Short Wave Magazine

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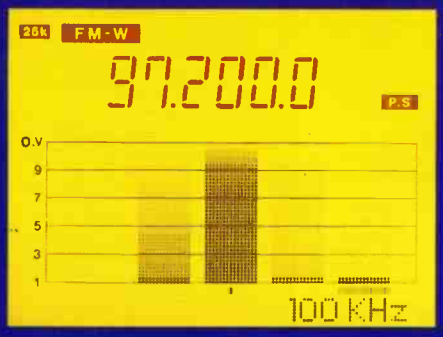
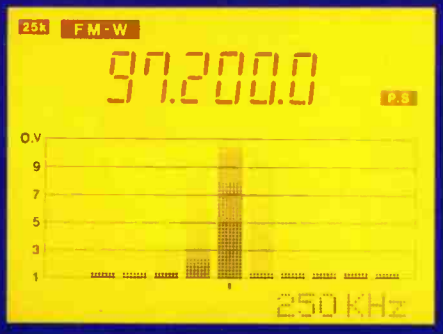
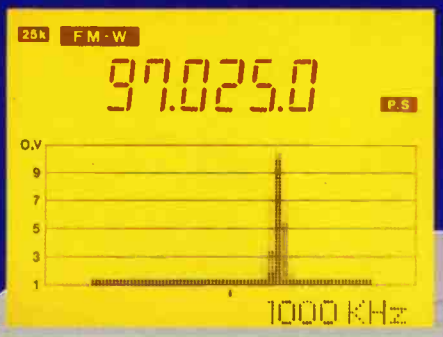
SWM SWM SWM SWM SWM SWM SWM







WHAT DOES THAT MEAN ?

INSIDE THIS ISSUE
Your FREE Pull-out Guide to Radio Abbreviations

REVIEWED
ERA Microreader

STANDARD AX-700E

For The Radio Listener

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

The New HF-225 Receiver

I am particularly proud to announce that the new HF-225 receiver is now in production, and available from the better dealers on the short wave scene. This is the receiver designed to give you high performance under European band conditions, and dig out the weak signals under the welter of Megawatt broadcasters and jammers.

Technically, the HF-225 distinguishes itself by having a low phase noise synthesiser, which gives a reciprocal mixing performance not far off that of "professional" receivers costing up to ten times the price, and that's not just advertising talk, it is really true. The synthesiser actually tunes in steps of 8Hz, which betters most other receivers and gives a smooth "VFO" feel when tuning. As one user has already commented "If you tuned the HF-225 with your eyes closed, you would believe you had a £5,000 receiver on the table".

The HF-225 has a range of low cost options which extend its appeal; such as a keypad for direct frequency entry, which simply plugs into a rear panel jack; an active whip aerial; a rechargeable battery pack for portable use; and an attractive carrying case which protects the receiver whilst allowing full operational use. The new D-225 detector option is really something special, because it gives true synchronous AM detection for dragging sensible programme quality out of a signal being affected by selective fading distortion. The same option also gives narrow band (communications) FM demodulation.

Every listener these days appreciates a receiver which offers facilities for memorising favourite or regularly used frequencies, and the HF-225 offers 30 memory channels for this purpose. Using the memories has been made particularly versatile, because the operator can review the contents of the memories whilst still listening to the frequency he is using, or alternatively in the "Channel" mode, can tune through the memory channels using the main tuning knob, listening to each frequency as it appears on the display. Just like having a bank of single channel receivers under your control. Terrific for checking HF airband channels for activity.

Unlike most HF receivers on the market, the HF-225 comes complete with all filters fitted for every mode:— 2.2kHz, 4kHz, 7kHz, and 10kHz. There is also a 200Hz audio filter for CW, and if the D-225 detector is fitted, a 12kHz filter for FM. The correct filter for each mode is automatically selected by the receiver mode switch, but further selection can be made by the user from the front panel and the receiver remembers which filter was last used. True versatility and all built in at no extra cost. When selecting filters in use, the filter bandwidth is shown on the main display.

The display itself is a high contrast liquid crystal type, and shows frequency, filter bandwidth, detector lock (when D-225 is fitted), and whether the receiver is in memory mode. Automatic placing of the decimal point takes place as the receiver is tuned, so there can be no ambiguity in reading.

At the end of the day, what does the HF-225 offer you as a user? I can do no better than quote what was said by Rainer Lichte about the earlier HF-125:—"The HF-125 is a serious piece of equipment; don't be deceived by the unassuming front panel and the lack of spectacular features. The HF-125 will outperform most competitors. If you like an honest approach to receiver design, this is it. British understatement at its best".

The HF-225 is even better.

John Wilson

HF-225 £395

LOWE ELECTRONICS LIMITED

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone 0629 580800 (4 lines) Fax 580020 Telex 377482

VOL. 47 ISSUE 5 MAY 1989
ON SALE APRIL 27th

JUNE ISSUE ON SALE
MAY 25

|18| **The latest scanner from Standard is the AX700E.**

Cover Alan Gardner's "Scanning" column brings you the first news of the Standard AX700 scanner which is fitted with a pan-adapter display. Alan discusses this feature at length in his column this month.
DXTV Part 18 and Starting Out have had to be held over this month but should, space permitting, appear next month.

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CONTENTS

Short Wave Magazine

REGULARS

SEEN & HEARD

GOOD LISTENING

FIRST WORD

This month we are giving you another free gift in the form of a useful pull-out booklet which will help you negotiate the jungle of abbreviations used in our hobby.

I know, from your letters, that for the newcomer to this hobby, understanding abbreviations and technical terms is one of the hardest things to grasp. I have tried to help with the addition of the Abbreviations boxes which now accompany most of the articles in *Short Wave Magazine*. Now, with the help of this booklet you should all be able to translate those technical terms and abbreviations in other publications as well.

As well as abbreviations you will also find useful addresses together with some technical explanations which Elaine G4LFM has picked out of the pile for you.

By now you should all have mounted your Great Circle Map, which came free with the April issue of *SWM*, on the wall of your shack and be using it to the best advantage. If you want extra copies these are available from our Book Service Department at a cost of £1.50 plus 75p post and packing.

As a result of the terrorist attack on the Pan Am Boeing 747 over Lockerbie it would appear that radios and cassette recorders

are likely to be banned from passengers' luggage. As it is not normally permissable to use such equipment while the aircraft is in flight most passengers would probably place their radios in the main baggage, if only to reduce the amount of hand luggage they had to cart around the airport waiting hall for a couple of hours.

Just how this will affect the listener who looks forward to taking his s.w. radio with him on holiday is not yet clear. If there is to be a total ban on taking any such equipment onto a commercial airliner then the s.w.l. going on holiday to listen to stations which he normally wouldn't be able to hear at home, is at worst, going to be denied his enjoyment. At best he will have the cost of his holiday increased by having to aquire a s.w. radio when he reaches his destination, if indeed suitable ones are available.The workaholic businessman who takes a small, portable s.w. radio with to listen to the BBC World Service will not be too happy either!

However, if passengers are to be allowed to take radios with them will they be happy at the increased time it takes to have them inspected - if this is indeed possible? Would you like to stand and watch an airport security guard attempt to open your expensive radio to make absolutely certain that it contained nothing that it shouldn't?

Mrs L.A. Reed RS87871 has suggested, in a letter printed elsewhere in this issue, that perhaps we should be allowed to have our radios checked at the local police headquarters and then sealed so that the airline security staff would know that it was safe and allow you to take it on board. Is this really practical? Doubtless you will write and air your views on the subject!

DICK GANDERTON

A WORD IN EDGEWAYS

Sir

Having used a Trio R10000 with a long wire for some time I thought I would try a dipole in the loft for 14MHz.

After getting the bits and pieces from Lowe Electronics, clambering amongst the junk aloft, and making a bit of space to work in, I finally soldered the coaxial cable to the connectors and tried the antenna out.

Although the dipole is not in a straight line, having the legs bent to fit the available space, the difference was quite amazing.

The following evening I heard VK5WP (Aust) around 2200, and later at 2300 I heard VK6AU talking to VP9GQ (Bermuda) for quite some time. When VP9GQ went to dinner ZF1HK (Cayman Is.) called VK6AU and took up the conversation from there. It was like listening to a telephone chat.

Apart from the increase in signal strength, the signal-to-noise ratio is much higher, resulting in clearer reception.

I would very much like a QSL card from the above mentioned hams, but as the Amateur Radio Call Book *is out of print, I cannot see any way of writing to them. The bureau takes much too long. That is unless some kind reader will sell me an old issue they have finished with. Most of the addresses would undoubtedly be the same.*

Also, I would suggest Mr J. H. Wright of Buxton looks into the range of Philips receivers, especially the D1835 and D2935.

The D1835 is a little gem for armchair listening. Sensitivity and selectivity are excellent, audio quality is good, and with nine s.w. bands as well as l.w., m.w. and f.m., analogue tuning is no drawback. I have heard stations on this receiver from USA and CAN through to Free China, Japan, Australia and back again and all points between, and I have QSL cards to prove it!

C. STAPLETON
TORQUAY
DEVON

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

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

Sir

I hope the following information will be of interest to SWM *readers. On Wednesday 15 March 1989, I picked up, on my Icom R71E, the Space Shuttle on the frequency 20.1983MHz short wave from 1520 to 1652UTC and at 1825 to 1947UTC with a YL from Mission Control at Cape Canaveral. They were being interviewed by the press for over 80 minutes, and hoped to land on the Saturday morning.*

MR A. GLASSEY
DUNDEE

Sir

I was most interested to read the AMATERMINAL advertisement in the April issue of ***SWM.*** *However, like all newly released products, it is already out of date, as the Mark 2, which I understand is still in the pre-production stage, will provide integral shack central heating and air conditioning. I am also reliably informed that the manufacturers hope to advertise the Mark 2 in the April 90 issue, by which time it should be in full production.*

RICHARD Q MARRIS
G2BZQ
SLOUGH

Sir

When I took out my Class A amateur licence in 1985, I decided to reactivate my late father's callsign G2BXP.

A few days ago, a friend showed me a copy of Short Wave Magazine *dated March 1949 he had found in a second hand shop. On page 39 was a photo of PY6CO's shack in the DX commentary feature. In the picture he had noticed my father's QSL card on the wall of PY6CO's shack!*

On turning up the QSL file, I was able to find the corresponding card from the PY. The QSL was for a 20 metre 'phone QSO on 19 November 1948.

Bearing in mind, the publication date of the magazine and the mail between England and Brazil, the photo labs in Brazil must have been fairly speedy!

SWM in 1949 was rather different to that of today! It measured only 8 x 5 inches and had 80 pages with a heavy concentration on constructional and technical articles.

MARTIN PRESTIDGE
WARLEY
WEST MIDLANDS

A WORD IN EDGEWAYS

Sir

Thousands of thanks for publishing my letter. I have now received several replies from friends who have supplied the WW Data Book *and other books which have solved my problems and now I will continue to work on the three old valved sets and my* Sanyo *and Vega. I am writing to the generous readers who have supplied the information.*

I have recently been making some notes on repairs to some of my sets, and these may help other readers, who have similar problems.

I have had four Russian s.w. sets from the time when they made the Convair. *The first* Convair *worked for about four weeks and packed up; the shop replaced it without comment; the second worked for about six weeks and packed up and was then replaced over the counter; I suspected from that, that it was not unusual and when the third ceased after six months or so I went back and asked questions and the retailer told me of many problems with the sets. I now still have the* Vega, *but what a shambles - the band turret needs a crowbar to turn it and replacing the batteries is a work of art.*

Four weeks ago the turret contacts all went astray so I had a look inside. The beryllium copper strips were out of alignment by 2-4mm and at one end were waving about in the wind. To inspect the strip contactor the turret must be removed; to remove the turret the tape socket must be removed; to get the turret bearing the back p.c.b. must be removed and then it's a struggle to get the turret out only to find that the antenna has to be removed.

Only then was it clear that the whole chassis has to be removed from the case and so the batteries came out. With the turret on the table the problem was clear - the chassis was broken at one end so that the support mounting for the contact strip was loose and the contacts didn't connect. Worse still, all the contacts are glued to a bar which was also out of alignment by some 2mm when built!

Another problem was that the tuning control had become dodgy, this was due to a spur gear driving a gearwheel on the tuning capacitor. The smaller gear was a grey plastics moulding, just like like old putty; the other was a spring-loaded steel anti-backlash gear. The steel wheel had eaten away the plastics gear teeth. I'm still working on it, but I wouldn't recommend a Vega *to anyone.*

The Sanyo *gave up working because of an open circuit at a moulded block holding three minute jack sockets. One jack was connected to the p.c.b. by a tiny lug bent down to just reach the p.c.b. track, to which it was connected by a tiny blob of solder. The solder had parted by microns. Of course, it was almost inaccessible but, after hours of curses, a touch of the soldering iron put it back on the air again.*

The Pioneer *went dead, due to dry contacts between the tuning capacitor and a brass spring contact to the shaft, which is wrong anyway. Brass to aluminium is, in effect, zinc to aluminium oxide providing an extremely good cell or insulator. Aluminium oxidises in minutes and the oxide is the basis of the anodising in the protection of aircraft parts. The wavechange switches were the same, so I cleaned all the offending items and am back on the air again.*

On my old valved set the switch bank is all of 33 years old and still good. The high voltage electrolytics are now in need of renewal and there could be a difficulty there. Nothing else went wrong but the valves must be replaced - from the many replies received I can go ahead and do this. There is nothing like the BT400GEC *- perfect reception for many years.*

JOHN D. BERRIDGE
WHITCHURCH
CARDIFF

Sir

First may I say how very much I enjoy your magazine and keep up the good work. May I please use your letters page to air my views on a couple of topics.

The first is the price of radio equipment in the UK compared with N. America. On recent visits to the USA I have noted that the AR2002 scanner is available for $455.00 (approx £267.00) while the Sony IC2010 (2001D) is $328.00 (approx £192.00).These prices include sales tax and a full one year warranty plus repair service.

In the UK these items are priced at £487.00 and £299.00 respectively. Perhaps your advertisers can explain the large difference. I have noted that the price for imported TNC equipment is very much more akin to that charged in the US, so it should be possible.

Point two is a result of a visit to a Ham Rally last year. a reputable dealer was approached by a lad of perhaps fourteen or fifteen years regarding the purchase of an airband radio. The dealer promptly tried to sell him an airband transceiver (Icom A20) as this was all he had in stock. Luckily the price put the young lad off. However, as a PPL holder and regular passenger, the thought of the havoc that could be caused by one of these in the wrong hands gives cause for a great deal of concern. Surely tighter controls should be places on the sale of such equipment, possession of an R/T licence for example?

Finally, in your reviews of the Bearcat 800XLT, your reviewer bemoaned the lack of response on the WX band. I suspect this function scans the US NOAA terrestial v.h.f. band, so reception may be difficult in the UK!

Good luck with the magazine.

J. PUMFREY
READING
BERKS

Thanks for the compliments. I expect that you will stir up the usual hornets' nest with your remarks on the price of equipment imported into the UK compared to the USA. Ed.

Sir

During the ever increasing security at all airports concerning radios and cassette players, what is the situation regarding what must be a great deal of short wave listeners who, like myself, do not like being without a small short wave receiver, even on holiday. Wherever I travel, even just for a day, I like to take along my Sony 7600D. I am now wondering what can be done for all us hobbyists who will certainly be waiting to fly away on holiday somewhere in the very near future.

Could this situation be looked at please? Perhaps if we are going to travel our sets could be taken to a Police Headquarters, checked and sealed so that the airline security staff know that it is safe.

What do other readers think?

MRS L.A. REED
RS87871
CHELTENHAM

Sir

I was interested to read the letter from J. H. Wright in the March issue of SWM *and would suggest that if he looks on page 13, he will see a receiver there which performs superbly.*

This set appears in a number of guises (five I believe) and the model which I purchased was the Sangean 803 AT for £79.00 which had been reduced from £99.00 during the Christmas sales at my local Debenhams.

It soon becomes apparent when you get the set home and start to use it that you have on your hands a very good communications receiver indeed. Mine is excellent.

I erected a 17m long wire antenna which, instead of connecting to the set's external antenna socket, I connected to the telescopic rod on the set by means of a crocodile clip, and the DX simply rolled in. During one evening's listening on 10 and 20m, I logged a number of PYs and Js.

I have seen all the marques of this receiver and the differences seem to be cosmetic. On some, the controls are fawn in colour, whilst on others they are silver, etc.

The set has the advantage that f.m. stereo broadcasts may be received on headphones if required. This receiver is thoroughly recommended and the spec is excellent.

HAROLD McINTYRE G3FLJ
CHELMSFORD
ESSEX

I reviewed this set under the Matsui 4099 badge in the September 87 issue and found it to be extremely good value for money. Since then the price has fallen as different versions of the set have been brought into the UK. Several other readers have let me know that they think this set to be a good buy. Back issues with the review are available from the editorial offices price £1.50 inc. p&p. Ed.

A WORD IN EDGEWAYS

Sir

In reply to the points raised in Nov 88 issue by G4DTC on my series on the Eddystone 940 receiver.

Simple test of sensitivity & signal to noise ratio: *This is a misconception, as the method described can only show that the complete system of antenna, feeder and receiver is externally noise limited, on that particular frequency. In some cases a poor receiver and a large efficient antenna will give better apparent results than a more sensitive receiver with a small inefficient antenna.*

External noise is greater than system noise.

where

External noise =

$$10 \log_{10} \frac{\text{Thermal + Atmospheric + Cosmic}}{\text{Thermal}} \text{ dB}$$

and

System noise =

Antenna directivity + Antenna gain + Feeder loss + RX n.f.

All external noise may be either measured directly with an antenna and receiver of known noise factor (n.f.) or taken from tables of published data of equivalent sky noise temperature and calculated. Receiver n.f. can be measured directly but the antenna n.f. will have to be calculated.

Local oscillator pulling*: A test was made with a weak c.w. input, a.g.c. off, b.f.o. on, and a suitable beat note established. When the r.f. gain control is operated, a shift of beat not will occur. The reason can only be either the b.f.o. or the l.o. changing frequency. As the effect is more noticeable on higher frequencies the b.f.o. can be ruled out. The only possibilities left are (a): l.o. varies because of h.t. variations with load (b): the mixer pulls the l.o. as the load on the oscillator varies with cathode current variations in the mixer. Remove mixer gain control and fix at a constant level. This clears up the problem.*

Also local oscillator stability and purity were confirmed by taking a sample output to a frequency counter, deviation meter and scope. A high-level long wave input at 20MHz was swept across the receiver pass band with a sweep generator in an attempt to destabilise the l.o. No spurious f.m. appeared on the l.o. output. Next the signal was slowly moved, manually across the receiver pass band and any tendancy to locking or pulling should have shown up on the frequency counter. The l.o. only moved a few hertz at 20.450MHz with no a.g.c. operating. It only moved unidirectionally when approached from either side and by less than 100Hz, as the signal came in line with the pass band, (a.g.c. on). This is probably caused by the h.t. rail varying as the a.g.c. altered loading as it operated.

After the repair work and alignment was completed, which entailed some component replacement, namely R28, C65, C74, R36, R35 and C100, the noise factor was 12dB.

After replacing R1, 2, 3, 4, 7, 9, 12, 13, 20, 21, 22, 24, 25, 27, 28, 31, 35, 36, 41 & 44, C10. 12, 14, 43, 46, 65, 74, 75, 82, 94 & 100.by the careful use of forceps and a crochet hook, with the selector switch shaft removed, and after re-alignment, the n.f. had reduced to 10dB at the 20MHz test frequency.

After each valve change the receiver alignment was optimised and the noise factor again checked. With the original Mullard valves for V1 and V3 the n.f. was 10dB.

Replacing V1 with:

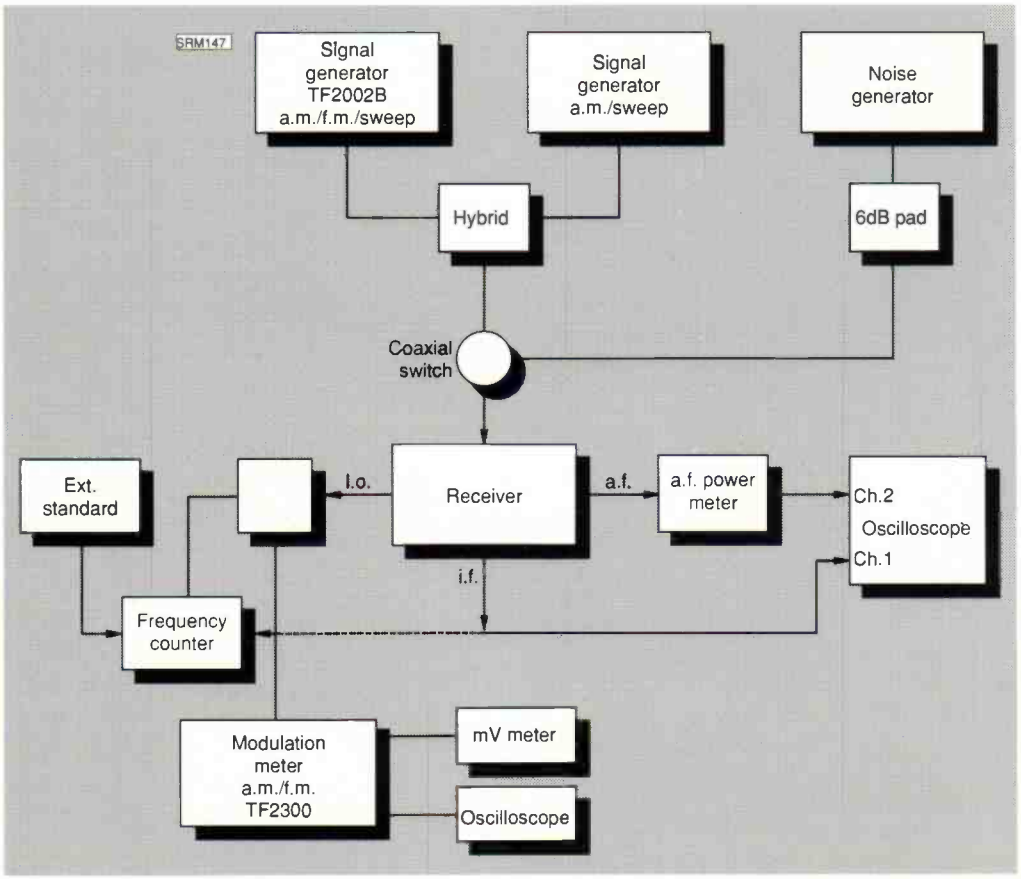
Z&I(USSR) the noise factor became	*9.5dB*
Mullard (UK) new	*9.0dB*
Raytheon (USA)	*9.0dB*
Telefunken (WG)	*8.5dB*

Replacing V3 with:

Mullard (Hol)	*7.5dB*
Colomar (Fr)	*7.5dB*
Raytheon (USA)	*7.0dB*

Regarding the tertiary windings, see "Restoring an Eddystone 940 Receiver", part 2 para 3 Sept. '88, for an explanation.

As thermal noise is directly proportional to i.f. bandwidth, we can improve the signal-to-noise ratio or give a lower minimal discernible signal, by reducing this or improving the shape factor. Note that as long as sufficient bandwidth for the signal intelligence is maintained, no distortion will occur.



The test set-up used by Tim Wright to evaluate the Eddystone 940 receiver

As for the Stenode modification, if I had to choose from a barely readable output with a 1.5kHz heterodyne, or a tolerable output, but with considerable distortion and limited a.f. response, then I know which I would go for!

The remarks on drift are not relevant if the modifications are done, and if the set is left to warm up and stabilise before use. I have had the 940 on 11.200MHz u.s.b. (RAF VOLMET) for hours to check stability with very little drift.

I might also add that if the tuning dial gear train is properly cleaned, greased and free of backlash, it is possible to offset the b.f.o. correctly, set the crystal phasing control for best performance and then use only the main tuning control, even s.s.b. signals on 21MHz .

I would also like to thank all those who have contacted me as a result of the articles, some from abroad. I shall reply to everyone of you in due course.

T.J. WRIGHT
PAGHAM
W. SUSSEX

WHAT'S NEW

Packet Shop

Andrews Computer Services Ltd (ACS) have recently opened a packet radio and computer shop. The address is 35a Chalk Hill, Watford, Herts., which is just under Bushey Arches. The shop is open Monday to Saturday from 9am to 5.30pm.

There is a live packet station for the demonstration of various TNCs as well as a wide range of computers, printers and other peripherals. They also hold a range of Public Domain Amateur Radio Software. This is available for a small charge to cover the cost of disks and duplication (free if you purchase a computer!).

All enquiries are now dealt with by the Watford shop. **Andrews Computer Services Ltd (ACS), 35a Chalk Hill, Watford, Herts. Tel: (0923) 229222; FAX: (0923) 242102.**

ISWL Awards

The International Short Wave League currently issues a total of thirteen Certificate Awards to successful claimants. Certificates and claim forms are free and post free worldwide to fully credited members, also being available to non members subject to an advance payment.

The amateur and broadcast band awards are a different colour and both are suitable for framing, each measuring 248 x 184mm.

The amateur band awards are available to both licensed amateurs and s.w.l.s. Those currently available are: Century Club, Commonwealth Award, Continental Award, European Award, Monitor Award, Pacific Ocean Award, States Award, Zone Award and 5 Band DX Century Award. Broadcast band listeners can apply for the Short Wave Broadcast DX Award which is issued in four classes, Class 1 for 140, Class 2 for 110, Class 3 for 80 and Class 4 for 50 countries confirmed.

If you send a stamped s.a.e. to **ISWL Awards Manager, 46 Richmond Drive, Rayleigh, Essex SS6 7RH**, he will send full details of the awards.

DTI Sweeps Away Radio Receiving Licences

At long last, the need to obtain a licence to operate a radio receiver has been done away with under the Government's latest relaxations in the red tape surrounding the use of radio receiving equipment.

The only remaining exception to this new ruling is that a licence is still needed for the reception of authorised television broadcasts.

"Licences for receivers are not required for radio spectrum management purposes." Industry Minister Robert Aitken said, announcing the changes last February. "Reception of authorised sound broadcasting and of radio amateur transmissions was exempted some time ago. In particular, people will no longer need a separate licence to use television receive-only (TVRO) equipment such as satellite dishes for television broadcasts direct to the home from fixed-service satellites. Removal of licensing will moreover avoid the costs to users and to Government caused by changing requirements as new services develop."

Apparently, some 7000 licences have been issued specifically for receive-only equipment, mostly for TVRO on a once-for-all basis of £10, but including a small number for the reception of meteorological data. The relaxation in the regulations will avoid the need to create new licence categories solely for reception, for instance, for specialised satellite services, which are being liberalised.

A broadcasting station which transmits in bands other than the broadcasting bands is not an "authorised" broadcasting station. these include INTELSAT, EUTELSAT and ASTRA. Satellite receiving dishes for these transmissions will be exempted in the new regulations, but the TV licence will still be required to use a television set which also receives authorised broadcasts.

It is a condition of the present exemption that receivers must not cause undue interference when used, and must comply with any statutory enactment concerning technical specification. A user of reception apparatus which does not meet these conditions may commit an offence attracting a maximum penalty of £400. It is an offence under Section 5 of the Wireless Telegraphy Act 1949 to use receivers with intent to obtain information on the contents, sender or addressee of any message, or to disclose such information. The maximum penalty for this is a £2000 fine. These provisions will be unaffected by the new regulations, which do not affect criminal liability resulting from unauthorised reception under the Wireless Telegraphy Act, or the Interception of Communications Act 1985, or any civil liability.

Catalogues

The IR Group has produced its 1989 instrument sales catalogue. It's a 110-page publication featuring a comprehensive range of test and measuring instruments. Many products in the catalogue are also available under a rental or leasing agreement.

The sort of products in the new catalogue include oscilloscopes, signal sources, multimeters, power supplies and logic analysers. There are also special-purpose test equipment for TV/audio, datacomms and fibre-optic applications.

The different manufacturers' names you can expect to see in the pages are Tektronix, Philips, Marconi, Hitachi, Grundig, Thandar, Racal and Stag. **IR Group. Dorcan House, Meadfield Road, Langley, Slough SL3 8AL.**

Unitel have recently published their 56-page catalogue on capacitor ranges from AVX, Beck, Kemet, Murata-Erie, Philips, Siemens, Syfer, Thomson-and Wimpey-Dubilier.

Fully illustrated, the publication is free-of-charge and provides technical and pricing details on a wide variety of products. For further details, contact: **Unitel Ltd., Unitel House, Fishers Green Road, Stevenage.**

Geoff Watts

The *DXCC Countries List*, giving the DXCC countries in each ITU Zone and in each CQ Zone given in alphabetical order of prefix is available from Geoff Watts.

Also available is a companion to the *DXNS Prefix List*. This is a useful 15-page cross-reference to all the other prefixes and special prefixes used by each DXCC country. The other DXNS lists available are:

Prefix-Country-Zone List 15 pages
DXCC Countries Guide 11 pages
USSR Oblast Guide and Maps 13 pages.

The four lists are always up-to-date, 54 pages of DX reference information. The price of each DXNS is £1 for the double-sided version (UK) or $3 (6IRCs) for overseas airmail. The single sided version is £1.25 (UK) and $4 overseas (8IRCs). **Geoff Watts. 62 Belmore Road, Norwich NR7 0PU.**

Bristol Rally in 1990

Yes, you read that right, 1990. The next Bristol Radio Rally will take place in 1990. The premises they used for the 1988 rally are no longer available, so they have decided to hold the rally over for a year so they can arrange a suitable venue.

They're looking for somewhere that has plenty of space, easy access, good car parking as well as all the other things that make the rally site enjoyable for those who come. Any bright ideas as to where they could hold the next rally should be sent to David Farr G4WUB.

If you would like to be kept in touch with what's happening about his rally, then contact: **David Farr G4WUB. 94 Ridgeway Lane, Whitchurch, Bristol BS14 9PH.**

WHAT'S NEW

Thinking Day On The Air

In February it was Thinking Day on the Air for Guides and Brownies all over the world. For the first time in a number of years a Guide station was put on from the Isle of Man. Guides from all over the island came to participate and a great deal of fun was obviously had by all.

We'd like to hear about your Thinking Day on the Air, with any photograps you had taken. If we hear from enough groups then we can put together a short feature on this popular event.

VHF Comms in the UK

Many readers will have heard of *VHF Communications*, but not so many will have seen a copy in recent years. I have heard it said that the magazine doesn't exist anymore - well that's not true.

Due to problems in the past, it has been several years since a UK agency existed. Consequently, obtaining the magazine, back issues, binders, kits, p.c.b.s, etc., has been somewhat difficult. A full service is now available through Mike Wooding.

For those who don't know, *VHF Communications* contains constructional articles on transmitters, receivers, demodulators, test equipment, r.f. amplifiers and pre-amplifiers. In fact, on all subjects to do with v.h.f., u.h.f. and s.h.f. communication in the amateur bands.

The subscription rate for 1989 is £8.75 including all postage costs. If you're interested, send a cheque, payable to M. Wooding, to: **Mike Wooding. 5 Ware Orchard, Barby, Nr. Rugby CV23 8UF. Tel: (0788) 89-365.**

Birmingham Centenary Award

As it is the year in which Birmingham celebrates the centenary of it becoming a city, the Midlands ARS would like to share the celebrations by offering a Centenary Award. This will take the form of a specially designed certificate and will be awarded to any person who works 100 stations within the city boundary simplex only (not to be confused with Post Codes). You can use any mode other than packet and any band. You must also work a G1 or G3 MAR station and two special event stations from within the city walls. No RAYNET or talk-in stations may be included.

The certificate any be endorsed for any special circumstances requested by the applicant, e.g. QRP, etc., and will also be available to s.w.l.s.

The award will run for the whole of 1989 and the closing date for claims is 1 April 1990.

To claim your certificate, send an s.a.e. to **Paul O'Connor G1ZCY at 100 Coldbath Road, Billesley, Birmingham BV13 0AH** who will send you the necessary application and log forms. When these are completed and verified, send them back to Paul with a fee of £2 (£1.50 for MARS members) and you will receive your certificate.

Alpha Have Moved

Alpha Electronics (Southern) Ltd have moved to new premises in Maidstone. So all their test equipment sales and hire business can now be contacted at: **Alpha Electronics (Southern) Ltd., Unit 8, Coldred Road, Parkwood Industrial Estate, Maidstone, Kent ME15 9XN. Tel: (0622) 690187.**

Young Amateur of the Year

The DTI have announced their sponsorship of the Young Amateur of the Year Award for 1989. Anyone who is under 18 and:

is keen on d.i.y. radio construction or

is interested in using radio and gaining operating skills or

is using radio for a community service, such as helping the disabled or in emergency communication networks or

is good at encouraging interewt in amateur radio or

is involved in amateur radio in any way, such as in a school scientific project

is eligible for the 1989 Award and its £250 cash prize.

The prize, for the most outstanding achievement between 1 April 1988 and 31 July 1989 will be awarded by the DTI and presented at the RSGB HF Convention in October.

The DTI will also send every genuine entrant a copy of the coloured chart of radio frequency allocations. The winner gets to see the DTI's radio experts at work at the RIS at Baldock in Hertfordshire.

The closing date for applications is 31 July 1989. Entrants do not need to be a radio licence holder to enter. The competition is open to anyone in the UK, the Channel Islands or the Isle of Man, who is under 18 on July 31.

Applications or nominations for the Award must be sent to: **The Secretary, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. Tel: (0707) 59015.**

Snippets from Sweden

Albania: The French transmission from Radio Tirana at 1800-1830 now uses the new frequency of 6.08MHz in parallel with medium wave 1215kHz.

Antarctica: Radio Nacional Arcangel San Gabriel on 15.476MHz can sometimes be heard on an extended schedule until after 0100. Reception is possible after 2200 when Radio France International via Gabon leaves 15.475MHz.

Ascension Island: In September this year, the BBC will take two new 250kW relay transmitters into operation. Four new antennas will be installed at the British relay base.

Ethiopia: English to Europe from the Voice of Ethiopia is now between 1500 and 1600 on 9.56 and 7.165MHz.

Iran: The Voice of the Republic of Iran had an additional English broadcast between 1400 and 1500 on 702kHz medium wave intended for northern Iran and the south-west USSR.

Laos: Lao National Radio has been heard with a broadcast in English at 2200 on the new frequency on 9.595MHz.

Sri Lanka: Trans World Radio uses new 11.83MHz instead of 11.92MHz during the English broadcast to India at 1200-1239, 5.99MHz is in parallel. The frequency of 5.99MHz is also used between 0000 and 0130 for broadcasts in South Indian vernacular languages. The transmitter has a power of 12.5kW. Trans World Radio also plans to install a 100kW transmitter at Puttalam where their present medium wave station of 400kW is situated.

The construction of the Voice of America relay station in Puttalam is well behind schedule. It will be at least five years until anything comes out of it.

UK: The BBC will leave its long-time-used frequency of 18.08MHz as of July 1. this is a result of the World Administrative Radio Conference in 1979.

Turkey: The Turkish Police Radio in Ankara is on the air daily until 1500 on 6.34MHz. It's been heard in North America from 0457. The Turkish Meteorlogical Station has been noted from 0509 on 6.9MHz.

Ireland: As of January 1, most of the Irish pirate radio stations closed down as government legislation went into effect imposing heavy fines for unlicenced broadcasting. Radio Dublin has remained on 6.91MHz and has applied for a court injunction to stop the legislation.

The Voice of the Republic of Ireland has been heard testing on fridays at 2100 on 6.135MHz claiming 2kW and a second transmitter on 27.83MHz.

Rare WAB Squares

Two rare squares in Essex will be activated by G0KSY/P and G6XOU/P on the 7 and 144MHz bands on the following dates:

Square TR09 on Saturday May 13 from 0930 to 2100UTC.

Square TM00 on Sunday May 14 from 1030 to 2100UTC.

No Swindon Rally in1989

There will be no Swindon Rally this year. Wroughton Science Museum is not available and the organisers haven't been able to find a large enough alternative site. It is hoped to hold the rally in 1990 though.

Ratchet Drivers

The price of the Freetrade (TEP) ratchet driver mentioned in "What's New" February '89 *SWM* should be £4.54 incl. VAT and P&P and they are available from **Electronic & Computer Workshop Ltd., Unit 1, Cromwell Centre, Stepfield, Witham, Essex CM8 3TH.**

GRASSROOTS

Lorna Mower

S·T·A·R·S

Derby & District ARS meet at 119 Green Lane, 7.30pm. May 3 is a Junk Sale, the 10th is Video Show, the 17th is Satellite TV, talk/demo by G8JGF and the 24th is Visit by Birketts of Lincoln. Kevin Jones G4FPY on Derby 669157.

Aylesbury Vale ARS meet 1st & 3rd Wednesdays, 8pm at the Old Village Hall, Hardwick, located 5km out of Aylesbury just off the A413 to Buckingham. For more details contact Martyn on Milton Keynes 560026.

Sutton & Cheam RS have a Natter Night in the Downs Bar on May 1 and their AGM on the 19th. 3rd Fridays, 7.30pm at Downs Lawn Tennis Club, Holland Avenue, Cheam. John Puttock G0GWV on 01-644 9945.

Norfolk ARC meet Wednesdays, 7.30pm in The Norfolk Dumpling, The Livestock Market, Harford. May 3 is Pub Life, the Inn-side story G0DAP, the 10th is Polar Ski-trek expedition G0/PA3BHF, the 17th is first NFD briefing and the 24th is GB3NB repeater AGM. Craig Joly G0BGD on Norwich 485784.

Wimbledon & District ARS have a Desert Island Radio competition on April 28 and General Activity on May 12. 2nd & last Fridays, 7.30pm in St. Andrews Church Hall, Herbert Rd. Nick Lawlor G6AJY on 01-330 2703.

Southgate ARC have Marconi & Microwaves by Mr Stan Woods on May 11 and a popular c.w. computer programme "Dr QSO" by G0ASA on the 25th. Holy Trinity Church Hall (Upper), Winchmore Hill. Brian Shelton G7DIN on 01-360 2453.

Chelmsford ARS have KW Communications for Ten-Tec on May 2. 1st Tuesdays, 7.30pm at Marconi College, Arbour Lane. Roy Martyr G3PMX on Chelmsford 353221 Ext. 3815.

Huntingdonshire ARS meet 1st & 3rd Thursdays, 7.30pm at The Medway Centre, Coneygeare Rd. G8LRS on Huntingdon 56772.

Yeovil ARC meet Thursdays, 7.30pm at The Recreation Centre, Chilton Grove. May 11 is Enrolment for RAE Class, the 18th is Great Circle Propagation G3MYM and the 25th is a Natter Night. David Bailey G1MNM at 7 Thatchem Close, Yeovil BA21 3BS.

Verulam ARC meet 2nd & 4th Tuesdays, 7.30pm at the RAF Association HQ, New Kent Rd, St. Albans. 2nd Tuesdays are informal activity evenings, 4th Tuesdays are monthly formal meetings. May 23 is a 6 metre Equipment talk G8CUB. George Christofi G0JKZ on 01-427 4800.

Mid-Warwicks ARS have a DX Foxhunt and Bar-B-Q on May 9 and HF Antenna Experiments at Warwick School G0GLU on the 23rd. 2nd & 4th Tuesdays, 8pm at Warwick Ambulance Centre, 61 Emscote Rd. P. A. Brown G0HIH on Marton 632370.

