
FOR THE RADIO LISTENER
short wave magazine
REVIEWED THIS MONTH
PK-232MBX Multi-Mode Data Controller
Lake TU3 Antenna Tuner
Build A VLF Loop Antenna
Hawaii Calls
Passport To World Band Radio
The UK Scanning Directory
February 1995 £2.25 ISSN 0037 - 4261
9 770037 426036 02
Plus Regular Features Covering
Airband, Scanning, Junior Listeners, SSB Utility Listening,
Propagation, Amateur Bands, Long, Medium & Short Waves,
Satellite TV Reports, Weather Satellites and more.

uniden®
Bearcat

Scanners Are Back!

UBC65XLT

Our new 10-channel model offers outstanding value for money, giving clear reception of Marine, Rescue Services, Amateur, PMR, and Public Service Bands Bands. Housed in a rugged case it will give years of reliable service.

Freq. : 66-512 MHz (with gaps)
Receive mode : NFM
Supplied with NiCad Batteries and Charger **£99**

UBC2300XLT

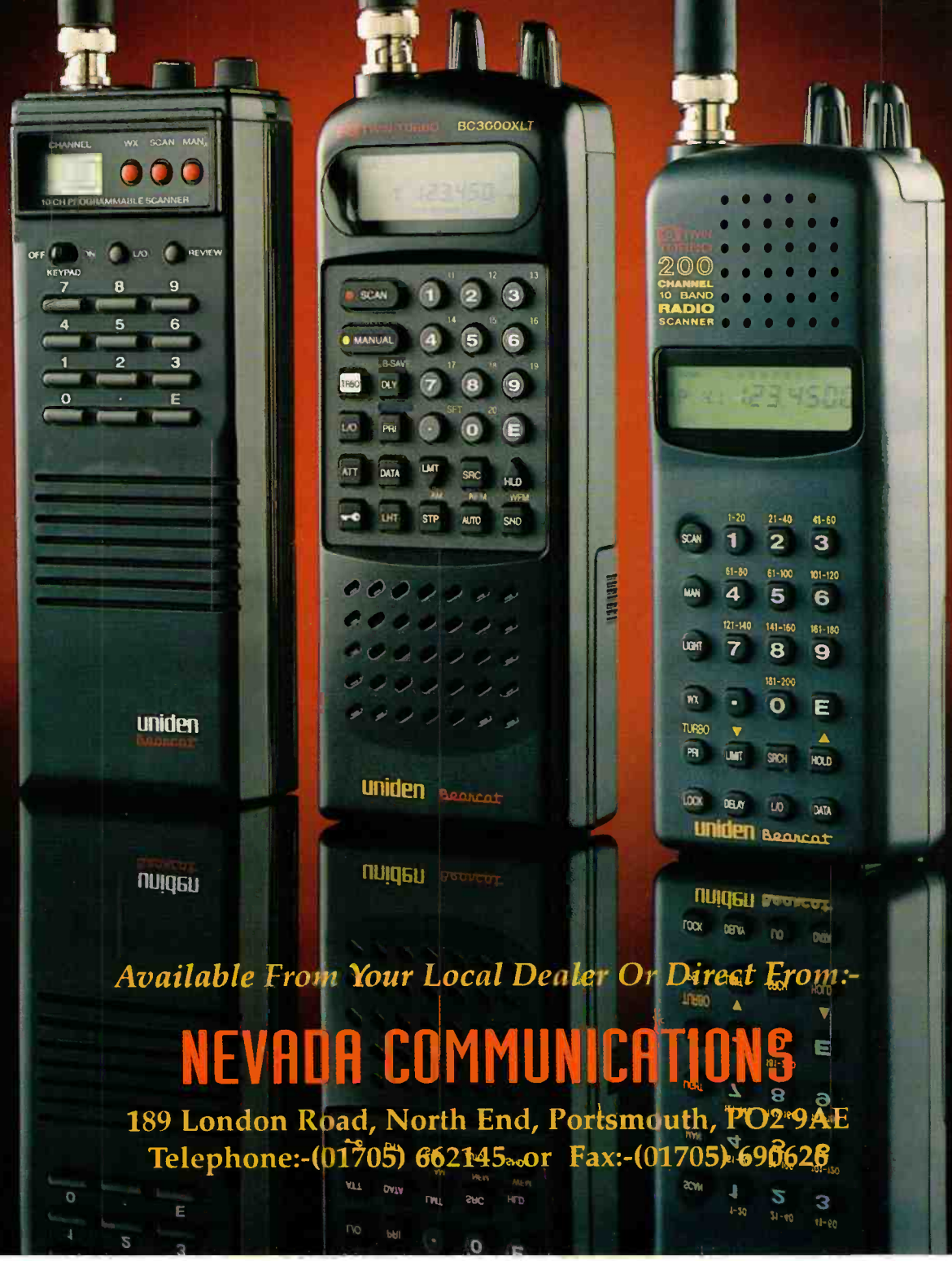
Featuring a new rotary tuner and turbo scan facility, this 400 channel model incorporates automatic memory store and search. Easy use direct keypad for frequency control and finished with a leatherette carry case.

