republic of China.

Alexandria Radio/SUR, Manshia Square 9th Floor, Alexandria, Egypt.

Helsinki Radio/OFJOHG, SF-01700 Vantaa, Finland.

Saint Lys Radio/FFI.FFS.FFT, Centre Radiomaritime de Saint Lys, 21 Cite de la Radio, F-31470 Saint Lys, France.

Station Radionavale La Regine/ FUG, La Regine Marine Nationale Centre de Transmissions du-France-Sud, F1150 Bram, France.

Radiostation de Forces Aeriennes/ FDY/Escadron Electronique 1/800, F-45 Orleans-Bricy-Air/loire, France.

Hellenic Telecommunications Organisation, HTO Directorate of Technical Services, Radio Systems Dept, 15 Stadiou Street, GR-Athens 24, Greece.

Magyar Tavirati MTI Iroda, Fem Utca 5-7 PO Box 3, H-1426 Budapest, Hungary.

Haifa Naval Radio/4XZ, Director of Naval Communications, navy Base, Haifa, Israel.

Kaijo Hoan Cho Maritime Safety Agency, Central Station/JNA, Tokyo Centre, 2-1-3 Kasumigeseki, Chivoda-ku, Tokyo, Japan.

Ministere des Postes, Telegraphes et Telephones, Le Chef du Service des Transmissions, Rabat, Morocco.

Scheveningen Radio/PCH, Traffic Manager, Postbus 468, NL-1970-AL Ijmuiden, The Netherlands.

Royal Dutch Navy Radiostation Noordwijk/PBC, Officer in Charge, langeveldersiag, NL-2210 AB Noordwijkerhout, The Netherlands.

That's enough addresses for now. However, if you receive any QSLs, please send me a photocopy - I might be able to print it in the column.

Frequency List

Listed below is a small selection of the frequencies sent in by readers. I have included mainly simple modes in the list to help the newcomer. The format used is the normal, i.e. frequency, mode, speed, shift, callsign, time and notes. If you would like a copy of the full frequency list, then send three first or second class stamps asking for a current frequency list. If you can include a few loggings of your own, great.

8.083MHz, FAX, 90, 576, RIJ75, 1945UTC, Tashkent Meteo

8.14MHz, RTTY, -, -, CLN219, 0846UTC, PL Havana

8.163MHz, FAX, 120, 576, IMB55, 1930UTC, Rome Meteo

10.603MHz, RTTY, -, -, -, NAN Lagos

11.638MHz, RTTY, 50, 400, DDK8, 1000UTC, Hamburg

13.77MHz, RTTY, 75, -, -, 1140UTC, VoA Tanger

13.826MHz, RTTY, 50, -, CLN411, 0950UTC, Cuba Havana

14.367MHz, RTTY, 75, -, BZP54, 1220UTC, Xinhua

14.56MHz, RTTY, -, -, JYF2, 0815UTC, PETRA Amman

18.264MHz, RTTY, -, -, XVN48, 0728UTC, VNA Hanoi

18.36MHz, RTTY, 50, 400, 9PL, 1930UTC, Kinshasa Air

18.405MHz, RTTY, -, -, RCT57, 0645UTC, TASS Moscow

18.788MHz, RTTY, -, -, -, 1712UTC, SUMA Khartoum

20.385MHz, ARQE, 72, -, RFFX, 1114UTC, FF Versailles

20.56MHz, RTTY, -, -, -, 1611UTC, JANA Tripoli

21.793MHz, RTTY, 100, -, RKE29, -, Novosti

Abbreviations

a.t.u.	antenna tuning unit
c.w.	continuous wave (Morse)
CGA	Colour Graphics Adaptor
FAX	facsimile
FEC	Forward Error Correction
in	inch
IOC	Index of Co-operation
m	metres
MHz	megahertz
QSL	confirmation of contact
r.f.	radio frequency
RTTY	Radio TeleType
TV	television
UTC	Universal Co-ordinated Time (=GMT)

You are cordially invited to the most comprehensive Amateur Radio event in Britain today.

LONDON AMATEUR RADIO SHOW

Saturday March 9th
10.00 am - 6.00pm

Sunday March 10th
10.00am - 5.00pm

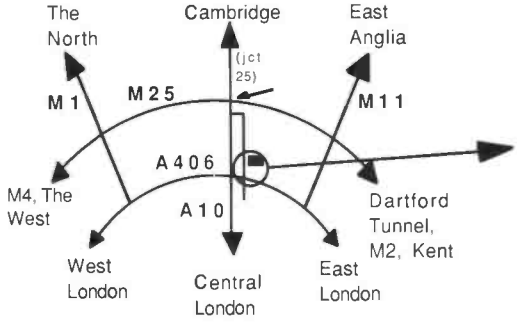
Picketts Lock Centre, Picketts Lock Lane, Edmonton, London, N9 0AS.

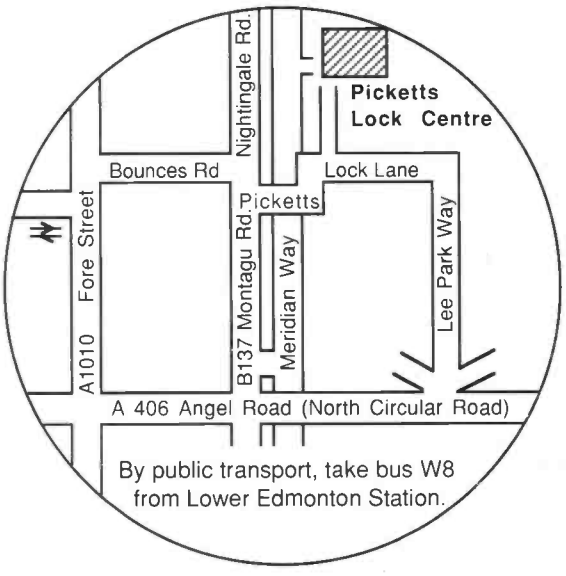
Check these details!

Free parking for 3000 cars
Morse testing facility
Talk-in on 2m and 70cm
40,000 sq ft exhibition area
Bars and restaurants
Facilities for the disabled
Easy access by road
Grand prize draw each day
Bring and Buy sale
On-site leisure and camping
Lectures each day
Special Interest Group section
Over 100 exhibitors

Admission: Adults..... £1.50 OAPs..... £1.00
Under 14..... FREE (if accompanied by an adult).

Lee Valley Leisure Park





London Amateur Radio Show,
126 Mount Pleasant Lane,
Bricket Wood, Herts, AL2 3XD.
Tel 0923 678770.

Presented in conjunction with Southgate Amateur Radio Club.

info in orbit

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

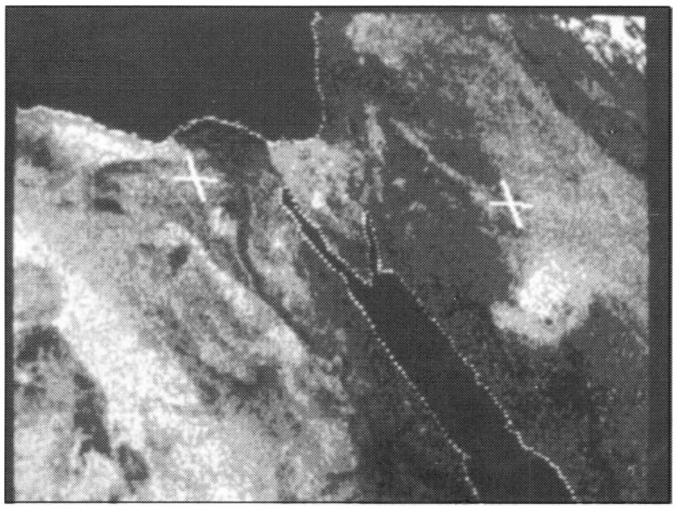


Fig. 1: METEOSAT - 3 picture showing the River Nile and surrounding desert areas.

Those of you who look at METEOSAT pictures will be aware that the C3D and D3 pictures include the Gulf region - see **Fig 1**. I wondered whether this satellite would be switched off by the European Space Agency to prevent unauthorised use of its regular transmissions, but fortunately this didn't happen. I commented on this possibility to the local press and a number of press, radio and local television interviews resulted. Local public interest in satellite monitoring of such activities increased rapidly and I have been kept fairly busy responding to requests for information! The resolution of the METEOSAT sensors should allow the identification of larger scale smoke generation or oil pollution, and the higher resolution images will reveal even smaller details. As I write, I am looking for evidence of smoke on the images.

The satellite technology developed by various nations for the identification of earth resources and for the monitoring of ice thickness will have been used for more urgent purposes! The Americans have launched some meteorological satellites especially for monitoring the Gulf situation. They are part of the Defence Meteorological Satellite Program (DMSP) and a new one (DMSP 28) was launched on December 1. It is using NOAA frequencies i.e., 137.62 or 137.50MHz but I have not heard any transmissions from it even though I have used the latest elements. My source informs me that the data is coded and I presume that it transmits only on command from the American ground stations.

Current Satellite Activity

The bad weather that hit Britain over Christmas tempted me to spend some extra time monitoring the different satellites and even on Christmas Day the Russian satellite controllers were active! For some weeks METEOR 3/3 had been transmitting continuously on 137.85MHz as had METEOR 2/16 and so sooner or later their paths had to cross. On December 19 at 1450UTC both satellites were above my horizon together and so interfering. On December 25, the satellite controllers switched METEOR 3/3 over to 137.30MHz and then switched METEOR 2/16 off a day or so later. Christmas Morning also saw METEOR 2/20 switched off and so I waited to see what might replace it. Just after midday METEOR 2/19 came on on 137.85MHz. I didn't spend the whole day monitoring satellites! I produced a complete set of satellite predictions so I had only to listen out on a few occasions to check out which ones were off and which were on.

FENGYUN 1-2

This Chinese WXSAT has been off, then on and again off, during January, so it may be having problems. I haven't heard it for several days as of late January.