Todmorden & District ARS have RAYNET talk by G6FMP on May 1 and Surplus Equipment/Junk Sale on the 15th. 1st & 3rd Mondays, 8pm in The Queen Hotel. Esde Tyler G0AEC on Halifax 882038.

Bedford & District ARC have Visit to Stewartby Brick Works on May 2 and Crime Prevention by Bedfordshire Constabulary on the 16th. Allen's Club, Hurst Grove, 8pm. Glen Loake G0GBI on Bedford 266443.

Torbay ARS meet at the ECC Social Club, Ringslade Rd, Highweak, 7.30pm. Natter Nights are Fridays. April 29th is their AGM. Bob McCreadie G0FGX on Haytor 6233.

Acton, Brentford & Chiswick ARC have a talk on Antenna Projects by G3IGM on May 16. Chiswick Town Hall, High Rd, 7.30pm. W. G. Dyer G3GEH at 188 Gunnersbury Ave, Acton, London W3 8LB.

Brighton & District ARS meet 1st & 3rd Wednesdays, 8pm at the Roast Beef Bar, Brighton Racecourse. May 3 is Electrifying Holiday on Ice G3GZT and the 17th is Visit to TA Troop of Royal Corp of Signals. Harold Lunson G3WR on Brighton 501100.

Biggin Hill ARC have a Quiz on May 16. 3rd Tuesdays, 7.30pm at the Victory Social Club, Kechill Gdns, Hayes. Geoff Milne G3UMI on 01-462 2689.

The Radio Society of Harrow meet Fridays, 8pm at The Harrow Arts Centre, Uxbridge Rd, Hatch End. May 5 is an Activity Night. Chris Friel G4AUF on Ruislip 635522.

Vale of Evesham RAC have a Visit to the Club by Howes Communications - Kit Manufacturers on May 4. Formal meetings on 1st Thursdays, 7.30pm at The Meb Club, Worcester Rd. John G3DEF on Evesham 6407.

Cheshunt & District ARC have Electronic Warfare G3WFM on May 3. Natter Nights on the 10/24th and Packet Radio G3XDV on the 17th. Wednesdays, 8pm at The Church Room, Church Lane, Wormley. Roger G4OAA on Hoddesdon 464795.

Fylde ARS meet 2nd & 4th Thursdays at South Shore Tennis Club, Midgeland Lane, Blackpool. May 11 is an Equipment Sale and the 25th is an informal/preparation for field day. F. Whitehead G4CSA on St. Annes 720867.

Lothians RS meet 2nd & 4th Wednesdays. 7.30pm at the Orwell Lodge Hotel, Polwarth Terrace, Edinburgh. They have a Construction Competition/d.f. tune up on May 10 and a d.f. hunt on the 24th. P. J. Dick GM4DTH at 21 West Maitland St, Edingburgh EH12 5EA.

Thornbury & District ARC have RAYNET on May 3 and h.f. activity on the 17th. 1st & 3rd Wednesdays, 7.30pm in the United Reform Church, Chapel St. Tom Cromack G0FGI at Rose Cottage, The Naite, Oldbury-on-Severn, Bristol, Avon BS12 1RU.

Colchester RAs meet in Room 15, Ground floor, "C" Block, Gilberd School, Brinkley Lane, Highwoods, 7.30pm. May 11 is Project (Queries). Mike Griggs on Layer-de-la-Haye 348189.

Loughton & District ARS have Radio Navigation by Tony Mothew on May 5 and Planning Night for Aylmers Farm on the 19th. All meetings in Room 20 of Loughton Hall, 7.45pm. John Ray G8DZH on 01-508 3434 after 7pm.

Dragon ARC meet 1st & 3rd Mondays, 7.30pm at the Four Crosses, Pentraeth Rd, Menai Bridge. May 1 is a general get together on Bank Holiday and the 15th is Meteosat demo, let us find out what the summer weather is going to be. Tony Rees on Bethesda 600963.

Mansfield ARS have an Inter Club Quiz on April 28 and their AGM on May 12. 2nd &4th Fridays, 7.30pm at the Westfield Folk House, Westfield Lane. Keith Lawson on Mansfield 642719.

Halifax & District ARS meet 1st & 3rd Tuesdays, 7.30pm at the Running Man Public House, Pellon Lane. 1st Tuesdays are informal Noggin and Natter Nights. May 16 is John Bowyer G4KGS on Packet. David Moss G0DLM on Halifax 202306.

Wirral ARS have RSGB Videos on May 3 and Final NFD organisation on the 17th. Ivy Farm, Arrowe Park Rd, Birkenhead, 7.45pm. Alec Seed G3FOO at 31 Withert Ave, Bebington, Wirral L63 5NE.

Rugby ATS meet Tuesdays, 7.30pm at the Cricket Pavilion outside Rugby Radio Station. May 2 is Annual Construction Competition Judging, the 16th is a talk by G5LP on DXpedition to Lundy and the 23rd is the first of this years d.f. hunts. Kevin Marriott G8TWH on Rugby 77986.

Stourbridge & District ARS have a talk with slides on Early Amateur Radio G3CAQ on May 9 and Natter/on-air Night on the 17th. Meet twice monthly at Robin Woods Centre, Beauty Bank. C. Brunn G1WAI on Hagley 885602.

Keighley ARS meet Tuesdays, 8pm in the Clubroom, rear of Victoria Hall. May 2 is night on the air G0KRS, the 9th/23rd are Natter Nights and the 16th is an Annual Foxhunt. Kathy G1IGH on Bradford 496222.

York ARS meet Fridays, 7.30pm in the United Services Clubroom, 61 Micklegate. Keith Cass G3WVO at 4 Heworth Village, York YO3 0AF.

Hastings Electronics & RC meet Fridays, 8pm at Ashdown Farm Community Centre, Downey Close and 3rd Wednesdays, 7.45pm at West Hill Community Centre, Croft Rd. May 17 is East Sussex Model Engineers. Tim Anderson G0GTF on Hastings 437513.

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

The R-5000 from Kenwood

The R-5000 has established itself as one of the world's outstanding receivers, and a glance at the photograph will tell you what a range of facilities are on offer. The photograph of course only tells you what is on the front panel, but behind it is the engineering skill of Kenwood. The Kenwood engineers, widely acknowledged to be the best in the business, have made the R-5000 into one of the finest receivers you could wish to own. Not only in sheer performance but in the ease of use which is the hallmark of their careful approach to total design.

The R-5000 will satisfy the most demanding applications, whether in winkling out the weakest rare amateur DX, or listening to Radio Hanoi under conditions in a heavily congested Broadcast band. The combination of operating facilities means that the operator can match the performance of the receiver to the prevailing conditions on the air. The result — total satisfaction.

Am I alone in being so enthusiastic? I don't think so. Read what Angus McKenzie said in his review (Amateur Radio magazine). "I was most impressed with the front end, as it is far superior to much of the competition. The selectivities of the various filters on CW, SSB, and AM were excellent. . ." In "Short Wave Magazine", Ken Michaelson remarked "I used the R-5000 for some weeks and was impressed with its performance . . . . I was able to resolve signals which when I first tuned them in seemed too weak to decipher." These comments give you some idea of the listening satisfaction which can come from a truly top class receiver.

The R-5000 scores on quality of construction as well as performance. Rainer Lichte says in his review:—"The entire electronics are housed in a sturdy metal cabinet. This outer barrier and elaborate shielding of critical inside parts combine to form an RF-tight enclosure. Excellent workmanship is evident everywhere, the finish is outstanding." Ken Michaelson said much the same thing:— "In passing, I must comment on the finish of the interior. The whole assembly, when the top cover was lifted off, was a picture. Gleaming plated screening and circuit boards and components all having the appearance of being carefully put together. Quite different to some I have seen."

I think that there is little doubt that the R-5000 is one of the really classic receivers of the future, but having bought it, you will then find that you can extend its usefulness by adding the internally fitted VHF converter, giving you 108 – 174 MHz coverage in addition to the normal 30kHz – 30MHz range, with the VHF frequencies read out on the main receiver display. All the HF modes are available on VHF as well – AM, USB, LSB, CW, FM, FSK. There is also a selection of high specification optional filters for special needs, and even a voice synthesiser option which will announce the frequency in English (and Japanese if you prefer. . .)

As Rainer Lichte concludes:— "The multitude of functions puts the R-5000 almost in a class by itself. Undoubtedly this is the best receiver ever offered by Kenwood." Well, he likes it, Ken Michaelson likes it, and Angus Mckenzie likes it. I just think it's terrific and I'm sure you will agree when you try an R-5000 for yourself at one of our branches or your nearest Kenwood approved dealer. By the way, just to keep the record straight, the ONLY Kenwood approved dealer in London (apart from our own branch at Eastcote) is Radio Shack Ltd. Anyone else trying to sell you an R-5000 has no connection whatsoever with the UK sales and service organisation, and should be treated with due caution, even if you may be getting "Forty quid off, John."

In the words of Dr Samuel Johnson when he referred to London:—
"Prepare for death if here at night you roam,"
"And sign your will before you sup from home."

Caveat Emptor.

John Wilson.
G3PCY/5N2AAC

R5000 **£875** inc VAT
VC20 **£167** inc VAT

FREE

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

LOWE ELECTRONICS LIMITED

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25 YEARS IN SHORTWAVE

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

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

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

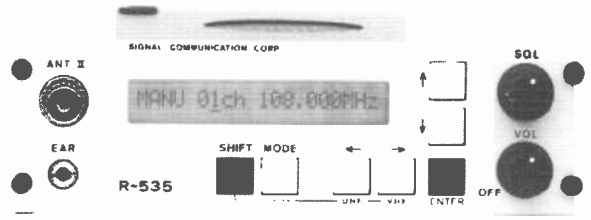
Coming very soon is the incredible AR-3000. 100kHz to 2036MHz — with no gaps, and in all modes including SSB. Watch this space.

AR-2002..... **£487**

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

AR-900.....**£235**

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

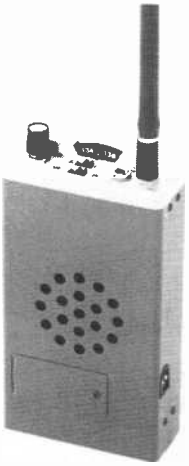


R-535..... **£249**

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

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

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



R-537..... **£69.51**

WIN-108..... **£175**

25th Anniversary Prize Draw

Congratulations to Mr Cole of Poole, and Mr Dicker of Dunmow who were winners in our January and February prize draw. To celebrate our 25th year in Short Wave, anyone making a purchase of £5 or more will automatically be included in that month's draw for a substantial prize — for example a WIN-108. All mail order sales are included automatically; all shop sales will be recorded on cards given to you by the manager.

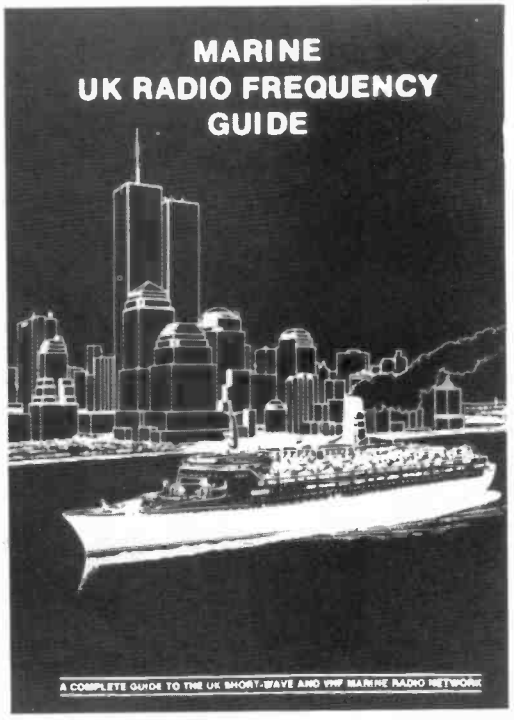
Shops in **GLASGOW** Telephone 041-945 2626, **DARLINGTON** Telephone 0325 486121, **CAMBRIDGE** Telephone 0223 311230, **BARRY** Telephone 0446 721304, **LONDON** Telephone 01-429 3256, **BOURNEMOUTH** Telephone 0202 577760
All branches are closed all day Monday.

BOOKCASE

MARINE UK RADIO FREQUENCY GUIDE
compiled by Bill Laver
Published by Spa Publishing
Available from Short Wave Magazine Book Service
210 x 296mm, 62 pages. Price £4.95 plus 75p P&P
ISBN 0 9512729 6 9

The latest in a range of frequency guides compiled by Bill Laver, this one covers all the UK short wave and v.h.f. marine radio networks.

The book starts with a series of explainatory chapters dealing with the marine band, digital communications, facsimile (FAX), main l.f./h.f. calling frequencies, long distance communications, Portishead Sector Watch, the v.h.f. band, radio aids and weather broadcasts. The rest of the book is devoted to a listing of port stations giving location, frequenciy and channel number, a list of the world marine coastal phone stations and the international marine short wave allocations. A useful refernece book for those listeners into the maritime radio scene.



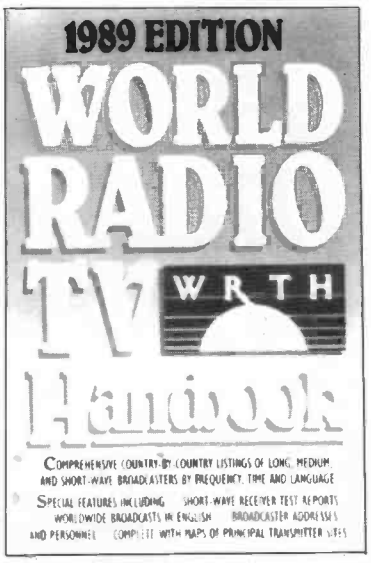
WORLD RADIO TV HANDBOOK 1989
edited by Andrew G Sennitt
Published by Billboard Ltd
Available from Short Wave Magazine Book Service
147 x 226mm, 576 pages. Price £17.95 plus 75p P&P
ISBN 0 9902285 13 0

One of the most eagerly awaited events in the life of the listening enthusiast is the publication of the latest edition of *WRTH*. The 43rd edition has just arrived and is in much the same format as last year's edition, even having the same number of pages.

Of course, that doesn't imply that the content hasn't changed, after all there would be litle point in publishing it annually if the information contained within its covers didn't change regularly. *WRTH* is a reference work designed for the short wave listener, as well as those working in the broadcasting industry and is an indispensable adjunct to the s.w.l.'s radio.

As well as giving all the essential information on each country of the world, including signature tunes, frequencies, powers and times of transmission as well as addresses and contact names.

At the back of the book is a section titled "Listen to the World" which reviews the previous year's happenings in the world of short wave radio broadcasting. Also in this interesting section as an article on satellite television, the first time that *WRTH* has dealt with this subject. The section ends with the now famous "Equipment Test Bench Section" covering s.w. receiver reviews as well as the "1989 WRTH Receiver Value



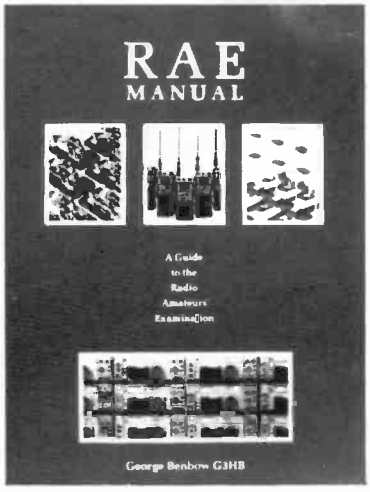
RAE MANUAL
A Guide to the Radio Amateurs' Examination
by George Benbow G3HB
Published by Radio Society of Great Britain
Available from Short Wave Magazine Book Service
83 x 242mm, 132 pages. Price £5.00 plus 75p P&P
ISBN 0 900612 84 3

This book, which is almost compulsory reading for anyone taking the Radio Amateurs' Examination, has been out of print for some time now, awaiting revision to cope with the latest changes to the examination syllabus.

However, it is at last available - although the companion book, *How to Pass the RAE* is now out of print!

The most important ammendment is the addition of a chapter on electromagnetic compatibility covering the new secton in Part 1 of the examination. However, information on licensing conditions has been deleted so that a copy of the free booklet *How to Become a Radio Amateur*, obtainable from the Department of Trade and Industry, is essential for the RAE Candidate.

The book is intended primarily as a basis for formal tuition and contains all the technical information necessary to pass the examination, although the treatment is necessarily brief.



ANTENNAS

F. C. Judd G2BCX

Part 5

The subject of directivity gain is concluded in this part, and Fred Judd makes a start on dealing with different types of antenna.

Continuing from Part 4 on the subject of "directivity gain" it should be mentioned that the cross-sectional area of the main lobe from a parasitic beam antenna may not be circular. More often than not it will be elliptical. In Fig. 5.1 for example. if the beam widths at -3dB were, say, 40° horizontal and 35° vertical, the directivity gain with reference to an isotropic would be:

$10 \times \log_{10}\{41235/(0.78534 \times 40 \times 35)\} = 15.74$dBi

However, it is more usual to quote directivity gain with reference to a half-wave dipole - this being more or less accepted as the standard antenna - in which case dBd (reference dipole) is used. (Note that gain quoted in "dB" is meaningless!) Since the power gain of a dipole over an isotropic radiator is 1.64 (2.14 dBi) it is only necessary to subtract 2.14 from directivity gain in dBi, as above, to obtain that with reference to a dipole. This would be 15.74 - 2.14, which gives 13.6dBd. See also Fig. 5.1.

Directivity gain with reference to a dipole can also be obtained directly from:

$10 \log_{10}(32027/(\vartheta h \times \vartheta v))$ in which ϑh & ϑv, as in Fig. 5.1., are the horizontal and vertical dimensions (in degrees) for the cross-sectional area of the main lobe at -3dB from maximum. Note that if there is more than one symmetrical main lobe, the cross-sectional area of either one may be used; the gain factor will be the same for each of the remainder[9].

The equation given in the foregoing can also be used to show that the directivity gain of a dipole is zero, or 0dBd, with reference to itself. The cross-sectional area of either lobe is 360 x 88.96388889° = 32027;

Therefore 32027/32027 = 1 and

$10 \log_{10}1 = 0$.

Hence the reference gain of 0dBd (Fig. 5.2).

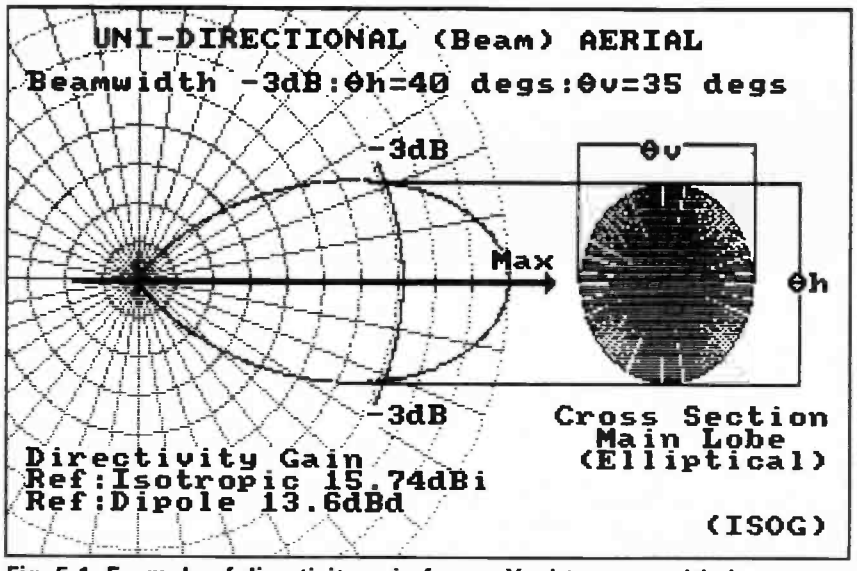


Fig. 5.1: Example of directivity gain from a Yagi type parasitic beam antenna with an elliptical cross-section (main lobe) at -3dB from maximum forward radiation.

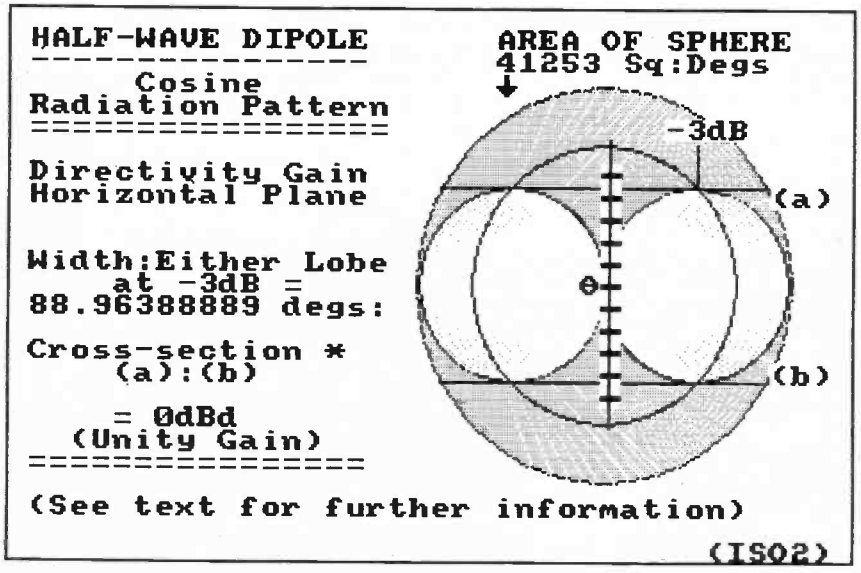


Fig. 5.2: Directivity gain of a half-wave dipole from either lobe width at -3dB from maximum radiation.

Antenna Bandwidth

The functional bandwidth of an antenna may depend on any one of several different performance parameters, but mainly on the radiation pattern and impedance characteristics. With antennas consisting of thin linear elements - the types most used for amateur radio applications - impedance match and directivity gain are the main criteria. However, with very thick cylindrical, biconical and discone antennas with considerable "cone angle" the impedance characteristics may be satisfactory over such a wide bandwidth that radiation pattern variation ultimately determines one or both of the frequency limits relative to a given centre frequency.

If, on the other hand, an acceptable bandwidth for a given radiation pattern exceeds that for impedance, the bandwidth may be abitrarily specified by the frequency limits (f1 to f2) at which the voltage standing wave ratio on the transmission line, between transmitter and antenna, rises to an unacceptable value.

For most antennas the v.s.w.r. must be as close to unity (ratio of 1:1) as possible at the centre frequency (f0) of the transmitting band concerned - which will normally be the frequency to which the antenna is tuned. Incidentally, v.s.w.r. is often talked about but not always fully understood.

It should be noted that bandwidth may also be dependent upon the "Q" of the antenna. The higher the "Q" factor, the narrower the bandwidth, resulting in the antenna becoming "sharply tuned" at its resonant frequency. This is a problem likely to arise with inductively loaded antennas and multi-band systems incorporating inductive/capacitive "traps".

Impedance

The input impedance of an antenna is also of prime importance because it directly affects the transfer of r.f. power to or from the antenna. A transmission line or cable of a given impedance used to feed r.f. from the transmitter must either match directly with the input impedance of the antenna or be connected via an impedance-changing device to meet this requirement. An impedance mismatch between transmission line and antenna can produce a high, and usually unacceptable, v.s.w.r. which can result in loss of power to the antenna and cause the transmission line to radiate. As well as modifying the radiation pattern of the antenna, radiation from a transmission line is often the cause of BCI or TVI.

Which Antenna, What Purpose?

Readers will no doubt appreciate that for any one application, transmitting or receiving, there are many types of antenna to choose from and that operation over a number of frequency bands may call for several different antennas, see Fig. 5.3. The antenna has yet to be developed that will operate with a high degree of efficiency on every frequency within the spectrum covered by the h.f., u.h.f. and v.h.f. bands.

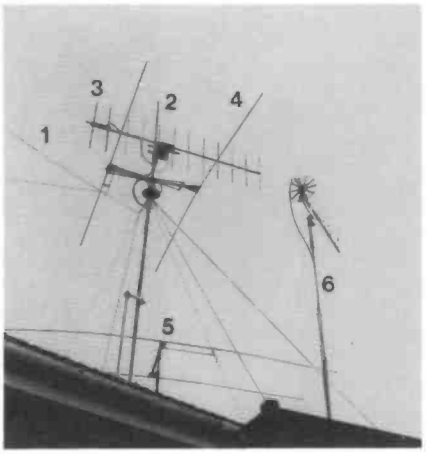


Fig. 5.3: Some antennas in use at the writer's QTH:
(1) Harmonic operation long wire, 1.8 to 14MHz. (2) 144MHz Slim Jim. (3) 144MHz 12-element ZL Special beam. (4) 28MHz 2-element beam. (5) 21MHz 2-element beam. (6) 430MHz 6-turn helical.

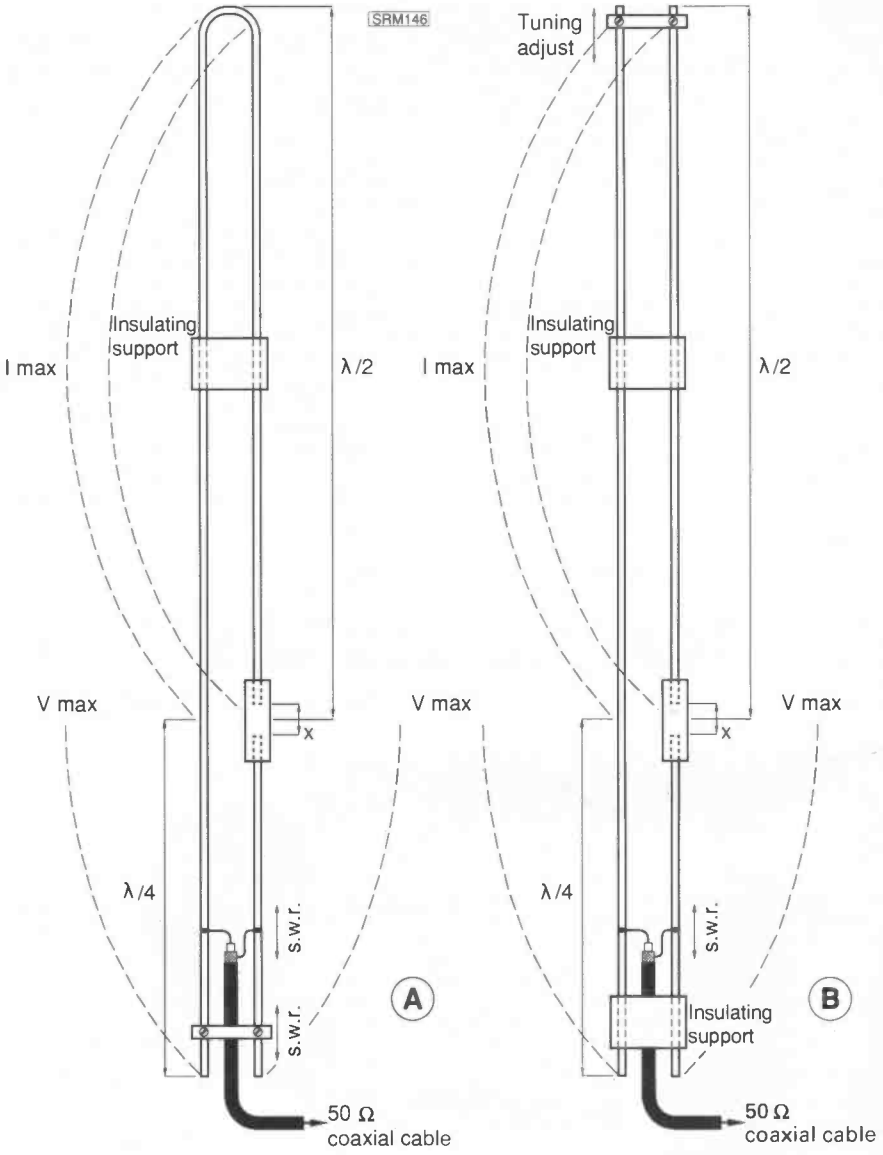
Antenna Systems - VHF and UHF

There is of course the simple half-wave dipole which can be used in two different ways, i.e. horizontal with radiation bi-directional, or vertical with radiation omni-directional. The dipole can be directly centre fed with 72 twin transmission line, but if coaxial cable is used then a balance-to-unbalance (balun) device must be used to connect cable to antenna. The balun must also provide the appropriate impedance transformation. An alternative is to "end feed" via a quarter-wave stub - the "J" match. At v.h.f. or u.h.f. the dipole is not often used by itself, but two horizontal dipoles crossed at right-angles make a suitable antenna for satellite working.

An antenna at one time used almost exclusively for v.h.f. operation is the "ground-plane", consisting of a vertical radiation some fraction of a wavelength long and mounted above an artificial ground made of four or more radials. Because of the high angle vertical radiation, which limits its working range, this antenna is now hardly ever used.

End-Fed Folded Dipole

A far better arrangement for v.h.f. omni-directional operation is a "folded dipole"[10] end fed from a 50Ω coaxial transmission line via a quarter-wave stub, as in Fig. 5.4. Two configurations are shown: "A" with a closed quarter-wave stub and adjustment for minimum s.w.r. by moving the shorting bar at the bottom and 50Ω cable feed points; and "B" with an open ended stub, adjustment for minimum s.w.r. being made by positioning the 50Ω cable feed points in conjunction with tuning the half-wave section using the movable shorting bar at the top - note the gap as indicated by "X". This antenna can be dimensioned for virtually any frequency band from low v.h.f. to around 500MHz u.h.f. It also has a wider bandwidth for low s.w.r. than can be obtained with a linear dipole. The "tilt angle" of the otherwise low angle of maximum vertical radiation does not exceed



x = Gap between ends of elements approx. 30mm. Join with insulating blocks

Fig. 5.4: Omni-directional vertical (stub matched) folded dipole. With (A) closed stub. (B) open stub. (see text).

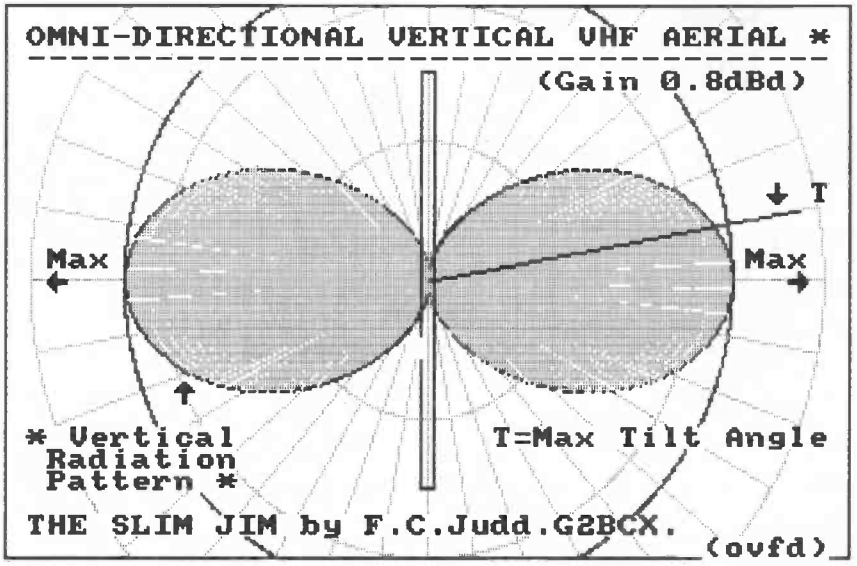


Fig.5.5: Vertical radiation pattern for the Slim Jim antenna.

☞17

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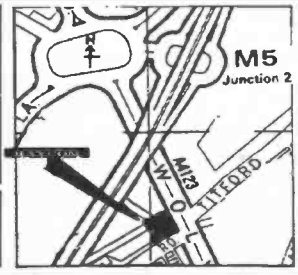

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AIRBAND

Godfrey Manning G4GLM

Some of you have been flying! While on holiday in the Falklands **John Periam** (Shoreham-by-Sea, Sussex) had a trip in a Falkland Island Government Air Service Britten-Norman Islander. The strips were often beaches and fields, necessitating the prior clearance of sheep (arranged by air-ground citizens' band radio!). Such strips can be like landing on "several hump-back bridges in a row" and safety cover consists of a fire extinguisher strapped to the back of a Land-Rover. To assess the take-off weight, each passenger stands on bathroom scales - in the middle of the field! A slide that John has sent me shows one young lady's vital measurement being publicly announced - and the chap with four stripes on his shoulder is writing it down on the back of his hand! A day's work might consist of 23 short sectors in all weathers - always under visual flight rules.

Quite a comparison with the 18 hour ride back home (via Ascension) in an RAF Tristar.

Flying Lessons

"I had 10 flying lessons in a Rallye 110 from Biggin Hill - tremendous fun" writes **Peter Wade** (Sevenoaks, Kent).

If you want to brush up on your skills without leaving your armchair then I suggest a look at the Microsoft Flight Simulator program for the IBM PC type computer (but it won't run on your Spectrum).

Thanks, Peter, for the documents you sent me. One is free from the Civil Aviation Authority (CAA) Printing and Publication Services, Greville House, 37 Gratton Road, Cheltenham, Gloucestershire GL50 2BN (but don't forget to send 50p postage UK or £1.30 overseas). It's Document No. 297 *Air Traffic Control at Gatwick Airport*.

On a clear day Peter can see the Detling and Lydd stacks - the aircraft are 64km away. We've all noticed the condensation trails left by aircraft in the cruise; have you thought that, since nearly 8nm are travelled each minute, you can work out how far the aircraft has travelled whilst remaining in sight?

Peter has various radios including a "Receiver Unit Type 88 Ref No 10D/1541". It covers 2-20MHz and any details would be welcome. Although probably dating from World War II its performance is better than some modern types that we won't mention!

Equipment Problems

Recent "Airband" correspondents have complained about the excessive selectivity of some receivers, which causes problems with offset relay stations.

Peter had his Yaesu 9600 modified by Raycom Communications Systems Ltd. who fitted a 25kHz filter for £15.

In his St. David's Day letter, **Alan Jarvis** (Cardiff) suggests that the FRG-8800 can resolve offset relay transmissions if it is tuned about 3kHz away from the nominal centre frequency.

From Whitwick, Leicestershire, **James Dennis** reports the Signal R-535 as being

Aircraft can often be tracked visually in good weather - as some of you prove this month. Godfrey provides the usual mix of frequency information mixed in with your flying stories and all the news.

sensitive but unfortunately the NiCad batteries only last 2 hours per charge.

It should be simple enough to disconnect the backlight (or route it through an on/off switch); just follow its wiring. But please note that this may invalidate the guarantee on your set.

The backlight may be quite low-powered - in the case of the WIN-108 that I reviewed in the December issue, it only contributed about 10 per cent of the power consumption and may not be worth removing.

Frequency and Operational News

James notes that 243.45MHz is available during displays for communication within aircraft formations. In the 2/89 *General Aviation Safety Information Leaflet* from the CAA, I see that the Rochester n.d.b. (RCH, 369kHz) is only operating on a 10 mile range.

Weston airfield (Weston-super-Mare) has closed to all except gliders. At Northolt the runway magnetic designation has changed from 08/26 to 07/25.

Not a new frequency, but nonetheless useful to know about, Hong Kong VOLMET transmits at 20 minutes to and 10 minutes past the hour on 13.282MHz; other h.f. stations of note are Johannesburg (8.932MHz) and Bangkok, New York Centre and San Juan sharing 11.396MHz. Thanks to **Geoffrey Powell** (Tamworth, Staffordshire) for pointing these out.

Alan Jarvis notes that when Bristol approach changed frequency, it had actually swapped with Leeming approach. Here's the final score: Bristol 132.4MHz, Leeming 127.75MHz. One possibility might be that this change has solved someone's interference problem.

Some travellers just can't seem to get by without access to a telephone. You must not use a cellular 'phone on an aircraft, but British Airways have now started an experimental satellite telephone service in some of their Boeing 747s.

Information Sources

"Where could I obtain a listing of SelCals and the aircraft to which they are assigned?" asks **Eric Sillick VE3IRL** (Ontario, Canada).

Although allocated by Aeronautical Radio Inc. (ARINC) in the United States, an easier source of this information is *High in the Sky* published by The Aviation Society. For current prices send a self-addressed envelope and an international reply coupon to Ken Barker, 44 Laburnum Park, Bradshaw, Bolton BL2 3BU, England. You might, however, be expected to arrange payment in pounds sterling.

I must ask all readers to note again the sheer impossibility of me sending direct replies to your questions. I'm delighted by the response to this column, and all answers will be printed here - that way, everybody gets to share the information.

You Write

Lucky **Rob Browning G4UMW** lives five miles from Cranfield aerodrome at Bromham, Bedford, under the approach to Runway 22 in fact. "Aircraft of all shapes and sizes come overhead at about 2000ft, just starting to descend on the i.l.s. glide path." RAE Bedford is not too far away and some of its traffic is also visible.

A disappointed **Bill Thomas** (Brecon, Powys) missed the Christmas Quiz. Just to confuse you, the photo that was to be identified by quiz entrants was actually published in the January edition - which hit the newsagents just before the festive season! For the results, see last month's issue. Sorry that your letter was sent slightly too late to enter, Bill.

Alan Jarvis noted huge swings in barometric pressure recently. The peak was 1046mb and Alan set his altimeter to zero at this time. At midday on February 25 the Bristol QFE was so low at 931mb that some pilots' altimeters could hardly cope with this setting! Alan's was now showing 3300ft higher than when he had zeroed it during the high pressure weather. Another of Alan's weather-dependent observations is Concorde. At 1945hrs it passes overhead, and, with binoculars, can be seen heading out to sea abeam Porthcawl. When the afterburners are switched on for transonic acceleration, two bright white points of light can be seen. Quite a sight.

Aviation photographer **Roger Syratt** (Winslow, Buckinghamshire) managed a nice shot of LN-BWG, a Convair 580 that's still in passenger service and was recently sub-chartered by Ryanair when they were awaiting extra capacity in the form of new ATR-42 equipment. Luton is, as you say, being planned for major expansion but I was given to understand that spectators will not be forgotten. Roger favours Birmingham where a public park (adjacent to the long-term car park) has a grassy bank with seats provided that overlook the apron. Sounds idyllic. Most of the aircraft have to taxy past this position.

Now is the time of year to get out and about and see what's flying. And don't forget to write in about it! □

Abbreviations

CAA	Civil Aviation Authority
ft	feet
h.f.	high frequency
hrs	hours
i.l.s.	instrument landing system
kHz	kilohertz
mb	millibar
MHz	megahertz
QFE	height above airfield

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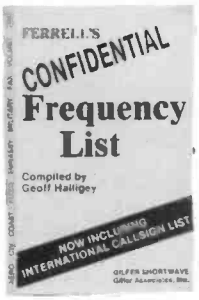

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ERA MICROREADER

Rev. G. C. Dobbs G3RJV

Any keen short wave listener will be aware of the amount of data transmission that now occupies the short wave bands. We have all become familiar with the incoherent jangles and thumps to be found when tuning across the short wave spectrum. George Dobbs has tried out one small, modestly priced unit which enables RTTY and Morse signals to be easily read by the average listener using a s.w. receiver and was very impressed.

The ERA Microreader enables the listener to read Morse (c.w.) and teleprinter (RTTY) transmissions. These are both forms of data transmission. To put it simply, those transmissions that are not speech or music will be data transmissions. The radio signals contain information which is coded through the radio signal being switched on and off in a particular manner, or in tones which are added to the signal, or a combination of both.