Freq. : 68-1300 MHz (with gaps)
Receive mode : NFM & AM
Supplied with NiCad Pack and Charger **£299**

UBC220XLT

Easy to use with 200 memory channels, this model covers 10 bands from VHF to UHF. The new styled case has large clear keypad controls and high quality audio output. Already our most popular model.

Freq. : 66-956 MHz (with gaps)
Receive mode : NFM & AM
Supplied with NiCad Pack and Charger **£199**



Available From Your Local Dealer Or Direct From:-

NEVADA COMMUNICATIONS

189 London Road, North End, Portsmouth, PO2 9AE
Telephone:-(01705) 662145 or Fax:-(01705) 690628

short wave magazine

Vol. 53 ISSUE 2 FEBRUARY 1995

ON SALE JANUARY 26
Next issue on sale February 23

EDITOR: Dick Ganderton, C. Eng., MIEE, G8VFH
ASSISTANT EDITOR: Kevin Nice, BRS95787
EDITORIAL ASSISTANT: Zoë Shortland
ART EDITOR: Steve Hunt
LAYOUTS: Richard Gale

EDITORIAL
Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW
Telephone: (01202) 659910
Facsimile: (01202) 659950

BOOK SERVICE, SUBSCRIPTIONS, BACK ISSUES ETC.:
CREDIT CARD ORDERS: (01202) 659930
(Out-of-hours service by answering machine)

ADVERTISEMENT DEPARTMENT
ADVERTISEMENT MANAGER
Roger Hall G4TNT
Telephone: 0171-731 6222
Facsimile: 0171-384 1031
Mobile: (0585) 851385

ADVERTISEMENT DEPARTMENT(Broadstone)
Lynn Smith (Advertisement Sales)
Ailsa Turbett G7TJC (Advertisement Production)
Telephone: (01202) 659920
Facsimile: (01202) 659950

Cover Subject

This month you have a chance to see the part of the *SWM* receiving station, complete with a few loaned items. Lowe HF225 *Europa* is our competition prize, donated by Lowe Electronics soon to go to its new home, AEA PK232MBX loaned by Martin Lynch a Seldec Selcall Decoder and a TU3 antenna tuner from Lake Electronics. Our thanks to these dealers for the equipment.

pw publishing ltd.

Features

Regular Columns

Good Listening

SWM SERVICES

Subscriptions

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

Components for SWM Projects

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

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

Back Numbers and Binders

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

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

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

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Broadstone (01202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (01202) 659950.

editorial

Now that the festive season has finished and all the decorations have been taken down, I trust that Father Christmas was kind to you.