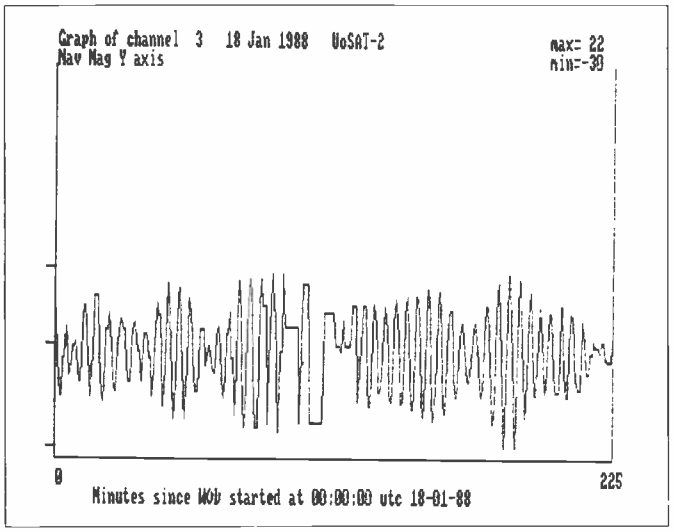


Fig. 2: Graphical plot of the navigation magnetorque Y-axis during part of an orbit in January 1988.

NOAA Decontamination

NOAA watchers may have heard the change in sound from NOAA 10 recently. The infra-red sensors have to be decontaminated every few months and so at this time the satellite only transmits visible channels. This means that the side-by-side pictures are almost completely blank during the evening passes. Decontamination usually lasts a few days only and then the other satellites in the group will probably go through the same routine.

Satellite Operations

Not so many years ago I was involved in the actual commanding of a number of satellites including the all-British UK5, UK6 and then the international IRAS satellite (Infra-Red Astronomical Satellite). These projects were based, first at the Appleton Laboratory in Slough and then at the combined Rutherford Appleton Laboratories near Oxford.

The telemetry from UK5 and UK6 was in the v.h.f. band, with UK6 using 137.56MHz until it re-entered the atmosphere last September. When I started monitoring satellites again a few years later, I heard UK6 and logged it as 'unidentified' because I didn't initially recognise it! My days with UK6 and IRAS were both exciting and demanding in that we were making the first measurements by satellite of new areas of the spectrum in astronomy. UK6 carried a cosmic ray detector, apart from other experiments, and its data was stored in an on-board tape recorder which didn't work too well. Tape recorders have a finite storage capacity and we had to dump the data every few hours when the satellite came over the ground station at Winkfield. Sometimes we were annoyed to find that the tape-recorder had dumped its data without commanding and would then stop!

The scientists involved in the project were able to solve some of the mysteries and we satellite controllers became totally involved in the attempts to retrieve as much data as possible. The IRAS project differed in being an international one in which our ground station did all of the operations using an enormous dish for both commanding and data reception. This satellite had sensors which were extremely sensitive to temperature and it was not long before we discovered comet IRAS, this becoming the first comet to be discovered by satellite, and while I was on shift! There are many stories worth relating about these and other satellite projects that I have been fortunate to be closely involved in, but back to the amateur scene!

Satellite Frequencies

There are many parts of the radio spectrum where you might hear a satellite signal so here is a summary of the most commonly recognised frequencies that certain types of satellite have used in the past: 20MHz band - some Cosmos satellites transmit on 19.990MHz and nearby. 29MHz band - the amateur radio RS 10/11 (Radio Sputnik) satellite transmits on 29.357, 29.403, 29.407 and 29.453MHz, amongst others. 121.75MHz - Russian Soyuz frequency.

136.00MHz band - all the current weather satellites transmit their a.p.t. in the upper part of this band (see WXSAT frequency summary). Many other satellites can also be heard in this band.

143MHz band - several satellites operate here including UoSAT-2 (OSCAR 11) and DOVE both on 145.825MHz. MIR, the Russian's manned orbiting space station can usually be heard on 143.625MHz. 149MHz band - used by the Russian military and navigation satellites; 149.91, 149.94, 149.97MHz etc. This band is very active and you should be able to pick up frequent transmissions. 204 - 297MHz - various spot frequencies are used for specific missions; shuttle EVAs (extra-vehicular activity) use 279MHz. 400MHz band - the navigation satellites transmit both on 149MHz and also on 399.84, 399.92 and 400.02MHz. 413 - 437MHz - several spot frequencies used here, e.g. PACSAT uses 437.025MHz. The above listing is by no means complete! There are too many satellite frequencies in occasional use to list them all, but the above includes satellites that are not difficult for the average listener to hear without using expensive receivers. I continue to monitor several of these satellites using a wide-frequency coverage scanner, fed by a discone antenna. This data was collated from various sources including a helpful note from **Pat Gowen G3IOR**.

Beginners Next Stage

So, using the list you should be able to hear your first satellite. Having realised

just how much is being broadcast, the scanner operator may leave his/her receiver until it stops on a signal and then try to decide whether it is a satellite or not. There is a better way! I think that it is wise to start by tuning into known satellite frequencies and wait until you hear one and can get a feel for its characteristics. You can probably start in the 136 or 143MHz band, so if you are doing this for the first time, scan the band between 136.00 and 137.90MHz. If your scanner allows individual frequencies to be selected then refer to those listed later for the weather satellites. These satellites are mostly reliable and if your antenna and receiver are together capable of picking up the signals then you will know within a few hours.

The UoSATs

My first dedicated satellite receiver was bought for the UoSATs and so operated on 145.825MHz. I fitted a suitable dipole on a nearby washing line, for test purposes, and heard signals within a few hours. This was the first time that I had heard satellite signals as an amateur and I was pleased to feel back in the business! For a beginner it is very rewarding to hear such signals and to know what you are hearing! Such receivers are usually fitted with a SQUELCH control which can activate a tape recorder and so I got used to recognising the sounds of telemetry from a few minutes of recorded data. Telemetry from UoSAT-2 is easily decoded and the University of Surrey, which commands UoSAT-2, can provide a booklet which explains further the methods of decoding and analysing this data.

You will have realised from my previous notes on IRAS that I was very keen to analyse the scientific data from UoSAT-2 and so my son Tim and I wrote software for my Amstrad CPC6128 computer from which many graphs were produced - see **Fig 2.** The UoSATs (originally 1 and 2, but UoSAT-1 re-entered the atmosphere) were intended to permit schools and interested individuals to have access to space measurements on a regular basis, and this objective has been admirably achieved. Suitable receivers for UoSAT-2 are available, though I don't think that a dedicated receiver is necessary unless you wish to do continuous monitoring and regularly analyse the data. If any readers want more details about the UoSAT-2 satellite you can contact the University of Surrey at: UoSAT-2 Control Centre, Department of Electronic and Electrical Engineering, University of Surrey, GUILDFORD, Surrey, GU25XH, England. If you would like occasional coverage here of UoSAT activities please drop me a line and I will oblige. I am also interested to see any results if listeners are analysing UoSAT-2 data.

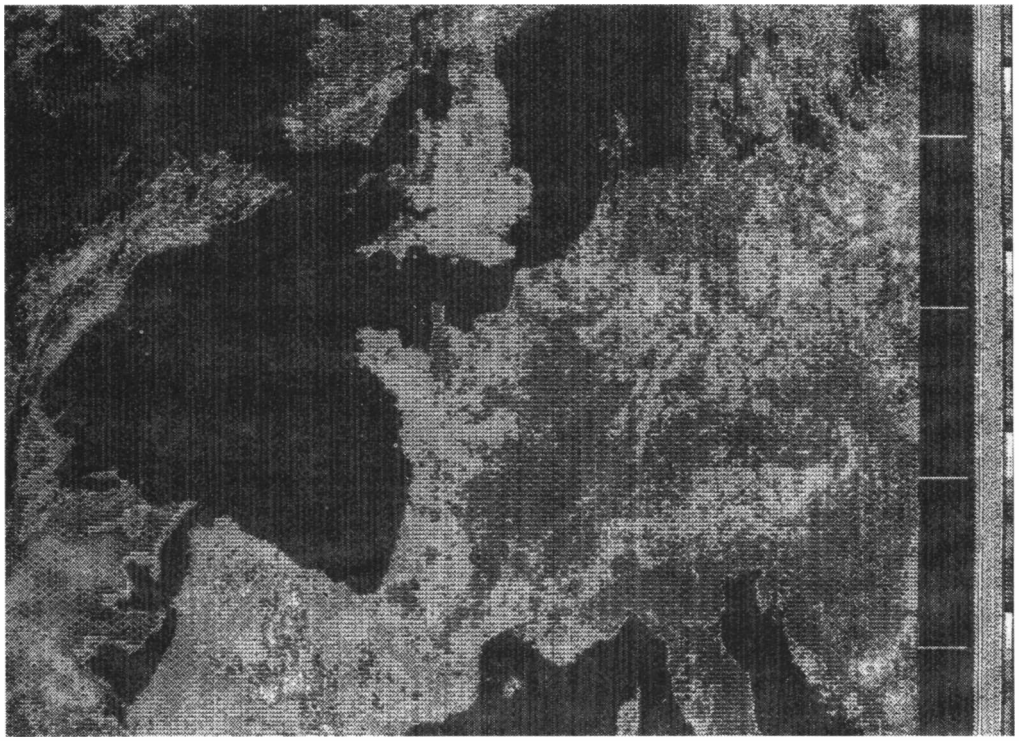


Fig. 3: NOAA II image of the UK and Europe with almost no cloud. 20th July 1990.

WXSAT Frequencies

The American NOAA satellites transmit on:

NOAAs 9 and 11 - 137.62MHz; NOAA 10 - 137.50MHz

OKEAN 2 - 137.40MHz occasional transmissions

The Russian METEORS 2/16 to 2/20 and 3/2 or 3/3 use 137.30, 137.40 or 137.85MHz when switched on. The Chinese FENGYUN 1-2 uses 137.80MHz.

Russian GOMS

The Russians has announced that their long-awaited Geostationary Orbiting Meteorological Satellite (GOMS) is scheduled for launch in early 1991. Positions have been registered at 14°W (so my source writes) for GOMS 1 and 18°W for GOMS 1M. Most fortunately they have stated that the transmissions will be compatible with METEOSAT and GOES transmissions. We must hope that the frequencies are also identical or we shall need modifications to our down-converters!

Letters

The number of letters increases each month - very pleasing, thank you! Many are requesting Kepler elements which I usually send off immediately. If there is a delay of a few days before you receive them it is because I get a new set each month from **Des Watson** the RIG membership secretary and so I may wait for a few days until they arrive. If you are desperate for a quick response do say so - it's no trouble. **Donald Martin** of Cleveland asked me for my source for these useful elements so Des, you have been warned!