Morse (c.w.) is the grandfather of all data transmissions. Nothing could be simpler. The transmitter signal (carrier wave) is just switched on and off in sequence to form the characters of Samuel Morse's code. Experienced operators learn the code and are able to read the transmissions like another language but for those who do not know the code the Microreader offers salvation. It translates the received c.w. into characters which appear on a scrolling liquid crystal display, rather like those Piccadilly Circus advertising screens. When set up correctly, the Microreader displays the actual letters and numbers of the c.w. moving across the screen.

RadioTeleTYpe (RTTY) is a data mode which uses a typewriter keyboard to generate audio tones which have a start and stop (called mark and space) series of elements to convey the data. The early systems were electromechanical and very complex and heavy items of equipment. More recent equipment is computer controlled and the readout is from a v.d.u. (visual display unit) driven by a computer. The Microreader decodes the RTTY signals directly from the radio receiver and they appear on the liquid crystal display as scrolling letters and numbers.

The Microreader

The Microreader is a self contained c.w. and RTTY decoder housed in a case just 134 x 54 x 123mm. The unit requires an external supply of 12 to 14 volts d.c. at 200mA which could be obtained, in some instances, from the receiver. For safety the supply line is reverse polarity protected so that accidental reversal of the supply polarity will not harm the unit.

The front panel has a 16-character wide, liquid crystal display which scrolls the letters and numbers from right to left. There are just two controls: a mode switch and a filter switch and a system of four l.e.d.s to aid tuning. The back panel contains the input socket, a 3mm jack socket, to take the signal from the headphone or external loudspeaker output of a receiver via a screened lead. This input has a useful parallel jack socket to allow continued use of the receiver audio ouput on another loudspeaker or headphones. The panel also contains two preset controls; one for adjust of the gain of the unit, the other to adjust the angle of viewing to give the best contrast for the liquid crystal display. In the units with the Morse tutor option there is a centre-off switch which selects the normal reader function or the Morse tutor facility.

The viewing angle does help with the contrast between the display and the background of the display unit, but I would have been happier if the display had included back lighting. The display has to be mounted at eye level and in a position of reasonable light to ensure a clear reading. The preset gain control does require a little time to set up correctly although in practice it is not difficult to get the level right by following the suggested instructions in the manual.

Using the Microreader

The first thing to say is that it does take time and practice in use before the full benefits of the Microreader can be utilised. The operation of the unit in itself is very simple but it does require practice to tune in the signals correctly to obtain a good reading. I had never had any experience of RTTY reception at all before I tried the Microreader but by the end of an evening's operation I was quite adept at tuning in signals and getting consistant readings on the display.

Decoding c.w. is the simpler of the two modes. The Microreader contains a c.w. filter centred on an audio frequency of 800Hz and optimum performance occurs when the signal lies in the centre the filter passband. There are two filter postions: WIDE and NARROW . In the WIDE position signals that are not exactly on the centre of the passband may be decoded. The NARROW position, which brings in a 80Hz bandwidth digital filter, does require accurate tuning. Thankfully there is a very easy to use tuning aid built into the unit.

The front panel has four l.e.d.s to aid tuning. The top three are mounted in a line with a red l.e.d. in between two amber l.e.d.s. The centre red l.e.d. indicates the signal strength at 800Hz by its brightness. The amber "L" l.e.d. indicates the signal is tuned low and the amber "H" l.e.d. indicates that tuning is too high. It soon becomes clear in use how to tune in to a signal in the centre of the passband. If the receiver is fitted with an incremental tuning control (i.r.t.), sometimes called a "clarifier" or "fine tune", this can be helpful. The manual contains helpful advice on the correct tuning procedure.

Microreader Mark 1 as reviewed

The cw NARROW position is very helpful on the amateur bands where c.w. stations are often packed very close together. In the WIDE position the adjacent stations may well interfere with the clean decoding of an individual station. Some receivers contain narrow c.w. filtering facilities but I found it best to operate the receiver without internal filtering and to rely upon the filtering provided by the Microreader. The cw NARROW position also includes another, very clever, facility. In that position the Microreader performs a word search on the received text. The system memory contains all of the commonly used words and code groups in amateur radio communication. If words are found that match those in the system memory then the correct spacings are inserted before and after the words, even if these are not included in the received text. For example the received signal "QSLVIABURO" would appear on the screen as the corrected "QSL VIA BURO". For these reasons the cw NARROW position is the one to use for amateur transmissions.

Clever Facility

Another clever facility built into the Microreader is its ability to cope with differing speeds of Morse sending without having to alter any controls. If the spacings and character formations are near enough correct, the unit will decodec.w. in the speed range 5 to 40 words per minute. Once the procedure for use has been mastered, the operation takes care of itself. I found in practice that correctly tuned signals only required to be sampled for three or four characters before the Microreader produced the text. In the correct tuning position almost any corruption of the text came from poor operator sending rather than any other cause. It certainly sorts out the bad operators!

RTTY Made Simple

The RTTY operation is also made simple by the intelligence of the unit. The front panel switch gives the choice of commercial 425Hz shift (WIDE) or Amateur 170Hz shift (NARROW) but the reader automatically samples and selects the baud rate and if the signal is normal or reversed tones.I followed the manual and tuned in RTTY signals by beginning in the c.w. Wide position to get the signal into the passband and then switching to the required RTTY mode. The manual is simple enough even for someone like me, who knew nothing about RTTY, to be able to master the operation of the decoder. The manual also contains a useful trouble shooting page for possible problems with RTTY operation.

I began simply by decoding some of the the stronger commercial signals. These can often be found just below the amateur bands. Sadly about half them are scrambled but there are enough normal transmissions to be able to gain experience in using the mode.

ERA MICROREADER

The new agency signals are probably the best and certainly the most interesting. A fine tuning control on the receiver certainly helps as careful tuning and a little experience and patience is required for successful results. I also enjoyed practicing on the Headquarters News Service for Radio Amateurs from the ARRL on 14.095MHz.

Morse Tutor

The Microreader comes with a Morse tutor facility which was fully exploited by my wife who is learning Morse code. She quickly pressed it into service and found it a valuable asset in learning to read Morse. The unit will give Morse receiving practice from a choice of four menus: Letters, Numbers, Letters and Numbers, Punctuation and Abbreviation.

The speed required can be set in the range 6 to 18 words per minute and the spacing between characters can also be changed, allowing the characters to be sent at the chosen speed but with the overall word-per-minute rate being slower. This facility is very useful for increasing the speed at which Morse can be received. The required speed can be received with wide spacing which is then gradually reduced until Morse is accurately read at normal spacing.

The tutor sends groups of 5 characters, each lesson being ten groups long. As the Morse is sent, the characters being made are scrolled across the screen. Unless the operator chooses to change the lesson, it will repeat the same characters. The Morse student can listen to the lesson once, not looking at the readout screen, and attempt to write down the characters. The repeat can be used to check the lesson by reading the characters on the screen.

The Microreader can also be used for sending practice. A Morse key is plugged into the rear panel jack and Morse code is sent in the usual way. During the first few words the Microtutor adjusts to the speed and spacing of the operator and may show odd readings. The tutor is a critical way to check on Morse sending. It will display exactly what is sent, so bad spacing will be recorded, as will incorrect shaping of the characters. It can be embarrassing to the experienced operator of Morse code in showing up habitual mistakes. I know: it showed up mine!

Impressions

I was very taken by the Microreader. It is a clever little device offering the short wave listener a simple and inexpensive way to decode RTTY and c.w. It does take a little practice to use but after a few sessions, I found it simple and reliable in use. One minor moan is that the l.c.d. display does have to be positioned in relation to the ambient lighting and the operator's eyes to be clearly read. Perhaps backlighting the display would have helped the readability. Comparing its cost with a similar American product, it is excellent value for money.

Footnote

ERA have just introduced a Mark 2 version of the Microreader which clears up some of the points raised by George in his review. The visible differences between the Mark I as reviewed by George and the new Mark II are on the front panel. The single l.e.d. for tuning has been replaced by a three-colour bargraph and the two push-buttons by a ten-position, rotary, mode switch allowing more options to be selected. Also, three separate l.e.d.s automatically indicate the RTTY shift. Internally all the filters have been changed to make the unit compatible with v.h.f. tone pairs and additional filtering, including two notch filters, makes a significant improvement in readability under poor conditions. The amount of text editing has been increased to try to make more sense of bad Morse sending and to achieve this the processor speed has been increased to 12MHz. The display, however is still of the l.c.d. type without backlighting as the marginal improvement gained by the addition of backlighting is, says Bill Green of ERA, not worth the extra cost incurred.

Cost

The Microreader Mark 2 costs £139.95, inc. VAT and postage from: **ERA Ltd., 26 Clarendon Court, Winwick Quay, Warrington WA2 9QP. Tel: (0925) 573118.**

12☞

ANTENNAS

10°, as shown in Fig. 5.5, thus making it ideal for maximum performance over ground working distances. As a point of interest, the 144MHz band version of this antenna is used world-wide by individual radio amateurs as well as by 144MHz repeater stations in various countries, including Indonesia, Sri Lanka and Japan. Suitably re-dimensioned it is also used in Greece by f.m. broadcast stations, and in the UK for taxi and other commercial communication bands.

We will look at further types of antenna in the next part.

□

References

[9] "Directivity Gain - Transmitting Antennas", F.C. Judd, *Practical Wireless*, Feb. 1988.
[10] *Out of Thin Air*, PW Publishing.Ltd.

Abbreviations

BCI	broadcast interference
cm	centimetre
dB	decibel
dBd	gain relative to a half-wave dipole
dBi	gain relative to an isotropic radiator
f.m.	frequency modulation
h.f.	high frequency
MHz	megahertz
m	metre
Q	reactance/resistance
r.f.	radio frequency
s.w.r.	standing wave ratio
TVI	television interference
u.h.f.	ultra high frequency
v.h.f.	very high frequency
v.s.w.r.	voltage standing wave ratio
Ω	ohms

SCANNING

Alan Gardener

This month Alan begins with a look at an interesting new feature appearing on two new scanners, one of which is our cover subject, and examines some of its uses. His survey of what you can hear on your scanner has now reached the middle part of the v.h.f. radio spectrum.

By now the first examples of Icom's new scanning flagship the IC-R9000 should be appearing in the radio dealers' showrooms. As you saw in *SWM* last month, its most distinctive feature - apart from the price - is the provision of a built in spectrum display or pan-adaptor. This gives a graphic representation of activity within a small range from each side of the frequency the receiver is tuned to. This is a common feature in many military surveillance receivers and may well have been included in the design at the request of professional users. It is often surprising how much of the sophisticated equipment now available to the amateur or listener would, but a few years ago, have been so expensive to produce that only government bodies or the military would have been able to afford it. This may be partially due to advances in component design but I suspect the main factor is the manufacturers' realisation of the vast world-wide market for cheap quasi-military specification equipment, with many of the new features being offered as a result of Research and Development programmes for such equipment.

In addition to the pan-adaptor, the receiver also has one or two new features not found on its predecessor the R7000. The most obvious addition is the enlarged frequency coverage. Now ranging from 100kHz up to just below 2GHz. Reception modes include a.m., w.b.f.m., n.b.f.m., u.s.b., l.s.b.,c.w. and f.s.k. which should permit demodulation of most signals you are likely to encounter within the receiver's frequency range.

The receiver has 1000 memory channels in ten banks of 100 and just in case you have difficulty in remembering what you have stored in each one, a comment of up to eight characters can be stored along with the frequency, mode and tuning step size. Exchanging information between memories is also simplified with the addition of a memory editor function. The idea of this is to allow the user to organise memory contents into more usable blocks - all airband frequencies together for example.

Scanning facilities include all those currently found on the R7000 with the addition of ten programmable search bands, memory bank scan, selected memory scan, and finally perhaps the most interesting one, Delta Frequency Scan. This searches a pre-defined range around the frequency the receiver is tuned to - handy if you only know an approximate frequency.

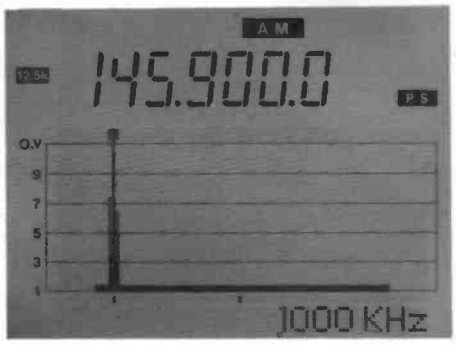
Other features include improved frequency stability, now better than ±0.25p.p.m. above 30MHz; Tuning step sizes of 10Hz, 100Hz, 1kHz, 5kHz, 9kHz, 10kHz, 12.5kHz, 25kHz and 100kHz; notch filter and i.f. shift for improved short wave reception; programmable clock and timer functions; separate antenna sockets for h.f., v.h.f./u.h.f. and s.h.f. Extra CI-V commands for a.f. and r.f. gain, squelch level and signal strength - improving the versatility of the receiver when operated under computer control.

Altogether this is a very impressive receiver. However I would like to have seen a facility to permit the locking out of individual frequencies within a search band, a wider frequency span on the pan-adaptor and perhaps a slightly better than specified receive sensitivity - although the published figures are usually worst case ones. Of course this is just a personal opinion and should not detract from the fact that this is undoubtedly the most advanced scanning receiver likely to appear outside the professional market - at least for the present!.

If you are a little put off by the three figure price tag of the R9000 but would like a scanner with a built in pan-adaptor then the new Standard AX700, featured on the cover this month, may be just the thing. The UK model's specification should be finalised by now so keep an eye open for the first examples. Frequency coverage is expected to be from 50-905MHz but may extend up to 950MHz if Ray Withers can manage to perform "Micro-surgery".

I have also heared of an interesting hand-held covering 25-550MHz and 800-1300MHz but I am still awaiting a further report from Agent X.

The new Standard AX700E scanner



Typical AX700E pan-adaptor display.

Seeing a Signal

With the introduction of these two new receivers I thought that it may be a good idea to take another look at the subject of pan-adaptors - you may remember I touched upon the subject before in the August 1988 column. The basic idea of such a display is to allow the analysis of signals appearing within the frequency range of the receiver. This is usually presented in graphical form with the horizontal axis displaying the frequency range and the vertical axis displaying the amplitude or strength of a signal. By selection of suitable frequency and amplitude ranges it is possible to use such a display for several different purposes. The most common use is in finding previously undiscovered transmissions. For this application the frequency span needs to be fairly wide - say a few MHz. By watching the screen any transmissions occurring within the display range become immediately noticeable. Very useful if you are a military operator searching for very short duration clandestine transmissions, or looking at the characteristics of frequency hopping signals.

Once a signal is detected it can prove useful to examine it more closely. A much narrower frequency span is required for this - perhaps just a few kHz. This permits analysis of the modulation present on a transmission which may in turn reveal additional information.

Again this is a field in which the military is very interested. By examining the characteristics of a signal it may prove possible to identify the type of equipment being used and with the addition of other intelligence may lead to an assessment to the strength of the opposition. This is possible because various types of equipment are known to only be used at certain levels of troop deployment - for example by squads or battalions.

Military operators try to disguise this by changing power levels or antennas and by using the same callsign from different locations or different callsigns from the same location! However each transmitter has its own "fingerprint". This may be the time it takes for the transmitter output to decay, the way in which the carrier frequency changes when initially switched to transmit, the depth of modulation or any spurious signals transmitted as sidebands. All of these tell-tale characteristics can be as accurate in identifying the equipment as the serial number.

From the casual listeners point of view it may not be too important to know that an amateur station is using a Satsuma TXR 3000 GTi just from the fact that its transmit frequency sweeps over several MHz each time the transmit button is released, but it can be quite amusing watching it happen. I believe that a number of listeners may be glued to the small screen over the next few

months, discovering all sorts of strange signals not previously noticed.

What Can I Hear? Part 4

We finished our last look at the radio frequency spectrum at 136MHz and the top end of the v.h.f. airband. This month we move higher in both frequency and altitude, as we examine the part between 136 and 138MHz.

This small band is perhaps one of the most interesting to monitor as it is used almost exclusively for down-links from orbiting satellites. Most of these send information relating to the worlds weather or geography, normally by converting the measured parameters to audio tones before transmission. Decoding the information is a fairly involved process with many articles on the subject having been published over the past few years. However it can still be quite entertaining trying to identify individual satellites as they pass within radio range. Fairly narrow tuning steps are required in order to tune on to the correct frequency and then follow the signal up and down in frequency as it is effected by doppler shift. Single sideband is a useful addition if you want to pick out the really weak ones.

For information about satellite frequencies you could try Peter Rouse's book *Scanners 2*, obtainable from the *SWM* Book Service, of course. For more detailed information about practically anything in space that radiates signals, *Communications Satellites* by Larry van Horn is a very absorbing read.

Moving up in frequency we encounter the p.m.r. "Mid Band" starting at 138MHz and reaching up to 141MHz. This band is mainly used by the nationalised - for the time being anyway! - Fuel, Power and Transport industries. The mobile stations are paired 33MHz lower in frequency than the base stations which use 12.5kHz channel spacings. The interesting thing about this allocation is that each channel is offset by 6.25kHz in order to reduce interference to services outside the UK.

As the v.h.f. f.m. Broadcast band is extended upwards in frequency some of the mobile transmit allocations will be lost. In order to accommodate the displaced users a new allocation has been created at 148MHz. This will be paired with mobile transmit frequencies at 139.5-140.5MHz. The vacated channels at around 138MHz are likely to be reallocated to new services just requiring a simplex channel. For example, some of the new national digital paging systems. This can create problems when trying to listen to weak satellite signals just a few hundred kHz away.

The band 141-144MHz is a real mixture of odd allocations including TV and Radio outside broadcast talk-back channels. These are used to relay information back to programme presenters from the studio or control centre which may be located some distance away. Military aircraft are another user, with many airbases having spot frequencies scattered around the band.

Perhaps the most interesting user of this segment is the Russian orbiting space station MIR, which can usually be found transmitting voice communications at around 142.4-142.6MHz. The final user is another service which has been displaced from the v.h.f. f.m. Broadcast band - the Police who use part of this allocation for mobile stations.

The band of frequencies144-146MHz is perhaps the best known portion of the v.h.f. frequency spectrum, being otherwise known as the 2 metre amateur band. This small portion of the spectrum is crammed with just about every sort of transmission you could possibly imagine, ranging from c.w. - Morse code to you and me at just above 144MHz. s.s.b. centred around 144.3MHz, digital packet repeater stations at around 144.65MHz, Propagation beacons around 144.9MHz and from 145MHz up to 145.8MHz n.b.f.m.

The segment above 145MHz is split into 25kHz channels with most activity occurring around the Calling Channel 145.5MHz (Channel S20) or the many repeater stations in the segment 145.6-145.8MHz (Channel R0-R8).

The purpose of a repeater is to extend the range of mobile stations by receiving signals and re-transmitting them from the much better located repeater site. The mobile stations transmit 600kHz lower in frequency than the repeater output. This requires careful design in order to prevent the transmitter from interfering with reception of the mobile signal due to the very narrow frequency spacing between the two. In order to prevent interfering signals from accidentally triggering the repeaters a special tone is transmitted by the mobile station in order to initially "open up" the station, in addition the repeater is required to identify it-self in morse code at least every 15 minutes. By listening to these stations it is often possible to spot enhanced propagation conditions by identifying the callsigns of distant repeaters.

Finally the top segment of the band 145.8-146MHz is internationally assigned for amateur satellite communications. Radio amateurs have for several years been launching their own communications satellites. These act as giant repeater stations, re-transmitting weak signals back down to the earth. In order to accommodate all the stations wishing to use the satellites s.s.b. is used in preference to n.b.f.m. However you may just be lucky if you tune to 144.825MHz as this is a special satellite down link channel and sometimes has a synthesised speech transmission on it giving details of the satellites condition.

Well that should keep you busy until we venture still further up in frequency - standby for the next instalment.

I seem to have run out of space again - so that's it for this month. If you have any views or comments relating to the column then send them to the usual address; PO Box 1000, Eastleigh, Hants SO5 5HB. Until next month - good listening. □

FREQUENCY ALLOCATIONS 136-146MHz

FREQUENCY (MHZ)	SERVICE
136.000	Meteorological satellites
138.000	105.000 PMR "Mid band" Base transmit paired with
139.500	106.500
	148.000 New JRC band mobile transmit paired with
	149.000
140.500	107.500 PMR "mid band" base transmit paired with
141.000	108.000
144.000	Start of 144MHz amateur band
144.300	Centre of s.s.b. activity / s.s.b. calling frequency
144.650	Digital packet frequency
144.900	Centre of beacon segment
145.000	R0 input Repeater mobile station transmit frequencies
145.200	R8 input
145.550	S20 Centre of n.b.f.m. activity (n.b.f.m. calling frequency)
145.600	R0 output Amateur repeater base station transmit frequencies
145.800	R8 output
146.000	Amateur satellite down-links

Abbreviations

a.f.	audio frequency	MHz	megahertz
a.m.	amplitude modulation	n.b.f.m.	narrow band f.m.
c.w.	continuous wave (Morse)	p.m.r.	private mobile radio
f.m.	frequency modulation	r.f.	radio frequency
f.s.k.	frequency shift keying	s.h.f.	super high frequency
GHz	gigahertz	s.s.b.	single sideband
h.f.	high frequency	u.h.f.	ultra high frequency
Hz	hertz	u.s.b.	upper sideband
i.f.	intermediate frequency	v.h.f.	very high frequency
kHz	kilohertz	w.b.f.m.	wideband f.m.
l.s.b.	lower sideband		

CIRKIT WEATHER SATELLITE SYSTEM

Peter Rouse GU1DKD

The versatile Cirkit Weather Satellite System is a popular means of getting started on weather satellite watching. Peter Rouse GU1DKD has built the kit version of the system and in this review looks at the decoder section and provides some general notes on FAX reception.

The Cirkit system comprises three individual units; v.h.f. receiver, decoder and BBC-B software held in sideways ROM (Read Only Memory). All can be purchased separately and in this review we look at the decoder and software as the receiver will be reviewed separately at a later date.

As a budget system it produces excellent results and can decode not only NOAA, Russian and Meteosat formats but also v.l.f. and WEFAX charts, press pictures, while access to parameters such as line sampling rates allows the user to configure the system for non-standard transmissions. However would-be buyers should be aware that the system only works effectively if it is used with a stereo cassette deck. Try as I might I was not able to replay any of my old recordings through this system.

Basically, the decoder comprises two separate circuits both of which operate entirely independent of each other. The raw signal is filtered and passed to an 8-bit a.d.c., the output of which is fed to the user port of the computer.

I was quite surprised to find that this section of the circuitry was identical to the one used in the YU3UMV frame store system favoured by the dyed-in-the-wool enthusiasts. In fact even the component values are virtually the same. The only notable exception is a 10nF capacitor (C18) strapped across the audio input and I cannot see what purpose this component serves other than to drag most of the input signal hard to ground. Indeed, removing it means that far less audio drive is required and yet there seems to be no degradation of signal. I have a sneaky feeling that someone misread an early circuit diagram and this component should have been a 1nF capacitor to de-couple at r.f.

The remaining circuitry is comprised of the synchronisation chain, which is not derived from the incoming subcarrier but instead is produced by a crystal oscillator with its output divided down to 4.096kHz. This is either used to record a synchronisation track on the tape recorder or can be fed to the p.l.l. and dividers for synchronising pictures off-air.

The method of recording a separate synchronisation track is the one favoured by the purists as the synchronisation will happily track any wow or flutter on the tape. However, I am a little puzzled at the choice of frequency as it seems to be standard procedure to use 2.4kHz (the same as the weather satellite sub-carrier). Had this frequency been chosen it would have been a simple matter to provide the option of deriving the synchronisation pulses either from a separate track or from a single-track recording of the raw signal. Having made that point it should be borne in mind that the twin-track method is far superior and even a budget stereo cassette deck will suffice. One further advantage of using a crystal controlled synchronisation chain is that when pictures are produced off-air there is no picture slip if the incoming signal is temporarily lost or affected by interference.

The master synchronisation tone is fed to a p.l.l. which is allowed to free-run at a slightly lower frequency when the input is disconnected via a push switch. This allows the picture to be slipped slowly across the screen for alignment. Further division provides pulses at 1, 2 and 4Hz (indicated by a flashing l.e.d.) and these are buffered and sent to the computer. It's at this point that my only hard criticism of the decoder arises. With the BBC-B, this pulse is applied to the printer port and so if hard copies are required the computer has to be tipped-up and leads swapped over. When this is done several times a day it is bound to lead to problems with poor connections on the plugs and sockets. I have used other systems where the user port has been effectively used to provide input for the synchronisation and so cannot understand why it was not done with this system.

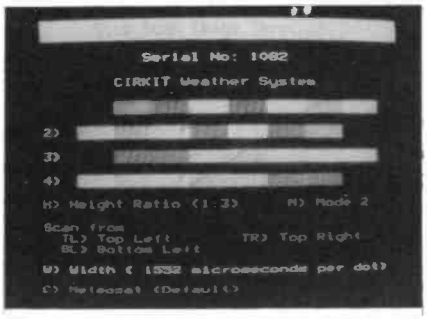


Fig. 1: Preset or customised parameters can be set using the Menu Screen.

Construction

The decoder board was easy to assemble, but anyone who has not tried to fit IDC plugs and sockets to ribbon cable may find it a difficult job. The sockets are no real problem but the plugs which solder to the board can be hard to fit. My own tip is to solder the plug to the p.c.b. first and then fit the cable by squeezing the heads onto them, preferably in a vice.

Alignment of the master oscillator is best done with a digital frequency meter although it can be done with an off-air signal simply by adjusting for a perfect vertical edge to the picture (the p.l.l. is adjusted to give a slow slip rate). The a.d.c. is set up simply by adjusting a pre-set resistor to give an even distribution between black and white whilst in Mode 2 (eight colours). The average constructor will not have a d.f.m. and so is likely to face a frustrating wait for a satellite pass before any kind of alignment can be attempted and I think it would be very desirable if Cirkit were to supply a cassette tape with some sample signals (several other firms who make decoder kits do provide a line-up tape) particularly as any previously recorded tapes are unlikely to work with this system.

The decoder is supplied with all cables, plugs, sockets and switches but a dual rail 5 volt power supply is not included. The instructions could do with a little bit of tidying up, particularly when it comes to explaining about the use of the synchronisation.

SATPIC

The most impressive part of the system is the SATPIC software originally devised by Clappison and Atkinson for Timestep who've since sold-off their interests to a number of different firms including Cirkit. Although several years old, it has now been re-vamped and is probably the most comprehensive software of its type. It is supplied as a "sideways" plug-in ROM and will only activate on the command '*S.' if the decoder is plugged-in and switched-on. Once booted it goes automatically into Meteosat mode but pressing the ESCAPE key takes you straight to the menu. The function keys are then used to select all standard formats as follows:

Meteosat x 1 - Meteosat x 2 zoom - NOAA full image - NOAA i.r. or visible - Meteors - v.l.f. news pictures - v.l.f. charts 7:1 - v.l.f. charts 4:1 - WEFAX

There is a choice of three picture modes: Mode 0 provides a 2 colour image of 640 by 256 pixels, Mode 1 provides 320 by 256 pixels in 4 colours and Mode 2 reduces to 160 by 256 pixels but in eight colours. A colour palette allows selection of various mixes of colours which can give a true or reversed grey scale when displayed on a black and white monitor. The use of such a monitor is what really shows off the system to its best

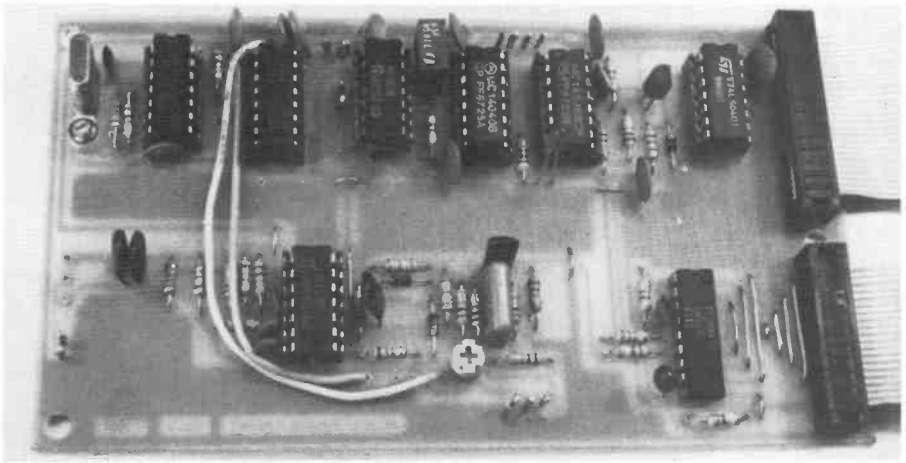


Fig. 2: The p.c.b. has two distinct circuits. The top set of i.c.s form the synchronisation chain and the bottom row the a.d.c.

advantage when using Mode 2 where colour scaling has been chosen to give an even distribution of scale between black and white.

Further selection allows the picture to be started in any corner of the screen and a simple press of two keys allows access to both picture height ratio and line sampling rate. This means that the user is able not only to set-up for non-standard formats but also zoom-in by as much as eight times. In fact it is even possible to zoom-in further widthwise and produce quite spectacular close-ups albeit with a slightly squashed image in terms of height.

Once in picture receive mode, images can be stored to disc or tape simply by pressing a function key and the files are automatically labelled using sequential numbers. The system will even advise you that a disc is full and retain the picture whilst you check discs to find one with available space.

Weather pictures

Weather satellite pictures on a black and white monitor using Mode 2 are excellent and on clear days there is no problem in following the course of major rivers such as the Thames when using zooming. Even the darker shading of the built-up areas of cities shows up and it is possible to see the three dimensional effect created by major mountain ranges such as the Alps. The system was used daily throughout June and August and some extremely good definition pictures were obtained. Although the ultimate goal of weather satellite freaks seems to be 64 grey levels it is surprising how a good 3-dimensional effect can be obtained with just eight levels. The set-up used to test the system was an Icom R7000 scanner (Wide-band f.m. modified with 50kHz filters) and a Philips N5748 cassette deck (Black Tulip system). The feed audio was taken from the headphone socket of the cassette deck and potential buyers should be aware that the so called "monitor" output of the Cirkit receiver does not provide enough drive to get the decoder to fully function so either a separate amplifier (or the monitor amplifier of the receiver) must be used.

FAX

The FAX options were tested using an FRG-7700 and JVC Hi-Fi type graphic equaliser, which I will explain later. The weather charts show up reasonably well in black and white in Mode 0 but it is not possible to read the smaller figures printed on them unless zooming is used which means a full and readable chart may need the tape to be processed about four times. On selecting WEFAX the system defaults to reproducing only about 60 per cent of the picture. To be fair, this limitation is imposed more by the computer than the decoder or software and the semi-professional FAX decoders now appearing on the market send their output straight to a printer where it is possible to get better resolution than on a v.d.u.

The v.l.f. news pictures are are a very impressive feature. The pictures are transmitted at regular intervals throughout the day on 139kHz by DPA in Germany. These pictures and WEFAX ones are sent using f.s.k. which involves transmitting a 1.9kHz centre frequency which is pulled 400Hz up or down to produce peak white at one extreme and black at the other. The decoder does not have an f.m. demodulator but appears to rely on the fact that with the b.f.o. set to put peak white into the centre of the audio filter passband, all remaining frequencies will be progressively lower in amplitude by the time they reach the detector and so give an approximate grey scale. In practice, because the roll-off slope of the filter is not linear, the results on v.l.f. news pictures tends to mean a fairly contrasty picture. In practice this is no bad thing as these pictures look best when decoded in mode 0 where the image is only in two colours.

Fig. 3: A typical newspaper half-tone picture reproduced in Mode 0.

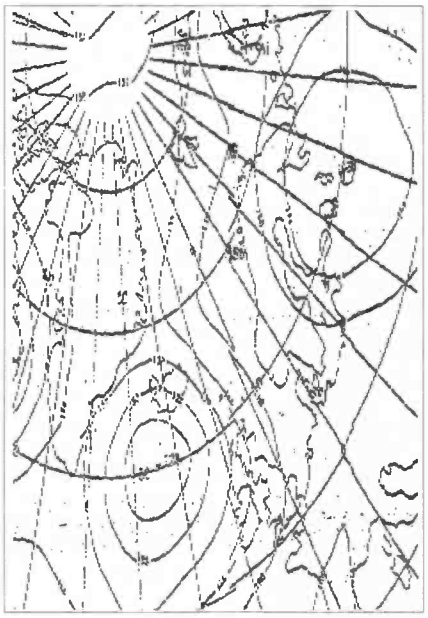


Fig. 4: WEFAX charts have to be processed a piece at a time and even then the smaller lettering is difficult to read.

Any receiver capable of receiving s.s.b. should be able to resolve these signals and as Mike Richards G4WNC recently pointed out in his "Decode" column, you do not need a sophisticated receiver to get started on FAX. Many of the h.f. WEFAX transmission such as those from Bracknell on 4.782MHz can easily be copied by a simple receiver.

However, if you intend hunting for DX FAX then you may need to improve the system. Even on my FRG-7700 I find the normal 2.6kHz bandwidth i.f. filters too wide for f.s.k. where there are strong signals on adjacent channels. Even the DPA press picture transmissions can be a problem because DCF (Frankfurt) on 140.3kHz often sends out a stream of RTTY day and night. You do not need to carry out complicated modifications and fit expensive i.f. filters because the signal can be cleaned-up at audio level hence my use of a graphic equaliser. Any off-centre transmission such as RTTY is going to be fairly high or low pitched and so can filtered out leaving the wanted FAX signal unaffected. A graphic equaliser is a bit of overkill in my case but the unit was already to hand and perhaps a better solution would be to use a proper parametric filter such as the *PW* Arun (p.c.b.s are still available from our sister magazine).

Most owners of h.f. receivers are going to have difficulty receiving v.l.f. as the majority of receivers only seem to go down to about 150kHz. The inexpensive way round this is to use a simple converter and the *PW* Taw is ideal. Details were published in *Practical Wireless* November 86.

Conclusion

As I said at the start, SATPIC has been revamped and it is a pity that a method of recovering stored images from disc was not included. As it stands a BASIC program has to be written and run to view the images. You even have to devise the program yourself from some notes to get the grey scales right. In practice you have to copy the program to each of the discs you use for storage and I am puzzled as to why this could not have been included in the ROM as the idea of these chips is to do away with this kind of fiddling about. Perhaps available space in the ROM is at a premium in which case two of the colour palettes and the rather useless comment line could be got rid of without spoiling performance.

There appears to be something odd about the way the Mode 0 pictures are stored because whenever I tried to recover them from disc and perform a screen dump I got strange results. Eventually by fiddling with the parameters on my "Printmaster" ROM I was able to print them but only at a reduced size (all other modes print as normal). The hardware and software have been honed to near perfection over the years but I feel it's time the same was done to the SATPIC instructions. The six pages seem fairly high on waffle and detailed instructions on how to work everything out for yourself - why not just list a table of examples of the various figures for typical zoom rates in various modes.

☞53

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73 from Dave G4KQH, Technical Manager

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DX LETTER FROM AMERICA

by Gerry Dexter

Short wave listeners in both North America and the rest of the world got quite a surprise when they began to hear test broadcasts from a new religious broadcaster late in January. Gerry Dexter explains all.

KJES (the call letters are an abbreviation of "Jesus") is located in the small town of Vado, New Mexico, about 40km northeast of El Paso, Texas, on the Rio Grande River. The station is operated by Missionary Radio Evangelism of El Paso, the equipment is owned by Our Lady's Youth Centre and the station itself is located on the "Lord's Ranch" some 10km outside of Vado. The "Lord's Ranch" is run by Rev. Richard Thomas, SJ as a home for delinquent teenagers.

First tests consisted of nothing more than a Bible reading with responses by a group of children and a station identification also given by the children in an almost shouted manner which was very difficult to understand. Representatives of the station say the target date for regular programmes was being set for April 15, though they seemed unclear as to just what form the programmes would take, who was to staff the station or where the operating funds would come from!

Test frequencies include 6.070, 6.095, 11.730 and 15.140MHz. Initial power is 5kW which is supposed to be increased to 50 (the minimum allowed by US short wave broadcasters). The station's address is simply KJES Radio, Vado, New Mexico 88072 or in care of Missionary Radio Evangelism, 3720 Greenwich Drive, El Paso, Texas 79902. There is an amateur radio station at the site, too. Engineer Pete Warren operates W5MQA there.

April 1 was to be the day for inauguration and dedication at WSHB in Cypress Creek, South Carolina. WSHB is the third leg in the Christian Science Church's short wave network (WCSN and KYOI are the others). WSHB employs a pair of half million watt transmitters and a number of antennas. Testing was due to run over a month's time and involve some 270 half hour transmissions on a wide range of frequencies. WSHB's regular programming should appear at various times on some or all of the following frequencies: 6.005, 6.175, 7.315, 9.455, 9.535, 9.770, 11.580, 11.700, 11.915, 13.760, 15.155, 15.205, 15.225, 17.640, 17.710, 17.720, 21.460 and 21.770MHz. Reception reports should go to the main address, PO Box 860, Boston, MA 02123.

Nothing has yet been heard out of WWCR in Nashville, Tennessee which, at this writing, is several months behind schedule. The most recent information available indicates tests might have taken pace in April and regular programmes beginning in May, but it is an even bet that this deadline will not be met.

It seems there are still more short wave stations planned or being discussed for the United States! The anti-Castro Cuban American Foundation is unhappy with the programming aired on the government's official Radio Marti broadcasts and so wants to put on a station of its own. New Convenant Educational Ministries also has plans to put a 100kW station on the air from Jacksonville, Florida. Another group wants to establish World News and Information Radio (WNIR) which would relay the programmes of the USA's National Public Radio network to a short wave audience.

Indiana-based religious broadcaster WHRI is now airing a programme called "Radio Libertas", a feature produced by a Croatian group - perhaps the Croatian National Resistance - seeking the establishment of a soverign Croatian state, independent from Yugoslavia. The programme, in Croatian, can be heard from 1600 to 1657 weekdays on 21.840MHz.

Mayin Corea, still a member of the Panamanian Senate but living in exile in the Miami, Florida area is airing an anti-Noriega commentry, weekdays (for about seven minutes) between 0400-0430 over Costa Rica's Radio Impacto on 5.030 and 6.150MHz.

Radio Norte

In the Dominican Republic, Radio Norte in Santiago has appeared on 4.800 and is heard by some listeners around 1000. Prime reception time in Europe would, of course, be around 0000 and later. There are a couple of other Latin stations on or very near this frequency, however. Radio Norte has been active on short wave in past years, though it has been silent for several years. Radio Mil, once commonly heard on 4.930 and also silent for many years, was relayed for a time over Radio Clarin recently but that seems to have been discontinued and only Radio Clarin is heard on the 11.700MHz channel now. Other Dominican stations include the occasionally active Radio Santiago on 9.778 and the religious station Radio Amanacer, which is sometimes well received to 0300 on 6.035MHz.

In Mexico, Radio Mil reappeared briefly on its usual 6.010MHz frequency but the station was active for only a couple of days before it vanished again. Like many of the Mexican short wave outlets it is activated briefly every now and then just to keep the licence in good standing. These are never known about in advance by short wave DXers so the only way to get them is to check frequencies occasionally and rely on luck. Or maybe get tipped off by a fellow listener who might run across one of these stations in an active stage.