One of the presents that I received set my mind thinking about the real usefulness of some of the hi-tech consumer items. The present was an electronic Pocket Planner and when I first opened it my reaction was - what a great idea! However, closer inspection revealed an interesting feature - a full-blown hard-copy diary! Why, with the technology inside the Pocket Planner, did I need a separate diary? Even more bizarre - why was there no provision for a pen or pencil to make entries in the diary?

Further oddities came to light. Don't put it in the same pocket as your credit cards or near your computer disks - the case provided has a large magnet to hold the Pocket Planner! Don't squeeze the case as the diary presses the keys - including the Time/Date reset key!

So - what can I use it for? Keeping addresses and telephone numbers instantly available - just as long as I can remember in what format I stored them! It tells me the time and date - if I can believe it and make the necessary mental conversion that today is really Wednesday 11 January 95 and not Wednesday 1 November 95! That's right - both dates are Wednesdays!

Ah well! It's back to the good old-fashioned, but reliable, diary - as long as I can remember where I put it!

Letters

If you feel strongly enough to write to me on any subject, please remember that without your name and signature I cannot put any credence on what you are saying. Also, unless you clearly mark your letter '**not for publication**', it might just find its way onto these pages.

Dick Ganderton G8VFH

letters

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

Dear Sir

SWM 11/94 - Change for Change's Sake?

I wholeheartedly agree with Bill Mitchell in November's *SWM*. It does not matter whether the actual mechanism for keeping world time is in Paris, Greenwich or Timbuktu, 'universal' time is calculated from 0° longitude and that calculation originated in Greenwich.

The accepted *lingua franca* on this earth in English (eg. air to ground communications) and it is perverse to persist with the initial UTC which are not derived from words in English. If there must be a change from GMT, let it be to UT which is as distant as the letters 'UTC' and which makes sense.

A. G. Robertson
Perth
Western Australia

Dear Sir

G3MPD - Request For Information

May I, through your columns, thank all those who came forward with information regarding the above callsign, which turned out to be GI3MPD.

GI3MPD was only active for two or three years from 1958 and, sadly, is now a 'silent key'. His family has been traced through the good offices of GI8AYZ to who I am especially grateful.

L. D. Davey-Thomas
Chairman of Poldhu Amateur Radio Club
Penzance
Cornwall

We are pleased to have been of service. If anyone is looking for information, or trying to contact old associates drop us a line at the Editorial Offices.

Dear Sir

I would refer to the letter in your December issue from E. R. Billiald regarding the Leicester Amateur Radio Show.

I went to this rally on the Saturday with my son Paul G0BXC. He has been to this event several years running and it is a favourite as far as he is concerned. We could see nothing wrong with the facilities at the Granby Halls. We had an interesting and enjoyable time, with opportunities to purchase things and meet members of the Medium Wave Circle and the Danish Short Wave Clubs International on their stand.

The location of the Granby Halls suits us very well as we do not have a car and travel by train from London. Leicester Railway Station is within walking distance. In addition, there is a choice of pubs where we can obtain a nice lunch.

Mrs Sheila Hughes
Morden
Surrey

letters

Dear Sir
I read with interest your editorial in the October issue about the bogus landing information being transmitted to pilots. I agree wholeheartedly that the press must be made fully aware of the proper definition of a radio amateur as this created a very bad public image of a licensed amateur or CB operator.

However, I feel, and have felt for quite a while, that transmitters for aircraft band and marine band are too freely available. You only have to look through some magazines to find these freely for sale so that anyone can purchase one with no questions asked.

I know that the majority of purchasers are quite legitimate, however, essential services such as air and marine must be protected. Having worked in air traffic control, I am only too aware of the dangers of bogus transmissions. The marine v.h.f. band, which I am also licensed for, also suffers from similar problems. I have heard children chatting on Ch.16, the emergency channel.