The Apple Macintosh computer has its followers and **David Ormerod** of Bacup wrote to ask me whether I knew of any hardware and software to allow his computer to decode satellite or FAX pictures. The only system that I have heard of for the Mac is the 'Macsat' decoder produced by Dartcom, but I'm afraid it appears to be rather expensive from what I have been told. A record number of letters requested Kepler elements, and one writer, **Bernard Tooke** of Spalding also asks whether a Yaesu FRG-9600 receiver with w.f.m. would be suitable for satellite reception? This is a superb receiver for most purposes and if fed by a suitable antenna it would hear the satellites without problems, but of course the receiver circuitry is not tailored for providing a proper video quality signal from the weather satellites. They require about 50kHz to allow for both the actual signal's frequency bandwidth and the Doppler effect. These a.p.t. signals contain much more information than most other utility transmissions and so the receiver must be able to cope with this if you wish to decode a good quality picture.

Radio Astronomy

I have been using a 12-element Yagi operating at 150MHz feeding a 150/28MHz down-converter and then into a Lowe HF-225 receiver modified to disable its a.g.c. Using this equipment my son Tim and I have been able to monitor the sun but not very consistently. There are signal variations and once the cause has been identified I hope to use the equipment for radio astronomy as well as satellite monitoring. My very first job back in the late sixties was as a solar scientist at the Radio and Space Research Station (later renamed the Appleton Laboratory) where I was involved in the measurement of solar activity using radio telescopes! If you are wanting to find out a bit more about the use of your receiving equipment for radio astronomy as well as satellite signals you can write to **Steven Newberry** who helps to run the British Amateur Radio Astronomy Society. His address is 19 Oakway, Kingsley Park, Birkenshaw, Bradford, West Yorkshire BD11 2PG.

Kepler Elements & APT Tapes

As usual, anyone wanting recent Kepler elements can obtain them by post from me by simply sending an s.a.e. Similarly, if you are testing a new a.p.t. decoder and haven't yet got a suitable receiver then send me a pre-paid cassette tape I will return it with some satellite a.p.t. data recorded on it. Do mention whether you want METEOSAT, NOAA or METEOR data put on the tape, and please remember the data is new each time, so please, only ask for all three if that's what you need! Thank you for all of your letters and do write if you have problems with which I might be able to help.

Abbreviations

a.p.t.	automatic picture transmission
FAX	facsimile
kHz	kilohertz
MHz	megahertz
NOAA	National Oceanic & Atmospheric Administration
s.a.e.	stamped addressed envelope
UTC	Universal Co-ordinated Time (=GMT)
v.h.f.	very high frequency

long medium & short

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

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs were compiled during the four week period ending 7/1/91.

Some European l.w. signals have reached Canada. Listening in Quebec from 2300-0100 & 0400-0600UTC, Alan Roberts logged Donebach (153kHz) as SINPO 12232, Allouis 162 as 23242, Saarlouis 183 as 23232 and Junglinster 234 as 23222. He heard carriers on 171, 177, 198, 207 & 216kHz, but the modulation depth was too low to identify the language. In Canada and the USA, many aircraft radiobeacons operate in the top half of the band and mask the DX.

John Stevens (Largs) has built both a box and a spiral loop using 16s.w.g. enamelled wire. The spiral loop provides the best signal strength and station separation, but the box loop seems to reduce interference. He can now 'null out' Atlantic 252 and listen to Kalundborg on 243, also Burg or Moscow on 261. John reports that Atlantic 252 now gives a constant S-meter reading, which suggests they no longer reduce power at night.

MW Transatlantic DX

Signals from CJYQ in St.John's, NF on 930kHz have reached the UK well before midnight. At 2249, Leo Barr (Sunderland) rated their signal as 12222, Roy Patrick (Derby) noted it as 'fair' at 2350.

In St.Andrews, **Eric Duncan** monitors 930kHz until midnight regularly. He logged CJYQ on 16 nights in October, 27 in November and every night in December! For several years he has made similar checks from October to December. He says, "Reception this year has been remarkably consistent - once received CJYQ usually became a steady signal with minimal fading". He says that when unfavourable conditions occur they usually prevail for two or three nights.

By midnight, the signal from CJYQ is usually stronger and may peak SIO433, as noted by **Jim Willett** in Grimsby. Most reports of Canada and the USA were after 0145. At 0320 he logged KKYX in St.Antonio, TX on 690 as SIO 222, but their signal faded out after two minutes. Later, he heard several signals from the Caribbean area including CBC Bridgetown, Barbados on 900, which peaked SIO222 at 0410.

The thrill of hearing a transatlantic signal for the first time was experienced by **Matthew King** (Hayes) when he heard CJYQ at 0030. Later, he heard CKCW in Moncton, NB on 1220 and a football commentary from an unidentified station on 1210. The broadcasts from WINS in New York on 1010 were heard at 0130 by **Simon Holland** in Douglas, IOM. He logged CJYQ at 0110 and VOCM in St.John's, NF on 590 at 0200.

Other MW DX

Sky wave signals from Saudi Arabia and Oman have reached the UK after dark. When checking the band at 2100, Roy Patrick heard the BBC World Service via their relay on Masirah Island, Oman 1413 (1500kW). At 0305 he heard a broadcast in Arabic from Damman, Saudi Arabia on 1440 (1600kW).

Signals from N.Africa have also reached the UK after dark, including Algiers, Algeria 891 (600/300kW) noted as 34333 at 2320 by Sheila Hughes (Morden); Agadir, Morocco 936 (600kW) rated 23222 at 0108 by **Ron Galliers** in N.London; Les Trembles, Algeria 549 (600kW) noted by **Eddie McKeown** in Co.Down as 11221 at 0128; also Alger, Algeria 1422 (50/25kW) heard by **George Millmore** in Wootton.

MW Local Radio DX

No doubt the sea paths between the Isle of Man and the mainland help the ground wave signals to reach Simon Holland, but it is surprising that he can receive the 250W transmission from BBC R.Kent via Rusthall on 1602 during daylight! He logged a number of DX signals, including BBC R.Cornwall via Redruth 630 (2kW) and ILR Moray Firth R, Inverness 1107 (1.5kW).

Broadcasts from Moray Firth R. on 1107 were heard for the first time by Bart O'Brien in Co.Wexford. He rated them as SIO222 at 1405. Most of the paths to his location are over the sea and his log shows that some ground wave signals are quite potent, for example BBC R.Jersey 1026 (1kW) and R.Guernsey 1116 (0.5kW) rate SIO333 at noon. Perhaps the extensive log compiled by **David Wratten** in Cambridge will encourage the DXers who are unable to take advantage of sea paths.

Short Wave Reports

Solar flares have made all h.f. reception poor, or even impossible, at times, but sometimes good signals have been noted from many areas. Although the peak of the sunspot cycle has passed, solar activity is continuing at a high level, so more disturbances can be expected.

Most mornings, the 25MHz (**11m**) signals from R. Australia to the Gulf area via Carnarvon 25.750 (Eng 0800-0955) have reached the UK. While monitoring daily in Harrogate, John **O'Halloran** noted ratings of SIO333 to 555. Their signals have also been received in Botswana. At 0820 **P.R.Guruprasad** (Molepolole) noted them as 55444.

The Arabic broadcasts from the Voice of the UAE in Abu Dhabi on 25.690 have reached several continents. They were SIO444 at 0930 by **David Middlemiss** in Eyemouth, in George, S.Africa **Dick Moon** logged them as SINPO 44444, Alan Roberts (Quebec) quoted a remarkable 55555 at 1250UTC.

During daylight, the s.s.b. (u.s.b.+ p.c.) signals from HCJB in Quito on 25.950 (Eng to Europe) have been heard in the UK. In Macclesfield, Philip Rambaut logged them as SIO333 at 1222.

Some of R.Australia's **21MHz (13m)** signals have reached the UK. Their broadcast to C.Asia via Darwin 21.525 (Eng 0100-0900) was SIO323 at 0730 in Eyemouth; to S.Asia via Carnarvon 21.775 (Eng 0100-0958) 35333 at 0915 in Derby, also to the Gulf area (1300-1400) 44444 by **Darran Taplin** in Brenchley; to E/C.Asia via Darwin 21.825 (Eng, Jap 0900-1230) SIO433 at 1224 in Macclesfield.

The signals to Europe include R. Japan via Moyabi 21.690 (Eng 0700-0800), rated 34333 at 0718 by **Kenneth Reece** in Prenton; R.Pakistan, Islamabad 21.520 (cricket commentary Eng, Ur) 45554 at 0800 by **David Edwardson** in Wallsend; UAE R.Dubai 21.605 (Ar, Eng 0615-1645) 43343 at 1033 by **Jim Cash** in Swanwick; also 21.675 (Ar, Eng 1000-1400) 34423 at 1035 in Sunderland; WCSN Scotts Corner 21.780 (Eng 1400-1600) 55444 at 1405 by **John Nash** in Brighton; R. Japan via Moyabi 21.700 (Eng 1500-1600) 54344 at 1510 by Chris **Shorten** in Norwich; WHRI Noblesville 21.840 (Eng 1500-1700, Sat/Sun only) 34333 at 1645 by **Robin Harvey** in Bourne; WYFR Okeechobee 21.615 (Eng 1600-1700, also to Africa) 54444 at 1655 by **Darren Beasley** in Bridgwater; RCI via Sackville 21.545 (Eng 1715-1730) SIO444 at 1715 by **Cyril Kellam** in Sheffield; R.HCJB Quito 21.480 (Eng 1900-2000) 44344 at 1909 by **Robin Clark** in Plymouth; also 21.455 (u.s.b. + p.c.) noted as 'good' by **Kenneth Buck** in Edinburgh.

Some broadcasts to other areas come from Vatican R, Rome 21.650 (Port, Fr, Eng to Africa 0500-0655), logged as 44433 at 0632 by **Rhoderick Illman** in Oman; R.Portugal, Lisbon 21.700 (Port to Africa 1000-1200) 44444 at 1030 in Morden; BBC via Limassol 21.470 (Eng to E.Africa 0900-1615) 33343 at 1103 in N.London; R.Sweden via Horby 21.570 (Eng, Sw to S.Asia, Australia 1100-1330) SIO434 at 1300 by **Phil Cooper** in Guernsey; R.Yugoslavia, Belgrade 21.715 (Eng to ?) 44444 at 1316 in Co.Down; Finland via Pori 21.550 (Eng, Sw, Fin to E.Africa, Middle East 1405-1557) 55444 at 1410 by **Ted Agombar** in Norwich; DW via Wertachtal 21.600 (Eng to E/S.Africa 1500-1550) 55454 at 1500 in Botswana; REE Spain 21.570 (Sp to C.America 0930-1900) SIO444 at 1737 by **John Coulter** in Winchester; WCSN Scotts Corner 21.640 (Eng to S.Africa 1800-2000) 44444 at 1811 by **Denis Bosher** in Dolgellau.