Peru

After several years when every week seemed to bring a new station on the air from Peru, activity has slowed greatly in recent months. Those knowledgable about both DXing and Peru indicate this is due largely to the tremendous inflation rates Peru is now suffering - 2000 per cent in 1988 and predictions of 30 000 in 1989! At least one source of Peruvian mint stamps can no longer supply his customers and those in the know about such things are saying it may be a waste of one's time and money to try to send reception reports to that country as things are now.

Only one new station has been reported in the past few months - Radio Nuevo Mundo in Pucallpa on 4.8817MHz, heard in the 1000 and 0100 time frames. Out-of-band Peruvians, Radio Sensacion, on 6.895 and Radio Cutervo on 6.691 are currently well heard most days.

A second transmitter has been installed at Radio For Peace International in Costa Rica. It is rated at 5kW but the station hopes to increase that later in the year. Two of the following three channels should be in use during the station's regular schedule: 7.375, 13.663 and 21.560MHz. Frequencies may vary slightly.

An old/new Colombian station recently reactivated is Radio Reloj in Bogota, now operating on 4.945. This station was active on 4.795 some 20 years ago! It's affiliated with the Caracol network and is part of a large group-owned system. Reports in Spanish may be sent to Apartado Aereo 9291, Bogota, Colombia.

Yours truly had the pleasure of attending the mid-winter SWLFEST February 24-26 which was held near Philadelphia. About 80 radio enthusiasts - both listeners and amateur operators - attended.

Attendees included a number of people who are decision makers for some of the top North American listening clubs, including the North American Short Wave Association, Speedx, Ontario DX Associaiton and Canadian International DX Association. Talks and discussions covered such subjects as pirate and clandestine radio, QSLing, RTTY and facsimile reception. There were several receivers, RTTY and computer-aided monitoring programs on display.

The weekly ANARC s.w.l. net was conducted live on the scene via ham radio. This net exchanges DX tips and other s.w.l. news each Sunday at 1500 on 7.240. Another edition of the SWLFEST is expected to occur in February of next year and any readers who find themselves in North America during the appropriate dates will find the event very interesting and very enjoyable.

That does it for this time. Another "DX Letter From America" in three months. Good listening! □

Abbreviations	
kW	kilowatt
MHz	megahertz
RTTY	**R**adio **T**ele**TY**pe
s.w.l.	short wave listener

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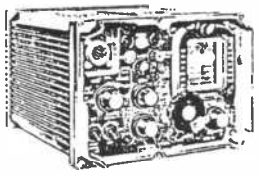

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Callers by appointment only

RALLIES

April 30: The Kelso ARS will be hosting the 6th Anglo-Scottish Rally in the Tait Hall, Kelso. The rally is open from 11am to 5pm. and there will be the usual stands, talk-in on S22, Morse Tests (booked through the RSGB), bar, hot and cold snacks, raffles, etc. Entrance fee is £1, junior ops, YLs and XYLs are welcome and admitted free. For further information, contact: Bruce Cavers. Tel: Kelso 24654.

April 30: The British Amateur Television Club will be holding their 1989 rally in new and larger premises. This year they'll be using the Founders Suite at the Coventry Crest Hotel. This is located on the A46, about 450 metres south of Junction 2 of the M6. There will be the usual wide range of trade stands and demonstrations covering all aspects of both amateur and satellite TV equipment. The hotel training centre has been made available for technical lectures which are to be given in the afternoon. There is ample parking and the rally opens at 10am. Admission is free to BATC members who bring their ticket from CQTV and 50p to non-members.

May 7: The Southend & District Mobile Rally will be held at Roach Way Youth Centre, Rochford, Essex. Doors open at 10am. More details from: Ted G4TUO. Tel: (0702) 202129.

May 21: The "Hobbies Fair" is the first event in the Science Museum's Wroughton 1989 season. As well as radio this event covers a wide range of interesting hobbies and also offers the rare opportunity to see some of the Science Museum's stock of aircraft and other transport items which are stored in the hangers. Wroughton Airfield is south of Swindon, Wiltshire and easily reached by road.

May 21: The Parkanaur Rally, organised by the Mid-Ulster Amateur Radio Club will be held at the same venue as last year, the Silverwood Hotel, Lurgan, Co. Armagh. Doors open at 12 noon and the entrance fee is £1. The usual trade stands, bring & buy, bookstall, QSL Bureau will be there and talk-in will be on S22. Proceeds from this rally go to the Stanley Eakins Memorial Fund, Parkanaur, near Dungannon, so the club hope for a really good turnout of everyone interested in all aspects of radio and electronics.

May 21: The British Telecom South Wales District ARS are holding their first rally at the BT HQ, Coryton, North Cardiff. The site is within 100 metres of Junction 32 on the M4 . There will be the usual licensed bar and catering facilities available.

May 28: The 13th Annual East Sussex Wireless Revival will take place at the usual venue of the Civil Service Sportsground, Straight Road, Bucklesham, Ipswich. That's between Bucklesham Road and Felixstowe Road (now the A1156) and adjacent to the Suffolk Showground. There will be the usual traders, an RSGB book stand, and antenna testing range, Bring & Buy, car boot sale, transceiver clinic, etc., plus non-radio stands, a children's play area and a model flying display. Doors open at 10am. Further information from: Colin Ranson G8LBS, 100 Stone Lodge Lane West, Ipswich IP2 9HR. Tel: (0473) 464047.

May 28: The rally will be at the Maidstone (YMCA) Sportscentre on the A229 at Loose Village. Admission is £1 at 10.30am, but disabled visitors can get in free at 10am. Also free overnight parking with a snack bar, showers, etc. Children's videos and a playroom, GB2YSC active on all bands, ATV demo, beer tent and the usual trade stands. More details from: G6FZD Tel: (0622) 50709.

* SWM in attendance

May 28: Plymouth Radio Club are holding their mobile rally at Plymstock School, Church Road, Plymstock. Doors open at 10am and there is a large, free car park, refreshments, raffle, trade stands, demonstrations and talk-in on S22. Full details from: Joe G1RXR on (0752) 509855.

May 29: The Doncaster Radio Rally will be held at the Bircotes Sports Centre, near Bawtry, Doncaster. This rally is organised by the Doncaster RAYNET Group and they rely on this rally for their source of income to keep the group running.

***June 11:** The Royal Naval Amateur Radio Society's Annual Rally is schedules to be held at HMS *Mercury* again this year. More details nearer the date.

June 11: The Mid Lanark Amateur Radio Society are having their open day at the Community Education Centre, Newarthill, by Motherwell. This is on the A723, 12km south of the Newhouse interchange on the M8. There will be trade stands, bring & buy, demonstrations of packet, RTTY and QRP together with lectures and the award of the Society's annual EHI Trophy. Talk-in is on S22 and refreshments will be available.

June 11: The Elvaston Castle Radio Rally will be held in the showground of the Elvaston Castle Country Park. This is 8km south-east of Derby.

***June 25:** The 32nd Longleat Amateur Radio Rally will be held as usual in the grounds of Longleat House, Warminster, Wiltshire. This rally is always popular as it offers something for the whole family. More details from: Shaun O'Sullivan G8VPG, 15 Witney Close, Saltford Bristol BS18 3DX.

June 30 - July 2: The Popular Flying Association Rally is again being held at Cranfield Aerodrome, Bedfordshire. The rally covers the whole spectrum of sporting aviation from light aircraft through powered gliders and microlights to airband radio. For more details, contact: Popular Flying Association. Tel: (0273) 461616.

July 2: The Newport Amateur Radio Society will be holding their 2nd Grand Surplus Equipment and Junk Sale at Brynglas House, Newport. The event opens at 11am (10.30am for disabled visitors) and it finishes at 4pm. There will be surplus/second-hand equipment and junk stands. From 12 noon to 3pm there willbe an auction held in the main hall of the building. Light snacks and refreshments will be available. Talk-in by GW1NRS on S22. The money raised will go towards training young people in line with Project YEAR.

July 9: The 1989 Droitwich Strawberry Rally will take place at the High School, Droitwich. There will be trade stands, a Bring & Buy, family entertainment and strawberry fields (weather permitting). There is both free entrance and car parking. Details from: Derek Batchelor G4RBD. Tel: Worcester 641733.

***July 15:** The Cornish Radio Amateur Club rally will be held at Richard Lander School, Truro. There will be the usual trade stands, a Bring & Buy, computer displays/demos and refreshments. There is plenty of free parking as well as attractions for all the family. More details from: Rolf Little. Tel: (0872) 72552.

July 23: The Burnham Beeches and Maidenhead & District ARC are staging the sixth McMichael Rally at the Haymill Centre, Burnham, near Slough. Doors open at 10.30am (10.15 for disabled visitors). The CAMRA bar will again be attending. Tea, coffee and food will also be available. There's ample car-parking on site and the car boot sale will be staged again this year. Attractions include radio controlled cars, ATV groups, packet station and the h.f. station GB4MR. Entrance fee is £1 and the car boot area will be £5 per car and driver for the day. Contact: Bob Hearn G0BTY on (0494) 29868.

July 28-31: Dataspace '89 (incorporating the RSGB Data Symposium and the AMSAT-UK Colloquium) will be held at the University of Surrey. Full details and booking forms for tickets and accomodation can be obtained from: Ron Broadbent G3AAJ, AMSAT-UK, London E12 5EQ or RSGB HQ, Lambda House, Cranborne Road, Potters Bar EN6 3JW.

July 30: The Hilderstone Radio Society are holding their rally at Hilderstone College, St Peters Road, Broadstairs, Kent. There will be trade stands a Bring & Buy, a talk-in station, raffle, refreshments a licensed bar, etc. Contacts are: Alan on (0832) 593072 or Ron (0304) 812723.

***July 30:** Scarborough ARS are holding their annual rally at the Spa, on the South Shore Seafront, Scarborough. This is close to the beach and all the entertainment, so there will be something for all the family. Doors open at 11am. There will be trade stands, Bring & Buy, refreshments and bar with talk-in on S22. Details from: G4UQP on (0723) 376847.

***August 13:** Hamfest '89 will be held at the Flight Refuelling Sports Ground, Wimborne, Dorset. Gates open at 10am and there's free car parking as well as overnight camping facilities. The day will feature radio and electronics trade stands, field displays and a craft and gift fair. More details from: Bob G6DUN. Tel: (0202) 479038.

August 13: The annual Derby Radio Rally will again be held in the Lower Bemrose School, St Albans Road, Derby. All the usual attractions will be there including their Monster Junk Sale. More details from Martin G3SZJ. Tel: (0322) 556875.

August 20: The West Manchester Radio Club's Red Rose Summer Rally will be held in the Astley & Tyldesley Miners Welfare, Meanley Road, Gin Pit Village, Astley, Tyledesley, Manchester. More details from: D.R. Camac on (0204) 24104.

August 27: The Galashiels & District ARS are holding their open day at the Focus Centre, Livingstone Place, Galashiels at 11am. There will be trade stands, a bring and buy and all the usual activities. Light refreshments will be available. Talk-in will be on S22. For more details, contact: Jogn Campbell GM0AMB. Tel: (0835) 22686.

If you are organising a rally and would like it mentioned in *Short Wave Magazine*, drop us a line, preferably as soon as you have fixed the date but no later than 6 weeks in advance (mark the envelope "SWM Rally Calendar") and we'll do the rest. Please ensure that you include all details, including such essential information as venue, starting time, special features and a contact for further information.

THIS IS TWO EMMA TOC

Joan Ham
Part 1

The arrival of a letter signed "Eckersley", telling of the writer's visit to the Chalk Pits Museum's Wireless and Communications Exhibition was an opportunity to acquire some first-hand wireless history not to be missed on any account. We accordingly invited Myles Eckersley and his sister Joan Le Grand to visit us again, to talk to us about their famous father. They accepted our invitation, bringing with them a fascinating family scrapbook and documents.

Peter Pendleton Eckersley was born in 1892 into a scientific family. His father was William A. Eckersley AMICE fellow of the Royal Geographic Society, who built railways from Dorset to Italy, Peru, Mexico and East Africa, and was in charge of Thames protection work and sea-wall construction in France. P.P.Eckersley's mother was Rachel Huxley, daughter of the Rt. Hon. Professor T.H.Huxley FRS and aunt to Professor Julian Huxley and Aldous Huxley. One of the first items in the family scrapbook is a booklet entitled *British Engineers* and features William Eckersley.

Peter was a scholar at Bedales school from 1907-11. His elder brother Thomas Lydwell Eckersley first introduced him to wireless when he walked up their garden path and saw Tom winding a very black tube with some bright-green, silk-covered wire.

"What are you doing?" he asked.

"Oh, this is wireless." Tom answered.

His life seems to have been a steady procession of "firsts" from then on. Tom installed some fascinating equipment in their playroom such as induction coils, Leyden jars, ebonite rods, X-ray tubes and galvanometers; Peter was happy to be his "laboratory assistant", arranging shelves and operating switches as required. At that time, wireless was just the sensual pleasure of handling all these lovely objects - a simple delight which stayed with him throughout his life. At Bedales, a progressive school for the time, where scholars were encouraged to investigate things, they were allowed to use a chicken hut in the grounds to build a transmitting station because they wanted to test Sir Oliver Lodge's counterpoise antenna against Marconi's grounded one. They christened this first laboratory, Wavy Lodge, and it had its own proper visitors' book. An early name is Robert Best. Bob Best, an aquaintance of Sir Oliver Lodge, was Peter's lifelong friend and involved with him in the Wavy Lodge experiments. Norah Lodge also signed the book; Sir Oliver's son and three daughters were pupils at Bedales, together with the Prime Minister, Ramsay MacDonald's sons. The brothers dragged their transmitter outside to transmit what must have been the very first sports OB, the results of a 1910 cricket match back to Wavy Lodge. P.P.Eckersley's ambition was fired and he knew with absolute certainty what he wanted from life.

"My ambition was to become a leading man of science, a successful man of business and a dominant figure on politics."

There can have been few schoolboys with such a clear vision of their road ahead, and who followed it with such single-minded dedication to fulfillment.

> Those famous words, followed by "Writtle calling", in a distinctive and much-imitated voice came through thousands of headphones, horn loudspeakers and vibrated many a speaker cone in the heady first days of broadcasting. In his time with Marconi and as Chief Engineer of the BBC, Captain Eckersley became known wherever a wireless enthusiast adjusted cat's whisker on crystal or delicately tuned in his home-built valved receiver.

Royal Flying Corps

WW1 steered him, like so many young school-leavers, into the RFC. He was gazetted 2nd Lieutenant in the special reserve of officers as Assistant Equipment Officer and sent to Salonika, where his interest in wireless experimenting was given full rein. He designed a wind generator to supply power for aircraft transmitters when portable power usually meant a wet-acid battery, obviously hazardous for airborne use. The generator was driven by a Rouget propellor taking its wind from the main aircraft propellor, whilst Lieutenant Eckersley sat with the transmitter on his knees, spotting for the artillery and tapping out Morse to tell them where their shells were landing. The scrap book has a map of the front line, with Lieutenant Eckersley's plots of shell impact sites marked in red ink. He was nearly killed when the Rouget propellor broke away, fouling the aircraft propellor and bringing the plane down. He returned to England and more research, and was later shot down over the Western Front.

By 1917, he was working with others to design duplex wireless telephony for use in aircraft, and was the first person to achieve this breakthrough, which allowed wireless to be used with the simplicity of a telephone. He was at Brooklands aerodrome as a member of the Wireless Experimental Establishment to hear the historic first speech signals from an aeroplane in flight. At the end of the war, Captain Eckersley, his warrant is dated 1 December 1918, joined the Marconi Wireless Telegraph Company at Writtle in charge of technical development in the aircraft department. Two years later, he was head of the design department and was responsible for the first airport transmitter at Croydon aerodrome. The Writtle experimental staff in 1920 included Noel Ashbridge (later Sir Noel, Technical Director of BBC), Rolls Wynne (Chief Engineer of BBC), H.L.Kirke (later Head of Research, BBC) and B.N.MacLarty (Marconi's engineer-in-chief). Myles Eckersley has the distinction of claiming Noel Ashbridge and Rolls Wynne as his two godfathers. The whole team became the "Brains Trust" of British Broadcasting. Captain Eckersley, however, like many pioneers, received public acclaim but never the official recognition which his work so richly deserved.

In 1921 the Postmaster General received an application for a licence to broadcast

"Wavy Lodge" at Bedales school was Peter Eckersley's first laboratory.

Outside Broadcast. With their equipment mounted on a wheeled trolley, Peter Eckersley and Bob Best sending cricket results back to "Wavy Lodge".

THE RST CODE

Readability

R1	Unreadable
R2	Barely readable, occasional words distinguishable
R3	Readable with considerable dificulty
R4	Readable with practically no difficulty
R5	Perfectly readable

Signal Strength

S1	Faint, signals barely perceptable
S2	Very weak signals
S3	Weak signals
S4	Fair signals
S5	Fairly good signals
S6	Good signals
S7	Moderately good signals
S8	Strong signals
S9	Extremely strong signals

Tone

T1	Extremely rough hissing note
T2	Very rough a.c. note, no trace of musicality
T3	Rough, low-pitched a.c. note, slightly musical
T4	Rather rough a.c. note, moderately musical
T5	Musically modulated note
T6	Modulated note, slight trace of ripple
T7	Near d.c. note, smooth ripple
T8	Good d.c. note, just a trace of ripple
T9	Purest d.c. note

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

BROADCASTING BANDS

Band	Frequency Limits	Band	Frequency Limits
Long	150 - 285kHz	**41m**	7.100 - 7.300MHz
Medium	525 - 1605kHz	**31m**	9.500 - 9.775MHz
120m	2.300 - 2.490MHz	**25m**	11.700 - 11.975MHz
90m	3.200 - 3.400MHz	**19m**	15,100 - 15.450MHz
75m	3.900 - 4.000MHz	**16m**	17.700 - 17.900MHz
60m	4.750 - 5.060MHz	**13m**	21.450 - 21.750MHz
49m	5.900 - 6.200MHz	**11m**	25.600 - 26.100MHz

FREE WITH SHORT WAVE MAGAZINE MAY 1989

PULL-OUT SUPPLEMENT

WHAT DOES THAT MEAN?

Your Guide Through the Abbreviations Jungle

by Elaine Richards G4LFM

CONTENTS

In this booklet you will find the answers to most of your questions concerning technical abbreviations. Keep it by you when reading through your books and magazines so that you can refer to it when necessary.

Each section has a table of the most commonly used technical abbreviations, followed by useful addresses and a selection of technical terms applicable to that section's topic.

Good reading!

AIRBAND

a.d.f.	automatic direction finder
a.s.i.	airspeed indicator
a.t.c.	air traffic control
a.t.i.s.	automatic terminal information service
ATP	British Aerospace Advanced Turbo Prop
a.t.s.o.r.a.	air traffic services outside regulated airspace
a.t.z.	aerodrome traffic zone
CAA	Civil Aviation Authority
CAVOK	Cloud And Visibility are OK
com	communication
c.p.l.	commercial pilot's licence
c.v.r.	cockpit voice recorder
D & D	distress and diversion
d.f.	direction finder
d.m.e.	distance measuring equipment
d.v.o.r.	doppler very high frequency onmi-directional radio range
e.t.a.	estimated time of arrival
f.d.r.	flight data recorder
f.i.r.	flight information region
f.i.s.	flight information service
f.l.	flight level
f.o.d.	foreign objects & debris
ft	foot
g.a.s.i.l.	general aviation safety information leaflet
GAVFFS	General Aviation Visual Flight Forecast Service
g.c.c.s.	global command and control system
h.s.i.	horizontal situation indicator
i.a.s.	indicated air speed
ICAO	International Civil Aviation Organisation.
i.f.f.	identification friend or foe
i.f.r.	instrument flight rules
i.l.s.	instrument landing system
i.n.s.	inertial navigation system
i.v.s.i.	instantaneous vertical speed indicator
LATCC	London Air Traffic Control Centre
l.o.m.	locator outer marker
m.a.t.z.	military air traffic zone
mb	millibar
m.d.a.	minimum descent altitude
m.d.h.	minimum decision height
NAT	North ATlantic
NATO	North Atlantic Treaty Organisation
NATS	National Air Traffic Service
nav	navigation
n.d.b.	non-directional beacon
NOTAM	NOTifications to AirMen
o.b.s.	omni bearing selector
PFA	Popular Flying Association
p.p.l.	private pilot's licence
p.t.t.	push-to-talk
RAF	Royal Air Force
r.m.d.i.	radio magnetic direction indicator
r.m.i.	radio magnetic indicator
R/T	radio telephone
r.v.r.	runway visual range
s.c.a.	subsidiary communications authorisation
SELCAL	SELective CALling
s.o.c.	sector operation centres
s.r.z.	special rules zone
s.s.r.	secondary surveillance radar
STCICS	STrike Command Integrated, Communications System
TACAN	Tactical Air Navigation
t.m.a.	terminal manoeuvering area
t.o.t.	time on target
v.d.f.	very high frequency direction finding
v.f.r.	visual flight rules
v.i.t.s.	vertical interval time signal
v.m.c.	visual meteorological conditions
VOLMET	VOLume METeorological reports
v.o.r.	very high frequency omnidirectional radio range
v.s.i.	vertical speed indicator

class....)? I am going to send on this frequency (*or* on....kHz *or* MHz with emissions of class....)?

QSX Will you listen for ....*(callsign(s))* on....kHz (*or* MHz)? I will listen for ....*(callsign(s))* on....kHz (*or* MHz).

QSY Shall I change to transmission on another frequency. Change to transmission on another frequency (*or* on....kHz or MHz).

QSZ Shall I send each word or group more than once? Send each word or group twice (*or* ....times).

QTH What is your position in latitude and longitude *(or according to any other indication)*? My position is.....latitude.....longitude *(or according to any other indication)*.

QTR What is the correct time? The correct time is....hours.

QTS Will you send your callsign for tuning purposs or so that your frequency can be measured now (*or* at....hours) on.....kHz (*or* MHz)? I will send my callsign for tuning purposes or so that my frequency may be measured now (*or* at....hours) on....kHz (*or* MHz).

QTV Shall I stand guard for you on the frequency of ....kHz (*or* MHz) from....to...hours? Stand guard for me on the frequency of ....kHz (*or* MHz) from....to.....hours.

QTX Will you keep your station open for further communication with me until further notice (*or* until.....hours)? I will keep my station open for further communication with you until further notice (*or* until....hours).

QUA Have you new of ....*(callsign)*? Here is news of.....*(callsign)*.

Q-Codes take the form of a question when the code-group is followed by a question-mark.

Some Q-Codes have taken on a more informal meaning in the Amateur Service, and become simply abbreviations:

QRM Interference from other stations
QRN Interference from atmospheric noise or electrical apparatus.
QRO High power
QRP Low power
QRT Closing (closed) down
QRX Wait - Stand by.
QSB Fading
QSL Verification card; confirm contact.
QSO Radio contact
QSY Change frequency
QTH Location

ITU PHONETIC SPELLING ALPHABET

Letter	Word	Letter	Word
A	Alpha	**N**	November
B	Bravo	**O**	Oscar
C	Charlie	**P**	Papa
D	Delta	**Q**	Quebec
E	Echo	**R**	Romeo
F	Foxtrot	**S**	Sierra
G	Golf	**T**	Tango
H	Hotel	**U**	Uniform
I	India	**V**	Victor
J	Juliet	**W**	Whiskey
K	Kilo	**X**	X-Ray
L	Lima	**Y**	Yankee
M	Mike	**Z**	Zulu

INTERNATIONAL Q-CODE

Codes commonly used in the Amateur Service

QRA What is the name of your station? The name of my station is....

QRB How far approximately are you from my station? The approximate distance is....km

QRG Will you tell my my exact frequency (*or* that of....)? Your exact frequency (*or* that of....) is ....kHz (*or* MHz).

QRH Does my frequency vary? Your frequency varies.

QRI How is the tone of my transmission? The tone of your transmission is....(amateur T1-T9)

QRK What is the intelligibility of my signals (*or* those of....)? The intelligibility of your signals (*or* those of....) is....(amateur R1-R5).

QRL Are you busy? I am busy (*or* I am busy with...) Please do not interfere.

QRM Are you being interfered with? I am being interfered with.

QRN Are you troubled by static? I am troubled by static.

QRO Shall I increase transmitter power? Increase transmitter power.

QRP Shall I decrease transmitter power? Decrease transmitter power.

QRQ Shall I send faster? Send faster (....words per minute).

QRR Are you ready for automatic operation? I am ready for automatic operation. Send at ....words per minute.

QRS Shall I send more slowly? Send more slowly (....words per minute).

QRT Shall I stop sending? Stop sending.

QRU Have you anything for me? I have nothing for you.

QRV Are you ready? I am ready.

QRW Shall I inform....that you are calling him on....kHz (*or* MHz)? Please inform....that I am calling him on....kHz (*or* MHz).

QRX When will you call me again? I will call you again at ....hours on....kHz (*or* MHz).

QRY What is my turn? Your turn is number.... *(or according to any other indication.) (Relates to communicaiton.)*

QRZ Who is calling me? You are being called by....on kHz (*or* MHz).

QSA What is the strength of my signals (*or* those of....)? The strength of your signals (*or* those of....) is....(amateur S1-S9).

QSB Are my signals fading? Your signals are fading.

QSD Is my keying defective? Your keying is defective.

QSI I have been unable to break in on your transmission *or* will you inform.... that I have been unable to break in on his transmission on....kHz (*or* MHz).

QSK Can you hear me between your signals and if so can I break in on your transmission? I can hear you between my signals; break in on my transmission.

QSL Can you acknowledge receipt? I am acknowledging receipt.

QSN Did you hear me (*or....callsign*) on....(*or* MHz)? I did hear you (*or.... callsign*) on....(*or* MHz).

QSO Can you communicate with....direct (*or* by relay)? I can communicate with....direct (*or* by relay through....).

QSP Will you relay to....? I will relay to....

QSR Shall I repeat the call on the calling frequency? Repeat your call on the calling frequency; I did not hear you (*or* I have interference).

QSS What working frequency will you use? I will use the working frequency....kHz.

QSU Shall I send or reply on this frequency (*or* on....kHz *or*....MHz with emissions of class....)? Send or reply on this frequency (*or* on....kHz *or* MHz with emissions of class....)?

QSV Shall I send a series of V s on this frequency (*or*....kHz *or* MHz)? Send a series of V s on this frequency (*om*....kHz *or* MHz).

QSW Will you send on this frequency (*or* on....kHz *or* MHz with emissions of

non-directional beacon (n.d.b.): these devices operate in the 190-1750kHz band and although the trend is to replace them with v.o.r., they are still in widespread use. They are non-directional in the sense that their signal is identical no matter which point of the compass you are receiving it from.

directional radar: A v.o.r. beacon simultaneously transmits two signals on the same frequency. At the centre of the beacons antenna complex is a single radiator transmitting a signal that is frequency modulated by 30Hz. Surrounding this is a circle of phased antennas whose transmission is also modulated by 30Hz. On board the aircraft, the phase of the two received signals is compared and depends upon the relative bearing of aircraft from beacon.

instrument landing system (i.l.s.): A radiobeam navigational aid that allows aircraft to find the runway once they are positioned somewhere near the start of the final approach. distance measuring equipment: This is a transponder system with the aircraft sending out a pulsed signal and timing how long it takes for the ground stations reply to be received.

VOLMET: A computer-synthesised voice which, having announced the station to which the listener is tuned, proceeds to recite the weather reports at each of the named airports. When it finishes, it starts all over again.

secondary surveillance radar (s.s.r.): Enables the air traffic controller to see an aircraft's flight level and identity on the radar display screen.

DATA COMMUNICATIONS

a/d	analogue to digital
AMTOR	AMateur Teleprinter Over Radio
a.p.t.	automatic picture transmission
ASCII	American Standard Code for Information Interchange
ASTUR	Atari ST Users on Radio
BARTG	British Amateur Radio Teledata Group
BBS	Bulletin BoardSystem
CCIR	International Radio Consultative Committee
CCITT	International Telegraph and Telephone Consultative Committee
c.p.u.	central processing unit
CRUG	Commodore Radio Users Group
DCE	Digital Communications Experiment
d.i.l.	dual in line
EPROM	Erasable programmable read only memory
FAX	Facsimile
f.s.k.	frequency shift keying
IARU	International Amateur Radio Union
INFODUTCH	INFormation Of Direct Use To Computer Hobbyists
i.o.c.	index of co-operation
ITU	International TelecommunicationsUnion
m.p.u.	microprocessor unit
PDSL	Public Domain Software Library
p.p.m.	parts per million
RAM	Random Access Memory
r.f.i.	radio frequency interference.
RIG	Remote Imaging Group
r.i.t.	receiver incremental tuning
ROM	Read Only Memory
r.p.m.	revolutions per minute
RSGB	Radio Society of Great Britain
RTTY	Radio TeleTYpe
SARUG	Spectrum Amateur Radio Users Group
SITOR	SImplex Telegraphy On Radio

SSTV	Slow Scan TeleVision
TDM	time division multiplexing
TNC	Terminal Node Controllers
TOR	Teleprinter Over Radio
t.t.l.	transistor-transistor logic
TV	TeleVision
WEFAX	WEather Facsimile

central processing unit (c.p.u.): The unit containing the arithmetic, logic and control circuits which direct and co-ordinate the operation of the computer and the peripheral devices

FAX: The process of scanning a still picture to obtain corresponding electrical signals which can be used locally or remotely to produce a recorded likeness of the picture.

time division multiplex (t.d.m.): A multiplex system in which each signal is allowed use of the communications path for a short time interval. Usually there are a number of signals and they use the path in turn.

Public Domain Software Library
Winscombe House
Beacon Road
Crowborough
Sussex TN6 1UL

ASTUR
Michel Geeraert
W. Elsschotlaan 21
B-8460 Koksijde
Belgium

CRUG
Simon Lewis GM4PLM
69 Irvine Drive
North Clippens
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BARTG
Mrs P Beedie GW6MOJ
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Salem
Llandeilo
Dyfed SA19 7NP

SARUG
Paul Newman G4INP
3 Red House Lane
Leiston
Suffolk IP16 4JZ

SHORT WAVE LISTENING

AFRTS	Armed Forces Radio & TV Services
ANARC	Association of North American Radio Clubs
ARC	amateur radio club
ARS	amateur radio society
ATV	amateur television
Band I	45 - 68MHz
Band II	87 - 108MHz
Band III	E5 - E12 (175 - 230MHz)
Band IV	471 - 608MHz
Band V	615 - 856MHz
BBC	British Broadcasting Corporation
BC	BroadCast
BDXC	British DX Club
BST	British Summer Time
CB	citizen's band
CEPT	Conference of European Posts Telecommunications Administration
Ch.	Channel
c.i.o	carrier insertion oscillator
dB	decibel
d.s.b.	double sideband
c.w.	continuous wave (Morse)
DSWCI	Danish Shortwave Clubs International
DTI	Department of Trade & Industry
DX	"long distance"

SATELLITES

AMSAT	AMateur SATellite organisation
a.o.s.	aquisition of signal
a.p.t.	automatic picture transmission
DBS	direct broadcast satellite
ESA	European Space Agency
l.o.s.	loss of signal
NASA	National Aeronautics & Space Administration
NOAA	National Oceanic & Atmospheric Administration
OSCAR	Orbiting Satelite Carying Amateur Radio
RIG	Remote Imaging Group
UoSAT	University Of Surrey SATellite (OSCAR 10)
WEFAX	WEather Facsimile

AMSAT-UK
Ron Broadbent G3AAJ
94 Herongate Road
Wanstead Park
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NASA
Public Relation Department
Washington DC, 20456
USA

TELEVISION RECEPTION

ATV	amateur television
Band I	45 - 68MHz
Band II	87 - 108MHz
Band III	E5 - E12 (175 - 230MHz)
Band IV	471 - 608MHz
Band V	615 - 856MHz
BATC	British Amateur Television CLub
BBC	British Broadcasting Corporation
b/w	black & white
Ch.	channel
FSTV	Fast Scan Television
IBA	Independent Broadcasting Authority
NTSC	National Television Standard for Color (US Colour TV Standard)
PAL	Phase Alternate Line (Colour TV Standard)
r.c.c.b.	residual current circuit breaker
SECAM	(French Colour TV Standard)
SSTV	Slow Scan TeleVision
TV	television
TVI	television interference
v.c.r.	video cassette recorder
WRTH	*World Radio TV Handbook*

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kHz	kilohertz
km	kilometre
kW	kilowatt
l.c.d.	liquid crystal display
l.e.d.	light emitting diode
l.f.	low frequency
l.o.	local oscillator
l.s.b.	lower sideband
l.t.	low tension
l.w.	long wave
m	metre
mA	milliampere
m.c.w.	modulated continuous wave
m.f.	medium frequency
MHz	megahertz
mm	millimetre
m.o.s.f.e.t.	metal oxide silicon field effect transistor
ms	millisecond
mV	millivolt
mW	milliwatt
m.w.	medium wave
n.b.f.m.	narrow band frequency modulation
nF	nanofarad
ns	nanosecond
N-type	coaxial connector system
p.c.b.	printed circuit board
p.d.	potential difference
p.e.p.	peak envelope power
pF	picofarad.
p.l.l.	phase locked loop
p.m.r.	private mobile radio
p.p.m.	parts per million
p.s.u.	power supply unit
RAM	Random Access Memory
r.c.c.b.	residual current circuit breaker
r.d.s.	radio data systemn
r.f.	radio frequency
r.f.c.	radio frequency choke
r.f.i.	radio frequency interference
r.i.t.	receiver incremental tuning
r.m.s.	root mean square
ROM	Read Only Memory
R/T	radio telephone
S + N/N	ratio of Signal + Noise to Noise
s.h.f.	super high frequency
SINAD	(SIgnal + Noise + Distortion) to (Noise + Distortion)
Sp-E	Sporadic-E
s.s.b.	single sideband
s.w.	short wave
s.w.g.	standard wire gauge
s.w.l.	short wave listener
s.w.r.	standing wave ratio
t.h.d.	total harmonic distortion
t.r.f.	tuned radio frequency
t.t.l.	transistor-transistor logic
TV	television
u.h.f.	ultra high frequency
u.s.b.	upper sideband
V	volt
v.c.o.	voltage controlled oscillator
v.f.o.	variable frequency oscillator
v.h.f.	very high frequency
v.l.f.	very low frequency
v.s.w.r.	voltage standing wave ratio
W	watt
w.b.f.m.	wide band frequency modulation
w.p.m.	words per minute
µA	microampere
µF	microfarad
µH	microhenry
µV	microvolt
µW	microwatt
Ω	ohm
°C	degrees Celsius

BAEC
Mr C. Bogog
Dickens
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Penarth
South Glamorgan

DXAGB	DX Association of Great Britain
DXCC	DX Century Club
DXNS	*DX News Sheet*
e.c.s.s.b.	exalted carrier single sideband
EDXC	European DX Councilt
Es	Sporadic-E
FCC	Federal Communications Commission (USA)
g.c.	general coverage
IBA	Independant Broadcasting Authority
IFRB	International Frequency Registration Board
ILA	International Listeners Association
ILG	International Listening Guide
IRC	International Reply Coupon
i.s.b.	independent sideband
ISWL	International Short Wave League
ITU	International Telecommunications Union
JOTA	Jamboree on the Air(Scouts)
l.s.b.	lower sideband
m.u.f.	maximum useable frequency
n.b.f.m.	narrow band frequency modulation
p.m.r.	private mobile radio
OM	"old man"
PO	Post Office (usually PO Box No.)
QTHR	"radio amateur's address is in the latest Callbook"
RAE	Radio Amateur's Examination
RAIBC	Radio Amateur Invalid & Blind Club
RAOTA	Radio Amateur Old Timer's Association
RAYNET	Radio Amateur Emergency NETwork
r.i.t.	receiver incremental tuning
RO	radio operator (officer)
RSGB	Radio Society of Great Britain
RX	receiver
s.i.d.	sudden ionospheric disturbance
SLT	ship's letter telegram
Sp-E	Sporadic-E
s.s.b.	single sideband
t.r.f.	tuned radio frequency
TX	transmitter
u.s.b.	upper sideband
v.c.o.	voltage controlled oscillator
VOA	Voice of America
v.s.w.r.	voltage standing wave ratio
WAB	Worked All Britain (award scheme)
WARC	World Administrative Radio Conference
WRTH	*World Radio TV Handbook*
XYL	"wife"
YL	"young lady"

maximum usable frequency (m.u.f.): In radio wave propagation via the ionosphere the m.u.f. is the highest frequency that can be used between two points at a particular time.

sudden ionospheric disturbance (s.i.d.): A short-lived abnormal increase in the D and E regions of the ionosphere resulting in a sudden radio fade-out.

tuned radio frequency (t.r.f.): A receiver system in which all amplification of the received radio signal prior to detection is made at radio frequency.

audio frequency (a.f.): A frequency, in the range 0 - 18kHz, of a sound wave audible to the human ear.

amplitude modulation (a.m.): Where the *instantaneous amplitude* of the carrier is proportional to the instantaneous value of the modulating wave.

beat frequency oscillator (b.f.o.): A variable-frequency oscillator whose output can be mixed with that of the final i.f. amplifier in a superheterodyne receiver to produce an audio frequency beat when the receiver is tuned to an unmodulated signal.

effective radiated power (e.r.p.): The product of the power supplied to an antenna and its relative gain in a given direction with respect to a half-wave dipole.

frequency modulation (f.m.): Where the *instantaneous frequency* of a constant amplitude carrier is proportional to the instantaneous value of the modulation and the *rate of change of frequency* is proportional to the amplitude of the modulation.

modulated continuous wave (m.c.w.): A carrier wave modulated by a steady audio frequency tone.

liquid crystal display (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 pattern can be obtained.

single sideband (s.s.b.): A method of operation in which either the upper or lower sideband of an a.m. signal is transmitted, the unwanted sideband being filtered out. The carrier may be partially or wholly suppressed.

short wave listener (s.w.l.): A term used to describe anyone who is a listener to radio signals for hobby purposes. It's no longer only applied to those who listen on the short wave bands.

superheterodyne: A receiver system in which the received radio signal is mixed with the output of a local oscillator so as to provide a constant intermediate frequency which is then amplified by the tuned intermediate frequency amplifier stages prior to detection.

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Hampstead
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601 North Fairfax Street
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Alexandria
Virginia 22314
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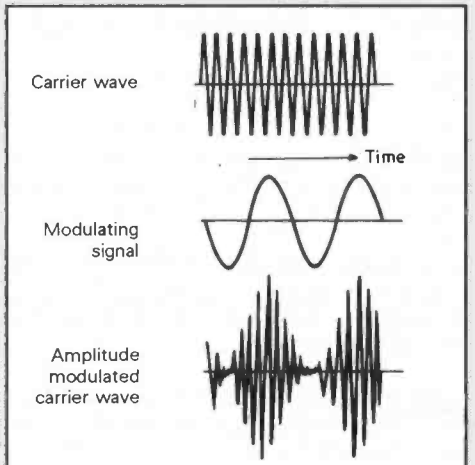
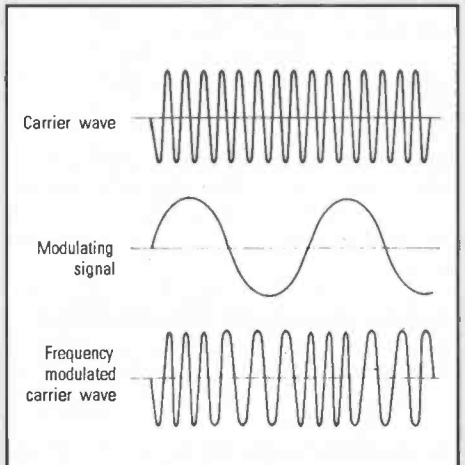


Amplitude modulation of a carrier wave

Fig. 1



Frequency modulation of a carrier wave.