I would suggest that retailers do not sell transmitters for any band unless the purchaser holds the appropriate license and can produce the same, along with a letter of authority from the license holder if the purchaser is not the licensee (as in the case of air and marine). Similar rules should apply to the sale of second-hand equipment.

Some might complain that especially in the case of a new amateur who has just passed the RAE and applied for their licence that this is restrictive, I disagree, as it would only cause a slight delay before being able to operate.

On the plus side, it would mean very few unlicensed transmitters being used (currently, there are many in the air and marine world), an increase in safety, a reduction in the number of unlicensed amateur repeater abusers, etc., and possibly the prevention of a loss of a life due to radio transmitter abuse.

Robert A. Connolly GI7IVX
Co. Down
N. Ireland

Dear Sir
With reference to Mr Manning's review of the publication *Airwaves 94*, I must concur with him wholeheartedly. I have been an airband enthusiast for over 15 years and have bought many frequency books in my time. *Airwaves 94* is by far the best frequency directory ever to be available to those with an interest in aviation. I bought my copy at Mildenhall Airshow in May and it has been in constant use ever since.

I was fortunate to speak to the publishers of *Airwaves 94* at the Air Tattoo at RAF Fairford in July, and like Mr Manning, I also commented on the fact that London Air Ambulance frequency was not listed. For information, you may like to know that the omission of the frequency G-HEMS, was apparently due to a request from official sources.

I would also like to comment on a second book called *Eavesdropping on the British Militar'*, which I ordered recently through an advert in your magazine. It is with regret that I must recommend that anyone with an interest in Aviation should avoid this book completely. Despite this book being dated September 1994, the information is vastly out of date.

Frequencies are listed that have not been in use, in some cases, for over two years. Also, airfields such as Honington and Bedford are mentioned in the text even though they have been closed for almost a year, but worst of all, Border Radar is listed, which I think closed in 1991 or 1992.

There are also squadrons listed that were disbanded or moved to other airfield during the past two years. I could continue, but to save print, I shall refrain. I strongly recommend to your readers that they save their £17.95 and use it to buy a product that at least seems to have had some recent research work put into it.

David Evans
Worthing
West Sussex

Dear Sir
Firstly, may I say I have read *SWM* for over four years now and must congratulate you on a great magazine - keep up the good work. I have never felt strongly about writing to you before, but Andrew Walker's letter (December '94) berating the Yupiteru 7100 just incensed me, (and no, I don't work for them).

Here again is a 'long time radio enthusiast' having a go at anything that is obviously not an Icom, Kenwood JRC and the like and also seemingly expecting the same results from a unit many times smaller and much less in price. For someone with his knowledge and supposed experience, he seems to expect a great deal more than he should.

May I deal with his points one by one (hopefully you will print all of my letter as you devoted half a page to his).

1) The photos showing the 7100 tuned to l.s.b. on the 40m band were obviously just to show that the unit received short wave, surely a 'long time radio enthusiast' would have known this, I certainly did. But while we are on the subject, I sometimes use my 7100 with the telescopic aerial to see what I can pick up and regularly have heard amateurs on 3, 7 and 14MHz, and also received h.f. aeronautical as well. Granted, not as strong as with a proper antenna, but still quite clear.

2) Attaching a 'proper antenna' I can only say that for a non-dedicated and such a small size, the 7100 is remarkable. I have a 30ft long wire with magnetic balun and I can pick up most short wave transmissions without the receiver being swamped and without the intermodulation Mr Walker mentions.

3) He says he realises scanners can be prone to such problems as intermodulation, etc., so why does he expect it to perform like a dedicated h.f. set? If this is what he wants, then he should have spent his money on a second-hand Lowe HF150 or similar.

4) He claims it works poorly when connected to a discone antenna, not true. I have mine connected to a double discone on my roof and I can say the results are nothing short of impressive throughout the range of the set. I live in an area with plenty of transmissions and have no problems at all.