Good DX reception has been noted in the 17MHz (16m) band. R. Australia's broadcast to S.Asia via Carnarvon 17.630 (Eng 1300-1730) rated 55434 at 1722 in Swanwick. The 100kW transmissions from R. New Zealand Int. via Rangataiki (Eng to Pacific areas 2111-0630 Mon-Sat, 0000-0630 Sun) have reached the UK some mornings. To avoid co-channel interference from Radio Moscow they moved from 17.675 to 17.770 on January 14. The signal from KHBI in Saipan 17.555 (Eng to S.E.Asia 0600-?) was noted as 55555 at 0807 in Dolgellau.

Among the many log entries were R.Japan via Yamata 17.890 (Eng, Jap 0700-0900) 34333 at 0810 in Prenton; SRI via Schwarzenburg 17.740 (It, Eng, Fr, Ger to Australia, Pacific areas 0745-1030) rated 44454 at 1010 in Co.Down; AIR Delhi, India 17.387 (Eng, Ta to E/SE.Asia 1000-1230) 44333 at 1015 in Morden; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 33333 at 1057 in N.London; R.Sweden via Karlsborg 17.740 (Sw, Eng, Russ to Asia, Australia 1100-1430) SIO434 at 1230 in Winchester; R.Moscow, USSR 17.655 (Eng to E.Africa, Middle East 1400-1600) SIO433 at 1400 in Guernsey; R.Pakistan, Islamabad 17.555 (Eng to Europe 1600-1630) 54554 at 1610 in Bridgwater; R.Morocco, Rabat 17.595 (Fr, Eng to N.Africa, Middle East 1400-1700) SIO545 at 1640 by **Thomas Barnett** in Slough; Vatican R, Rome 17.710 (Am, Tig, Fr, Eng to E.Africa 1630-1755) 43434 at 1736 in Sunderland; R.RSA Johannesburg, 17.790 (Eng to Africa 1700-1800) 33233 at 1740 by Alan Smith in Northampton; R.Nederlands via Bonaire 17.605 (Eng, Du, Fr to W.Africa 1830-2125) 54444 at 1830 in Norwich; RCI via Sackville 17.875 (Eng to Europe 1930-2000) SIO555 at 1930 in Edinburgh; also 17.820 (Eng to Africa 1900-1930) 54333 at 1927 in Oman; R.HCJB Quito 17.790 (Eng to Europe 1900-2000) 44433 at 1935 in Brenchley; WYFR Okeechobee 17.612 (Ar, Fr, Port, Eng 1600-2300) 43434 at 2000 by **Cliff Stapleton** in Torquay; BBC via Ascension Island 17.880 (Eng to E/C.Africa 1900-2115) 45444 at 2020 in Brighton.

The **15MHz (19m)** signals from R.New Zealand Int. Wellington to Pacific areas have reached the UK at remarkable strength some days. Their signal on 15.130 (Eng 1800-2111 Sun to Fri) was SIO444 at 1830 by **Simon Hamer** in New Radnor. Strong signals have also arrived from R.Australia via Shepparton 15.240 (Eng to S.Pacific areas 2200-1030) during the morning. A typical rating is 44443, as noted in Norwich at 0835.

Many other signals are beamed to Europe. Those noted during the evening were from RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-2055), rated as

long medium & short

'poor' at 1800 in Largs; WWCR Nashville, USA 15.690 (Eng, Ger 1200-0100) 44444 at 1850 in Co.Down; RHC Habana, Cuba 15.435 (Eng 1900-2100), heard at 1921 by **Phil Townsend** in E.London; RCI via Sackville 15.325 (Eng 1930-2000) SIO555 at 1931 in Edinburgh; WINB Red Lion 15.185 (Eng 2003-2245, also to N.Africa) 54333 at 2130 in Bridgwater; R.HCJB Quito 15.270 (Eng 2130-2200) 33333 at 2130 in N.London; WRNO New Orleans 15.420 (Eng 1600-0000) 12321 at 2200 by **John Robertson** in Alnwick.

During the day there are broadcasts to other areas, they include R.Japan via Yamata 15.325 (Eng to Middle East 0700-0800) rated 34543 at 0750 in Wallsend; VOA Europe 15.195 (Eng to Middle East 0800-1000) 42444 at 0843 in Sunderland; Radio Beijing, China 15.440 (Eng to Australia 0830-1025) SIO444 at 0900 in Sheffield; BBC via Kranji 15.360 (Eng to E/SE.Asia 0915-1130) 23333 at 0946 in Prenton; R.Beijing via R.Mali 15.130 (Eng to E/S.Africa 1600-1700) 43433 at 1650 in Brighton; BBC via Mahe 15.420 (Eng, So, Swa to Africa 0300-1800?) 44554 at 1708 by **John Parry** in Northwich; KHBI Siapan 15.610 (Eng to C.Asia 1600-1800) 55344 at 1730 in Northampton; R.RSA Johannesburg 15.270 (Eng to E.Africa, Middle East 1700-1800) 54344 at 1725 in Norwich; TWR Swaziland 15.210 (Eng to E.Africa 1800-1845) SIO322 at 1812 in Macclesfield; BBC via Ascension Island 15.400 (Eng 1745-1830) SIO444 at 1830 by **Neil Wheatley** in Lytham St Annes; R.Nederlands via Talata Volon 15.560 (Eng to E.Africa 1830-1925) SIO433 at 1845 by **Alf Gray** in Birmingham; WSHB Cypress Creek 15.610 (Eng to C/S.America 1400-2000 Sat/Sun only) 44444 at 1940 in Morden; KUSW Salt Lake City 15.590 (Eng to NE.USA 1600-0200) 34343 at 1945 in Torquay; BBC via Ascension Island 15.260 (Eng to S.America 2000-0330) 34434 at 2015 in Dolgellau; RCI via Sackville 15.150 (Eng to Africa 2130-2200) SIO444 at 2200 in Eyemouth; VOA via Tinang 15.290 (Eng to E.Asia 2200-0100) SIO322 at 2300 by **Francis Hearne** in Bristol.

The **13MHz (22m)** signals to Europe include R.Korea, Seoul 13.670 (It, Fr, Kor, Eng, Port, Sp 0600-1145), rated 43323 at 1012 in N.London; R.Jordan, Al Karanah 13.655 (Eng 1100-1315) 45444 at 1200 in Derby; R.Austria Int, Vienna 13.730 (Ger, Fr, Eng, Sp, Ar 0400-1700) 43333 at 1400 in Norwich; UAE R.Dubai 13.675 (Ar, Eng 1600 to 2100) 55555 at 1620 in Bridgwater; Voice of Israel, Jerusalem 13.750 (Heb 0300-2215) SIO544 at 1800 in Harrogate; WHRI Noblesville 13.760 (Eng, Sp, Port, Yu 1700-0000) SIO455 at 1930 in Edinburgh; WCSN Scotts Corner 13.770 (Eng 2000-2200) SIO544 at 2155 by **Ron Pearce** in Bungay; R.Baghdad, Iraq 13.660 (Eng 2100-2300) SIO333 at 2115 by **Bill Clark** in Rotherham.

Those to other areas include: DW via Leipzig, Germany 13.610 (Ger, Fr, Eng to Africa 0430-0700), noted as 22222 at 0435 in Prenton; KSDA Agat, Guam 13.720 (Bur, Ta, Mal, Hi, Tel to SE.Asia 1400-1700) 55444 at 1515 in Botswana; SRI via Sottens 13.685 (Eng, Fr, It to Middle East 1515-1700) 43233 at 1530 by **John Sadler** in Bishops Stortford; R.Pakistan, Islamabad 13.665 (Eng to N.Africa, Middle East 1600-1630) 54333 at 1620 in Norwich; RCI via Sackville 13.670 (Eng, Fr to Africa 1800-2000) SIO534 at 1825 in Slough; R.Australia via Carnarvon 13.745 (Eng to S.Asia 1530-?) 43433 at 1750 in Brenchley; SRI via Sottens, Switzerland 13.635 (Ger, Fr, It, Port, Eng, Sp to E.Africa 1900-2200) SIO333 at 2003 in Winchester; R.Australia via Shepparton 13.745 (Eng to Pacific areas, USA 1930-2130) SIO222 at 2020 by **Julian Wood** in Elgin; R.Nederlands via Flevo 13.700 (Eng to W.Africa 2030-2125) 22222 at 2030 in Plymouth; R.Australia via Darwin 13.605 (Eng to E.Asia 2200-0100) SIO111 at 2220 in Macclesfield.