Fig. 2

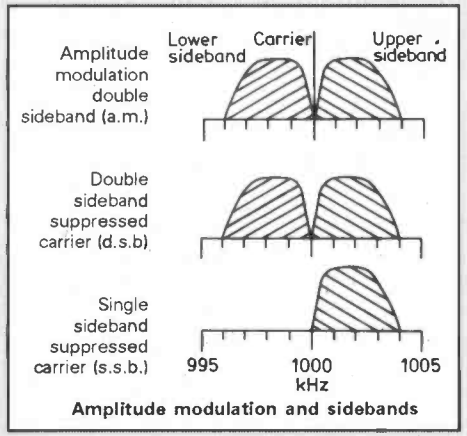
ISWL
Yvonne Blain
167 Wombridge Road
Trench
Telford
Shropshire
TF2 6QA

Medium Wave Circle (publish *MWN*)
Harold Emblem
137a Hampton Road
Southport
Merseyside PR8 5DY

BDXC
Colin Wright
54 Birkhall Road
Catford
London SE6 1TE

ILA
1 Jersey Street
Hafod
Swansea
SA1 2HF

DSWCI
c/o Bent Nielsen
Betty Nansens Ave 49
DK-200 Frederiksberg
Denmark



Amplitude modulation and sidebands

Fig.3

RADIO DATA

A	ampere
a.c.	alternating current
a/d	analogue to digital
a.f.	audio frequency
a.g.c.	automatic gain control
a.m.	amplitude modulation
a.t.u.	automatic tuning unit
ATV	amateur television
BAEC	British Amateur Electronics Club
BCI	BroadCast Interference
b.f.o.	beat frequency oscillator
BNC	coaxial connector system
cm	centimetre
c.r.t.	cathode ray tube
c.t.s.s.	continuous tone signalling system
c.w.	continuous wave (Morse)
d.a.m.	dynamic amplitude modulation
dB	decibel
dBi	decibel relative to an isotropic source
dBm	decibel relative to one milliwatt
d.c.	direct current
d.i.l.	dual-in-line
d.m.m.	digital multimeter
d.s.b.	double sideband
DX	"long distance"
EPROM	Erasable Programmable Read Only Memory
e.r.p.	effective radiated power
Es	Sporadic-E
f.e.t.	field effect transistor
f.m.	frequency modulation
f.s.d.	full scale deflection
f.s.k.	frequency shift keying
GHz	gigahertz
h.f.	high frequency
h.g.	harmonic generator
h.t.	high tension
Hz	hertz
i.c.	integrated circuit
i.c.w.	interrupted continuous wave
i.f.	intermediate frequency
i.f.t.	intermediate frequency transformer
i.s.b.	independent sideband
kg	kilograms

THIS IS TWO EMMA TOC

telephony, supported by the RSGB and many radio societies around the country, eager to have this permanent signal by which to calibrate their sets. Five months later, very limited broadcasting was permitted on 700 metres with 250 watts on Tuesday evenings from 8 - 8.30pm. By the following February, the first historic broadcast was made on a wavelength changed to 400 metres in the following month. The broadcasts went out weekly and after every 10 minutes there was a 3 minute close-down for "legitimate PO transmissions."

Rhymes

It was then, that the famous "Hello CQ. Hello CQ. This is Two Emma Toc. Writtle calling." was first heard. It was usually followed by an announcement of a record, the music was played on a mechanical gramophone with the microphone held to its horn. Then there was a retrospective announcement of the record, followed by the obligatory, "We are now closing down for three minutes, when transmissions will resume." and the three minutes' silence. Capt. Eckersley was responsible for transmissions, heading the design team engineers, and was probably the first and last chief engineer/performing artist. He had an unerring instinct for popularising a new and esoteric science, and enjoyed relaxed informality and deflating pomposity. This he combined with a warm, extrovert personality and a wicked talent for composing Lear-type verses at the drop of a hat. He left the engineers to manage things in general, whilst he went home to listen to reception, but on one particular night, well primed with the local beverage, he abandoned the records and announced that he was going to recite. Surprised listeners heard through their headphones;

"Hey diddle didrode,
Two grids in one quadrode
The outer one forming the plate.
The electrons got muddled
With so many grids
But the final mu value was eight."

Opus followed opus with a cavalier disregard of the obligatory three-minute silences as he was carried away by his performance, well past the bare half-hour allowed. Finally, he signed off with a song at the piano to a famous tune;

"The concert's ended now, sad wails the heterodyne
You must switch off your valves, I must switch off mine.
Write back and say you heard me, your hook up and where and how.
Quick! for the engine's failing fast. Goodbye, Goodbye."

This was not what the company was licenced for, and he admitted to being slightly taken aback when told afterwards what he had said! The Writtle team waited uncomfortably for the heavens to descend on them, but he had swept the cobwebs out of the laboratory and siezed his listeners' attention. Of the many postcards received, only one was critical, and that came from the publicity department of Head Office! The general tenor was "Please give us more!"

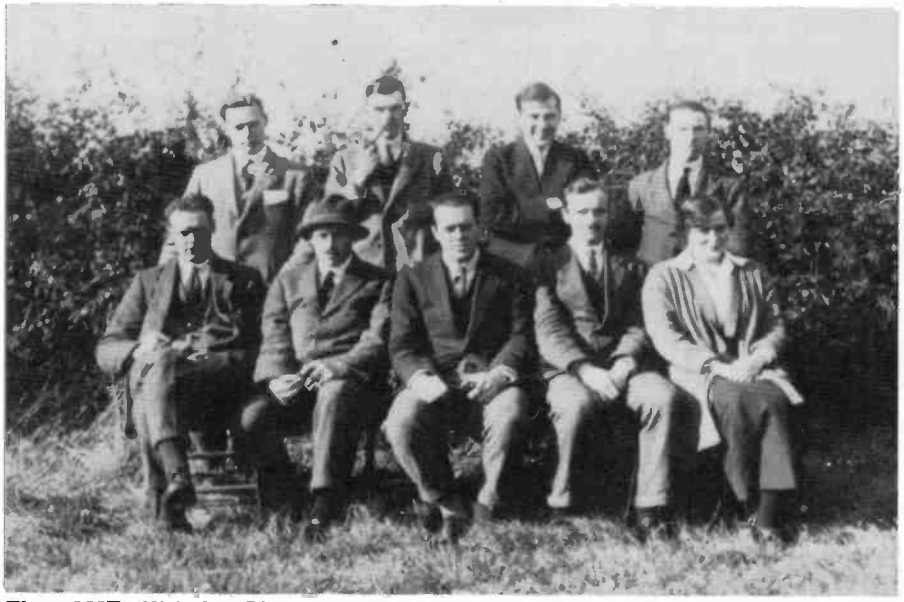
Peter Eckersley inside "Wavy Lodge".

Writtle became a highly sought-after signal among afficionados who would avidly tune in everything from ships' Morse and time signals, to experimental stations, and even after the advent of 2LO, Writtle was always the popular station. Captain Eckersley evoked those early days of wireless perfectly when he said,

"If you had wireless as an amateur that had never done anything but, parp, parp, par, par, par, parp, suddenly you heard a voice or even music - well,it was fascinating!"

The 2MT team introduced drama to broadcasting by sitting around a kitchen table in a hut and reading a scene from *Cyrano de Bergerac*. Capt. Eckersley read Cyrano in company with Ben Travers, his sister Agnes and the others. They had one microphone passed from one speaker to another, which they rehearsed beforehand with a spoon standing in for the microphone and they had practised so that their scripts did not rustle or the microphone drop in its travels.

Perhaps his flair for drama was foreshadowed in the scrap book mementoes of Bedales where three play programmes are preserved. In 1903, *A Midsummer Night's Dream* included Tom Eckersley as Snug the joiner, and Peter as one of the fairies. By 1908 when the school production was *Twelfth Night* he played Sir Toby Belch, and in the 1909 performance of *The Merchant of Venice* he starred as Shylock. Peter's school report for music said that he was good, and had "several times taken the choir for me and has done well." His singing at the piano remained a popular feature from 2MT, and on one occasion after a record of the tenor Melchior had been played, a listener wrote in to say it was the finest imitation of an opera singer that Capt. Eckersley had ever done! The whole thing was fun and a great adventure for listeners and engineers alike from beginning to end. □



The 2MT Writtle Pioneers. Back row (L-R) B.H.MacLarty, H.L.Kirke, R.T.B.Wynne, H.J.Russell. Front Row (L-R): F.W.Bubb, Noel Ashbridge, P.P.Eckersley, E.H.Trump, Miss E.M.Beeson.

DRAKE R-4C

Ken Michealson G3RDG
Part 2

Ken Michealson continues with his appraisal of the vintage Drake R-4C receiver.

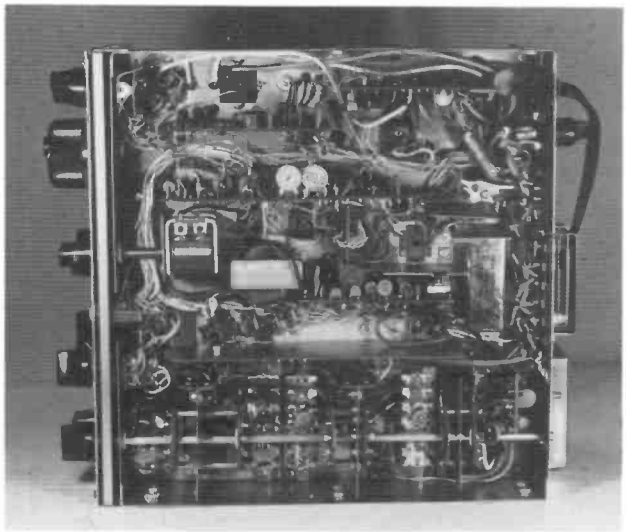
Mention was made previously about modes CW 1.5, CW .5 and CW .25. These three modes would give greater selectivity on c.w. by the insertion of the crystals concerned. However, they were not fitted in the review unit so I am unable to comment on them. There were up to 15 additional tuning ranges available, each 500kHz wide, by fitting the appropriate crystals in the accessory crystal sockets at the top of the rear panel. With the exception of the band from 5.0 to 6.0MHz, these additional ranges could be anywhere between 1.5 and 30MHz. A full list of the crystals required, together with the bands they cover, is given in the instruction manual. Only the five amateur band crystals were supplied as standard, and were the only ones fitted in the review set. Crystal selection is with the 16 position XTALS switch mentioned above. The switch has a window to the right of centre, through which one can see which crystal is in use. However, when the knob is turned to the NORMAL position the window is blank, but the proper crystals for the various amateur bands are selected by the BAND switch, (except the 1.5MHz setting). The numbered positions of this switch correspond to the accessory crystal sockets on the rear panel, so that when the switch is turned to a certain position the crystal in the socket having the same number is brought into circuit. The range window provides a convenient place to write in the frequency covered in each accessory band when the crystals are installed. However, when operating on out of band frequencies, care has to be taken in using the preselector and settings should be taken from a chart shown in the instruction manual.

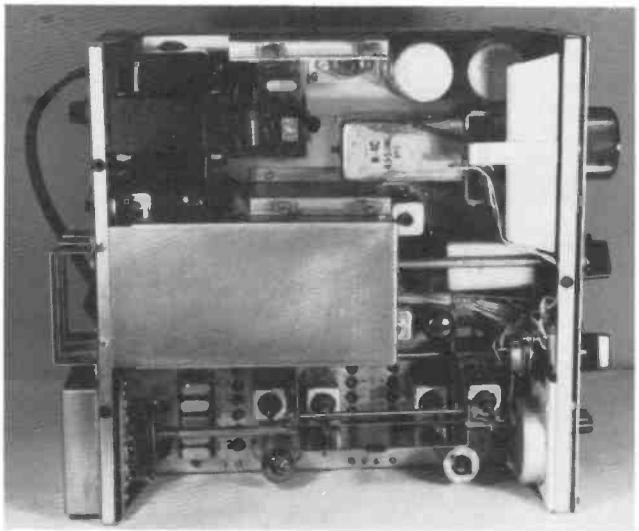
The R-4C performs very well when compared with modern receivers, such as the Icom IC-R71E, which uses a microprocessor-controlled phase locked loop, (p.l.l.), consisting of two loops for the local oscillator, giving greater stability. The R71E's basic circuit uses an up-conversion with a first i.f. of 70.4515MHz and a second i.f. of 9.0115MHz. In the days when the Drake R-4C was designed, there was no idea of using a microcomputer to control a receiver and, as far as I know, a phase locked loop wasn't thought of either. There is an r.f.amplifier in both sets, but whereas the R-4C has to be tuned on the desired band by the PRESELECTOR control, the R-71E has a bandpass filter for each 1MHz band covered. In addition, at this stage it has a pre-amplifier and an attenuator. The R-4C uses a simple mixer, a 6EJ7, whereas the R71E has a double balanced mixer. Even in the early stages of the receivers a difference is noticeable in the operation of the two units. There is a very effective notch filter on the R-4C which, when used with the "passband tuning" control, is a great aid to removing an unwanted carrier. The two controls should be used together, the passband tuning being set first. After adjusting the "notch" the p.b.t. may be trimmed to fine tune the "notch". But nevertheless, when I change from one receiver to the other the technological advances made over the last ten years are very noticeable, rather like comparing a vintage car to its modern counterpart. With the R71E, you either key in the desired frequency or read it directly off the display, with the R-4C you have to mentally work out how much to add on to the dial readings and set the p.b.t. and/or the "notch" together with the PRESELECTOR,

As for maintenance and servicing of the R-4C, full alignment instructions, together with voltage and resistance charts are given in the owner's manual. Two clear photographs of the top and bottom views are also supplied with all the relevant parts distinctly labelled. The chassis is steel, and there is plenty of room to get into the various points for checking. This is very different to the IC-R71E as well as many other present day rigs, and is a point in the Drake's favour. The operating controls, too, move with a healthy "clunk". There is no provision for friction drag, as on the R71E, but it would appear that the gearing and precision of the shafts is, in itself, sufficient to give the required feel.

I used the R-4C for about two months and at the end of that time I had grown fond of it. It took several days before I felt at home with the controls, but once having familiarised myself with them, I felt able to concentrate on the business of copying stations. When the "notch" filter and "p.b.t." are used correctly, it is quite a surprise to find that an offending station can be made to vanish. I must admit that the "p.b.t." of the Icom is easier to use, but there is no doubt but that the Drake has the necessary qualities for coping with difficult reception conditions. I spent some time in the evenings on the particularly noisy 7MHz band, and found that I could copy most of the stations that I heard. Both AMTOR and packet transmissions were decoded through my PK-232 as well as some RTTY stations. As I mentioned, the p.b.t. worked well, and I feel that without this facility I would have found the operation much more difficult, Top Band was of little interest to me, as my antenna is unsuitable, but 3.5MHz (80 metres) provided a number of interesting stations. For a newcomer to the hobby, or a short wave listener, I would think that an investment in an R-4C would be preferable to the purchase of a bottom of the range new receiver and, in fact, it is still a much wanted unit amongst old hands in amateur radio.

Thanks are due to Jim Chambers, G4IBK, for the loan of his R-4C for this review. □





ADMIRALTY HF DIRECTION-FINDING STATION, GOONHAVERN

Andy Thomas

It is well known that Britain mounted a major effort during the Second World War to both intercept and analyse Germany's military communications. In this article Andy Thomas reveals that the identity of some vital war-time intelligence stations has remained secret until very recently.

Radio interception stations were set up during the war by the Services, under the control of the Government Code and Cypher School (GCSS) - which, after hostilities ended, became the Government Communication Headquarters (GCHQ). Although there is now no state of war it is a safe bet that interception of radio messages still continues, with Warsaw Pact countries being the prime area of interest.

But there is more to the story. Admiralty records recently de-classified under the 30-Year Rule show that there were, until the late 1950s at least, a number of h.f. direction-finding stations, the existence of which has never been discussed before. One of these was at Goonhavern in Cornwall, and is described below.

The de-classified papers describe an organisation called the Admiralty Civilian Shore Wireless Service. After 1945, ACSWS performed the signals intelligence duties for the Royal Navy, both at home and overseas. In 1956, which is the most recent date of the de-classified papers, there was a proposal to make the ACSWS a uniformed part of the Navy, but the idea was abandoned and sometime after that date, it seems, ACSWS was absorbed into GCHQ.

According to these papers, the Admiralty h.f. direction-finding system consisted of a chain of four radio interception stations. The main station was at Irton Moor, Scarborough (more recently named as a GCHQ station specialising in listening to Soviet trawlers), which controlled the other three stations at Goonhavern, Ford End near Chelmsford and Bower near Wick, Northern Scotland. Goonhavern is a small village on the main road to Land's End, at the top of a hill leading down to the sandy beaches of Perranporth and Penhale on the northern coast of Cornwall. Not too far away are other military establishments, such as RAF St Mawgan, from where Nimrods fly on maritime patrol, and RAF Portreath, the radar station covering the Western Approaches. The Ordnance Survey map shows two installations, helpfully called "Masts", and these were visited by the author in 1987.

The Goonhavern Site

The two installations are almost identical. Site 1 is at reference SW777543 and Site 2 at SW796545. Both are on farming land, and at the time of my visit one was protected by a herd of bullocks and the other by growing wheat; Site 2 is the better preserved (Fig. 1). From observations made at the sites it is possible to deduce the way the h.f. d.f. system worked.

The typical site consisted of a sand-covered circle of land fenced off from the surrounding land, with an enclosed track leading to it. At the perimeter of the sand circle was a small shed composed of two halves, evidently a toilet and a store. Outside was a wooden bridge, about half a metre above the sand circle, leading to another hut at the centre of the circle.

Outside the central hut, midway along each wall, was a mast base - four masts in total. These bases were connected by copper braid to the ground under the sand and an entry into the wall evidently brought the feeder cables into the hut; a ring of concrete guy bases surrounded the masts and the hut. A large pit could be seen inside the hut at Site 2, the other hut being locked. The external dimensions of the circle varied slightly between the sites: at Site 1 the distance between the mast base and the guy bases was 5 paces, but at Site 2 it was 3 paces, and at Site 1 the radius of the circle from the mast was 25 paces while at Site 2 it was 15 paces. At both sites the distance between the guys was some five paces. Also near Site 2 was another deserted building which had evidently taken power from the silent electricity sub-station nearby; the power sockets were labelled "Site No 2", "Essential", "Lighting" and "Stand By".

Adcock DF

From this description it is clear that the two sites each housed a d.f. station of the Adcock type, standard during the war, and Fig. 2 shows what the installations would have looked like when active. At each side of the hut there was a 10m high mast holding a monoplane antenna, four in all, and above the hut was a central wire antenna for sense determination. The direction of the signals was determined by comparing the signal received at each antenna using either mechanical or electronic means.

The Goonhavern installations were evidently of the buried U-type Adcock variety, where the feeder cables from the ends of the monopoles passed under a ground shield before entering the hut - which probably accounts for the sandy base there today. The archetypal Adcock used dipoles, not monopoles, but all the h.f. Adcocks were monopole or U-type.

Goniometer

The electro-mechanical way of analysing the incoming signal relied on the use of a goniometer, a device powered by an electric motor, situated inside the hut, which electrically simulated the physical rotation of the antennas (the site for this could have been the pit inside the hut). Operators would determine the direction of the target transmitter by tuning to the loudest sound. Later in the war a cathode ray tube device was invented which indicated the bearing on a 360° dial.

However, individual Adcock stations were only accurate to about 8°, which could cause great problems with longer distances into the North Atlantic. A number of experiments were conducted by the Admiralty into making Adcock arrays more effective. Essentially, two or more Adcock stations were grouped together to analyse the incoming wavefront over a broader area. Another experiment involved Adcock antennas configured as an interferometer: this entailed separating two arrays by a multiple of the wavelength being intercepted, the multiple reflecting the electrical characteristics of the arrays. For two Adcock arrays a separation of around 18 to 30 wavelengths can be calculated from data given in the professional literature.

Regarding the Goonhavern installations, the horizontal distance between the two sites

Fig. 1

☞52

SEEN & HEARD

AMATEUR BANDS ROUND-UP

Paul Essery GW3KFE

PO Box 4, Newtown, Powys SY16 1ZZ

Do you use a computer in your Shack? There is an enormous potential for the computer in areas other than packet. For example, greyline propagation, to tell us what time to hunt the real DX on Top Band; contest log-keeping, particularly with reference to duplicates, and scoring; sorting listings to suit the particular requirements; antenna design; c.w. RTTY, or AMTOR decoding; Morse training; smarting up one's operating skills (The "Doctor DX" program for example); circuit design; and much more.

However, there is a snag for most of us, and that is the electrical noise the things kick up! The simpler machines which use a domestic TV set as a monitor have the infernal line-timebase every 15kHz or so; then there is always a "clock" oscillator to drive everything, and of course there are sharp leading and trailing edges of pulses up all the time.

So what can you do? Screening the inside of the case with conductive paint or even sticking foil, earthed of course, to the inside of the case is a start but you'll probably find the device is built upon the premiss that an earth mustn't be seen within two metres. The leads can be screened, or you may get away with the trick of wrapping some turns of the computer's mains lead around a ferrite ring where it leaves the case, plus the use of a ferrite ring applied to the lead between computer and TV.

Further improvement can often be obtained by doing similar things to the station receiver though to be sure you must always assume suppression at source is the most important. In general terms, the same instructions go for the more advanced machines where you have a dedicated screen rather than a TV, but you still need to be careful. For example, I have an Amstrad 8512 which is little trouble, but the Amstrad 9512 here is totally different; every time its disc drive operates, the two-metre receiver, which normally sits, squelched, downstairs listening for activity on channel R7, lets out a mighty growl of sound. Our compromise here is that I stick to the 8512 for computing! This machine too has a fair amount of RAM built in; most of the small machines don't have enough of this memory.

But, of course, this is part of the universal r.f. pollution problem. When I first came into amateur radio, man-made interference was little more than QRM from other stations; since almost everyone used c.w. most of the time, it wasn't too bad save for the slight whistle from a local s.w.l. listening to the same station on his regenerative receiver. Next more people started using a.m. telephony, with the consequent cacophony on our bands as carrier whistles interacted — but s.w.l.s could hear us without knowing Morse. Then came the spread of a.c. mains electricity followed by WW2, then the enormous growth in TV and consumer electrical goods. The house in which I grew up was well-equipped — one power point downstairs and one upstairs. This was great from the QRM point of view of course; if you were using the power point upstairs and the domestic wireless set the other one downstairs then nothing else in the house could kick up a noise!

Even the early TV sets weren't too much bother, since the line timebase only had to scan a small angle, as c.r.t.s. were smaller and longer. Things like electric can-openers, electric drills and the rest weren't heard of, the fruit machine was never installed in a pub, and anyway was 100 per cent mechanical. About the noisiest thing around was a vacuum cleaner or the street lighting if your road happened to be lit by the blue or orange lights — for most of us there were ornate gas lamps or occasionally electric ones, all on cast metal columns to light the way home, and of course all of these went out anyway in WW2. On the other hand, petrol driven cars and lorries were all totally unsuppressed, though steam was still to be seen and the odd bus might by 1939 have had a diesel engine. Trams must have been quite noisy, though the writer lived a mile or more from the nearest tram terminus the flashes from the overhead pick-up were quite bright when they occurred.

Nowadays, they would probably go undetected under the general noise level. Even in the 1950s one recalls that the first G-ZL Top Band contact was made using an HRO modified to operate on 50 volts h.t., by a station in the West Country who reckoned his QTH didn't have mains electricity coming within several miles to carry noise to him! For s.w.l.s, those were indeed the days!

Letters

Eric Chapman (Jersey) wonders whether there has ever been a legitimate operation from Albania. I recall two that were said to be legitimate, and the ZA2RPS operation of 1970 was considered to be legitimate by ARRL for DXCC credit. However, so far as I'm aware that was the only one to be accepted. Having said all of that, I do know of at least one UK amateur having a ZA QSL card actually bearing a Tirana postmark. The Albanian authorities have always been anti-amateur radio so I doubt if the ZA2RPS or any other Albanian operation was ever properly licensed; and of course it is only in more recent years that the serious checking of the credentials of stations claiming to be in rare spots has occurred. So, even if someone has a ZA QSL card that has been accepted for DXCC credit, I still doubt if there has ever been a proper, legal, ZA operation since WW2 — though to be fair I would love to be proved wrong! On the other hand, this very week I hear a buzz that a Dutch station is involved in serious negotiations for operating permission. Our advice over all this is to log any ZA stations you may come across, but don't bother to waste postage on a report unless and until you are certain that it has been accepted as a DXCC country — which means seeing a statement in a magazine confirming that cards may be sent off by the transmitting types for DXCC credit! As the DX transmitters say WFWL — work 'em first, worry later!

The Laccadives operation must be one of the slowest operating expeditions ever, but at the time of writing I hear that from March 21 another station will be taking over and hopefully things will liven up.

Award

This one is of considerable interest to keen s.w.l.s: the G2DX Memorial Award requires you, while you remain in your own continent, to hear 100 countries as defined by the RSGB countries list which lies outside one's own continent. Only loggings after March 1986 are valid; transmitters of course to work them. The Award costs some £2.50 sterling, $5 US or 8 IRCS, and you have to send the usual list of the various hearings, certified by a leading club official or two licensed amateur operators. All the details from I. Ireland, 118 Mytchett Road, Mytchett, Camberley, Surrey GU16 6ET, if you send him an s.a.e. This is the first Award of this sort I have ever felt to be worth going after, as the difficulty level is high enough to make it worthwhile, even for an s.w.l.

Museums

The Wireless Museum on the Isle of Wight is at present looking in particular for old leaflets, such as were being given away at radio shows years ago, and similar items to add to the Museum's collection. Incidentally it has become associated with the military collection held by Dr. Winbolt, under the aegis of Portsmouth City Museums with help from Victory Radio and South Hampshire Industrial Mission; so doubtless other items would be of interest.

Another Award

Just a reminder on this one; The Worked all Britain Awards are available to s.w.l.s on a "heard" basis; there are a whole string of these, and support for the WAB programme is tantamount to support for RAIBC. The membership secretary is, I believe, the chap to send to for details; but enclose an A4 s.a.e. at the same time to conserve the funds; Brian Morris G4KSQ; 22 Burdell Avenue, Sandhills Estate, Headington, Oxford OX3 8ED.

Grapevine

If you have a 144MHz receiver or scanner one useful frequency to monitor is 144.525MHz, simply because this is used over large areas of the UK as a DX alerting frequency so that if a licensed amateur happens to hear some good DX he can pass the word to others, and of course to you s.w.l.s. Listen to it, and pass the word on to club members on v.h.f. to avoid this channel, too, even though DX operators accept that it's not "their" frequency alone.

Talking of v.h.f. one wonders just how many s.w.l.s got involved in the Aurora event which came up on the evening of March 13? Alas, I had a meeting to attend at Llandrindod Wells that evening but while travelling home and hence looking northwards, I was surprised to be able to see, very dimly it is true, the aurora — the first time I have ever seen a visible aurora event. As I travel this road fairly regularly — all 365 bends of it! — I was able to satisfy myself that I was not looking at the "loom" of any township lights. Of course, there doesn't have to be a visual manifestation of aurora for the radio effect to occur, indeed it is rather unlikely this far south. The effect of an aurora event is best noticed with the help of a beam antenna; when an aurora event is in progress, a v.h.f. listener beaming northwards may well find a far-distant station who has such a rough-sounding signal as to be all but uncopiable on s.s.b., and about T1 on c.w.

The interesting bit is when the DX is weakly audible, say, when beaming east or south, with a T9 signal which degenerates into the characteristic auroral "rusty buzz-saw" as one aims the beam north. As the Aurora Borealis is in fact a curtain of ionisation, and hence reflection, which is continually in movement the roughness is in reality a doppler-effect demonstration that the curtain is in movement. Incidentally should you be alerted in mid-afternoon to an auroral event, which fades out, never forget the long odds that a second phase usually crops up that evening, so leave your beam pointing northwards. As a second point, when I say beam northwards, I don't mean slavishly to true north, but "in that general direction" as in most of these events the very best beam headings are a bit off to one side, such that each end of the contact is aiming at the right spot on the aurora itself. The moral is to have a scratch-round over the c.w. and s.s.b. segments, the while waggling the beam about a bit in a northerly direction. Normally, for this sort of activity, the old-fashioned highly sensitive v.h.f. converter fed into a tunable i.f. in the form of a good general-coverage receiver capable of copying s.s.b. and c.w. is a good proposition. With it you can try all modes, and satisfy yourself that a.m. and f.m. just "don't cut the mustard!"

WARC Bands

If your receiver covers these bands, then give them a whirl. Although in theory they are still c.w.-only, the alleged lack of activity is beginning to cause minds to change, and there is sometimes paydirt available for the s.s.b. s.w.l.. For a c.w. s.w.l., of course, as **G0APV** (Potter Heigham) noted; it is quite a surprise to try a CQ just to satisfy that the gear is still OK on 10.142MHz and get such as J37XC back!

D. Dhuglas (Glasgow) is blessed with a decent QTH; with a half-size G5RV up at 17 metres, and receiving by way of an old Argonaut 509 there isn't much on 28MHz s.s.b. that he misses. However, during February, there was an abrupt falling off in air-time, no doubt

The next three deadlines are May 15, June19 & July 17

due to work commitments. Yes indeed, 28MHz is a band which should be checked from end to end — or at the very least over the bottom megahertz — for even if it sounds totally dead, it will often yield a totally unexpected signal from somewhere.

A first-time report from **Michael Grimes** (Northampton) who recently lashed out on a Lowe HF-125. At the time of his letter, the antenna was all indoors, but an outdoor skywire is being considered, and the construction of an a.t.u. Michael's log to date includes the following: on 160, DJ0EC and OY9JD; on 80 CU2BR, KB1KE, OZ1IZB; on 40, CM2LN, CU5AA, C3ILD, DL4FE, EA8BLP, EI8FQ, FM5FA, KP4EIJ, ON7SH, OZ1IEC, PA3BQZ, PZ5JR, RA3ZAD, SM4HCM, SP9JZT, SV9AKD, VO1SA, YI0VP, YU3DAP, YV6PM, ZC4AB, ZL3GS, 4X6LA, 9Y4COR; on Twenty we find A41JR, EA3OT, JA9AA, SM4SET, TA1U, VS6WV, YV2AHR, Y33KN, 3A/PA3CPG, 4X4FR, 6W7OG; Fifteen gave with HA8KAZ, OK2BAL, SM6PWJ/3, TI5RLI, UA1ZA, VK3ACN, YU2DQ, ZL2APW; while on Ten Michael found CU2BR, CX7BL, IT9MBL, J28DN, ON8LS/5NO, and PP7BR.

R. Watters (St. Austell) uses an FRG-7700 plus an a.t.u., while the antenna is twenty metres of wire, end fed, up at 8 metres. Robert has been listening for some five years now. Over the 3-4-5 March contest period, the following stations were heard and logged: On 7MHz JA5OVU and JA1CPX, around 2100Z. On 14MHz, VU2QQ was noted at RS58, around 2050Z, and 9M2CW appeared an hour later. While on 21MHz, Robert noted OA4BJ and OA4OS who were working HL5BDS who said his QSL route was via HL1ASS; and ON8LS/5NO was doing good business at 2102Z. As for Ten, Robert noted VE7SZ, W9LT/IO and KA2DMI in contact, both YLs. On March 4, 18MHz yielded KC5UT, W8UPY, N4LBJ, W1ODY, W2AIH working OK1KJA and 9H4W, while on 24MHz, J37AJ, KA7HPJ, N4JQP, VE3VTC, and W5CNE were all booked in.

Set Listening Period

Fancy a little competitive s.w.l.ing? Get on the band on Sunday June 11 for a total of four hours between 0001 and 2359UTC, taken in up to three spells. Log everything you can during your periods, and score it at one point for each station in your own country, two for a station in a different country but your own continent and three for a signal from a country in a different country. Multiply by the total number of countries heard for a final score. Include the following detail in your log: Date, time, band in use, callsign, call of the station being worked (if possible), reports given and received (if possible), plus your own assessment of the station's signals, all in RS(T) form and remarks. Add a covering note which tells a little about your station and antenna, how you found the conditions, and any other comments. Send it in alone or with your normal letter, on the normal deadline. Incidentally since occasionally the deadlines aren't given for each section of "Seen and Heard" just check with one of the other sections where the date does appear! This gives you a week to play with. Have Fun!

DECODE

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

Letters

Chris Swann has sent me his usual comprehensive report and posed a few questions as well. One of his questions inspired the section *What Frequency?* in this column, but a second question has got me stumped. Chris would like to know if there is a freely available publication giving an international listing of ships callsigns. I must admit I don't have one, though I know they exist. My first guess would be to try an HMSO bookshop. If any readers know of a source for this information then please drop me a line and I will publish the details. The final point from Chris concerns his J & P Electronics FAX program. He has now purchased a copy of the "Decode" program from J & P and reports great success dumping FAX images from his Spectrum to his printer.

I have received a very welcome letter from **Chris Kirby** who was very active during the early days of the column. After a period of inactivity (radio that is) Chris has now settled himself down in the lovely town of Banbury so I will look forward to seeing some reports soon. Chris is still using his old faithful Racal RA-17 receiver which he is currently using with a trap dipole antenna, though he is hoping to improve on this soon.

One interesting snippet of information from Chris is that the firm he is working for has just invested in some sophisticated FAX equipment and he is hoping to be able to send me some samples which should prove interesting.

John Hunt has been a short wave listener for about two years but although interested in utility stations has never had the equipment to decode them. That has all changed now as John has been given an IBM PCI Having a PC though is only half the battle as you need the appropriate hardware and software to interface with the radio. The software isn't too much of a problem as I mentioned two sources of public domain programs in the column. The hardware is a little bit more serious as you need a terminal unit which can interface to a RS-232 port. So, the question is quite simple — do any readers know of a terminal unit which can handle 170Hz, 425Hz shifts and work to an RS-232 port, if so please drop me a line and I will tell all.

Incidentally the rest of John's station comprises a Matsui MR-4099 receiver and a 13m long wire antenna.

What Frequency?

One of my regular contributors, Chris Swann, has written asking a very common question — how do you measure the frequency of utility stations. I have answered this question before but I think it justifies perhaps a more complete answer than my first attempt. I'm sure you've all noticed that when monitoring utility stations using a frequency list there always seems to be a difference between the published frequency and the frequency indicated by your receiver when you are tuned to a particular station. So, let's start with an explanation of why this apparent error occurs. First of all, any of you who have a receiver with RTTY mode will probably wonder what I'm talking about as you should see little or no error between the published and tuned frequencies. For the rest of us mere mortals, who have to make do with receivers that were designed for s.s.b. reception read on!

As you may have guessed the crux of the problem is that most of us listen to utility stations with the receiver set to u.s.b. or l.s.b. If your receiver hasn't got a dedicated RTTY mode then you have no other option but to use s.s.b. The reason for the frequency error is that when you select upper or lower sideband on your receiver the frequency display shows the suppressed carried frequency whereas RTTY stations are normally identified by their mean frequency. It is this difference that causes the apparent error when receiving RTTY stations.

Fortunately the difference between the "real" frequency and that shown by your receiver is constant so all you need to do is find out what this constant is for your receiver and you can then use this to enable you to tune directly to the published frequency without having to tune around.

Having described the problem you can now work out the correction factor for your receiver by following this simple four step procedure:

1) Select the mode you normally use for receiving RTTY signals (i.e. u.s.b. or l.s.b.).

上海海岸电台

Shanghai Coast Radio Station
The People's Republic of China

This verifies your reception of XSG as follows:

Date: 23 MARCH 1988 **Mode:** CW A1A
Time: 2245 UTC **Power:** 10 KW
Freq: 12871.5 KHz **Tfc:**

Wish you success in your radio activities!

CQ DE XSG QRU? QSK **Date:** 10 MAY 1988
4 8 AND 12 MHz **Sign:** 潘永源

Fig. 1

2) Tune your receiver to 4.489MHz. This is GFL 26 Bracknell and is known to be very stable.

3) Tune your receiver up to 2kHz either side of 4.489MHz until you can resolve the signal with minimum errors. This signal consists of five digit groups or RY.

4) The correction factor is the difference between 4.489MHz and the frequency shown by the frequency readout of your receiver.

One point to note, the correction factor will normally be in the range of +2.5kHz to −2.5kHz.

Once you have worked out your correction factor for RTTY signals you can use it as described earlier.

Let's try an example to illustrate the technique.

a) Supposing that in step 3 your receiver was tuned to 4.4904MHz, the correction factor would be 4.4904 − 4.489MHz = 0.0014MHz. We can convert this to kHz by moving the decimal point three places to the right giving 1.4kHz. If we now wanted to receive a station with a published frequency of 12.345MHz we could simply add the 1.4kHz correction factor to give 12.3464MHz. This now becomes the frequency you should tune to, simple isn't it?

This simple technique can easily be extended to cover any mode you like and the following frequencies are good solid ones to use as your reference:

FAX: 4.782MHz Bracknell, GFE 21.
c.w.: 4.2515MHz Portishead GKC 2.

Equipment News

I received a letter from **Richard Wilmot** of Technical Software giving some background to the changes he has made to the instructions for the popular RX-4 program. First of all there are no changes to the program only the instructions!

There is now better coverage of the different versions of the program for disk or cassette use and the SSTV section is better explained.

Probably the most common difficulty with the RX-4 is the reception of AMTOR and other ARQ signals. The solution is simplicity itself as all you do is keep the audio low! Unfortunately most listeners, me included, tend to increase the audio level if they are suffering errors, whereas with the RX-4 the level should be reduced.

In addition to the RX-4 info, Richard has also sent me a full manual for the new RX-8 which is very well produced and informative.

The second item of equipment news comes from **J & P Electronics** who are about to announce a brand new FAX transceive program for the Spectrum. Although aimed at the amateur market, I know a lot of amateurs are also keen short wave listeners and would like to have a FAX program that could be used for amateur and utility stations alike. The new program is able to send images from the Spectrum's memory which can be created using a digitiser or one of the common graphics packages. In addition

to this the program can generate simple text messages for transmission by taking input from the keyboard.

Like other programs in the J & P range some external hardware is required in the form of a drum speed generator, tone generator and p.t.t. switching. This is all provided in the form of an IGM unit.

The big question is the price and J & P have done well here as the total package can be bought for £63.00 for the tape version or £66.00 for a disk based version.

Schedules

Jan Nieuwenhuis has sent me an interesting selection of station schedules and QSL addresses which I have listed here:

U.S. Navtransfac Totsuka, Japan.
Callsign: NDT
Frequencies: 4.965MHz, 12.777MHz, 22.3245MHz
QSL Address: U.S. Navtransfac Totsuka/NDT, c/o Department of Navy, U.S. Navcommsta, Japan. Commanding Officer, Box 3, FPO Seattle 98762-1800, U.S.A.