What I find strange is that despite all of the supposed problems and complaints about the set, Mr Walker is still going to keep it!

For a pocket sized scanner with short wave as well, the Yupiteru 7100 is excellent value and has remarkable receiving properties for a unit of this size when compared to others in its class, (such as the new AOR 8000, does Mr Walker perhaps work for them?) and I am sure will remain at the top for some time.

I say as Mr Walker stated in his letter, these observations are based solely on my own experiences but I felt I had to write so that others would not be put off the 7100 by someone who supposedly should know better.

If you want excellent h.f., buy a dedicated receiver, but if you want the versatility of a wide band scanner with h.f. capability in a small package then look no further.

Nigel Conn
Chester-Le-Street
Co. Durham

One man's meat would seem to be another's poison in this case. As we've stated on many occasions there just is no ideal single solution to cover the entire radio spectrum.

letters

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

Dear Sir
I read in disbelief in the Scanning and Off The Record sections in *SWM* about Colin Clark who was fined for listening to Band II v.h.f. I only really have one comment regarding the DTI and the Police on that occasion; how petty can you get?

I'm sure that time could have been better spent on catching real criminals! (and pirates). I feel the need for the DTI and RA to let us, the radio listener, know what is legal to listen to and what receiving equipment is legal to use! I'll take this opportunity to direct some questions at the DTI.

1) If I had been listening to the same pirate station as Colin Clark on my car radio (which I believe is legal), tuned to 106MHz, is this breaking the law?

2) Or is the use of a scanner full stop illegal?

3) Why prosecute one person for listening when there are hundreds of people who listen to pirate stations every day, are the DTI going to stop, check every single car in the UK and check our radios are not tuned above 106MHz?

I would like to see this issue answered by the DTI. It's about time we, the listeners, knew what is legal. Maybe *SWM* can publish the law regarding listening so that we can all see plainly what we cannot listen to or on what equipment. I for one certainly don't know exactly what is legal.

If scanners are illegal, then why aren't we warned when we buy them? These receivers are so easily available to Joe Bloggs, the public.

I hope *SWM* can help by publishing the law regarding listening so we can all follow the law. This is a very serious issue and needs to be clarified very soon!

Matthew King
Braunton
Devon

Dear Sir
In response to Mr Walker's letter, *SWM* December 1994, I would suggest that anyone using the Yupiteru MVT7100 multiband receiver on h.f., try using the simple loop antenna featured in *SWM* October 1993.

I have experimented with long wire antennas with and without various a.t.u.s and attenuators, the results were all disappointing, as Mr Walker discovered. However, when I constructed the loop antenna, I was amazed, the interfering noises, whistles and broadcast stations heard in the background when using the long wires, etc., had completely disappeared, and interference from adjacent channels were significantly reduced.

I am now using a modified version consisting of a 26 x 1¼in steel bicycle wheel rim for the main loop, with a 1000pF (2 x 500pF) variable capacitor for tuning, all mounted on a wooden kitchen stool. The frequency range now being 5-27MHz, it's ideal for s.s.b. utility and amateur radio bands.

S. M. Spencer
Sleaford
Lincolnshire

I wonder if this antenna would work for bicycle mobile operation?

Is there something you want to get off your chest? Do you have a problem fellow readers can solve? If so then drop a line to the Editor.

Dear Sir
It was a beautiful sunny November morning, my new edition of *Short Wave Magazine* had arrived, so I prepared a flask of hot coffee, got my AOR1500E scanner and set out for my favourite high spot - the top of Ilkley Moor, about 15 miles away.

I connected my scanner to an ordinary gutter mount CB antenna, tuned into the 20 metre band and was soon listening to amateurs from Italy, the Ukraine and USA chatting away to each other. After a spell of this I tuned into the Atlantic tracks on the 5.000 and 8.000 bands which proved interesting for a while, **then I read Andrew Walker's** long letter with a few moans about scanners in general, and a hint that he regrets a little buying his.