Many broadcasters use the **11MHz (25m)** band for Europe. Including the

531	Leipzig	Germany	100	K*,L*	999	Hoyerswerda	Germany	20	K*,M*
531	Oviedo	Spain	10	K*,L*	999	R.Popular, M'rid	Spain	20	D*,Q*
540	BRT-2 Wavre	Belgium	150/50	I,K*,L,Q*	1008	Hilv'sum-5 Flevo	Holland	400	D*,I,K*,L,M,Q*
540	Solt	Hungary	2000	H*	1017	Wolfsheim	Germany	600	D*,K*,L*,M*,Q*
549	Les Trembles	Algeria	600	K*,L*	1035	Milan	Italy	50	K*
549	Bayreuth	Germany	200	I*,K*,L*,Q*	1035	Prog.3 Lisbon	Portugal	120	M*,P*
558	Espoo	Finland	100	K*	1035	Tshisahulu, V'da	S.Africa	100	E*
567	Berlin	Germany	100	D*,K*	1044	Burg	Germany	250	K*,L*,M*
567	RTE-1 Tullamore	Ireland (S)	500	A*,D*,I,L,M,O*,Q*	1062	Kalundborg	Denmark	250	I*,K,L,M,Q*
576	Bechar	Algeria	400	L*	1071	Brest	France	20	K*,L,M
576	Stuttgart	Germany	500	D*,K*,L*,Q*	1098	Bratislava	Czech	750	B*,K*,L*
585	FIP Paris	France	8	H*,L	1098	R.Bop, Ga-Rank'a	RSA	100	E*
585	RNE-1 Madrid	Spain	200	D*,I*,K*,P*,Q*	1107	AFN via Munich	Germany	40	I*,K*,M*
594	Frankfurt	Germany	400	K*,L*,Q*	1107	RNE-5 Barcelona	Spain	20	K*
594	Muge	Portugal	100	H*,L*	1107	BBC-R1 Wallasey	UK	0.5	M
603	Lyon	France	300	L*	1125	La Louviere	Belgium	20	K*,L
603	Sevilla	Spain	20	K	1125	Stara Zagora	Bulgaria	500	L*
603	BBC-R4 N'castle	UK	2	K,M	1125	BBC Llandrindod Wells	UK	1	K*,M
612	Kiel	Germany	10	L*	1134	Valencia	Spain	10	K*
612	RTE-2 Athlone	Ireland (S)	100	D*,K*,L,M,Q*	1134	Zadar	Yugoslavia	1200	B*,L*,N
621	RTBF-1 Wavre	Belgium	80	D*,H*,K*,L,Q*	1143	AFN via Stuttgart	Germany	10	L
621	VOA S'bi-Phikwe	Botswana	50	E	1143	Century R. Dublin	Ireland (S)	?	K*,M
630	Vigra	Norway	100	D*,K	1143	Kaliningrad	USSR	150	C*,K*,L*
639	Liblice	Czech	1500	H*,L*	1161	Stara Zagora	Bulgaria	500	K*
639	RNE-1 Almeria	Spain	20	D*	1161	Strasbourg (F.Int)	France	200	K*,M*
639	La Coruna	Spain	100	D*,I*,K*,L*	1170	TWR Manzini	Swaziland	50	E*
648	BBC Orfordness	UK	500	H*,I,K*,L,M	1179	Solvesborg	Sweden	600	C*,I,K,L,M,Q*
657	Burg	Germany	250	K*,L*	1188	Kuurne	Belgium	5	L
657	R.Xhosa, Komga	RSA	100	E*	1188	Wachenbrunn	Germany	5	K*
666	Bodenseesender	Germany	300/180	D*,H*,K*,L*	1188	Szolnok	Hungary	135	K*
675	Marseille	France	600	D*,M*	1197	VOA via Munich	Germany	300	K*,M*
675	H'versum-3 Lopic	Holland	120	A*,D*,H*,K*,L,Q*	1197	BBC-R3 Enniskillen	Ireland (N)	1	M
684	RNE-1 Sevilla	Spain	250	D*,H*,I*,K*,P*	1197	BBC-R3 Bournemouth	UK	0.5	L
684	Beograd	Yugoslavia	2000	D*,L*	1206	Bordeaux	France	100	K
693	Berlin	Germany	250	K*	1206	Wroclaw	Poland	200	I*,L*
702	Aachen/Fl'sburg	Germany	5	H*,K*	1224	Vidin	Bulgaria	500	K*
702	Monte Carlo	Monaco	300	L*	1224	CDPE Madrid	Spain	20	I*
711	Rennes 1	France	300	D*,H*,K*,L*,M*,Q*	1233	Melnik	Czechoslovakia	400	K*,M*
720	Langenberg	Germany	200	L,M	1242	Marseille	France	150	K*,M*
720	Norte	Portugal	100	K*	1251	Marcali	Hungary	500	L*
720	BBC-R4 Lots Rd	UK	0.5	L	1251	Huisberg	Netherlands	10	B*,K*,M
729	RTE-1 Cork	Ireland (S)	10	A,D*,L,M	1260	Valencia	Spain	20	I*,L*
729	Oviedo	Spain	50	K*,L*	1269	Neuminster	Germany	600	G*,K*,L,M,Q*
738	Paris	France	4	D*	1278	RTE-2 Dublin/Cork	Ireland (S)	10	B*,K,L,M
738	Poznan	Poland	300	I*	1287	Litomysl/Liblice	Czechoslovakia	300/200	K*,L*,M*
738	RNE-1 Barcelona	Spain	250	D*,L*,P*,Q*	1296	BBC Orfordness	UK	500	K*,L,M
747	Hilv'sum-2 Flevo	Holland	400	D*,F,H,I,K*,L,M,Q*	1305	Rzeszow	Poland	100	K*,L*
747	Gobabis	Namibia	100	E*	1314	Kvitsoy	Norway	1200	B*,K*,L,M,Q*
756	Brunswick	Germany	800/200	K,L,Q*	1323	R.Moscow via Leipzig.	Germany	150	K,M,Q*
756	BBC-R4 Redruth	UK	2	M	1332	Rome	Italy	300	K*,M*
765	Sottens	Switzerl'd	500	K*,L*,M*	1341	BBC-Ulst.Lisnagarvey.	Ireland (N)	100	L,M,Q*
774	BBC-R4 Ennisk'n	Ireland (N)	1	K,M	1350	Nancy/Nice	France	100	K*,L,M,Q*
774	RNE-1 Caceres	Spain	60	D*	1359	Berlin	Germany	250/100	K*
783	Burg	Germany	1000	D*,K*,L*,M*,Q*	1368	Manx Radio, Foxdale	I.O.M.	20	K,M
792	Limoges	France	300	L*,M*	1377	Lille	France	300	K*,L,M
792	Sevilla	Spain	20	H*,K*	1377	Sandlane	Swaziland	50	E*
801	Munich	Germany	420	D*,K*,Q*	1386	Kaunas	USSR	1000	I*,K*,L*,M*,Q*
801	Castellon	Spain	5	L*	1395	R.Tirana via Lushnje.	Albania	1000	I*,K*,L*,O*,Q*
810	SER Madrid	Spain	20	D*,K*,Q*	1395	Alicante	Spain	2	K*
810	BBC-Scot.W'glen	UK	100	C*,I,K,L,M,O*,Q*	1404	Brest	France	20	K*,L,M
828	Hanover	Germany	100/5	K*,M*	1413	BBC via Masirah Is.	Oman	1500	N*
837	Nancy	France	200	K*,L*,M*	1413	RCE Zaragoza	Spain	20	K*,L*
846	Rome	Italy	540	D*,I*,L*,Q*	1422	Alger	Algeria	50/25	L*
855	Berlin	Germany	100	D*,K*	1422	Heusweiler	Germany	1200/600	K*,L,M*
855	Murcia	Spain	125	D*,K*,L*,Q*	1431	Dresden	Germany	250	K*,M*
864	Paris	France	300	O*,L,M*,Q*	1440	Marnach	Luxembourg	1200	H*,K,L,M*,Q*
873	AFN via Frankf't	Germany	150	B*,D*,I*,K*,L*,M*, O*,Q*	1440	Damman	Saudi Arabia	1600	N*
873	R.Ulster,Ennisk'n	UK	1	K	1449	Berlin	Germany	5	K*
882	BBC-Wales	UK	70	C*,D*,I*,K,L,M,Q*	1449	Squinanzo	Italy	50	L*
891	Algiers	Algeria	600/300	D*,H*,I*,K*,L*, M*,Q*	1467	TWR Monte Carlo	Monaco	1000/400	H*,I*,K*,L*
900	Milan	Italy	600	B*,K*,M*	1476	Wien-Bisamberg	Austria	600	K*
918	R.Intercont. M'rid	Spain	20	K*	1485	AFN	Germany	1	K*
927	BRT-1 Wolvert'm	Belgium	300	K,L,M	1494	Clermont-Ferrand	France	20	K,L,M
936	Bremen	Germany	100	D*,H*,K*,L*,M*	1494	Leningrad	USSR	1000	K*,L*
936	Agadir	Morocco	600	O*	1503	Stargard	Poland	300	C*,I*,K*,L*, M*,O*
945	Pleven	Bulgaria	30	L*	1512	BRT Wolvertem	Belgium	600	C*,H*,I*,J*,L, M*,O*,Q*
945	Toulouse	France	300	D*,I*,K,L,M,Q*	1521	Kosice	Czechoslovakia	600	K*,M*
963	Pori	Finland	600	A*,B*,D*,H*,K*,L*, M*,Q*	1530	Vatican Radio, Rome	Italy	150/450	E*,I*,L*,M*,Q*
963	Paris	France	8	L	1539	Mainflingen	Germany	700	K*,L,M*
972	R.Botswana	Botswana	50	E	1566	Sarnen	Switzerland	300	L*
972	Hamburg	Germany	300	K*,L,M	1575	Burg	Germany	250	K*,L*,M*
981	Alger	Algeria	600/300	D*	1575	Genoa	Italy	50	L*
990	Berlin	Germany	300	K*	1584	Pamplona	Spain	2	P*
990	BBC-Redmoss	UK	1	K*,M	1593	Langenberg	Germany	400/800	H*,K*,L,M*,Q
990	BBC-Tywyn	UK	1	K	1602	R.Onteniente	Spain	2	K*,L*,P
					1611	Vatican Radio, Rome	Italy	5	H*,N*,P*

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

DXers:-
A. Denis Bosher, Dolgellau.
B. Jim Cash, Swanwick.
C. Robin Clark, Plymouth.
D. Ron Galliers, London.
E: P.R.Guruprasad, Botswana.
F: Robin Harvey, Bourne.
G. Francis Hearne, Bristol
H: Simon Holland, Douglas, I O M
I. Sheila Hughes, Morden.
J: Rhoderick Illman, while in Oxted.
K: Eddie McKeown, Co.Down.
L: George Millmore, Wootton I O.W.
M: Bart O'Brien, Co Wexford
N: Roy Patrick, Derby.
O: Chris Shorten, Norwich.
P: John Stevens, Largs
Q. Phil Townsend, London

long medium & short

153	Bechar	Algeria	1000	G*
153	Donebach	Germany	500	A,B,C*,D*,E,F,G,H*,I*,J*
162	Allouis	France	2000	A,B,C*,D*,E,F,G,H*,I*,J*
171	Kaliningrad	USSR	1000	A,B,D*,G
171	Moscow	USSR	500	C*,E
177	Oranienburg	Germany	750	A,B,C*,D*,E,F,G
183	Saarlouis	Germany	2000	A,B,C*,D,E,F,G,H*,J*
189	Motala	Sweden	300	A,G*
189	Tbilisi	USSR	500	B*
198	BBC Droitwich	UK	500	C,D,E,F,J*
198	BBC Westerglen	UK	50	A,B
207	Munich	Germany	500	A,C*,D*,E,F,G*,J*
207	Vatnsendi	Iceland	50	B
207	Azilal	Morocco	800	G*
216	Roumoules	Monaco	1400	A,B,C*,D,E,F,G,J*
216	Oslo	Norway	200	A,B,D*
225	Konstantinow	Poland	2000	A,B,C*,D*,E,F,G,I*,J*
234	Junglinster	Luxembourg	2000	A,B,C*,D*,E,F,G,H*,J*
243	Kalundborg	Denmark	300	A,B,C*,D*,E,G,I*,J*
252	Tipaza	Algeria	1500	A,C*,D*,E,G*
252	Atlantic 252	S.Ireland .	500	A,B,C*,D,E,F,G,I*
261	Burg	Germany	200	E,F,G*,I*,J*
261	Moscow	USSR	2000	A,B,C*,G,I*
270	Topolna	Czech	1500	A,B*,C*,D*,E,F,G,J*
270	Orenburg	USSR	15	B*
279	Minsk	USSR	500	A,B*,C*,D*,E,J*