Copenhagen Meteo, Denmark.
Callsign: OXT
Transmitter power: 20kW
Mode: FAX 120/576.
Frequencies: 5.85MHz (0030-1005UTC)
9.36MHz (0005-0025, 1010-1215, 1245-1305 and 1830-1850UTC)
13.855MHz (1220-1240, 1310-1330 and 1805-1825UTC)
17.510MHz (1335-1355UTC)
Ice charts for the sea around Greenland are transmitted at: 0005, 0030, 0945, 1010, 1155, 1220, 1245, 1310, 1335, 1805 and 1830UTC.
QSL address: Copenhagen Meteo/OXT, Danmarks Meteorologiske Institut, Lyngbyvej 100, DK-2100 Kobenhavn 0.

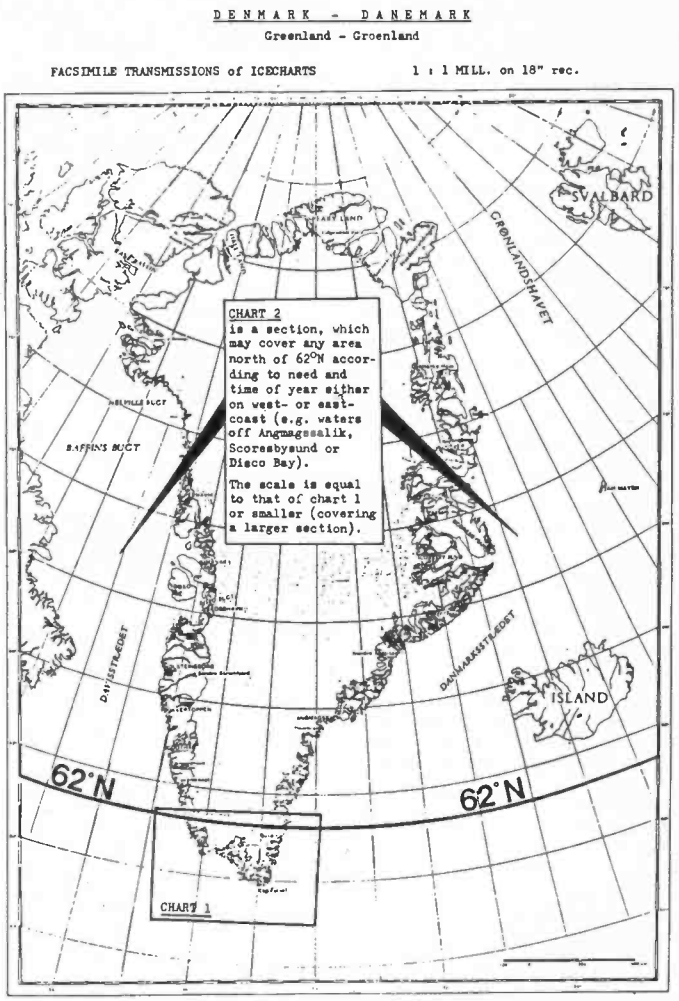
Pana Dakar, Senegal
Callsign: 6VK317
Frequencies: 16.117MHz (0800-1500UTC)
19.3827MHz (0800 – 1600UTC)
15.8424MHz (1500-1900UTC)
16.117MHz (1600-1900UTC)
Callsign: 6VK221
Frequency: 20.3278MHz (1500-1600UTC)
Transmissions are in English and French.
QSL address: Agence Panafricaine d'Information (PANA), Service Technique, BP4056 Dakar, Senegal.

The final schedule for this month comes from **John McLaren** who extracted this information from a CNA QSL letter.

Central News Agency Incorporated.
Frequency/callsign: 13.563MHz/3MA22, 7.695MHz/3MA26, 16.224MHz/3MA35. 10.96MHz/3MA28.
Transmitter power: 20kW
Antenna: Rhombic
Schedule: Monday to Saturday: 0230-0330, 0930-1030 and 1330-1500UTC.
Sunday: 1330-1500UTC only.
QSL address: Central News Agency Incorporated, 209 Sungkiang Road, Taipei, Taiwan, Republic of China.

Incidentally 1989 is the 60th anniversary of the founding of the CNA and they are giving away commemorative sets of stamps to those who send in reports.

All these schedules were obtained from the stations themselves so are as up-to-date as possible. If you receive any station details or schedules please write and let me know so I can spread the word.



INFO IN ORBIT

Pat Gowen G3IOR
17 Heath Crescent, Hellesdon, Norwich, Norfolk NR6 6XD

MIR Activity

Chris Van Der Bergh reports that lots of interesting projects are going ahead on MIR. At times he has been unable to follow the happenings, as the 143.625MHz voice channel has been reverting to scrambled speech, which they pre-announce by saying "... we are going over to the 2D regime ..." or simply "... we are going over ...". The SOYUZ-TM series also has this speech scrambling facility, known in this case as the "42D regime".

The cosmonauts often make use of the "stroke" (RTTY) working via the "strela", which is assumed to be a "TDRS" type Geosat. The crew have also been improving their television, telephone, telemetry and data communications by the use of their "sapphire" laser beam communications system to tracking ships, such as the *Yuri Gagarin,* which is now moored off Madeira. Furthermore, they are using a new downlink known as "VHF-2", the frequency of which is as yet unknown. Listeners with scanners may wish to investigate when the spacecraft is overflying in the hope of locating this.

One of the causative problems has been that of interference, especially when they overfly Western Europe, as the operators on MIR have been heard to complain of signals being received from radio amateurs (?), police, fire brigade, aircraft, ships, and even broadcast stations! It is felt very likely that the sheer intensity of signals on the "second channel" of their receiver may be overriding the image attenuation, by assuming the likely i.f. of their transceiver, doubling it and adding to the likely uplink frequency.

Chris reports that the MIR cosmonauts have been mapping earth's surface on a daily basis, taking many pictures and have been engaged in many astro-physical, medical and technical experiments. The first of the two new 12 tonne modules intended originally to go up to MIR by *Energia* in April has been postponed now until at least September, with the follow up to re-attain symmetry now probably due for launch in December. (With but one module attached to a side docking port, manoeuvres will be difficult, as the centre of gravity of the assembly is altered). The full function and purpose of these huge attachments which are even bigger than MIR itself is not yet fully known, but is understood that they have their own solar cells, new cabins, showers, a much enlarged hatch (for the "space bike"?) and that they will be used extensively for spacewalks in the future. They will also provide further extended facilities for gravity free metallurgy and some of the biophysics and technological experiments.

Some of the tense conversation reported in last month's column may have been due to the apparent frustration experienced by the crew due to the change of schedule brought about by the module delay. One of the functions is undoubtedly the "space bike" upon which Serebrov is the pre-trained expert. His mission may now be frustrated, which has a re-scheduling effect on both existing and future crews, and Volkov appears to be most unhappy about this situation. It now looks as if Volkov and Krikalov will be returning on April 29, possibly accompanied by Polyakov. The new crew was to be Viktorenko and Serebrov, but this may now change. Thus, the stimulating task of docking and setting up the new modules will now fall to the new crew, a prospect not exactly pleasing to Volkov.

One of the conversations overhead by Chris related to the new large Soviet shuttle BURAN. Krikalov spoke of wanting to perform some work in connection with the next flight, which could be manned. He referred to "... an integrated, circular orbit ..." and was told that the number of orbits to be made by the coming BURAN mission would evolve later. He asked if the flight would be "... processor controlled ..." which evoked a positive answer. The linking, or perhaps even the docking of BURAN with MIR therefore exists as an exciting future possibility. A further plan, first mentioned on February 27, is to retrieve SALYUT-7 from orbit and to return it to earth using BURAN. That faithful Salyut-7 module attached 19.955MHz beacon, so useful in propagation studies, will be sorely missed!

Re-entry entries

The faithful UoSAT-1 OSCAR-9 satellite, which has given such splendid service since its launch from Vandenburgh, California at 1127UTC on 6 October 1981, is now returning to earth rather more rapidly than desired. Its drag factor (orbital decay) is showing a figure almost as high as the MIR space station, but sadly, unlike MIR, it has no Progress attached to help boost it up again! At the time of preparing this column, UoSAT-1 was at around 415km altitude and descending at an every increasing rate of 330 metres per day. As it approaches more of earth's atmosphere, it loses its velocity, brakes and falls to a lower orbit, which brings it lower into more atmosphere, until

SEEN & HEARD

eventually friction will burn it up on re-entry.

What is more, the elevating solar flux is expanding our earths atmosphere by radiation heating, which in itself is further contributing enhanced decay to cause the satellite to descend even more rapidly than first thought. The telemetry is showing signs of this frictional heating already, as the previous temperature of around −25C is now up to −14C and rising.

A contest is being run by AMSAT, AMSAT-UK, the University of Surrey and by G3IOR, with prizes being offered to he or she who most accurately predicts the time and day of the re-entry of OSCAR-9. AMSAT-UK are offering a selection of their computer software, with up to six guesses allowed from contestants. The University of Surrey are giving handsome UoSAT T-shirts to the winners, whilst your columnist is offering a 308 page colour illustrated hardback on the history of space travel. For this latter prize, we need a single time and date of re-entry, plus a photograph of you and your station, or a good weathersat picture, or a short write up on your interest and findings on satellites. All entries have to be received by the contest organisers within one month of the earliest re-entry date predicted.

The current issue of *Practical Wireless* gives full details of the contest, the names and addresses for entries, plus some hints, tips and formulas on the best ways of calculating the descent and final demise of the satellite, which will aid you in entering a calculated probability rather than a wild "guesstimate".

At the time of preparing this column, according to the variable accuracy of the numerous recent Keplerian element sets used, the day and time of the final demise of OSCAR-9 calculates from as early as August 19 to as late as December 28. The peaks of probability occur in the first ten days of November.

Satellite Teach-in

Vinny **WB2YGA**, is running a series of satellite teach-ins each Sunday at 1900 on 28.460MHz. The initial course is mainly intended for those who are starting on satellites, and future broadcasts will cover all aspects of space interest and a wide range of specialised subjects. Vinny should be a good signal throughout the year now that the ten metre band is showing such good propagation.

Weather Satellites

Lawrence Harris reports that he has had many follow ups to his valuable and appreciated information content that appears regularly in this column, with many callers keen to see his equipment. He replies to all questions, but rightfully expects a stamped self-addressed envelope to accompany the request. Part of his well stocked station is shown in Fig. 1, with Lawrence seated at the functioning end of things. This month he again furnishes us with some more topical data on the many new happenings on the weather satellite aspect of our hobby.

"The January to February period was marked by NOAA-9 being 'fixed', whilst METEOR 3/2 went 'bust'," says Lawrence. He found that METEOR's 2/16 and 2/17, on 137.40 and 137.30MHz respectively were normally on when over ground that was in near full solar illumination, and that they both continued to operate normally, although showing the earlier related "sticky aperture" problems as they neared twilight conditions.

Readers will recall that Lawrence first logged clock synchronisation problems with NOAA-9 on November 1 last year with the problem increasing with time. At one time NOAA-9 signals, being on the same frequency, were coinciding with those emanating from NOAA-11, despite the American statements that NOAA-9 would be switched off during such clashes of dual and mutual appearance. Lawrence observed a very curious effect on his monitor screen when he was able to observe what was initially a NOAA-9 picture of the western Atlantic change to slowly mix and heterodyne with the incoming picture from NOAA-11. The merging pictures eventually turned to one of Europe only, as the NOAA-9 went below horizon.

"NOAA-9 was commanded off in early December only to come back on December 15 at 1423, to all intents and purposes with all systems correct" he writes. "However, the faults returned on December 17 and became worse. Nothing happened until January 20, when NOAA-9 was transmitting unmodulated frames. This continued until January 26 when at 1530UTC up came NOAA-9 with a normal signal, with fully synchronised pictures. At 1537UTC on February 10 only a visible light picture was being transmitted, and the following pass at 1718UTC showed that all was normal again."

Our regular correspondent tells us that NOAA-10 and 11, on 137.50 and 137.62MHz respectively continue normally. No current problems exist with the frequency clash between NOAA's 9 and 11, as NOAA-9 crosses the UK at about 0300 and 1500UTC, whilst NOAA-11 performs its passes at around 1300 and 0100UTC.

Sadly FEN-YUNG-1, the ailing Chinese weather satellite is still not in operation, and is unlikely to be recoverable.

OKEAN-1, the oceanographic research satellite and COSMOS-1766, both on 137.40MHz (the same frequency as METEOR-2/16) have been transmitting pictures with daily regularity. Lawrence points out that they are discernible by ear, as by listening to the signals only, it is apparent that they sound quite different. He uses a tape recorder to record the data from the transmissions, and is able to achieve perfect synchronisation when playing the tapes back later. "I have been getting very good results from all the different equipment formats" writes Lawrence. "The microwave sounder, the visible light pictures, the sideways looking radar, and often inclusion of the 'piano-key' telemetry all work well. The RADAR image shows very clear details, and, of course, it is cloud free. It often stops after a few minutes of operation, presumably due to power constraints."

"Unlike previous oceanographic satellite transmissions, picture reception is no longer limited to just the eastern passes. I, and other enthusiasts, are now regularly picking up OKEAN on westerly passes covering the UK. I am hoping to be able to complete a RADAR/microwave image of the whole of the UK shortly" he concludes. We shall have the opportunity of seeing one of these exciting OKEAN pictures in our next months column, as Lawrence has taken some photographs now awaiting processing.

Fig. 1

METEOR 3/2

This weather satellite is in a higher orbit than normal weathersats, and so provides a wider format of pictures. Lawrence has been getting good pictures showing the entirety of Greenland when the satellite is to his north, and into deepest USSR to the Urals to his east. When it has been out on his furthermost western horizon he has been looking at clear pictures of Boston and Hudson's Bay, and to the south he can see down to the lower west coast of Africa.

Lawrence has been studying this satellite, which in December was switched on again into fully operational mode. He finds that the transmissions continue, but with many changes. The relative synchronisation of the visible and the infra-red pictures are not correct.

He writes, "On some passes the infra-red is switched off when it goes into eclipse. On the next pass, it may come back on with the phase changed, i.e. with the visible picture still neatly set, but with the infra-red picture split into two. One needs to 'slip' the picture slightly." He is seeing what he believes is evidence that the Russians are commanding the satellite and changing the phase, as on 3 January a new event occurred. On the 1551UTC pass MET 3/2 changed immediately from visible to infra-red with perfect phasing, so he knows it can be done! However, later passes reverted to the more normal five minute pause between visible and infra-red, and the phasing was variable once again.

He wonders if it is possible that METEOR 3/2 has a system capable of picture swath adjustment, as his notes relating to December 22 show the image to be from Italy to the Caspian Sea, that swath now no longer being covered.

The MET 3/2 weathersat infra-red system sends a reverse of the NOAA satellite format, upon which white is warm, and cold is black. This, on MET 3/2, which is the other way round, the sea will appear as white, and the clouds as black or grey. This has produced difficulties in the past when recordings are being analysed! Hopefully a MET 3/2 I.R. shot taken by Lawrence will appear next month.

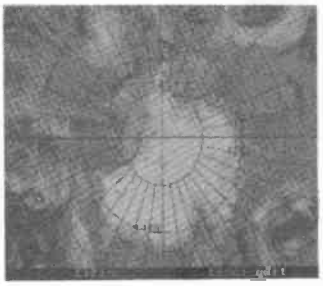


Fig. 2

Fig. 3

An excellent printed out infra-red view of the South Pole is shown in Fig. 2 (where white is cold, and black is warm) was made by Lawrence during the Antarctic winter. It was taken and recorded by NOAA-9, and relayed by GOES-E.

An evening December 1988 METEOSAT-3 infra-red picture is shown in Fig. 3, showing the still warm (dark). North Africa to the west. This was received by Lawrence using his home made dish, a Microwaves Modules down converter and Dartcom receiver, taken by his computer system and printed out on an Epson 8-pin printer.

Late News

METEOSAT-4 had a successful launch, but was still not commanded on in early March. Lawrence points out that this APT format carries an extra bit, which will permit 64 grey scales, so providing excellent definition.

Discovered by Lawrence, what is believed to be MET 2/18, suddenly came up on 137.300MHz (the same frequency as MET 2/17) on March 9. No information or Keplerian elements have come in as yet for this possible new Russian weathersat, but should be available in time for next month's column.

The next three deadlines are
May 15, June 19 & July 17

SEEN & HEARD

BAND II DX

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Many of the new DXers, who we welcome, read such jargon as openings, lifts, co-channel interference, F2, Sporadic-E and tropo and no doubt wonder what these words have to do with the reception of radio and television signals from afar. Therefore, with this in mind, I decided to use the Trojan Cadmaster light pen and Amstrad PCW to illustrate these points with a rough plan of the earth's atmosphere, Fig. 1. This plan is divided into two sections, the *ionosphere* and the *troposphere* because the likelihood of DX depends upon the prevailing state of these two regions of the earth's atmosphere.

Broadly speaking signals from about 10 to 30MHz hop between the earth's surface and the upper — F2 — region of the ionosphere before reaching their intended destination. However, during periods of high sunspot activity, like 1988/89, additional changes to the F2 periodically occur and its influence is increased to 60MHz. The next good friend to the DXer, lower down, is the E region of the ionosphere which forms at sunrise and disperses at sunset and during the months of May to September it can suddenly break up into clouds of more densely ionised gas. These extra reflecting areas can multiply many times the range of signals between 30 and 80MHz and sometimes in June and July, it may reach 150MHz, especially when a long and intense disturbance is in progress. This natural event is called Sporadic-E and the mid-summer months are referred to as "the Sporadic-E season".

By international agreement the limited radio frequency space available must be shared by the already large and growing number of users. This requires strategic planning to ensure that transmitters, using the same or very similar frequencies, are kept as far apart as possible to avoid *co-channel and/or adjacent channel* interference under normal atmospheric conditions. Careful planning is exceptionally important in the broadcast bands above 100MHz where signals are line-of-sight and their natural ranges are limited. Almost all domestic broadcasting, in continental Europe, is transmitted in the v.h.f. Bands II (87-108MHz) and III (175-230MHz) and the u.h.f. Bands IV and V (470 to 856MHz). These signal paths are directly effected by the *troposphere* which, being the home of the earth's weather is the main reason why rainfall, temperature and atmospheric pressure is frequently discussed in this column.

The bands are said to be *open* when the DX is pounding in and a *lift* is when conditions are above average. I refrain from using the word *good* because this may be so for the DXer but it certainly isn't *good* for the domestic user whose favourite programme is blotted out by foreign voices on the sound and/or criss-cross patterns on their screens.

There are three transmitters, A, B and C sharing the same frequency (channel) indicated in Fig. 1. The signal from A will be heard under normal conditions, B should increase its range and sound like a "warble" on top of A during a *lift* (mild *tropo*), but B and the distant (DX) C may swamp out the signal from A at your receiver during an extensive *tropospheric-opening*. If this happens all over Europe then chaos reigns and even directional antennas are of little help.

We all look forward to a good opening and by the time you read this the overtures of the 1989 Sporadic-E season may well have commenced and signals from outside Europe, who also use Band II for their national broadcasting, might have been heard in the UK.

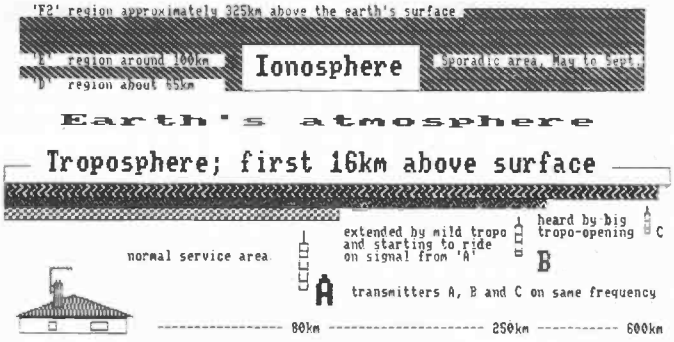

Fig. 1

Weather

After the super high pressure of 30.8in (1043mb) at midday on January 31 came, for me at least, a record low of 28.3in (958mb) during the evening of February 25. A warning of this deep depression may have occurred around 2145 on the 20th when **Brian Oddy** and I saw a gigantic halo around the moon as its bright rays of light picked out a layer of ice-crystals in the gathering clouds.

Apart from this phenomenon being one of nature's beautiful displays, it often preceeds a spell of wild weather as it did on this occassion and when I noted a much smaller ring at 2000 on January 14.

I heard from **Lt. Col. Rana Roy** on February 20, who wrote, "We have had a very severe winter this year and it is still continuing. The last time we had a very cold winter was 20 years back. This year temperatures in the plains went down to −5 degrees C at Amritsar and most of Northern-India had temperatures between 0 deg. C at night and 8 to 14 degs. C in the day. It's slightly better now. The temperatures in the hilly areas went down to −30 to −40 degs. C at night and −10 to −15 degs. C during the day. Here in Meerut the lowest temperatures were 0 degs. C with frost and chilly winds."

Reports

On March 5, **Simon Hamer** (New Radnor) heard BBC Wiltshire Sound testing, in stereo, on 103.6 and 104.3MHz, in preparation for the start of their regular service on April 4. He also logged stereo transmissions from a couple of West German stations.

During the aurora late on March 13, I heard "burbling' sounds from a few east-European broadcast stations between 66 and 73MHz as their signals bounced off the auroral display.

TELEVISION

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When you read this, your log may already contain some of the lesser events indicating the start of the 1989 Sporadic-E season. If not, it should begin very soon.

I was not a bit surprised to learn that those dedicated TVDXers **Edwina** and Tony **Mancini** (Belper) have added a Luxor full band unit and a 900mm dish antenna for satellite TV to their station. At present, they move the dish by hand about 6mm at a time. By march 10, their Astra log read: Galavision (Spain); TVE1, RAI UNO, RAI DUE, TV5 (France); Superchannel, SAT 1 and 3 SAT German, RTL+ German speaking (Luxembourg); NRK scrambled (Norway); SVT/TV3 (Sweden) scrambled; EurosportT, Holland (NER 1) test-card only not yet on full transmission; Teleclub, Supersport, Screensport, Eurovision, Aargeste Earth Station, NASA WSN Station and Filmnet scrambled." This is the first satellite TV report in the column, I wonder where it will lead?

On the subject of new equipment, **Bob Brooks** (Great Sutton) has added a Grundig VS520 video recorder to his station. "It tunes through Bands I, II, III and u.h.f. and receives and records Teletext!" said Bob.

Band I

Around 1900 on February 3, **Dave Coggins** (Knutsford) received auroral reflected signals on Chs. E2 (48.25MHz) and Ia (53.75MHz). On March 8, **Patrick Moore** (Selsey) observed a giant sunspot group and, as expected, an aurora manifested late on the 13th, large enough to be seen from southern England. Fortunately it was an almost clear night and although the moon was bright, Joan and I observed changing patches of white and pink, light blues and greens and a few beams of light in the northern sky. Around 2300, "burbling" sounds were heard on some of the sound and vision channels in Band I as the signals were reflected by the auroral display.

The high level of sunspot activity is also responsible for the "F2" openings seen by DXers during recent months, (see Fig. 1 in Band II DX). For instance, I received strong but too smeary to identify pictures via the "F2" region of the ionosphere on Ch. R1 (49.75MHz) continually between 0900 and 1100 on February 18 and 25. It is difficult to tell on a television dial whether such signals are on Ch. E2 or R1. However, I proved the latter by using my ex-military R216 v.h.f. communications receiver to find the channel on which the associated vision pulses could be heard. Readers with scanners could set a couple of memories to these vision channels ready for an immediate check when smeary pictures appear.

At 1100 on the 25th, the face of an announcer, with several images was very clear for a short time but it was still impossible to read the text on the screen. "F2 has been in everyday since the 10th. Some of it has been short-lived, only a minute or so," said **Gary Smith** (Derby). On the 13th and 14th, Garry saw the Iranian test-card, on Ch. E2, for almost an hour. At midday on the 15th he identified at least 2 strong African stations. Garry photographed a typical F2 picture, Fig. 1, which he received on Ch. E2 from an unidentified source between 0840 and 0920 on January 15.

Simon Hamer (New Radnor) received smeary F2 pictures, in the region of Chs. E2/R1 around 0800 on February 16, 18 and 21 and at midday on the 26th. Writing about the 26th, Simon said, "There were several stations with Arabic and Roman captioning. At 1210 a quiz was seen. . . At 1220 a news bulletin was observed. Again several stations were fighting for predominance . . . signals were very strong . . . There were Arabs at a meeting. At 1220 as well, Arabic adverts noted on Ch.E2 which could well be Dubai as they are said to do commercials. From the south, at 1230, a bird was seen on top of a logo and I was wondering if it could be Zimbabwe?" At 1500, Simon had another surprise when he logged weak north American 525-line signals on Ch. A2 (55.25MHz).

In Basingstoke, **John Woodcock** heard a variety of RT stations, including American police around 1500 on February 15 and more unidentifiable traffic, possible east European, in the band on days 17, 18 and 24.

SEEN & HEARD

Fig. 1

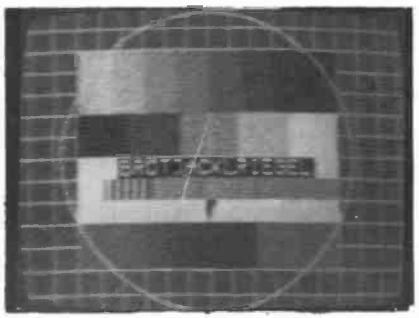

Fig. 2: Germany

Fig. 3: Germany

Fig. 4: Malaysia

Fig. 5: Malaysia

Fig. 6: Malaysia

Fig. 7: Acra

Fig. 8: Bhatinda

Fig. 9: Lahore

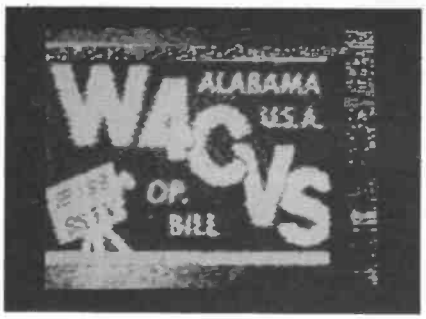

Fig. 10: USA

Fig. 11

Fig. 12

David Glenday (Arbroath) logged "warbles" and voices just below Ch. E2 for most of the days from the 23rd to 26th. "These seemed to originate from the USA (judging by the accents) and eastern Europe", said David. He also received unidentified smeary pictures around noon on the 26th.

Bob Brooks received F2 pictures for over an hour from possibly China or Malaysia, on Ch. E2, at 0827 on the 15th and logged further F2 on days 17, 18, 25 and 26.

Sporadic-E

At his home in Meerut, **Lt. Col. Rana Roy** saw a Russian clock showing 1200, followed by the TCCP logo, for about 10 minutes at 1530 on December 29 and January 10. "The 3.5 hour time difference should be around the longtitude of Moscow," said Rana.

Simon received test-cards from Iceland (RUV Island) on February 19, Finland (YLE TV1) on the 21st and the USSR and Italy (RAI) on the 26th and 27th respectively. He got off to a good start in March with Denmark (DR), Finland, Germany (ARD/SWF1), Norway (Greipstad and Gulen), Sweden and the USSR on the 1st and Finland on the 6th.

The Mancinis saw various programmes, during the mornings, from Portugal RTP1) and Spain TVE1/2) on February 14, test-cards from Holland (PTT NED1) on days 13, 18, 20 and 21, Norwegian regional stations Kongsberg and Bremanger on the 13th and 20th respectively, Poland's (TVP1) test-card on the 28th, the HOBOCTN (news) caption and Skiing from the USSR on the 18th and a programme schedule from Germany's ARD1 on March 5. David Glenday and Bob Brooks received programmes from Spain on the 10th and 14th respectively.

Tropospheric

Among the signals received by Garry Smith, in Band III, during the tropo-opening on January 16 was a test-card from Austria (ORF) and idents from the German regionals Brotjackriegel, Fig. 2, and NDR-3, Fig. 3. "**Chris Howles** alerted me that morning, he saw ORF FS2, on PM 5544, (test card) on Ch. E24!," said Garry.

During the tropo-opening on March 5, Simon Hamer received pictures from Austria (ORF FS1), Belgium (BRT and RTBF), France (TDF), Germany (ARD/SWF1) and saw their news (Tagesschau), Holland (NED1/2/3), Ireland (RTE1 and Network 2), Luxembourg (RTL+) and Switzerland (+PTT SRG-1) in Band III and Austria (ORF FS2), France Holland, Ireland and Switzerland (+PTT TS1) in the u.h.f. band. One of the films he saw on Radio Telefis Eireann was *Haunters of the Deep,* set in Cornwall. At 1900 on the 10th and 2020 on the 11th, he received pictures from France on two channels in Band III and about 6 spots in the u.h.f. band. In addition, on the 10th, he noted a very fluttery picture on Ch. E35 possibly "E.T.B." which serves the Basque region of Spain. "The suspected Spanish Basque E.T.B. made a reappearance for ten-minutes, again fluttery," said Simon on the 11th.

Edwina and Tony received pictures from France (Canal+) on March 2 and 5 and RTE1 on the 8th. While the atmospheric pressure was at the record low on February 25/26, David Glenday received good colour pictures from Bilsdale and as soon as the barometer began to rise Bilsdale had gone and Eyemouth took its place. "Eyemouth for me is an ultra-fringe local," said David. These must be interesting stations for checking conditions David, because I see that both transmitters carry BBC1 and 2 on Chs. 33 and 26

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respectively. Bilsdale also has Tyne Tees TV on Ch. 29 and CH4 on Ch 23 while Eyemouth has Border TV on Ch. 23 and CH4 on Ch. 29.

News from India

My thanks to **D. S. Rajan** (Bombay) for telling me about the IDXCI, a club dedicated to DXing, with a TV section in India. They have a large membership and have been going since 1975 and their address is GPO Box 646, Calcutta-700001. A recent issue of their magazine carried photographs of satellite reception by one of their members.

"There are 184 low power transmitters and 100 high power transmitters beaming programmes to various states in India," said Rana Roy. He added, "By 1992 we expect to have 450 TV transmitters. A 300 metre high TV tower is planned to be constructed at Rameshwaram, located at the southern tip of India."

Mainly during the evenings of December 6, 7, 9, 16 and 31 and January 4, 18, 19, 20, 21 and 22, Rana received "multiple smeary" pictures, sometimes fluttering, via F2, from stations mostly from Malaysia on Ch. E2 and occasionally Bangkok TV on Ch. E3 and the USSR On Ch. R1. From this jumble, Rana identified the Malaysian 3 logo, bottom right Fig. 4 and during relatively clear periods he recognised some adverts, captions, Fig. 5, various films, Fig. 6, including one Chinese, news and sport.

In Band III, Rana received Breakfast TV from Agra Fig. 7, Bhatinda Fig. 8, Jallandhar, Kasauli and Lahore, Fig. 9, while tropospheric openings were in progress on December 2, 7, 11, 13 and 28 and Janaury 25, 26 and 27. He also saw Rawalpindi-Islamabad showing commercials, test-cards with ident from Agra, Bhatinda, Kasauli and Lahore and Schools TV from Agra. "Between January 28 and February 1, tropo-signals from Pakistan and Indian stations came in very clearly. Lahore on E5, Bhatinda on E12 and Jalandhar and Agra on E9 came in strongly and in colour and as clear as a local station," said Rana. He logged the pictures from Pakistan betwen 0700 and 0845 and India from 0700 to 0815. There was no fading when these stations were up during the early evening which enabled Rana and his family to see some interesting programmes from Pakistan.

SSTV

The increased sunspot activity sure helped **Fred Pearce** (Driffield) because, at 1332 on January 15, he copied slow-scan television pictures from W4CVS in Alabama, Fig. 10. "This is my best catch since I started receiving SSTV," said Fred and soon sent a photograph of the received caption with his report, to W4CVS who acknowledged it with his QSL card. Fred's very neat station, Fig. 11, includes antenna tuner and Datong filter, Drake R4A and Trio R2000 receivers and a Telereader CWR675EP for decoding c.w. and RTTY, all fed by rotable beams. Fred often tape records the incoming SSTV pulses for later playback into the system and possible photography.

Among the SSTV pictures logged, in February 1987, by **Allan Sancto** (Grosskarolinenfeld), with his home-brew gear, was the charming young lady in Fig. 12.

LONG MEDIUM & SHORT

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Although the UK changed over to British Summer Time (BST) on March 26, s.w. broadcast schedules refer to transmission times in Universal Co-ordinated Time (UTC), which for all practical purposes is equal to Greenwich Mean Time (GMT). To avoid errors, it is advisable to keep a small clock alongside your receiver and set it to UTC, which is exactly one hour behind BST. Please be sure to quote UTC in your report for LMS.

Long Wave DX

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT).

Writing from Javea, Spain **Jurgen Thiel** says that he has extended the overall length of his Beverage antenna from 220m to 350m. His location, which is 300m a.s.l. and one kilometre from the sea, is proving to be excellent from the DX point of view because the levels of electrical interference there are very low. A number of the high power transmissions can be received at SINPO 55555 at any time of the day or night: Allouis, France 162 (2000kW); Medi-1 Nador, Morocco 171 (1200kW); Saarlouis, W. Germany 183 (2000kW); Monte Carlo via Roumoules 216 (1400kW); Junglinster, Luxembourg 234 (2000kW) and Tipiza Algeria 254 (1500kW).

No doubt his Beverage antenna is the key to obtaining such remarkable results and also accounts for the BBC Radio-4 broadcasts on 198 reaching him at 55555 between 1000 and 1700. Three BBC transmitters share 198; Burghead (50kW), Droitwich (500kW) and Westerglen (50kW).

An interesting report, which compares l.w. reception in the relative quiet of Selsey with that in busy Surbiton, was sent along by **Jon Baker**. Jon logged four stations in Selsey which were inaudible in Surbiton; Kaliningrad, USSR 171 (1000kW) SIO 242 by day and 343 at night; DLF Munich, W. Germany 207 (500kW), only heard during daylight at 333; Monte Carlo via Roumoules 216, only heard after dark at 322; Topolna, Czechoslovakia 272 (1500kW), 333 by day and 343 at night. Surprisingly, the broadcasts from Oranienburg, E. Germany 177 (750kW) could only be received during daylight in Selsey, but were audible by day and night in Surbiton! These results tend to confirm that a remote country location is best for DXing, but no dubt the clear sea paths at Selsey played their part too.

A comparison between reception during daylight and after dark was made by **Philip Rambaut** in Macclesfield. Many of the signals he logged could be heard during the day and at night, albeit with varying SIO ratings, but those from Azilal, Morocco 207 (800kW) and Oslo, Norway 216 (200kW) could only be heard during daylight. At night three additional broadcasts became audible: Brasov, Romania 153 (1200kW); Kishinev, USSR 234 (1000kW) and Lahti, Finland 254 (200kW).

MW Transatlantic DX

During a recent period of particularly good conditions, **Roy Patrick** (Derby) heard station idents from CJYQ in St. Johns, NF 930 at 2245; WINS in New York 1010 as 35333 at 2330; CIYQ Grand Falls, NF 680 as 24322 while relaying the same programme as CJYQ at 2335; also WSSH Boston, MS 1510, logged at 2345. Roy heard several more transatlantic signals later. These signals were all heard again during the next four nights.

Listening in Bristol at 0300. Tim Shirley heard WYNX in Smyrna, GA 1550 for the first time. Their QSL letter indicates that their transmitter runs 50kW and their programmes in a.m. stereo are of "adult contemporary Christian format". Tim was surprised to hear two daytime only* stations: WEEP In Pittsburgh, PA 1080 at 2100 and WWGM in Nashville, TN 1560 at 2200. The QSL letter from WEEP states that two of their three antenna towers were destroyed in early November, so their antenna is now non-directional and the transmitter power is now restricted to 10kW. Tim is still awaiting the QSL from WWGM. (*Daytime only usually implies that they close down at local sunset, but some are permitted to continue for an hour or so later.)

Freq kHz	Station	Country	Power (kW)	DXer
153	Bechar	Algeria	2000	F*,G
153	DLF Donebach	Germany (W)	500	A,B,C*,E,F,G,J*
153	Brasov	Romania	1200	E*
162	Allouis	France	2000	A,B,C*,E,G,I,J*
171	Medi 1-Nador	Morocco	1200	E,F*,G
171	Kaliningrad	USSR	1000	A,E,I
177	Oranienburg	Germany (E)	750	A,E,I,J*
183	Saarlouis	Germany (W)	2000	A,C*,E,G,I,J*
189	Caltanissetta	Italy	?	G
189	Motala	Sweden	300	E,I*
198	Ouargla	Algeria	2000	G
198	BBC Droitwich	UK	400	A,E,G,I,J*
207	DLF Munich	Germany (W)	500	A,C*,E,G,I,J*
207	Azilal	Morocco	800	E,G
207	Kiev	Ukraine	500	F
216	Roumoules	Monaco	1400	A,B,C*,E,G,I
216	Oslo	Norway	200	C*,E,J*
225	Konstantinow	Poland	2000	A,C*,E,G,I,J*
234	Junglinster	Luxembourg	2000	A,C*,E,G,I,J*
234	Kishinev	USSR	1000	E*
245	Kalundborg	Denmark	300	A,C*,E,G,H,I
254	Tipaza	Algeria	1500	A,C*,E,G
254	Lahti	Finland	200	E*
254	Duchanbe	USSR	300	J*
263	Burg	Germany (E)	200	A,D*,E,I
263	Moscow	USSR	2000	C*,D*,F,G
272	Topolna	Czechoslovakia	1500	A,C*,E,G,I*,J*
281	Minsk	USSR	500	E,I

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

DXers:
- A: Jon Baker, Salsey.
- B: Matthew Clarke, Birmingham.
- C: Alex Mackow, London.
- D: Roy Patrick, Derby.
- E: Philip Rambaut, Macclesfield.
- F: Tim Shirley, Bristol.
- G: Jurgen Thiel, Javea, Spain.
- H: Edward Turnbull, Gosforth.
- I: Neil Wheatley, Newcastle-on-Tyne.
- J: Max Wustrau, Bedford.

In Wakefield, **Mark Thompson** has been experimenting with a 1 metre spiral loop consisting of four turns spaced 10mm apart and tuned by a twin-gang 500pF variable capacitor. It has resulted in a general improvement in the strength of the transatlantic DX signals and enabled him to add WCAU in PA 1210 to his list as SIO 333 at 0230. Apparently the loop has good directional properties which can be used to eliminate the European signals on 1008 when listening to WINS in New York on 1010. He noted that the programmes from CJYQ can be received more clearly via CIYQ in Grand Falls on 680.

Equipment Used

Joe Baker: Matsui MR4099
Leo Barr: Matsui MR4099 + internal antenna
Noel Carrington: Saisho SW5000
Alan Curry: Sangean ATS-830A + 5m wire
Ian Curry: Sangean ATS-830
David Edwardson: Trio R600 + trap dipole
Simon Hamer: Grundig Satellit 1400
Sheila Hughes: Sony ICF7600DS
Cyril Kellam: Sony ICF600DS + 5m vertical wire
David Middlemass: Eddystone 7173 MkII
John Nash: Kenwood R5000
Chris Nykiel: Realistic DX-260
P. Parker: Panasonic RFB-40DL
Fred Pallant: Trio R2000
Roy Patrick: Lowe HF-125
Ron Pearce: Home-made "oscillodyne" 1 valve RX
Christine Pritchard: Kenwood R5000
Richard Radford-Reynolds: Sangean ATS-830
Terry Ray: Kenwood R2000 + A3700 active antenna
Kenneth Reece: JRC NRD525 + delta loop
Alan Smith: Matsui MR4099
Mark Thompson: Saisho SW5000
Ken Whayman: Vega 206
Louis Whitfield: Matsui MR4099
Julian Wood: Kenwood R1000
David Wratten: Trio R2000 + 30m wire
Max Wustrau: Datong PC-1 converter + FDK-750 2m transceiver

SEEN & HEARD

In New Radnor, Simon Hamer picked up two seldom mentioned broadcasts from Iceland at 0130. His log also included ZDK in Antigua 1100, which has not been reported for some time and several other stations in the Caribbean area.

Other MW DX

Listening at 2157 in Sunderland, **Leo Barr** heard a broadcast in Farsi from Isfahan, Iran on 1467 at a distance of over 4500km! He logged them as 23232 and made a short recording of it which he then compared with a s.w. broadcast so as to confirm the language.

Stations in Algeria, Egypt, Morocco and Tunisia were logged at night by Mark Thompson. He adopted an unusual approach of ignoring all broadcasts except for those in Arabic. Mark then proceeded to identify the stations by comparing them with similar ones on other frequencies in the m.w. and s.w. bands. This task was simplified by making use of memories.

A visit to Sidmouth enabled **Sheila Hughes** to try a little m.w. DXing from a new location. Sheila picked up a number of broadcasts via sky wave paths after 2200, the most distant from Albania and Italy.

Broadcasts from Scandinavia have been attracting **Edward Turnbull** in Gosforth. Owing to the clear paths across the North Sea, reception is good during daylight. An outstanding signal reaches him from Pori, Finland 963 at all times. They broadcast in Finnish, Swedish, English, German and occasionally French. The broadcasts from Norway via Kvitsoy 1314 were logged by David Middlemiss in Eyemouth. He rated them as SIO 444 during daylight.

A useful tip when noting the exact frequency of a station was sent in by **Matthew Clarke** in Birmingham. He says, "In Europe the frequencies of m.w. stations can be checked to see if they are correct by adding the individual digits together. The total will either be 9 or one of its multiples (e.g. 18)"

MW Local Radio DX

The new local radio station Wiltshire Sound in Swindon will no doubt welcome detailed reception reports on their broadcasts via Lacock 1332 and Swindon 1368, but do remember to include an s.a.e. if you require a QSL letter. They have already been heard well outside their intended service area. In Luton, **Louis Whitfield** rated the Swindon signal as 22323 during daylight, but he noted inteference from the R. Sussex Duxhurst transmitter on 1368 (500W) at night, which degraded the signal to 12112.

Both transmissions are reaching New Radnor during the day, but Simon Hamer says that the Swindon transmission interferes with Manx R. via Foxdale IOM also on 1368. he can retrieve the Manx signal by using a "Sooper Loop'. At night Simon experiences little difficulty in receiving the sky wave signal from Manx R.

Signals from Hereford and Worcester are also being heard over a wide area. Their transmission via Worcester on 738 was rated as 444 by **David Wratten** in Cambridge during the day. It is also being received very well in Denbigh by **Martyn Doig**, but due to a pirate station their 819 transmission via Hereford suffers from some co-channel interference. Simon Hamer is able to receive both transmissions very clearly by day and night.

Both transmissions are reaching Mark Thompson in Wakefield during daylight! He logged 738 as SIO 444 at 0950 and 819 as 232 at 0959. The improved performance of his new loop enabled him to log two stations which were hitherto barely audible: R. Solent 1359 (0.25kW) SIO 323 at 2020 and R. Tay 1584 (0.21kW) SIO 222 at 0645.

Freq kHz	Station	ILR BBC	Power (kW)	DXer
585	R. Solway	B	2.00	O,Q,S
603	Invicta Sound	I	0.10	A,H,J,M,N, Q,R*,U,V
603	R. Gloucester	B	0.10	A,C,F,N,Q, U,V
630	R. Bedfordshire	B	0.20	A,K,M,N,O, Q,R*,U*,V
630	R. Cornwall	B	2.00	A,J,O
657	R. Clwyd	B	2.00	J,K,M,Q,S,V
657	R. Cornwall	B	0.50	O
666	DevonAir R.	I	0.34	A,G,J,M
666	R. York	B	0.80	D,I,K,M,Q,S,V
729	BBC Essex	B	0.20	A,J,M*,N,Q,V
738	Hereford/Worcester	B	0.037	E,F,Q,R,V
756	R. Cumbria	B	1.00	I,Q,S
756	R. Shropshire	B	0.63	J,L,Q,V
765	BBC Essex	B	0.50	A,J,M,N,O,Q, R*,U,V
774	R. Kent	B	0.70	A,J,L,M,N,R*, U,V
774	R. Leeds	B	0.50	K,M*,O,Q
774	Severn Sound	I	0.14	C*,M*,Q
792	Chiltern R.	I	0.27	A,C*,D,J,M, N,Q,R*,V
792	R. Foyle	B	1.00	I
801	R. Devon	B	2.00	J,M,Q,V
819	Hereford/Worcester	B	0.037	E,F,Q
828	2CR	I	0.27	A,J
828	R. WM	B	0.20	K,Q
828	R. Aire	I	0.12	Q
828	Chiltern R.	I	0.20	A,M,N,V
837	R. Cumbria	B	1.50	Q
837	R. Furness	B	1.00	I,K
837	R. Leicester	B	0.45	A,C*,J,H,L, M,N,Q,U,V
855	R. Devon	B	1.00	J,O
855	R. Norfolk	B	1.50	H,I,L,M.N,Q, R*,V
855	R. Lancashire	B	1.50	K,Q
873	R. Norfolk	B	0.30	H,K,L,M*,N,Q,V
936	Brunel R (GWR)	I	0.18	A,C,J,L,N,Q,U,V
945	GEM-AM (R. Trent)	I	?	C,J,K,N,Q,V
954	DevonAir R.	I	0.32	A,J,N,Q*,U*
954	R. Wyvern	I	0.16	Q,V
990	R. Aberdeen	B	1.00	S
990	Beacon R. (WABC)	I	0.09	C,Q,V
990	R. Devon	B	1.00	A,J
990	Hallam R.	I	0.25	K,V
999	Red Rose R.	I	0.80	K,Q,S*
999	R. Solent	B	1.00	A,H,J,L,M,N,U,V
999	GEM-AM (R. Trent)	I	0.25	Q,V
1026	R. Cambridgeshire	B	0.50	H,K,M,N,Q,R*,V
1026	R. Jersey	B	1.00	A,J,N,P,Q*
1035	R. Kent	B	0.50	A,J,M,N,R*,U,V
1035	Northsound R.	I	0.78	S
1035	R. Sheffield	B	1.00	K,Q
1107	R. Northampton	B	0.50	C,H,J,L,M,N,Q,V
1116	R. Derby	B	1.20	D,M,Q,V
1116	R. Guernsey	B	0.50	A,H,J,M*,N,V
1152	BRMB	I	3.00	C*
1152	R. Broadland	I	0.83	K*,M,Q,V
1152	LBC	I	23.50	A,J,M,N,R,U*,V
1152	Metro R.	I	1.80	D,I,S
1152	Piccadilly R	I	1.50	K,Q
1161	R. Bedfordshire	B	0.10	M,Q,V
1161	Brunel R. (GWR)	I	0.16	L,U
1161	R. Sussex	B	1.00	A,J,N,U
1161	R. Tay	I	0.70	I,Q*
1161	Viking Gold	I	0.35	K,M,Q,V
1170	R. Orwell	I	0.28	M,V
1170	Signal R	I	0.20	Q
1170	TFM 9660 (R. Tees)	I	0.32	K,Q,S
1170	Ocean Sound	I	0.12	A,J,N
1242	Invicta Sound	I	0.32	A,H,J,M,N,Q,V
1251	Saxon R.	I	0.76	H,J,M,N,Q,V
1260	Brunel R (GWR)	I	1.60	A,H,J,L
1260	Marcher Sound	I	0.64	Q
1260	GEM-AM Leicester	I	0.29	M,N,Q,V
1260	R. York	B	0.50	K,Q
1278	Pennine R	I	0.43	J,K,Q
1305	R. Hallam	I	0.15	K,Q,V
1305	Red Dragon R.	I	0.20	J,P*,V
1323	R. Bristol	B	0.63	Q,V
1323	Southern Sound	I	0.50	A,H,J,M,N, Q*,U,V
1332	Hereward R.	I	0.60	H,J,M,N,Q,V
1332	Wiltshire Sound	B	?	F
1359	Essex R.	I	0.28	M,N,Q,R*,V
1359	Mercia Sound	I	0.27	C,Q,V
1359	Red Dragon R	I	0.20	M*
1359	R. Solent	B	0.85	A,J,Q*
1368	R. Lincolnshire	B	2.00	D,K,M,Q,V
1368	R. Sussex	B	0.50	A,J,M*,N,U
1368	Wiltshire Sound	B	?	F,T
1431	Essex Radio	I	0.35	H,M,Q*,V
1431	Radio 210	I	0.14	H,J,M*,N,U*,V
1449	R. Cambridgeshire	B	0.15	J,M,N,Q,V
1458	R. Devon	B	2.00	Q
1458	GLR	B	50.00	A,G,J,M,N, P,Q*,R,U,V
1458	R. Newcastle	B	2.00	D,I,K,M*,Q,S
1458	GMR	B	5.00	Q
1458	Radio WM	B	5.00	C,G,V
1476	County Sound Gold	I	0.50	A,H,J,M,N, Q,U*,V
1485	R. Humberside	B	1.00	K,M*,Q,V
1485	R. Merseyside	B	1.20	B,Q
1485	R. Oxford	B	0.50	G,M,V
1485	R. Sussex	B	1.00	A,J,M*,U
1503	R. Stoke-on-Trent	B	1.00	D,J,K,M,Q,V
1521	Mercury	I	0.64	A,G,H,J,N,Q,U,V
1521	R. Nottingham	B	0.50	M,Q,V
1530	R. Essex	B	0.15	J,M,N,V
1530	Pennine R	I	0.74	J,K,P,Q
1530	R. Wyvern	I	0.52	C,P,V
1548	R. Bristol	B	5.00	Q*
1548	Capital Gold	I	97.50	A,J,M,N,P,R, U*,V
1548	R. City	I	4.40	B
1548	R. Cleveland	B	1.00	K,Q,S
1548	R. Forth	I	2.20	I,K*,Q*
1548	R. Hallam	I	0.74	Q
1557	R. Lancashire	B	0.25	Q
1557	Northants 96	I	0.76	C,K*,M,Q
1557	Ocean Sound	I	0.50	A,J,N,Q*,V
1584	R. Nottingham	B	1.00	K,M,Q,V
1584	R. Shropshire	B	0.50	C
1584	R. Tay	I	0.21	Q
1602	R. Kent	B	0.25	A,H,J,M,N,O,Q,V

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

In Leeds, **Chris Nykiel** logged three stations during the evening which he had not heard before: R. Broadland via Brundall 1152 (0.83kW); R. Forth via Colinswell 1548 (2.2kW) and Northants 96 via Kings Heath 1557 (0.76kW). **P. Parker** in Reading compiled his first log for the chart, including R. Norfolk via Postwick 855 (1.5kW) and via West Lynn 873 (0.3kW), both were heard during daylight.

In London, **Phil Townsend** spent a good deal of time trying different antennas with his S.E.M. QRM eliminator in an attemt to overcome the interference from the electric trains which pass nearby. Having failed to obtain satisfactory results, he discovered that the interference was by-passing the QRM eliminator and entering the receiver direct. After removing the paint between the joints in the case of his Lowe SRX-30 receiver and then earthing it, the eliminator became more effective, but Phil has not yet managed to get it to eliminate the crackles, so further antenna experiments are now proceeding.

DXers:
- A: Jon Baker, Selsey.
- B: Ian Bond, Wirral.
- C: Matthew Clarke, Birmingham.
- D: Alan Curry, Stockton-on-Tees.
- E: Martyn Doig, Denbigh.
- F: Simon Hamer, New Radnor.
- G: Francis Hearne, Bristol.
- H: Sheila Hughes, Morden.
- I: David Middlemiss, Eyemouth.
- J: George Millmore, Wootton, I.O.W.
- K: Chris Nykiel, Leeds.
- L: P. Parker, Reading.
- M: Christian Pritchard, Cambridge.
- N: Mark Selby, Aldershot.
- O: Tim Shirley, Bristol.
- P: Jurgen Thiel, Javea, Spain.
- Q: Mark Thompson, Wakefield.
- R: Phil Townsend, London.
- S: Neil Wheatley, Newcastle-upon-Tyne.
- T: Louis Whitfield, Luton.
- U: Martyn Williams, Sunningdale.
- V: David Wratten, Cambridge.

The next three deadlines are May 15, June19 & July 17

SEEN & HEARD

Short Wave DX

Solar activity is increasing faster than expected and it now seems that the peak of this sunspot cycle (No. 22) will be the highest since records began in 1749.

From time to time the generally excellent conditions in the **25MHz (11m)** band have been disturbed and very high noise levels (hissing effects) and complete fade-outs (s.i.d.) have resulted. R. RSA in Johannesburg 25.790 (Ger 1000-1058; Eng to UK, S. Ireland 1400-1556) have been reaching their target very well during most days. In Sutton-in-Ashfield, **Noel Carrington** rated them as SIO 444 at 1445.

R. Norway International, Oslo have extended their 11m broadcast schedule to include listeners in additional target areas. Various beam headings are involved, so their transmitting stations at Fredikstad (350kW), Kvitsoy (500kW) and Sveio (500kW) time-share their broadcasts on 25.730. Programmes in Norwegian are beamed to Australia, Middle East 0600-0645; Africa 1000-1045 (Eng on Sundays) 1200-1245, 1445-1545, 1800-1845; S. Africa, W. Africa 1100-1145; E. Africa, Middle East 1400-1445.

The RNI schedule could also include Canada, because **Alan Roberts** says that their transmission to Africa is received quite well in Quebec around 1230 despite their beam heading of 170 degrees. Alan has noted an improvement in the reception conditions during the last few weeks and he can now receive the BBC World Service via Daventry 25.750 (Eng to E. Asia, Africa 1100-1515) from 1240 onwards; R. RSA 25,790 from 1400 onwards; RFI via Issoudun 25,820 (Fr to E. Africa 0900-1600) from 1245 onwards; also R. Denmark 25.850 (Dan to W. Africa, S. Europe 1300-1452). The most reliable signals stem from the BBC and RFI.

Alan has been hearing Radio for Peace International, Sante Anna, Costa Rica on 25.945. He first heard them on February 28 at 1415 and he says they have been there every day since. They broadcast programmes in Spanish until 1502, then change to English until close down at 1815. Are any other listeners hearing these broadcasts?

The generally excellent conditions in the **21MHz (13m)** band mean broadcasts intended for outside Europe being logged during the day. Those heard during the early morning are: R. Japan via Moyabi 21.695 (Eng, Jap to Middle East 0700-0830) 444 at 0700 by **Cryil Kallam** in Sheffield; BBC via Limassol 21.470 (Eng to E. Africa 0500-1615) 44444 at 0821 by **Kenneth Reece** in Prenton; R. Prague, Czechoslovakia 21.705 (Eng, Cz to SE. Asia 0730-0930) 44333 at 0830 by Sheila Hughes in Sidmouth; R. Moscow, USSR 21.635 (Eng, Ind, Beng to SE. Asia 2300-1230) 333 at 0940 by **Mal Tedds** in Nottingham.

Later, Vatican R., Rome 21.485 (Eng, Fr, Port to Africa 1100-1220) was heard at 1207 by **Ron Pearce** in Bungay; RFI Paris via Issoudun 21.645 (Fr, Sp to C. America 1130-1400) was noted as 33333 at 1219 by **Alex Mackow** in London; Voice of the UAE, Abu Dhabi 21.730 (Ar to Middle East 0600-1600) 444 at 1240 by Philip Rambaut; R. RSA, Johannesburg 21.590 (Eng to S. Asia 1300-1356) 43444 at 1300 by **Alan Curry** in Stockton-on-Tees; R. Sweden via Horby 21.615 (Eng, Sw, Fr to USA 1400-1530) SIO 555 at 1410 by **Kenneth Buck** in Edinburgh; R. Japan via Moyabi 21.700 (Eng, Jap to Middle East 1500-1700) 23222 at 1530 by Leo Barr in Sunderland; R. DW via Cyclops 21.680 (Ur, Hi, Eng, to S. Asia 1430-1650) 45444 at 1630 by **Neil Dove** in Lockerbie; BBC via Ascension Island 21.470 (Eng to Africa 1615-1745) 333 at 1630 by **Alan Smith** in Northampton; WCSN Scotts Corner, MN 21.640 (Eng, Fr, Ger to Africa 1600-1955), logged at 1930 by **John Coulter** in Winchester.

The 13m broadcasts from R. Australia via Shepparton 21.740 (Eng 2200-0700) are intended for the S. Pacific area and the beam heading of 63 degrees does not favour the UK, consequently reception here was noted as poor or non-existent in the latest report from **George Hewlett** in Torquay.

Many broadcasters beam a variety of languages towards Europe at some time during the day. They include UAE R. Dubai 21.605 (Ar, Eng 0615-1645) 34543 at 1030 by **David Edwardson** in Wallsend; Voice of Israel, Jerusalem 21.625 (Russ, Eng, Fr 1000-1200) 55444 at 1100 by **Christian Pritchard** in Cambridge; R. RSA, Johannesburg 21.590 (Eng 1400-1556) 332 at 1400 by **Alf Gray** in Brimingham; WYFR via Okeechobee, FL 21.615 (Eng, Ger, It 1600-1845) 53343 at 1640 by **Mark Selby** in Aldershot.

There is plenty to interest the DXer in the **17MHz (16m)** band too. Broadcasts from R. New Zealand, Wellington 17.705 (Eng to Pacific area 2245-0630) have been reaching the UK during the early morning. At 0420 David Edwardson picked up one of their cricket commentaries and rated them as 23432.

George Hewlett noted that the broadcasts from R. Australia via Carnarvon 17.715 (Eng to S. Asia 0100-0915) have not been audible until later than expected. On average he rated their transmission as SIO 322 at 0730, but it

Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2010	H
2.325	ABC Tennant Creek	Australia	2010	H
2.420	R.Sao Carlos	Brazil	0303	O
2.485	ABC Katherine	Australia	2010	H
3.200	TWR	Swaziland	0430	N
3.215	R.Orange	S.Africa	2050	M
3.270	SWABC 1, Namibia	S.W.Africa	1845	K
3.338	R.Maputo	Mozambique	1746	Q
3.345	ZBS Lusaka	Zambia	0500	N
3.355	R.Nac.Luanda	Angola	1830	Q
3.355	R.Botswana	Gabarone	1700	N
3.365	GBC Radio 2	Ghana	1945	K,L,N,Q
3.400	Reykjavik	Iceland	1900	H,L,N
3.777	VOIRI Tehran	Iran	1937	T
3.905	AIR Delhi	India	1700	M,N,O
3.915	BBC Kranji	Singapore	2010	L,M,O
3.945	R.Vanuatu, Port Vila	?	2010	K
3.955	BBC Daventry	England	1935	D,E,J,T
3.955	R.Orion	S.Africa	0200	N
3.965	RFI Paris	France	2010	J,L
3.970	RFE Munich	W.Germany	2057	E,S,U
3.975	BBC Skelton	England	1715	D,N
3.980	VOA Munich	W.Germany	2000	L,R
3.985	R.Geijing, China	via SRI Berne	2115	B,E,I,N,T
3.985	SRI Berne	Switzerland	2010	L,M.N
3.990	RFE Munich	W.Germany	2000	L
3.995	DW Cologne (Julich)	W.Germany	2010	E,L,M,T,U
3.999	Voice of Viet-Nam	Viet-Nam	2145	Q
4.055	Kalinin	USSR	0001	U
4.060	R.Moscow Kharkov	USSR	2015	L,N,T
4.220	PBS Xinjiang	China	0010	G
4.460	R.Beijing	China	2050	N
4.500	Xinjiang	China	2300	G,N
4.735	Xinjiang	China	2324	G,M.P
4.740	R.Afghanistan	via USSR	1900	C,J,L,N,T
4.750	R.Bertoura	Cameroon	2020	L
4.755	Caracol Neiva	Colombia	0750	B,C,G,K,M,O
4.760	ELWA Monrovia	Liberia	2000	I,L,O
4.760	R.Moscow (Dushanbe)	USSR	1930	T
4.760	R.Afghanistan	via USSR	1841	A,M,P
4.765	R.Moscow	via Cuba	0650	O
4.770	FRCN Kaduna	Nigeria	2020	K,N
4.775	R.Gabon, Libreville	Gabon	2000	K,L,N
4.785	RTM Bamako	Mali	2020	L,N
4.785	R.Baku	USSR	0353	O
4.795	R.Moscow	USSR	1909	J,L,M,N,T
4.795	R.Moscow, Ulan Ude	USSR	2336	J,O,U
4.800	LNBS Lesotho	Maseru	1805	N
4.805	R.Nac.Amazonas	Brazil	0050	C,F,G,Q,U
4.810	R.Yerevan	USSR	2100	F,K,L,M,N,O
4.815	R. Beijing	China	2341	U
4.815	R.diff TV Burkina	Ouagadougou	2130	C,L,Q
4.820	R. Botswana	Botswana	1805	N
4.820	La Voz Evangelica	Honduras	0437	O
4.820	Khanty-Mansiysk	USSR	1930	J,L
4.825	R. Ashkhabad	USSR	2050	F,J
4.830	Africa No. 1	Gabon	2000	E,F,I,J,K,L,M, N,O,P,R,T
4.830	R. Tachira	Venezuela	0005	F,G,J,M,N,O,U
4.835	R. Tezulutlan, Coban	Guatemala	0230	M
4.835	RTM Bamako	Mali	2010	I,J,K,L,M,N,O,T
4.845	R. Fides, La Paz	Bolivia	2220	K
4.845	ORTM Nouakchott	Mauritania	1950	K,L,M,N,O
4.850	R. Yaounde	Cameroon	2000	C,K,L
4.850	R. Columbia Pt	Costa Rica	0454	O
4.850	R. Tashkent	USSR	1840	F,O,U
4.850	R. Capital, Caracus	Venezuela	2200	F,G

Freq MHz	Station	Country	UTC	DXer
4.860	Kalinin	USSR	1835	F,I,M,P
4.865	V of Cinaruco	Columbia	0443	O
4.870	R. Cotonou	Benin	2045	K,L,N
4.875	R. Nac. Boa Vista	Brazil	2030	N
4.875	Uraisk	USSR	1914	J,T
4.880	SABC Radio 5	S. Africa	1900	K,L,N
4.885	R. Clube do Para	Brazil	0700	G,K,N
4.885	Voice of Kenya	Kenya	1900	L
4.890	RFI Paris	via Gabon	0504	O
4.890	ORTS Dakar	Senegal	1955	C,L,O
4.895	R. Bare, Manaus	Brazil	0300	Q
4.895	R. Chanchamayo	Peru	0200	Q
4.895	R. Ashkabad	USSR	1740	A,J
4.895	R. Moscow, Kalinin	USSR	2000	F,I,L,O,U
4.897	R. Ulan Bator	Mongolia	0900	Q
4.897	Voice of Viet-Nam	Viet-Nam	0100	Q
4.900	R. Juventud	Venezuela	0200	Q
4.905	R. Relogio, Rio	Brazil	0035	B,G
4.905	R. Nat. N'djamena	Chad	2030	B,C,G,K,L M,N,O
4.910	R. Zambia, Lusaka	Zambia	1817	C,L,N,Q
4.915	R. Nac. Macapa	Brazil	0723	G
4.915	R. Ghana Accra	Ghana	1820	C,K,L,N
4.920	R. Quito	Ecuador	0459	G
4.920	R. Moscow B, Yakutsk	USSR	1754	F,J,O
4.930	R. Moscow, Ashkhabad	USSR	1830	F,J
4.930	R. Moscow, Tbilisi	USSR	2007	B,C,J
4.935	Voice of Kenya	Kenya	1820	C,K,M,N
4.940	R. Kiev	USSR	2020	C,F,J,M
4.940	R. Moscow, Yakutsk	USSR	0508	O
4.945	Caracol, Neiva	Colombia	0700	C,O
4.955	R. Marajoara, Belem	Brazil	0021	C,G
4.960	R. Bahu	USSR	1920	C,F,L
4.970	R. Rumbos, Caracas	Venezuela	0027	C,K,N,O,U
4.975	R. Uganda, Kampala	Uganda	2030	B,C,K,L,N
4.975	R. Dushanbe	USSR	0206	J
4.980	Ecos del Torbes	Venezuela	0231	C
4.985	R. Brazil Central	Brazil	0700	O
4.990	FRCN Lagos	Nigeria	1834	C
5.005	R. Nacional, Bata	Eq. Guinea	2130	C,I,K,L,N
5.005	R. Nepal, Kathmandu	Nepal	1704	C,O
5.010	R. Garoua	Cameroon	0502	C
5.015	R. Moscow Arkhangelsk	USSR	2040	F
5.015	R. Moscow Vladivostok	USSR	1930	L
5.020	ORTN Niamey	Niger	1940	C,K,N
5.025	ABC Katherine	Australia	2139	O
5.025	R. Rebelde, Havana	Cuba	0240	C,F
5.030	R. Impacto	Costa Rica	0105	C,M,N,O
5.030	R. Continente Caracas	Venezuela	0110	U
5.035	R. Bangui	C. Africa	2010	C,F,L
5.035	R. Alma Ata	USSR	0217	J
5.040	R. Tbilisi	USSR	1852	C,F,J,K,T
5.045	R. Cultura do Para	Brazil	2351	C,G,K,M,O
5.045	R. Togo, Lome	Togo	1912	C,K,L,N
5.050	Voz de Yopal, Yopal	Colombia	0400	M
5.050	R. Rioja	Peru	0706	O
5.050	R. Tanzania	Tanzania	1850	K
5.050	R. Mundial, Caracas	Venezuela	0739	C,K
5.055	Faro del Caribe	Costa Rica	0711	C,Q
5.055	RFO Cayenne (Matoury)	French Guiana	0655	O
5.055	TWR Manzizi	Swaziland	1843	C
5.057	R. Tirana Gjirokaster	Albania	1807	I,J,L,M,O,T
5.060	PBS Xinjang	China	0010	G
5.065	R. Candip, Bunia	Zaire	1930	C,L,M
5.090	R. Pakistan Islamabad	Pakistan	0127	U
5.260	R. Alma Ata	USSR	0041	J,U

DXers:
- A: Jon Baker, Selsey.
- B: Leo Barr, Sunderland.
- C: Ian Baxter, Blackburn.
- D: Ian Bond, Wirral.
- E: Alan Curry, Stockton-on-Tees.
- F: Neil Dove, Lockerbie.
- G: David Edwardson, Wallsend.
- H: Simon Harner, New Radnor.
- I: Sheila Hughes, Morden.
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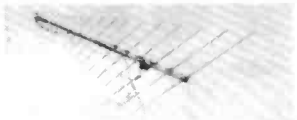

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SEEN & HEARD

often peaks to 433 by 0900. In Spain, Jurgen Thiel has been hearing their broadcasts via Shepparton 17.795 (Eng to C. Pacific and W. USA 2200-0800) from 2200 and via Darwin 17.750 (Eng to SE.Asia 0000-0100).

Broadcasts to other areas were noted too. They stemmed from KYOI Saipan, N. Mariana Islands 17.780 (Eng to E. Asia 0200-0800) 43433 at 0641 by Kenneth Reece; R. Moscow, USSR 17.565 (Eng, Fr to W. Africa 1000-1600) 33333 at 1221 by Alex Mackow. BBC via Mahe, Seychelles 17.885 (Eng to E. Africa 0900-1400) SIO 111 at 1351 by Philip Rambaut; R. Oman, Thumrait 17.735 (Ar to Middle East, N. Africa 0800-1700) 33323 at 1500 by Christian Pritchard; RTM Tangier 17.595 (Fr, Eng to Middle East, N. Africa 1400-1700) 543 at 1558 by **Neil Wheatley** in Newcastle-upon-Tyne; VOA via Monrovia 17.740 (Ha to W. Africa 1600-1630) logged by John Coulter at 1605; VOA via Greenville 17.640 (Port, Fr W. Africa 1730-2200) 354 at 1900 by **Fred Pallant** in Storrington; R. Nederlands via Bonaire 17.605 (Ar, Eng, Fr, Du to W. Africa 1730-2125) 333 at 1924 by Mal Tedds; BBC via Antigua 17.760 (Eng to S. America 2000-2115) 333 at 2045 by Alan Smith; VOA via Greenville 17.785 Eng to W. Africa 1600-2200) 22222 at 2131 by **Ian Curry** in Stockton-on-Tees; VOA via Tinang 17.820 (Eng to E. Asia 2200-0100) 54444 at 0047 by **Richard Radford-Reynolds** in Southampton; KVOH Van Nuys, CA 17.775 (S, Eng to C. America 1400-0100) 24333 at 0052 by David Wratten.

In contrast, relatively few of the broadcasts to Europe were logged. Among those heard were: Voice of the UAE, Abu Dhabi 17.820 (Ar 0600-1600) SIO 433 at 1425 by Kenneth Buck; WYFR via Okeechobee, FL 17.750 (Eng 1700-1745)43433 at 1705 by **John Nash** in Brighton; R. RSA, Johannesburg 17.795 (Eng 1800-1856) 54444 at 1814 by Mark Selby; RCI via Sackville 17.820 (Russ, Uk, Fr, Eng, Pol, Ger 1430-1800) 55545 at 1908 by Neil Dove; R. HCJB, Quito 17.790 (Cz, Ger, Eng, Sw, Norw, Dan, Fr, Sp 1800-2230) 43443 at 2140 by Sheila Hughes.

Long distance paths have been open to the UK in the **15MHz** (19m) band. The good propagation conditions enabled broadcasts from Australia and New Zealand to reach the UK though intended for other areas. During some days however, very little DX could be received because solar events disrupted reception.

Ron Pearce picked up R. Australia's broadcast to the central Pacific areas via Shepparton 15.160 (Eng 2100-0700) at 2100. Their transmission was rated as 44554 by **John Parry** in Northwich at that time. Around 0500, David Edwardson listened to their broadcast to the S. Pacific area via Shepparton 15.240 (Eng 2100-0730) and rated it as 24432. Their transmissions via Carnarvon to E. Asia 15.395 (Eng, Chin 0100-0900) were noted as SIO 222 at 0855 by Alan Smith and to S. Asia 15.415 (Eng 0900-1100) as 23443 at 1000 by David Wratten.

Broadcasts from R. New Zealand to Australia 15.150 (Eng 2245-0630) have been attracting the attention of many UK DXers during the early morning and some now have their attractive QSL card. Remember that they request two IRCs if you wish to receive their QSL. John Nash says it took just fourteen days for their QSL to reach him. Kenneth Reece has been monitoring their broadcasts on a fairly regular basis and the signal ratings noted in his log vary from inaudible to 33433 at 0550.

Some rare DX spots and interesting broadcasts were noted in the latest logs: RFP Papeete, Tahiti 15.170 (Fr, Tah to Oceania 1600-0930) 24323 at 0533 by David Wratten; R. Japan via Yamata 15.270 (Eng, Jap to Australia 0500-1000) 33333 at 0659 by Kenneth Reece; Voice of Greece, Athens 15.630 (Gr, Eng to E. Asia 1000-1050) 45344 at 1045 by Mark Selby; WYFR via Taipei 15.055 (Eng to S. Asia 1302-1502) 333 at 1355 by Alan Smith; BSKSA Riyadh, Saudi Arabia 15.060 (Ar to N. Africa, S. Europe 1100-1700) 444 at 1445 by Kenneth Buck; KUSW Salt Lake City 15.650 (Eng to E. USA 1600-2200) 35433 at 1600 by John Nash; VOA via Colombo 15.395 (Eng to S. Asia 1400-1800) 222 at 1607 by Philip Rambaut; R. DW Cologne via Wertachtal 15.105 (Ur. Hi, Eng to S. Asia 1430-1650) 54444 at 1625 by **Ian Bond** (Wirral); VOA via Greenville 15.195 (Fr to W. Africa 1830-2200) 333 at 1830 by Fred Pallant; RAI Rome 15.385 (It to E. USA 1830-1905) 44444 at 1832 by Leo Barr; R. Sophia 15.310 (Eng, Port, Fr to W. Africa 1530–2130) 433 at 1852 by Mal Tedds; KYOI Saipan, N. Mariana Islands 15.405 (Eng to E. Asia 2200-0200) 23442 at 2200 by Neil Dove; KUSW Salt Lake City 15.580 (Eng to E. USA 2200-0100) 32222 at 2305 by Alan Curry; R. Nacional, Santiago 15.140 (Sp to S. America 1030-0400) 35333 at 2305 by Roy Patrick; AWR Agat, Guam 15.125 (Jap, Ind, Bur to SE Asia 2200-0200) 22112 at 0033 by Christian Pritchard; R. HCJB, Quito 15.150 (Fr. Eng to USA 0000-0300) 333 at 0100 by **Terry** Roy in Gateshead.

Some broadcasts to Europe were mentioned too: VOIRI Tehran, Iran 15.084 (Sp, Ar, Far, Tur, Fr 24hrs) SIO 434 at 0845 by David Middlemiss; R. Moscow, USSR 15.540 (Eng 1100-1600) 55455 at 1400 by **Ken Whayman** in Bexleyheath; Voice of Israel, Jerusalem 15.615 (Heb 0815-1630) 544 at 1450 by Neil Wheatley; R. Kuwait via Sulaibiyah 15.505 (Ar 0700-0000) 43333 at 1537 by Alex Mackow; Voice of Vietnam, Hanoi 15.010 (Eng, Russ, Viet, Fr, Sp 1600-2130) 443 at 1620 by Noel Carrington; UAE R. Dubai 15.300 (Ar, Eng 1400-2050) 333 at 1635 by Matthew Clarke; R. RSA, Johannesburg 15.365 (Eng 1800-2056) as "perfect reception" at 1830 by Edward Turnbull; RHC Havana, Cuba 15.155 (Ar, Sp to W. Europe, N. Africa 1900-2220) at 1900 by Tim Shirley; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, Ger, Fr, It, Sp, 1700-2300) 52433 at 2110 by **Max Wustrau** in Bedford; R. HCJB, Quito 15.270 (Cz, Ger, Eng, Sw, Norw, Dan 1800-2200) 333 at 2130 by Alf Gray.

The **13MHz** (22m) band has attracted another broadcaster: R. Jordan in Amman. Their news bulletin in English on 13.655 was rated as 25322 at 1400 by Roy Patrick. Other broadcasters using the band include SRI via Sottens, Switzerland 13.685 (It, Eng, Ger, Fr to Australia, Pacific area 0745-1030) 34434 at 0845 by Leo Barr; SRI via Sottens 13.635 (Eng, Fr, Ger to S. Asia 1315-1500) 444 at 1333 by Matthew Clarke; R. Nederlands via Flevo 13.770 (Eng, Ar to S. Asia, Middle East 1430-1625) 54444 at 1440 by Alan Curry; WCSN Scotts Corner, Maine 13.760 (Eng, Fr, Ger to Europe 1400-1555) 433 at 1445 by Alan Smith; R. Pakistan 13.675 Ur, Eng to Middle East 1315-1630) 343 at 1615 by Kenneth Buck; R. Prague, Czechoslovakia 13.715 (Eng, Cz, Ar, Fr to S. Asia, Middle East 1430-2125) 33333 at 1916 by Alex Mackow.

Freq kHz	Station	Location	Time (UTC)	DXer
		USA		
690	KHEY	El Paso, TX	0330	C
770	WABC	New York, NY	0120	A
840	WHAS	Louisville, KY	0130	C
1010	WBIX (WTXL)	Jacksonville Bch FL	2300	C
1010	WINS	New York, NY	0120	A,B,C,D
1050	WFAN	New York, NY	0125	A,D
1060	WTTP	Natick, MA	0530	C
1080	WEEP	Pittsburg, PA	2100	C
1210	WCAU	Philadelphia, PA	0015	A,B,D
1500	WTOP	Washington, D.C.	0130	A
1510	WSSH	Boston, MA	2330	A,B,C
1550	WYNX	Smyrna, GA	0300	C
1560	WGMM	Nashville, TN	2200	C
		Canada		
590	VOCM	St. John's, NF	0110	A,D
680	CIYQ	Grandfalls, NF	2335	B,D
750	CBGY	Bonavista Bay, NF	0120	A
820	CHAM	Hamilton, ON	0600	C
920	CJCH	Halifax, NS	0000	A,B
930	CFBC	St. John, NB	0125	A
930	CJYQ	St. John's NF	0100	A,B,D
940	CBM	Montreal, PQ	0130	A
1000	CKBW	Bridgewater, NS	0130	A
1010	CFRB	Toronto, ON	0700	C
1070	CBA	Moncton, NB	0400	C
1200	CFGO	Ottawa, ON	0015	B
		C. America & Caribbean		
705	Kingston	St. Vincent	0150	A
770	R. Jamaica	Spur Tree, Jamaica	0200	A
1100	ZDK	Antigua	0115	A
1570	Atlantic Beacon	Turks & Caicos Ils	0130	A
1580	VOA	Antigua	0130	A
1610	Caribbean Beacon	Anguilla	0030	A,C
		South America		
1220	R. Globo	Rio, Brazil	0100	C
		Other Areas		
650	Greenlands R	Godthab, Greenland	0130	A
720	Greenlands R	Simiutaq, Greenland	0130	A

DXers:
A: Simon Hamer, New Radnor.
B: Roy Patrick, Derby.
C: Tim Shirley, Bristol.
D: Mark Thompson, Wakefield.

Conditions in the **11MHz (25M)** band have enabled two of R. Australia's broadcasts via Shepparton to reach the UK during the early morning: 11.910 (Eng to S. Pacific, Europe 0400-0630) as SIO 433 at 0530 by George Hewlett and 11.720 (Eng to C. Pacific 0830-0930) as 33333 at 0909 by Kenneth Reece.

Broadcasts from a number of places were noted during the day: TWR Agana, Guam 11.805 (Eng to Australia 0930-1100) 23222 at 0940 by Leo Barr; KYOI Saipan, N. Mariana Islands 11.900 (Eng to E. Asia 0800-1600) 42433 at 1320 by John Nash; AWR Agat, Guam 11.980 (Eng to S. Asia 1600-1700) 44334 at 1630 by Christian Pritchard; R. Pyongyang, N. Korea 11.350 (Ar, Kor to N. Africa, Middle East 1500-2050) 454 at 1700 by John Coulter; R. Beijing, China 11.600 (Eng to S. Asia, Africa 1400-1755) at 1700 by P. Parker; FEBA R., Mahe 11.865 (Swa, Oro, Am, Fr to E. Africa 1615-1906) 33333 at 1702 by Alex Mackow; SLBC, Colombo 11.800 (Si, Eng, Ur to Middle East 1645-1845) at 1800 by Simon Hamer; RNB Brasilia, Brazil 11.780 (Port to Brazil 1100-2200) 54444 at 2145 by Neil Dove; BBC via Kranji 11.850 (Bur, Beng, Hi to S. Asia 0015-0135) 54444 at 0015 by Richard-Reynolds.