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

BBC via Oaventry 12.095 (Eng 0700-2300), SIO333 at 0900 in Sheffield; Vatican R, Rome 11.740 (It, Fr, Eng, Sp 1130-1200) 44434 at 1146 in Sunderland; R.Romania Int, Bucharest 11.940 (Eng 1300-1400) 54444 at 1320 in Dolgellau; R.Finland via Pori 11.755 (Eng 1500-1530) SIO555 at 1500 in Slough; RFI via Issoudun 11.670 (Fr, Eng, Russ, Yu, Ro, Pol, 0600-2100) 43443 at 1600 in Bishops Stortford; R.Portugal, Lisbon 11.740 (Eng 2000-2030), heard at 2015 in E.London; AIR via Aligarh 11.620 (Eng, Hi 1845-2230) SIO333 at 1915 in Bristol; RCI via Sackville 11.945 (Eng 2200-2300) SIO444 at 2200 in Birmingham; VOFC Taiwan via Okeechobee 11.915 (Eng 2200-2300) SIO434 at 2230 in Guernsey; Radio Japan via Moyabi 11.735 (Jap, Eng 2200-0000, also to N.Africa) SIO222 at 2300 in Elgin.

Many signals are for other areas too. Among those noted were the Voice of Mediterranean, Malta 11.925 (Eng to N.Africa, S.Europe 1400-1600) 43543 at 1410 in Brighton; R.Australia via Carnarvon 12.000 (Eng to SE.Asia 1430-1700) 44443 at 1435 in Norwich; KTWR Guam 11.650 (Eng to S.Asia 1445-1700) SIO211 at 1550 in Macclesfield; KNLS Anchor Point 11.880 (Eng to E.Asia 2005-2100) 21231 at 2005 in Alnwick; RNB Brasilia, Brazil 11.780 (Port to S.America 0800-2300), noted as 'poor' in Largs; Voice of Israel, Jerusalem 11.605 (Eng, Heb to USA 2130-2330) SIO333 at 2245 in Eyemouth.

R. New Zealand's 9MHz (31m) broadcasts to Pacific areas have been clear in the UK some mornings. Their 100kW transmission from Rangitaiki, N.Island on 9.700 (Eng 0630-1110) was 34333 at 0706 in Prenton. In Gt.Malvern, Pete Oickerson has listened almost daily from 0900. The signal strength was usually adequate, but a rapid flutter reduced the intelligibility.

Some signals from Australia have also reached the UK. R.Australia via Shepparton 9.580 (Eng to Pacific areas 0830-2100) was 42243 at 0830 in Northampton; also via Carnarvon? 9.860 (Eng to Pacific areas?) was 21332 at 1711 in Swanwick. The ABC domestic services via Brisbane 9.660 (Eng to E.Australia 1845-1400) and Perth 9.610 (Eng to W.Australia 24hrs) were heard at 2130 in New Radnor at SIO222.

The 31m broadcasts to Europe include R.HCJB Quito, Ecuador 9.610 (Eng 0700-0800) 45444 at 0730 in Morden; R.Finland via Pori 9.560 (Eng 0730-0745) 55555 at 0735 in Wallsend; TWR Monte Carlo, Monaco 9.480 (Eng 0640-0825) SIO444 at 0805 in Birmingham; WCSN Scotts Corner 9.840 (Eng 0600-1000) rated 44444 at 0845 by Donald Blashill in Cheltenham; R.Moscow, USSR 9.685 (Eng 1830-0500, also to USA) 55444 at 1920 in Norwich; R.Prague, Czechoslovakia 9.605 (Eng 1900-1957) 54545 at 1930 by **Harold Wood** in Manchester; R.Cairo, Egypt 9.900 (It, Ger, Fr, Eng 1800-2245) SIO444 at 2141 in Bungay; VOIRI Tehran, Iran 9.022 (Russ, Fa, Tur, Ger, Fr, Eng, Sp, Ar 1530-2230) 34434 at 2050 in Sunderland; R.Sophia, Bulgaria 9.700 (Eng) 54444 at 2141 in Bourne; AIR via Delhi, India 9.910 (Hi, Eng 2000-2230) 43434 at 2200 in Torquay; VOFC Taiwan via Okeechobee 9.852 (Eng 2200-2300) 54444 at 2208 in Brenchley.

In the congested **7MHz (41m)** band good reception over long distances was noted from WYFR Okeechobee 7.355 (Eng to Europe, Africa 0600-0800) 35233 at 0630 in Co.Down; WHRI Noblesville 7.315 (Eng to USA 0800-1100) 44444 at 0805 in Dolgellau; R.Korea, Seoul 7.550 (Eng to Europe 0800-0900) 43343 at 0840 in Norwich; BBC via Tsang Tsui 7.180 (Eng/Chin to Asia 0930-1000) 24423 at 0942 in Prenton; AIR via Delhi 7.412 (Hi, Eng to Europe 1845-2230) SIO433 at 2150 in Bungay; RHC Habana, Cuba 7.215 (Fr, Eng to Europe 2100-2300) 54434 at 2100 in Swanwick; R.Beijing, China (via USSR?) 7.170 (Eng to Europe 2200-?) 53544 at 2200 in Brighton.

Many **6MHz (49m)** broadcasts to Europe stem from stations in Europe, e.g. R.Nederlands via Flevo 5.955 (Eng 1139-1225) SIO444 in Bristol; R.Polonia, Warsaw 6.135 (Eng 1600-1630) 54344 at 1605 in Brighton; R.Prague, Czechoslovakia 5.930 (Cz, Fr, Sp, Eng 1900-2215) 55444 at 1935 in Oolgellau; R.Sweden via Karlsborg 6.065 (Eng 1930-2000) SIO 323 at 1950 in Elgin;

DXers:
A: Kenneth Buck, Edinburgh.
B: Simon Holland, Douglas, IOM.
C: Sheila Hughes, Morden.
D: Eddie McKeown, Co.Down.
E: George Millmore, Wootton, IOW.
F: Bart O'Brien, Co.Wexford.
G: Fred Pallant, Storrington.
H: Alan Roberts, Quebec, Canada.
I: John Stevens, Largs.
J: Phil Townsend, London.

If you would like a copy of this month's Local Radio Chart, send a s.a.e. to the Editorial Office.