Broadcasts in a variety of languages are beamed towards Europe. They include RFI via Issoudun 11.670 (Fr, Eng, Yu 0700-1700) 434 at 1250 by Ian Bond; Vatican R., Rome 11.740 (It, Sp, Port, Fr, Eng, Ger, Pol 1330-1630) 333 at 1520 by David Middlemiss; Voice of Greece, Athens 11.645 (Gr, Eng, Sw 1500-1550) 444 at 1530 by Terry Roy; Voice of the UAE, Abu Dhabi 11.965 (Ar 1600-2130) 454 at 1700 by Kenneth Buck; Voice of Vietnam, Hanoi 12.020 (Eng, Russ, Viet, Fr, Sp 1600-2130) 444 at 1834 by Philip Rambaut; R. Pakistan, Islamabad 11.570 (Ur, Eng, Fr 1645-2015) 44554 at 1900 by John Parry; R. Kuwait, State of Kuwait 11.665 (Eng 1800-2100) at 1950 by Ron Pearce; WCSN Scotts Corner, MN 11.680 (Eng, Fr, Ger 2000-2155) 544 at 2005 by Alan Smith; RHC Havana, Cuba 11.800 (Eng, Fr 1900-2250) 34333 at 2020 by David Wratten; AIR via Aligarh, India 11.620 (Eng 1845-2230) 333 at 2048 by Julian Wood in Buckie; R. Damascus, Syria 12.085 (Ger, Fr, Eng 1800-2105) 433 at 2059 by Mal Tedds; R. Sophia, Bulgaria 11.720 (Eng, Ger, It, Fr 1930-2225) 444 at 2140 by Noel Carrington; Voice of Israel, Jerusalem 11.605 (Fr, Eng, Yid 2200-2325) at 2245 by **Francis Hearne** in Ilford; R. Cairo, Egypt 12.050 (Ar 1500-2350) 54334 at 2339 by Max Wustrau; R. Japan via Moyabi, Gabon 11.800 (Jap, Eng 2200-0000) 54444 at 2348 by Mark Selby.

The **9MHz** (31m) broadcasts from R. Australia to Europe and S. Asia via Shepparton 9.655 (Eng 0700-1030) are being received here quite well. **David Minter** (Portland) noted 43333 at 0830, which is typical just now. Their transmissions via Shepparton to S.

SEEN & HEARD

Freq kHz	Station	Country	Power (kW)	DXer
520	Hof-Saale	W.Germany	0.2	M,P*,U*
531	Ain Beida	Algeria	600	H*,O,P*,T*
531	Leipzig	E.Germany	100	J,M*,P*,U*
531	Beromunster	Switzerland	500	O,P*,U*
540	BRT-2 Wavre	Belgium	150/50	J,L*,O,P*,T,U*
540	Sidi Bennour	Morocco	600	H*,P*
549	Les Trembles	Algeria	600	H,P,T
549	DLF Beyreuth	W.Germany	200	H*,J,L*,M*,P*,U*
567	RTE-1 Tullamore	S.Ireland	500	A,E,G*,H*,I,J,K, P,Q*,T,U*
567	West Berlin	W.Germany	100	H*,T*
576	R.DDR Schwerin	E.Germany	250	P*
576	Stuttgart	W.Germany	300	H*,J,L*,P*,T*
585	Orf Wien	Austria	600	O,P*,T*
585	RNE-1 Madrid	Spain	200	H*,J,L*,P*
594	HRF Frankfurt	W.Germany	400	H*,J,P*,T*
594	Oujda-1	Morocco	100	P*
603	BBC-R4 Newcastle	UK	2	K,P
612	RTE-2 Athlone	S.Ireland	100	E,G*,H*,J,K,P, Q*,T*,U*
621	RTBF-Wavre	Belgium	300	J,P*,Q*,T*,U*
621	RNE-1 Santa Cruz	Tenerife	100	P*
630	Vigra	Norway	100	B*,S*
630	Tunis-Djedeida	Tunisia	600	P*
630	Saratov	USSR	?	M*
639	BBC Limmasol	Cyprus	500	M*
639	Liblice	Czechoslovakia	1500	J
648	BBC Orfordness	UK	500	A,I,K,L,O,P,T
648	Palma de Mallorca	Spain	10	O
657	BBC Wales	UK	2	E
666	Bodenseesender	W.Germany	300/180	H*,L,T*
675	Marseille	France	600	H*,T*
675	Hilversum-3 Lopic	Holland	120	B*,J,Q*,T*
684	RNE-1 Sevilla	Spain	250	H*
684	Beograd	Yugoslavia	2000	Q*
693	BBC Droitwich	UK	150	O
702	Monte Carlo	Monaco	300	O
702	Aachen/Flensburg	W.Germany	5	H*
711	Rennes 1	France	300	J,O
711	Heidelberg	W.Germany	5	O,U*
720	BBC Lisnagarvey	N.Ireland	10	O
720	BBC Lots Road London	UK	0.5	J,K,Q*,T
720	WDR-2 Langenberg	W.Germany	200	O
729	RTE-1 Cork	S.Ireland	10	S*
729	Oviedo	Spain	50	L*,T*
738	Paris	France	4	J
738	RNE-1 Barcelona	Spain	250	L*,U*
747	Hilversum-2 Flevo	Holland	400	H*,J,L,Q*,T,U*
756	Brunswick	W.Germany	800/200	H*,I,J,O,T*,U*
765	Sottens	Switzerland	500	J,T*
783	Burg	E.Germany	1000	H*,J,Q*,U*
792	Sevilla	Spain	20	L*
801	BRF via Munich	W.Germany	420	H*,P*,T*
810	BBC Westerglen	UK	100	J,K,T*
819	Warsaw	Poland	300	J
837	Nancy	France	200	J
837	R.Popular, Sevilla	Spain	10	L*
846	Rome	Italy	540	G*,H*,J,T*
855	Murcia	Spain	125	L*,T*
864	Santah	Egypt	?	P*
864	Paris	France	300	J
873	AFN Frankfurt	W.Germany	150	E,F*,H*,J,L*,T*
882	BBC Washford	UK	70	A,K,Q*,T*
891	Algiers	Algeria	600/300	H*,J,P,T*
900	Milan	Italy	600	G*,H*,J,L,T*
918	R.Intercont. Madrid	Spain	20	J
927	BRT-1 Wolvertem	Belgium	300	B*,I,J,Q*
936	Radio Bremen	W.Germany	100	I,L
963	Pori	Finland	600	D*,E*,H*,J,N*,R
972	NDR/WDR Hamburg	W.Germany	300	H*,I,J,L,T*
981	Algiers	Algeria	600/300	J,L,S*
990	SER R.Bilbao	Spain	10	L*
1008	Hilversum-5 Flevo	Holland	400	I,J,Q*
1017	Wolfsheim	W.Germany	600	H*,J,L,T*
1026	Graz-Dobl	Austria	100	S*
1035	Prog.3 Lisbon	Portugal	120	T*
1044	DDR-1 Burg	E.Germany	250	J
1044	Sebaa Aioun	Morocco	300	H*
1053	Tripoli	Libya	50	O
1053	BBC-R1 Droitwich	UK	150	O
1062	Kalundborg	Denmark	250	J,L*,Q*,R
1062	Diyabakir	Turkey	300	P*
1071	Brest	France	20	J,L,T
1071	Lille	France	40	H*,Q*
1080	Katowice	Poland	1500	T*
1089	Adrar	Algeria	?	O*
1089	BBC-R1 Brookmans Pk	UK	150	O
1098	Bologna	Italy	60	B*
1107	AFN via Munich	W.Germany	40	L*,T*
1107	BBC-R1 Wallasey	UK	0.5	C
1125	La Louviere	Belgium	20	J
1125	BBC Llandrindod Wells	UK	1	P
1125	Zagreb	Yugoslavia	200	L*
1134	Valencia	Spain	10	J
1134	Zagreb	Yugoslavia	300	B*,L*
1143	AFN via Stuttgart	W.Germany	10	F*,I,T*
1143	Kaliningrad	USSR	150	C*,F*,L*,Q*,T*
1170	Erfurt	E.Germany	?	T*
1179	Solvesborg	Sweden	600	B*,C*,D*,E,F*, G*,J,Q*,R,T*
1188	Kuurne	Belgium	5	J
1188	Szolnok	Hungary	135	B*
1188	San Remo	Italy	6	O
1197	VOA via Munich	W. Germany	300	D,E,L,S
1197	Minsk	USSR	50	B*
1206	Bordeaux	France	100	J
1206	Wroclaw	Poland	200	G*,L*,T*
1215	BBC Moorside Edge	UK	100	A
1215	Tartu	USSR	50	H*,S*
1233	Liege	Belgium	5	J
1233	Prague	Czechoslovakia	400	H*,L*,T*
1251	Siofok	Hungary	135	J
1260	Szczecin	Poland	160	T*
1269	Neuminster	W.Germany	600	E,F*,H*,J,L,Q*,T*
1278	RTE-2 Dublin/Cork	S.Ireland	10	T*
1287	Litomysl/Liblice	Czechoslovakia	300/200	B*,F*,G*,H*,L*,Q*
1296	BBC Orfordness	UK	500	J
1314	Kvitsoy	Norway	1200	H*,I,J,L,Q*
1323	BBC Zyyi	Cyprus	50	I
1323	R.Moscow via Leipzig	E.Germany	150	G*,H*,L*,O*,Q*
1332	Rome	Italy	300	J,O,Q*
1341	BBC Lisnagarvey	N.Ireland	100	J,O,Q*
1350	Nancy/Nice	France	100	I,J,L*,S
1359	RBI Berlin	E.Germany	250/100	D*,F*,L*,S
1368	Manx Radio, Foxdale	I.O.M.	20	F*,I,K*,P,S*
1377	Lille	France	300	I,J
1377	Porto	Portugal	10	O
1386	Kaunas	USSR	1000	H*,J,L*,O*,Q*,S*,T*
1395	R.Tirana via Lushnje	Albania	1000	B*,C*,F*,G*, J,L*,S*,T*
1404	Brest	France	20	J
1404	Dnepropetrovsk	Ukraine	30	O*
1413	RCE Zaragoza	Spain	20	J,L*,O
1422	Alger-2	Algeria	50/25	O*
1422	Heusweiler	W.Germany	600	H*,J,L*,O
1422	Saarbrucken	W.Germany	1200/600	B*,T*
1431	Dresden	W.Germany	250	O*
1440	Marnach	Luxembourg	1200	G*,H*,J,L*,O, Q*,T*
1449	BBC-R4 Redmoss	UK	2	F*
1467	Isfahan	Iran	100	B*
1467	TWR Monte Carlo	Monaco	1000/400	L*,O,T*
1476	Wien-Bisamberg	Austria	600	H*
1494	Leningrad	USSR	500	J,T*
1503	Stargard	Poland	300	G*,J,L*,T*?
1503	Pamploma	Spain	2	J
1512	BRT Wolvertem	Belgium	600	B*,G*,J,Q*,T*
1512	Jeddah	Saudi Arabia	?	P*
1521	Kosice	Czechoslovakia	600	H*,S*
1521	Radio Manresa	Spain	2	O
1530	Vatican Radio, Rome	Italy	150/450	B*,D*,G*,H*, J,L*,O*,T*
1539	DLF Mainflingen	W.Germany	700	H*,J,O*,Q*,T*,U*
1566	Sarnen	Switzerland	300	Q*,T*
1566	Sfax	Tunisia	1200	U*
1575	RBI via Burg	E.Germany	250	H*,J,T*,U*
1584	Pamplona	Spain	2	O
1593	Langenberg	W.Germany	400/800	B*,H*,J,L*,O,Q*, T*,U*

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

Pacific areas on 9.580 (Eng 0800-2030) were noted as 222 at 0830 by Alan Smith and to SE. Asia on 9.770 (Eng 1000-1100) as "good" at 1000 by Tim Shirley.

Broadcasts from R. New Zealand 9.850 (Eng to Australia 0900-1115) have also been reaching us. David Edwardson noted them as 24532 at 0900. Broadcasts to other areas have also been heard: WCSN Scotts Corner, MN 9.870 (Eng, Fr, Ger to W. Africa 0400-0555) SIO 333 at 0541 by Matthew Clarke; BBC via Ascension Island 9.600 (Eng to W. Africa 0545-0815) 43443 at 0628 by Kenneth Reece; R. HCJB Quito, Ecuador 9.745 (Eng to Australia, S. Pacific 0700-1030) 54334 at 0757 by Mark Selby; BBC via Kranji,

DXers:

A: Jon Baker, Selsey.
B: Leo Barr, Sunderland.
C: Ian Bond, Wirral.
D: Noel Carrington, Sutton in Ashfield.
E: Matthew Clarke, Birmingham.
F: Alan Curry, Stockton-on-Tees.
G: Sheila Hughes, Sidmouth.
H: Alex Mackow, London.
I: Dave Middlemiss, Eyemouth.
J: George Millmore, Wootton I.O.W.
K: Chris Nykiel, Leeds.
L: Mark Selby, Aldershot.
M: Tim Shirley, Bristol.
N: Mal Tedds, Nottingham.
O: Jurgen Thiel, Javea, Spain.
P: Mark Thompson, Wakefield.
Q: Phil Townsend, London.
R: Edward Turnbull, Gosforth.
S: Neil Wheatley, Newcastle-upon-Tyne.
T: Martyn Williams, Sunningdale.
U: Max Wustrau, Bedford.

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SEEN & HEARD

Fig. 1: Kenneth Reece's listening post in Prenton

Singapore 9.740 (Eng to S. Asia 0900-1515) 35333 at 1355 by John Nash; R. Prague, Czechoslovakia 9.605 (Eng, Cz, Ar to Africa 1430-1825) 33222 at 1430 by Sheila Hughes; SLBC Colombo, Sri Lanka 9.720 (Eng to S. Asia 1230-1630) 34333 at 1525 by David Wratten; KYOI Saipan, N. Mariana Islands 9.465 (Eng to E. Asia 2000-2200) 45444 at 2030 by Christian Pritchard; Voice of Israel, Jerusalem 9.010 (Eng, Fr to Africa 2000-2055) 43444 at 2001 by Ian Curry; R. Finland via Pori 9.670 (Eng, Fin, Sw to E. Asia, S. America 2200-2320) 333 at 2209 by Mal Tedds; Voice of Turkey, Ankara 9.445 (Eng, Tur to USA 2300-0450) 555 at 2302 by Neil Wheatley; Voice of Israel, Jerusalem 9.435 (Eng, Heb to USA 0000-0255) at 0000 by Francis Hearne; WCSN Scotts Corner, MN 9.850 (Eng, Fr, Ger to W. Africa 0000-0155) 54444 at 0130 by David Minter.

Broadcasts intended for Europe stem from TWR Monte Carlo 9.480 (Eng 0830-1130) SIO 333 at 0830 by Terry Roy; AWR via Sines 9.670 (Pol, Ger, Eng 0700-0930) 33333 at 0915 by Alan Curry; R. Nederlands via Flevo 9.715 (Du, Eng 1030-1225) 54555 at 1130 by Ken Whayman; R. Tirana via Lushnje 9.480 (Fr 1230-1300) at 1235 by John Coulter; R. Polonia, Warsaw 9.540 (Fr, Ger, Pol, Dan, Eng 1130-1730) 434 at 1628 by Ian Bond; R. Jordan via Al Karanah 9.560 (Eng 0500-2200) 44544 at 1830 by Jon Baker; R. Beijing, China 9.965 (It, Alb 1830-2125) 433 at 1837 by Philip Rambaut; Voice of Greece via Kavala 9.425 (Gr 1700-2000) 3333 at 1924 by Alex Mackow; R. Damascus, Syria 9.950 (Ger, Fr, Eng 1800-2105) at 2011 by Julian Wood; R. Budapest, Hungary 9.585 (It, Tur, Ger, Hung, Eng 1630-2200) 444 at 2115 by Noel Carrington; R. Baghdad, Iraq 9.770 (Fr, Ger, Eng 1900-2255) at 2145 by Ron Pearce; AIR via Delhi 9.910 (Eng 2000-2230) 43433 at 2145 by Max Wustrau; VOFC Taipei, Taiwan 9.955 (Eng, Sp 2200-0000) 333 at 2200 by Cyril Kellam; RCI via Sackville 9.760 (Eng 2200-2300) 54554 at 2210 by Neil Dove.

Broadcasts to Europe in the **7MHz** (41m) band include WCSN Scotts Corner, MN 7.365 (Eng, Fr, Ger 0600-0755) SIO 533 at 0630 by Alan Smith; WYFR via Okeechobee, FL 7.355 (Russ, Ger, Eng 1400-0730) 54455 at 0700 by Mark Selby; R. Peace and Progress, USSR 7.440 (Eng 1400-1430) 35433 at 1415 by John Nash; R. Australia via Carnarvon 7.205 (Eng 1430-2030) 43433 at 1732 by Kenneth Reece; R. Prague, Czechoslovakia 7.345 (Eng, Ar, Fr, Sp, Port 1500-2125) 43333 at 1800 by Sheila Hughes; R. Bangladesh, Dhaka 7.520 (Eng, Ben 1815-2000) 44333 at 1815 by David Wratten; RBI via Nauen 7.295 (Eng, Fr 1815-1945) 444 at 1915 by Mal Tedds; AIR Via Delhi 7.410 (Hi, Eng 1845-2230) 34453 at 1905 by John Parry; Voice of Greece, Athens 7.430 (Gr, Eng, Ger, Fr 1900-1950) 44444 at 1920 by Ian Curry; RAI Rome 7.290 (Eng 1935-1955) 43233 at 1936 by Alan Curry; Voice of Israel, Jerusalem 7.465 (Eng, Fr 2000-2055) 45433 at 2030 by Neil Dove; IBRA Radio via Cyclops 7.110 (Pol, Ger, Eng 2000-2115) 433 at 2045 by Terry Roy; R. Budapest, Hungary 7.220 (Ger, Tur, Hung, Eng, Sp 1730-2230) 44444 at 2101 by Alex Mackow; R. Moscow, USSR 7.150 (Eng 1700-2300) 434 at 2228 by Ian Bond; R. Polonia, Warsaw 7.270 (Ger, Fr, Eng 1900-2355) at 2330 by Francis Hearne; WHRI South Bend, USA 7.405 (Eng 0200-0600) 33233 at 0330 by Christian Pritchard.

During much of the day, broadcasters in Europe and Scandinavia use the **6MHz** (49m) band to reach Europe. They include RFI via Allouis 6.175 (Fr, Eng 0500-2200) 43433 at 1600 by Ken Whayman; R. Yugoslavia, Belgrade 5.980 (Fr, Ger, Gr 1700-1830) 22333 at 1729 by Alex Mackow; BRT Wavre, Belgium 5.910 (Du, Eng, Sp 1800-2225) 33444 at 1840 by Leo Barr; R. Bucharest, Romania 5.990 (Fr, Ger, Eng 1830-2126) 53433 at 2108 by Mark Selby; R. Sweden, Stockholm 6.065 (Sw, Sp, Port, Russ, Ger, Eng 1600-2230) 54555 at 2111 by Alan Curry; R. Finland via Pori 6.120 (Fin, Eng, Ger, Sw 0400-2320) 433 at 2208 by Mal Tedds; R. Austria Int, Vienna 6.155 (Ger, Eng, Fr, Sp 0400-2300) 43444 at 2252 by Max Wustrau.

R. Australia also uses this band to reach Europe via Carnarvon 6.035 (Eng 1530-2030) rated as 22432 at 1735 by Kenneth Reece. Broadcasts to other areas may also be heard here; CFRX Toronto, Canada 6.070 (Eng to E. Canada 24hrs) 23332 at 0800 by John Nash; BBC via Kranji 5.975 (Eng S. Asia 1615-1830) 433 at 1630 by Alan Smith; Voice of Lebanon, Beirut 6.550 (Ar, Eng, Fr to Middle East 0300-2300) 34333 at 1815 by David Wratten; King of Hope, Lebanon 6.280 (Fr, Eng 1945-2300) 35343 at 2135 by Neil Dove; AIR via Aligarh 6.055 (Eng to SE. Asia 2245-0115) 33433 at 0100 by Christian Pritchard; RBI via Nauen 6.080 (Eng, Ger to USA 0045-0400) 32223 at 0100 by David Minter.

Abbrv	Language
Alb	Albanian
Am	Amharic
Ar	Arabic
Beng	Bengali
Bur	Burmese
Chin	Chinese
Cz	Czechoslovakian
Dan	Danish
Du	Dutch
Eng	English
Far	Farsi
Fin	Finnish
Fr	French
Ger	German
Gr	Greek
Ha	Hausa
Heb	Hebrew
Hi	Hindi
Hung	Hungarian
Ind	Indonesian
It	Italian
Jap	Japanese
Kor	Korean
Norw	Norwegian
Oro	Oromo
Pol	Polish
Port	Portuguese
Russ	Russian
Si	Sinhala
Sp	Spanish
Sw	Swedish
Swa	Swahili
Tah	Tahitian
Tur	Turkish
Uk	Ukranian
Ur	Urdu
Viet	Vietnamese
Yid	Yiddish
Yu	Yugoslavian

Station Addresses

BBC Wiltshire Sound, Broadcasting House, Prospect Place, Swindon SN1 3KW.

BBC Radio Jersey, Broadcasting House, Rouge Bouillon, St. Helier, Jersey, Channel Islands.

Broadcasting Corp. of New Zealand, PO Box 98, Wellington, New Zealand.

Radio Oman, Ministry of Information, PO Box 600, Muscat, Sultanate of Oman.

The Voice of the United Arab Emirates from Abu Dhabi, Ministry of Information and Culture, PO Box 63, Abu Dhabi, UAE.

Radio Austria International, PO Box 700, A-1136 Vienna, Austria.

LW MARITIME RADIO BEACONS

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

This aspect of our hobby has been attracting a growing number of listeners and many interesting beacons have been heard since the last chart in the February '89 SWM.

Since relatively low power transmitters are employed at most of the beacon sites, most newcomers to beacon DXing tend to assume that their range will be very limited, but in practice this is far from the truth, as the latest chart clearly shows. Just how well the "ground wave" signal from a particular beacon can be received during daylight will largely depend upon the nature of the path between the transmitter and the point of reception. As the signals follow the contours of the earth's surface they lose energy due to its resistivity. The resistivity is not constant — flat pastoral country or marshy and loamy areas have much lower resistivity than those containing rocks. Hills and mountains tend to absorb energy. The lowest losses occur over sea paths.

After dark a different situation arises because additional "sky wave" signals may arrive at the receiving point via the ionosphere. Beacons in Iceland, Scandinavia, France, Spain, Portugal and as far south as Algeria have been heard by DXers via sky wave paths during the last three months.

Some listeners who would like to try beacon DXing have been disappointed to find that their l.w. receiver will not tune to the beacon band, which extends from 285 to 315MHz in the UK. Provided it covers one or more of the s.w. bands and it has provision for an external antenna and earth, then the problem may be overcome by installing a v.l.f. converter ahead of the set. For those who enjoy simple home construction projects, full details of the *PW* "Taw" v.l.f. converter were published in the November '86 *Practical Wireless* — back issues and a printed circuit board for the *PW* "Taw" are available from PW Publishing in Poole. An excellent ready made crystal controlled v.l.f. convertor covering 10kHz to 500kHz with a 28.010 to 28.500MHz (10m) i.f. is available from Datong Ltd — see adverts in *SWM*.

Another problem was frequently mentioned in the letters from newcomers: the difficulty in reading the beacon callsigns, which are sent in Morse code. If you are unfamiliar with Morse code, simply jot down the dots and dashes forming each letter as you hear them and decode them later by referring to a copy of the code. Be sure to note down the frequency of each beacon alongside the dots and dashes! A cassette tape recorder can make things easier, since the callsigns can be played back as often as is necessary to decode them. In no time at all you will start to recognise the dots and dashes associated with some letters and you will be well on the way to mastering the code.

Finally, some beacon news. Alan Jarvis (Cardiff) informs me that the beacon on Flat Holm in the Bristol Channel, callsign FL on 296.5kHz, has recently been taken out of service and replaced by a beacon at Nash Point, which is on the South Glamorgan coast between Barry and Porthcawl. It uses the callsign NP on 296.5kHz. A word of caution here, because there is also a beacon at Nieuwpoort on the Belgium coast which uses the callsign NP on 296.5kHz.

SEEN & HEARD

Freq kHz	Call-sign	Station Name	Location	DXer
285.0	GY	Castle Breakwater	Channel Is	F*,I
287.3	CM	Cromer LH	Norfolk	D,F*,I,J*
287.3	CR	Channel LV	?	F*
287.3	DG	Douglas Pier LH	I.O.M.	D,J,M*
287.3	FN	Walney Island	off Lancs	D,J,M*
287.3	GA	Outer Gabbard LV	off Suffolk	D,F*, I,J*,L
287.3	GR	Goeree	Holland	I,J*K*
287.3	HN	Hornafjordur	Iceland	D*
287.3	LV	Dudgeon LV	off Norfolk	D,F*,I,J*
287.3	NR	Noordhinder LV	Holland	D*,F*,I,J
287.3	PS	Point Lynas	Anglesey	D,E, F*,J,M*
287.3	RS	Rosnaes	Denmark	D
287.3	SG	Sjaellands LH	Denmark	F*
287.3	SK	Smith's Knoll LV	off Norfolk	D,E, F*,I,J*
289.6	B	Cabo Trafalgar	Spain	F*
289.6	D	Rota	Spain	F*
289.6	FV	Falsterborev Lt	Denmark	I
289.6	LP	Loop Head	S. Ireland	D*,F*,J*
289.6	SN	Slyne Head	Ireland	J*
289.6	TN	Thyboron LH	Denmark	D*,F*,J
291.9	CP	St. Catherines Pt	I.O.W.	F*,I
291.9	ER	Pointe de Ver LH	N. France	F*,I,J
291.9	FG	Pointe de Barfleur	N. France	D*,F*,I*,J
291.9	KD	Kinnairds Head LH	Aberdeen	A,D*, E,F*,H,J
291.9	MH	Mahon, Minorca	Balearic Is	F*
291.9	MR	Montedor LH	Portugal	F*,K
291.9	NR	N. Ronaldsway LH	Orkney Is	E,J*
291.9	OR	Punta de Llobregat	Spain	D*
291.9	PB	Portland Bill LH	Dorset	F*,I
291.9	SB	Sumburgh Head	Shetland Is	E,F*
291.9	TI	Cap d'Antifer	France	F*
294.2	AH	Altacarry Head LH	Antrim	D,E,F*,J
294.2	DA	Pladda LH	Is of Arran	D*,E,F*,J
294.2	ER	Eierland LH	Holland	J*
294.2	LO	Landsort S. LH	Sweden	F*
294.2	MW	Mew Island LH	off Co. Down	D,E,F*,J
294.2	NO	Cabo de la Nao LH	Spain	F*
294.2	PA	Cabo de Palos LH	Spain	F*
294.2	RN	Rinns of Islay	Is of Islay	D*,E,F*,J
296.5	BH	Blaavandshuk LH	Denmark	D*,F*
296.5	BN	Ballycotton	S. Ireland	F*,J
296.5	FT	Cape Ferret LH	W. France	E*,F*
296.5	HM	Hanstholm	Denmark	D*,F*
296.5	KL	Sklinna	Norway	D*,F*
296.5	LA	Lista LH	S. Norway	D*,E, F*,J*
296.5	LS	Lundy Is. S. LH	off N. Devon	F*,I,J,K
296.5	MA	Cabo Machicharo LH	N. Spain	F*,J*
296.5	MY	Cabo Mayor	Spain	D*,F*
296.5	NK	Inchkeith	F of Forth	A
296.5	NP	Nieuwpoort W. Pier	Belgium	J*
296.5	NP	Nash Point	S. Wales	F*,I*
296.5	OH	Old Head Kinsale	S. Ireland	D,F*,J
296.5	SB	South Bishop LH	Pembroke	D,F*,I*,J
296.5	TR	Tuskar Rock	S. Ireland	D,E,F*,I*,J
296.5	TS	Cape Tenes Lt	Algeria	F*
296.5	VN	Capo Vaticano LH	Italy	F*
298.8	BL	Butt of Lewis	Is of Lewis	D*,F*,J
298.8	DV	Djupivogur	Iceland	D*
298.8	HA	Grahara	Finland	D*
298.8	LZ	Lizard LH	S. Cornwall	F*,I,J
298.8	MF	Muckle Flugga LH	Shetland Is	L
298.8	OB	Hoburg	Spain	F*
298.8	PE	Penlee Pt	UK	F*,I,J
298.8	QS	Casquets LH	Channel Is	F*,I,J
298.8	RD	Roches Douvres LH	Channel Is	F*,I,J
298.8	SP	Start Point LH	S. Devon	F*,I,J
298.8	TA	Gabo de Gata	Spain	F*
298.8	VG	Ile Vierge	France	G*
301.1	BA	Punta Estaca Bares	N. Spain	D*,F*
301.1	BJ	Bjornsund	Norway	D*,F*
301.1	CN	Cregneish	I.O.M.	C*,D,J
301.1	HA	Halten LH	Norway	F*
301.1	HO	Hirsholm Main LH	Denmark	F*
301.1	IA	Llanes LH	N. Spain	D*,F*
301.1	IB	Bardsey Is LH	N. Wales	C*,D*,J
301.1	NF	North Foreland LH	E. Kent	D,F*, G*,I,J,L
301.1	PS	Cabo Penas LH	N. Spain	D,F*
301.1	PY	Point of Ayre LH	I.O.M.	C*,D, E,F*,J,M*
301.1	SR	Skerries LH	Anglesey	D,E, F*,J,M*
301.1	SU	South Rock LV	Co. Down	D,E,J
301.1	VS	Grosser Vogelsand	Germany	B*,F*
301.1	WK	Wicklow Head Light	Co. Wicklow	D,E,F*,J
303.4	BM	Brighton Marina	E. Sussex	I
303.4	BN	Les Baleines	France	F*
303.4	CH	Chichester Bar	W. Sussex	F*
303.4	FB	Flamborough Hd LH	E. Yorkshire	D,E,F*,J
303.4	GX	Ile de Groix LH	N.W. France	D*,I
303.4	LM	Isle of May	off Fife	A,D,E, F*,J
303.4	LT	Longstone LH	Berwick	E,F*,J
303.4	MA	Malariff	Iceland	D*
303.4	NH	Newhaven	E. Sussex	I
303.4	PO	Poole	Dorset	L
303.4	SJ	Souter Light	Sunderland	D,E,F*,J
303.4	SN	Ile de Sein	N.W. France	F,J
305.7	CB	Corbiere	Jersey C.I.	F*,J
305.7	CS	Calais Main LH	N. France	D*,F*,I,J
305.7	FE	Cap Frehel	France	F*
305.7	FS	Fall's LV	off Kent	D,F*,G*, I,J,L
305.7	GU	Tongue LV	off Essex	F*
305.7	LS	Hirtshals	Norway	F*
305.7	OE	Ostende	Belgium	F*,J
305.7	SW	Skagen	Norway	F*
305.7	TO	Torugen	Norway	F*
305.7	WH	West Hinder	off Belgium	D*,F*,I,J
308.0	BD	Barra Head LH	Is of Barra	C*,D*,F*,J
308.0	CA	Pointe de Creach	France	D*,F*
308.0	DG	Drogden	Denmark	F*
308.0	GL	Eagle Island LH	W. Ireland	D,E,F*,J
308.0	HE	Hestehoved	Denmark	F*
308.0	HK	Texel	Germany	F*,J
308.0	MZ	Mizen Head LH	S. Ireland	D,F*,J
308.0	PI	Cabo Espichel LH	Portugal	F*
308.0	RC	Cabo Roca LH	Portugal	F*,I*
308.0	RR	Round Island LH	Nr Cornwall	D,F*,I,J
308.0	SN	Cabo de Sines	Portugal	F*
308.0	TY	Tory Island LH	N. Ireland	D,F*,J
310.3	AL	Pointe d'Ailly LH	France	F*,J*
310.3	DU	Dungeness LH	S. Kent	D*,F*,I,J,L
310.3	FI	Cabo Finisterre LH	NW Spain	F*
310.3	FP	Fifeness Pt	Fife	A,E,F*
310.3	FS	Kalkgrund	Denmark	F*
310.3	GN	Cap Gris Nez	France	F*
310.3	LR	Laeso Rende LH	Denmark	F*
310.3	PH	Cap d'Alprech	France	B*,E,F*, G*,I*,J,L
310.3	RY	Royal Sovereign LV	Eng. Chan	I
310.3	VI	Cabo Villano	Spain	D*,F*
312.5	BK	Baltiysk Rear LH	USSR	F*
312.5	BT	Mys Taran Lt	USSR	F*
312.6	FN	Feinstein	Norway	F*
312.6	FR	Faerder Lt	Norway	F*
312.6	GU	Geltungane	Norway	D*,F*
312.6	KH	Kish Bank	E. Ireland	D,F*,J
312.6	NB	Nab Tower LH	off Sussex	F*,I
312.6	PT	Souter Pt	Durham	E
312.6	RB	Cherbourg	France	B*,D*,F*,I*
312.6	SF	Skaroesfjara Lt	Iceland	D*
312.6	UK	Sunk LV	off Essex	D,F*,I*,J
312.6	VR	Utvaer	Norway	D*,F*
312.6	YE	Ile d'Yea LH	France	D*,F*
313.5	BN	Cap Bon	Tunisia	F*
313.5	CX	Cap Caxine LH	Algeria	F*
313.5	PQ	Ile Porquerolles	France	F*
319.0	LEC	Stavanger	Norway	A,B*,D,E, F*,I,J,M
344.0	KUL	Kullen High LH	Sweden	F*
381.0	AB	Akraberg LH	Faroes	D*
397.2	DHE	Helgoland	Germany	F*
404.0	NL	Nolso	Faroes	D*
406.0	VY	Visby	Sweden	F*
412.0	AS	Aarhus LH	Denmark	F*
414.0	FK	Frederikshavn Bkw	Denmark	F*

Please note, this section will next appear in the August 1989 issue.

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

DXers:

A: Kenneth Buck, Edinburgh.
B: John Coulter, Winchester.
C: Robert Cowell, Blackpool.
D: Martyn Doig, Denbigh.
E: David Edwardson, Wallsend.
F: Alan Jarvis, Cardiff.
G: Matthew King, Hayes.
H: David Middlemiss, Eyemouth.
I: John Nash, Brighton.
J: Philip Rambaut, Macclesfield.
K: Tim Shirley, Bristol.
L: Alan Smith, Northampton.
M: Neil Wheatley, Lytham St. Anne.

GOONHAVERN

33☞

is exactly 2km; this is 16 times the wavelength corresponding to a frequency of 2.5MHz and 32 times the wavelength corresponding to 5MHz - both frequencies covering areas of the h.f. spectrum used largely by shipping. It is likely, then, that the two sites at Goonhavern functioned together as an interferometer, thus increasing the accuracy of its bearings.

Counter-Espionage

Goonhavern was active with the three other locations, and may have played its part in a major post-war spy trial. In 1961, Gordon Lonsdale and Peter and Helen Kroger were convicted of espionage for the Soviet Union, having obtained secret information from the Portland Naval Base. Evidence was given at their trial by an anonymous civilian who stated that direction-finding equipment had located the transmitter near Moscow employed to send instructions to the spies.

Although not mentioned in the newspaper reports, a book published after the trial referred to "interception stations" in northern Scotland (mentioning Wick), the Midlands, and the South Coast. The southern station was probably Goonhavern.

With a history spanning U-boats to spies, the station now stands derelict. □

References

Goonhavern station is named in Public Record Office file ADM 1/26478.

Adcock direction-finders are described in many papers in the *Journal of the Institution of Electrical Engineers*, 1947 volume 94, parts 3 and 3a.

The Lonsdale case is described in *Spy Ring: The Full Story of the Naval Secrets Case*, by John Bulloch and Henry Miller (1961).

CIRKIT WEATHER SATELLITE SYSTEM

22☞

I am sure that this system is likely to appeal to those who want to make a start on weather satellite and FAX reception and that being the case, the instructions assume the buyer is already well versed on the technicalities of the subject.

Despite the short space of time in which I have been using the system I have already devised a couple of modifications and these have been successful enough to elicit some comments of surprise from Cirkit themselves when they saw the results (To the point where they are now using some of my pictures to demonstrate the system).

The first was to take the preset contrast range control out to a front panel. This allows contrast to be individually optimised for each type of satellite and FAX system whereas the unit as it stands rather relies on a comprise setting for all systems.

The second modification was to play around with the value of the resistor connected to pin-7 of the a.d.c. chip. This is the reference voltage pin and a surprising difference in picture quality can be obtained by optimising the resistor for an individual i.c. rather than just following the value recommended by the manufacturer.

It may seem that I have criticised the system in several areas but I must stress that these are minor niggles and that overall this is an excellent and versatile combination of electronics and software. Having received the unit for review I am not prepared to part with it and have decided to buy it and I feel I can offer no better recommendation than that. My only regret is that I do not have advanced programming skills because the decoder is clearly capable of producing a considerable range of grey levels and can obviously be used with any computer that will accept 8-bit data from the outside world. I would really love to see what it could do hooked to a machine such as the Commodore Amiga with its stunning graphics capability.

The cost of the interface (Cirkit order number 41-03416) is £33.83 and the SATPIC software (40-90090) £32.50 direct from **Cirkit Distribution Ltd, Park Lane, Broxbourne, Herts EN10 7NQ Tel: (0992) 444111.** □

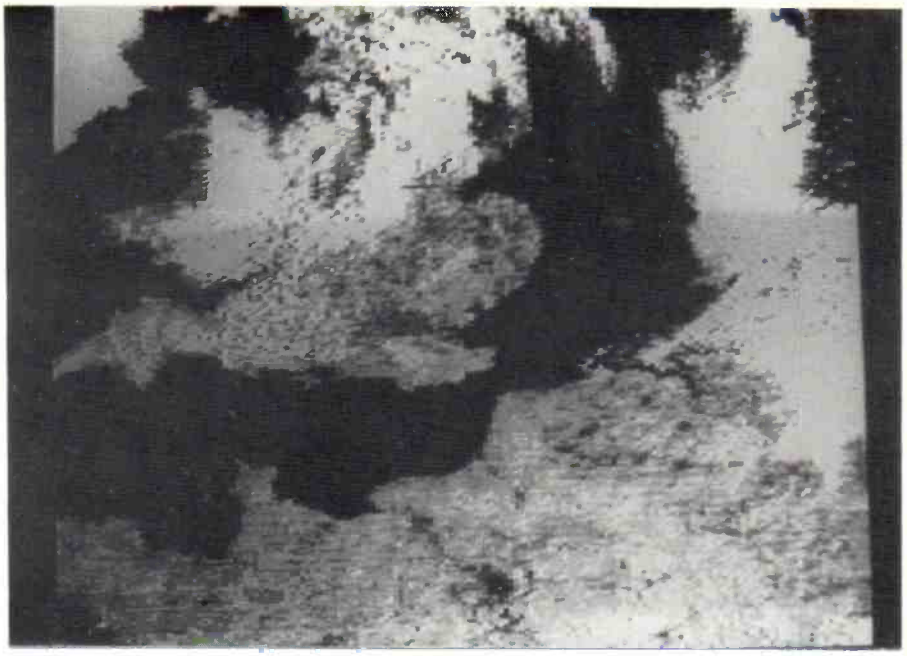

Fig. 5: The UK and the Continent (x4 zoom Mode 2). Note the darker shading of large built-up areas such as London and Paris.

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