Tropical Bands

2.310	ABC Alice Springs	Australia	2030	G	4.800	LNBS Lesotho	Maseru	1929	N
2.325	ABC Tennant Creek	Australia	2030	G	4.810	Voz de Galapagos	Ecuador	0100	U
2.340	Fuzhou	China	2144	D	4.810	R.Orion, Jo'burg	S.Africa	0406	L
2.470	R.Cacique	Brazil	0320	U	4.810	R.Moskva 1 (Yerevan)	USSR	2034	N
2.485	ABC Katherine	Australia	2030	G,O	4.815	R.diff TV Burkina	Ouagadougou	0025	L,R
2.490	Vos 1, Fuzhou	China	2130	U	4.820	R.Moskva 4 (Khanty-M)	USSR	1857	L,N
2.560	Xinjiang	China	0120	D	4.825	R.Moscow	USSR	1910	N,S
3.200	TWR	Swaziland	2010	F	4.830	R.Grigota, Santa Cruz	Bolivia	0350	U
3.205	AIR Lucknow	India	1545	O	4.830	Gaborone	Botswana	1937	N
3.230	R.Nepal	Kathmandu	1530	O,U	4.830	R.Tachira	Venezuela	0006	D,M,S
3.235	AIR Gauhati	India	1930	U	4.835	RTM Bamako	Mali	1903	B,D,I,N,P,S
3.240	TWR	Swaziland	2010	F	4.845	ORTM Nouakchott	Mauritania	1903	N
3.255	BBC via Maseru	Lesotho	2009	F	4.850	R.Yaounde	Cameroon	2204	D,L,N,P,S
3.270	SWABC 1, Namibia	S.W.Africa	1954	F,N	4.860	R.Moscow.	USSR	2205	J,S
3.290	SWABC 2, Namibia	S.W.Africa	1925	F	4.865	PBS Lanzhou	China	0032	D,L
3.300	R.Cultural	Guatemala	0420	D	4.865	V of Cinaruco	Colombia	0640	D,M
3.315	SLBS Freetown	Sierra Leone	0652	D	4.870	R.Cotonou	Benin	2117	N,R,S
3.350	KCBS Pyongsong	N.Korea	0200	U	4.870	R.Jornal Rio	Brazil	0220	U
3.355	AIR Kurseong	India	1540	O	4.885	R.Clube do Para	Brazil	0441	D,M
3.365	AIR New Delhi	India	1545	D,O	4.885	Voice of Kenya	Kenya	1857	L,N
3.365	GBC Radio 2	Ghana	2135	N,S,U	4.895	R.Bare, Manaus	Brazil	0520	U
3.375	AIR Gauhati	India	1610	O	4.895	R.Moscow (Kalinin)	USSR	1906	L,N,S
3.380	R.Malawi	Malawi	2110	M	4.898	La Voz/ Rio, Arauca	Colombia	0409	L
3.400	Reykjavik	Iceland	1810	U	4.900	V. of the Strait 2	China	2211	M,R
3.905	AIR Delhi	India	1520	D,G,J,O,R	4.905	R.Nat.N'djamena	Chad	2119	D,N,S
3.915	BBC Kranji	Singapore	1900	B,D,I,J,N,S	4.910	RRI Bukittinggi	Indonesia	1531	M
3.925	AIR Delhi	India	1600	O	4.910	R.Zambia, Lusaka	Zambia	1954	F,N
3.940	PBS Hubei Wuhan	China	2335	D	4.915	R.Ghana, Accra	Ghana	2145	M,N,R,S
3.950	PBS Qinghai Xining	China	2330	D	4.920	ABC Brisbane	Australia	1900	G,N,S,U
3.955	BBC Daventry	England	2130	E,H,I,L,R,S,T	4.925	R.Nacional, Bata	Eq.Guinea	2115	S
3.960	PBS Xinjiang, Urumqi	China	1620	D,U	4.930	RRI Surakarta,Java	Indonesia	1553	M
3.960	RFE/RL Munich	W.Germany	0354	L	4.930	R.Moscow	USSR	1910	L,N,S
3.965	RFI Paris	France	0623	E,J,L,R,T	4.935	Voice of Kenya	Kenya	1915	L,N
3.975	BBC Skelton	England	1919	R	4.940	R.Kiev 2	USSR	1915	E,J,L,N
3.980	VOA Munich	W.Germany	1725	E,I,J,Q,R,S,T	4.958	R.Baku	USSR	1918	D,L,M
3.985	R.Beijing, China	via SRI Berne	2200	C,D,E,I,J,K,L,R,S,V	4.960	R.Baku 2	USSR	1915	N
3.985	SRI Berne	Switzerland	1921	J,L,R,S,T	4.970	PBS Xinjiang	China	0025	D,L
3.995	DW Cologne (Julich)	W.Germany	1925	H,R,S	4.975	PBS Fuzhou	China	2142	M
4.005	RRI Padang	Indonesia	1930	M,U	4.975	R.Uganda, Kampala	Uganda	1915	N,S
4.080	R.Ulan Bator	Mongolia	2210	U	4.980	PBS Xinjiang	China	0030	U
4.220	PBS Xinjiang	China	0010	D,L	4.980	Ecos del Torbes	Venezuela	2213	D,L,M
4.500	Xinjiang	China	0052	D,L	4.985	R.Brazil Central	Brazil	0740	D,M
4.635	R.Dushanbe Tadzhik	USSR	0015	D	4.990	AIR via Madras	India	2359	P,S
4.719	RRI Ujung Padang	Indonesia	1528	M	4.990	FRCN Lagos	Nigeria	1728	I,R
4.725	BBS Rangoon	Burma	2120	U	4.990	R.Moscow (Yerevan)	USSR	2210	A,S
4.735	Xinjiang	China	2300	D,I,J,L,P	5.000	YVTO Caracas	Venezuela	0617	R
4.740	R.Afghanistan	via USSR	1510	D,J	5.005	R.Nacional, Bata	Eq.Guinea	1921	N
4.750	R.Bertoura	Cameroon	2035	N	5.005	R.Nepal, Kathmandu	Nepal	1530	D,M,O
4.760	ELWA Monrovia	Liberia	1904	I	5.010	R.Garoua	Cameroon	1924	D,N
4.760	R.Moscow (Dushanbe)	USSR	2010	N	5.020	La Voix du Sahel	Niger	2145	M
4.765	Brazzaville	Pep.Rep.Congo	2015	I,J,M,N,P,R,S,	5.025	R.Uganda, Kampala	Uganda	1924	N
4.770	FRCN Kaduna	Nigeria	2100	D,M,N,S,U	5.030	R.Impacto	Costa Rica	0240	U
4.775	R.Gabon, Libreville	Gabon	2130	D,U	5.035	R.Bangui	C.Africa	2150	L,M
4.775	RRI Jakarta	Indonesia	1615	D,M	5.040	EP de Benguela	Angola	0415	L
4.785	RTM Bamako	Mali	2142	N	5.045	R.Cultura do Para	Brazil	2210	M
4.785	R.Tanzania	Tanzania	0400	L	5.047	R.Togo, Lome	Togo	2217	J,S
4.785	R.Baku	USSR	2010	N	5.050	SBC Singapore	Singapore	1530	O
4.790	Azad Kashmir R.	Pakistan	0102	D	5.060	PBS Xinjiang	China	2355	D,L
4.790	R.Atlantida	Peru	0530	U	5.065	R.Candip, Bunia	Zaire	2145	I,U
4.790	TWR Manzini	Swaziland	1841	N	5.145	R.Beijing	China	1545,R	
4.795	R.Peace & Progress	USSR	2200	B,E,M,S,V	5.260	R.Alma Ata 2	USSR	0050	I,L

DXers:

A: Ted Agombar, Norwich.
B: Leo Barr, Sunderland.
C: Robin Clark, Plymouth.
D: David Edwardson, Wallsend.
E: Ron Galliers, London.
F: P.R. Guruprasad, Molepolole, Botswana.
G: Simon Hamer, New Radnor.
H: Robin Harvey, Bourne.
I: Simon Holland, Douglas, I.O.M.
J: Sheila Hughes, Morden.
K: Rhoderick Illman, while in Oxted.
L: Eddie McKeown, Co.Down.
M: John Nash, Brighton.
N: Fred Pallant, Storrington.
O: John Parry, Northwich.
P: Roy Patrick, Derby.
Q: Chris Shorten, Norwich.
R: Alan Smith, Northampton.
S: Darran Taplin, Brenchley.
T: Phil Townsend, London.
U: Jim Willett, Grimsby.
V: Harold Wood, Manchester.

R.Austria Int, Vienna 6.155 (Eng 0400-2300) 44333 at 1951 in Plymouth; BBC via Limassol 6.180 (Eng 1700-2300) 43222 at 2135 in Bourne.

Station Addresses

BBC Radio Stoke-on-Trent, Conway House, Cheapside, Hanley, Stoke-on-Trent ST1 1JJ.

ILR Radio City, PO Box 194, 8-10 Stanley Street, Liverpool L69 1LD

Radio Afghanistan, External Service, PO Box 544, Kabul, Afghanistan.

Swiss Radio International, CH-3000 Berne 15, Switzerland.

TWR Monaco, Boite Postale 349, MC-98007 Monte Carlo, Monaco.

TWR Bonaire, PO Box 37, Bonaire, Netherlands Antilles.

Equipment Used

Ted Agombar, Norwich: Grundig Satellit 400 + r.w.
Thomas Barnett, Slough: Kenwood R2000 + r.w.
Leo Barr, Sunderland: Matsui MR4099 + r.w. in loft.
Darren Beasley, Bridgwater: Philips D2935 + a.t.u. + 10m wire.
Donald Blashill, Cheltenham: Sony ICF-7001D + built-in whip.
Denis Bosher, Dolgellau: Matsui MR 4009 + r.w..
Kenneth Buck, Edinburgh: Lowe HF225 + r.w. in loft.
Jim Cash, Swanwick: Kenwood R5000 + trap dipole.
Bill Clark, Rotherham: Sony ICF-7600SW + built-in whip.
Robin Clark, Plymouth: Saisho SW5000 + 16m wire.
Phil Cooper, Guernsey: Sony ICF-7600DS + r.w.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Pete Dickerson, Gt.Malvern: JRC NRD 515 + a.t.u. + 30m inverted L.
Eric Duncan, St.Andrews: Icom IC-R71E + a.t.u. + 30m wire.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Ron Galliers, London: Philips D2935 + built-in whip.
Alf Gray, Birmingham: Codar CR70 + PR30 + a.t.u. + Ex-Army whip.
P.R.Guruprasad, Botswana: Sony ICF-2000DA + built-in whip.
Simon Hamer, New Radnor: Grundig S1400 or Lafayette HE30 + loop.
Robin Harvey, Bourne: Matsui MR 4099 + s.w. loop.
Francis Hearne, Bristol: Sharp GFA3 cassette radio + r.w.
Simon Holland, Douglas: Sangean ATS-803A + built-in whip.
Sheila Hughes, Morden: Sony ICF-7600DS or Panasonic DR48 + 15m wire.
Rhoderick Illman, Dman: Sony ICF 7600DS + 23m wire
Cyril Kellam, Sheffield: Sony ICF 7600DS + AN-1 or 5m vertical wire.
Matthew King, Hayes: Sony ICF 2001D + a.t.u. + 10m wire
Eddie McKeown, Co.Down: Tatung TMR 7602.
David Middlemiss, Eyemouth: Yaesu FRG-7 + r.w.
George Millmore, Wootton: Tatung TMR 7602 + l.w./m.w. loops.
Dick Moon, S.Africa: Icom R-70.
John Nash, Brighton: Kenwood R5000 + Datong AD370.
Bart O'Brien, Co.Wexford: Sony ICF-2001D + hexagon loop or whip.
John O'Halloran, Harrogate: Racal RA17 + r.w.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
John Parry, Northwich: Realistic DX-400 + 33m wire.
Roy Patrick, Derby: Lowe HF 125 + 44m wire.
Ron Pearce, Bungay: Home-made 2-valve (HL 210) straight RX.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Kenneth Reece, Prenton: Icom R9000 + delta loop.
Alan Roberts, Canada: Lowe HF225 + 11m dipole.
John Robertson, Alnwick: Ex-Army R210 + E/W r.w.
John Sadler, Bishops Stortford: Realistic DX-400 + a.t.u. + s.w. Loop.
Chris Shorten, Norwich: Matsui MR 4099 + 10m wire.
Alan Smith, Northampton: Matsui MR4099 + a.t.u. + vertical dipole.
Cliff Stapleton, Torquay: Trio R1000 or Philips D2935 + r.w.
John Stevens, Largs: Hammarlund HQ 180 or Icom R70 + loop or r.w.
Darran Taplin, Brenchley: Yaesu FRG 7700 + FRA 7700 or a.t.u. + 30m wire.
Phil Townsend, London: Lowe SRX-30 + l.w. converter + a.t.u. + r.w.
Neil Wheatley, Lytham St.Annes: Sangean ATS 803.
Jim Willett, Grimsby: RCA AR77 + 4m square loop or a.t.u. + X dipole in loft.
Harold Wood, Manchester: Philips D-2935 + 11m wire.
Julian Wood, Elgin: Kenwood R2000 + a.t.u. + 5m indoor wire.
David Wratten, Cambridge: Philips D2999 + m.w. loop.

Maritime Beacons

Long Wave Maritime Beacon Listening

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

Patrick McKeever (Birmingham) has been exploring the band for the first time with a copy of *Reed's Nautical Almanac*. This details the location, callsign and the operating frequency of the beacons around the coastline of the UK and a number of other countries. He started his check at 1900UTC and by 2330 he had logged ten beacons, including Bjornsund, Norway (BJ) on 301.1kHz and the long-range Consul beacon (LEC) in Stravanger, Norway on 319kHz. Encouraged, he made further checks from 1900 on nine subsequent evenings and compiled an impressive list for the chart.

Good results have also been obtained by **Alan Smith** in Northampton. He has added several distant beacons to his growing list, including North Ronaldsay, Orkneys (NR) 291.9, Bara Head (BD) 308 and Brighton Marina (BM) 303.4kHz. He also logged several along the coast of France, including Rosedo Lt (DO) 294.2 on the Isle de Brehat, which seemed to be off frequency.

John Stevens (Largs) wonders why he is receiving such a strong signal from the beacon on Tuskar Rock (TR), located off the coast of C.Wexford. Until recently the signal has always been very weak. Has anyone else noticed an increase in the strength of the signal, which is on 296.5kHz? In his latest report from Thurso, **John Macdonald** says, "I have been somewhat handicapped by a noise problem, which has forced me to fall back on the loop and listen mainly to the south". Despite this problem he compiled an interesting log, which includes two beacons in the Canaries and one on the coast of Tunisia!

In Edinburgh, **Kenneth Buck** has found that the best time to listen is during the morning because the noise level is so high at other times. The use of a loop is essential as the beacons on Inchkeith Island (NK) and Fidra Island (FD) in the Forth and Girdleness (GD) operate continuously and unless they can be nulled out it is impossible to hear other beacons on the same frequency. He says, "I know that some people prefer a long wire to a loop, but I sometimes wonder how they sort out two or more Morse idents simultaneously, particularly as the Morse can sometimes be degraded by beats between beacons on the same nominal frequency."

Many DXers have difficulty in distinguishing the maritime radiobeacons from the numerous aeronautical radiobeacons which also operate in the band. Kenneth Buck has been studying the problem and he says, "There really should be no confusion as all the maritime beacons give the Morse ident six times followed by a tone for 30 seconds and then the Morse ident twice. This sequence is usually repeated once every six minutes or sometimes every minute. The aircraft beacons give the Morse ident once every nine seconds with an unmodulated carrier in between. There are no breaks in transmission."

When the opportunity arises it is possible to engage in an interesting sideline to l.w. beacon DXing - visiting the sites! Whilst in Berwick-upon-Tweed, **Peter Easton** (Edinburgh) decided to take a boat trip to the Farne Islands and the Longstone lighthouse. The Longstone radiobeacon, callsign LT, is radiated on 303.4kHz by a Marconi T antenna, which is suspended between the gallery near the top of the lighthouse and a self supporting mast several hundred feet away.

Thanks to **Phil Townsend** (London) for drawing my attention to the list of 'Latest Corrections to Navigational Aids' on page 1:9 of the 1991 edition of *Reed's Nautical Almanac*, (Thomas Reed, 178-185 High Street West, Sunderland, Tyne & Wear)

287.3	BY	Bressey LH	Shetland Is	F*
287.3	CR	Channel LV	??	J*
287.3	FN	Walney Island	off Lancs	H
287.3	GA	Outer Gabbard LV	off Suffolk	B,C,I*
287.3	IB	Ilha Berlenga	Portugal	E*
287.3	LE	Leba Rear Light	Poland	E*
287.3	LV	Dudgeon LV	off Norfolk	B,C,F*
287.3	NR	Noordhinder LV	Holland	E*,I
287.3	PS	Point Lynas	Anglesey	B
287.3	SK	Smith's Knoll LV	off Norfolk	B
289.6	D	Rota	Spain	H
289.6	FD	Fidra LH	F. of Forth	B
289.6	LN	Langoeytangen	Norway	E*
289.6	LP	Loop Head	S.Ireland	F*
289.6	SL	Slatterou	Norway	F*
289.6	SN	Slyne Head	Ireland	F*
289.6	TN	Thyboron LH	Denmark	B
291.9	CP	St.Catherines Pt.	IOW	E*,F*
291.9	ER	Pointe de Ver LH	N.France	E*,F*
291.9	FG	Pointe de Barfleur	N.France	F*,G,J*
291.9	HG	Holmoegadd	Sweden	E*
291.9	KD	Kinnairds Head LH	Aberdeen	B
291.9	LH	Le Havre	France	I
291.9	LT	La Isleta Light	Canaries	E*
291.9	NA	Punta Lantailla Lt.	Canaries	E*
291.9	NR	N.Ronaldsay LH	Orkney Is	I*
291.9	OM	Stroma Pt LH.	Caithness	B
291.9	PB	Portland Bill LH	Dorset	F*
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291.9	SB	Sumburgh Head	Shetland Is	B
291.9	SO	Les Sables d'Olonne	France	F*
291.9	TI	Cap d'Antifer	France	E*
294.2	AH	Altacarry Head LH	Antrim	B,F*
294.2	DA	Pladda LH.	Is of Arran	B
294.2	DO	Rosedo LH	France	I
294.2	KI	Kiel LH	Germany	E*
294.2	LG	Eilean-Glas LH	Is of Harris.	B
294.2	MW	Mew Island LH	off Co.Down	B,F*
294.2	NL	Neuland LH	Germany	E*
294.2	OR	Oigh Sgeir LH	off Is Rum	B
294.2	PA	Cabo de Palos LH	Spain	J*
294.2	RN	Rinns of Islay	Is of Islay	B,F*
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296.5	BH	Blaavandshuk LH	Denmark	B
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298.8	AD	Ameland	Holland	B
298.8	BL	Butt of Lewis	Is of Lewis	B
298.8	CW	Cape Wrath LH	Sutherland	B
298.8	LK	Sule Skerry LH	off Orkney	B
298.8	MF	Muckle Flugga LH	Shetland Is	B
298.8	NO	Oelands Norra Udde	Sweden	E*
298.8	OG	Oelands S. Grund L.	Sweden	E*
298.8	PE	Penlee Pt.	UK	F*
298.8	QS	Casquets LH	Channel Is	F*,G,J*
298.8	RD	Roches Douvres LH	Channel Is	J*
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298.8	UK	Utklippan	Sweden	E*
301.1	BA	Punta Estaca Bares.	N.Spain	F*
301.1	BJ	Bjornsund	Norway	F*
301.1	CN	Cregneish	IOM	B,F*
301.1	GE	Skarvoy Egersund	Norway	B
301.1	HO	Hirsholm Main LH	Denmark	B
301.1	NF	North Foreland LH	E.Kent	F*,I
301.1	PY	Point of Ayre LH	IOM	B,F*
301.1	SR	Skerries LH	Anglesey	B
301.1	SU	South Rock LV	Co.Down	B,F*
301.1	WK	Wicklow Head Light.	Co.Wicklow	B,F*
303.4	BM	Brighton Marina	E.Sussex	F*,I
303.4	BN	Les Baleines	France	E*
303.4	FB	Flamborough Hd LH	E.Yorkshire	B
303.4	FP	Fife Ness Point	Fife	B
303.4	LK	Pointe de la Coubre	France	E*
303.4	LT	Longstone LH	Berwick	B,D
303.4	SJ	Souter Light	Sunderland	B,I
303.4	SN	Ile de Sein	N.W.France	E*
303.4	VC	Cape St.Vincent LH.	Portugal	E*,F*
305.7	CB	Corbiere	Jersey C.I	F*,J*
305.7	CS	Calais Main LH	N.France	I
305.7	FS	Fall's LV	off Kent	C,I
305.7	KY	Oksoy LH	Norway	B
305.7	LS	Hirtshals	Norway	B
305.7	OE	Ostende	Belgium	E*,I*
308.0	BO	Barra Head LH	Is of Barra	B,I
308.0	GL	Eagle Island LH	W.Ireland	B
308.0	MZ	Mizen Head LH	S.Ireland	F*
308.0	PI	Cabo Espichel LH	Portugal	E*
308.0	RC	Cabo Roca LH	Portugal	F*
308.0	RR	Round Island LH	Nr Cornwall	B,F*
308.0	TY	Tory Island LH	N.Ireland	B
310.3	AL	Pointe d'Ailly LH	France	G
310.3	DU	Dungeness LH	S.Kent	C,F*,G,I*
310.3	FI	Cabo Finisterre LH.	N.W.Spain	F*
310.3	FS	Kalkgrund	Oenmark	F*
310.3	GD	Girdle Ness	Aberdeen	B
310.3	GV	Goltur	Iceland	E*
310.3	PH	Cap d'Alprech	France	A,C,F*,G,I*
310.3	VI	Cabo Villano	Spain	F*
312.6	FN	Feistein	Norway	B
312.6	GU	Geltungane	Norway	B,F*
312.6	MA	Marstein	Norway	B
312.6	NB	Nab Tower LH	off Sussex	G
312.6	PT	Souter Pt.	Durham	B
312.6	RB	Cherbourg	France	G
312.6	UK	Sunk LV	off Essex	E*,F*,I*
312.6	UT	Utsira	Norway	B
312.6	VR	Utvaer	Norway	F*
313.5	BN	Cap Bon	Tunisia	E*
318.0	BH	Berry Head LH	Devon	J*
319.0	LEC	Stavanger	Norway	B,F*,I*
397.2	DHE	Helgoland Lt.	off N.Germany	B

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

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B: Kenneth Buck, Edinburgh.
C: John Coulter, Winchester.
D: Peter Easton, Edinburgh.
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H: Tim Shirley, Bristol.
I: Alan Smith, Northampton.
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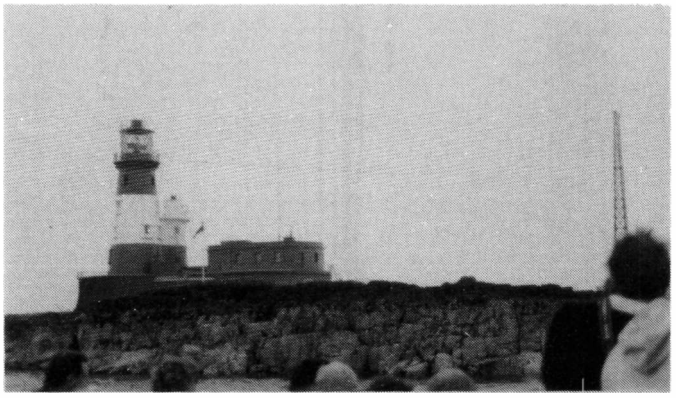
K: John Stevens, Largs.

The Marconi T beacon antenna at the Longstone Lighthouse Farne Islands.
Photo Peter Easton.



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