I agree with a certain amount of what he says, for example, what I had been doing I could have done easily, and perhaps with better quality with my Grundig Yacht Boy 400 costing approximately a third of the price of the scanner, but having tired of these h.f. band, I did, with the scanner, listen to three different amateur repeater conversations on 2m and 70cm plus a lot of traffic on the civil airband, which the Yatch Boy doesn't cover.

The price of these 'cover all' scanners being what they are I think I would plump for something like the Grundig Yacht 400, Sony 176 or the new small one with a b.f.o. and go for a simpler scanner like the such as the Netset PRO44 which you reviewed in this issue. The cost of both together would not be quite as much as the all band, all mode, s.s.b. scanner, and I am sure the 512MHz it goes up to would be adequate for most purposes, after all, what is there above that, except the illegal monitoring of cellphones.

Mr Walker also mentions cross modulation and spurious harmonics, a thing which we all get trouble with now and again. But at home with a more powerful antenna I find the inclusion of a JIM pre-amp pass filter helps a lot. Turn the gain of the pre-amp down if the signal is too strong and just make use of the filter, mine cuts the transmitter from a nearby bus depot out completely.

As I said previously, I did agree with many of Mr Walker's points, especially on the much to high price, and lack of information passed on about them by many dealers. The young lad in my local Tandy didn't seem quite sure how to switch one on when I made enquiries there once and also said they certainly couldn't demonstrate them in the shop. Too much interference from lighting and other sources was the excuse.

C. Robinson
Leeds

Dear Sir
I have just acquired a Astra 200 s.s.b. transceiver. With it came an operator manual and on page two, it mentions Issue 1, April 1977. When I purchased this unit, there was no 6-pin mic. or power lead with it.

I know that the unit was built by CIR Industries Inc. in California, but after trying to get in touch with the company, I have found out that they no longer exist at the address mentioned in the operator manual.

What I would like to know is, can anybody give me any more information or help with a mic., and power lead for this unit. It seems a shame to have to put it in my wardrobe and forget about it.

Your help in this matter would be really appreciated.

Stuart Goodfield
Stroud
Glos

Anyone know anything about this one?

Elaine Richards
PO Box 1863,
Ringwood,
Hants BH24 3XD.

junior listener

Awards

Having read the last couple of issues of *Monitor* - the ISWL Newsletter - over the Christmas holidays, I've details of a couple of awards you may be interested in.

Awards are a good way for newcomers to achieve something when they've only just started out as they usually don't require lots of equipment and specialist knowledge - just patience.

The first award is the Worked All Ireland Award. This started on 1st January this year and is being managed by the Galway VHF Group. The award was around in the seventies and is now being relaunched. It is based on the 10 x 10km 'Maidenhead' grid square system. You need to have heard stations in each of the various squares. There are four grades of awards.

If you live outside Ireland (both EI and GI) then the award is as follows (EI and GI requirements in brackets).

Basic	150 squares (175 squares)
Bronze	200 squares (250 squares)
Silver	350 squares (420 squares)
Gold	500 squares (600 squares)

For full details on claiming the award, send to Steve Wright EI5DD, Blood Bank, Regional Hospital, Galway.

The second award is the Avoncroft Award from the Bromsgrove & District ARC together with the Avoncroft Museum of Buildings. To get the award you need to get confirmation of hearing a combination of the following stations.

Bromsgrove & District Club Stations (each 5 points) G3VGG, G6VGG, GB3VGG, GB3RUB, GB2WED, etc.

Bromsgrove & District Club members (each 3 points)

Other amateurs in Worcestershire (each 1 point)

You can't count repeater QSOs heard and you must have listened from one location too.

For UK stations, you must get 20 points. The award costs £1.50, 7 IRCs or $3 and you need to send to:

John Harvey G4IVJ, 38 Bodenham Road, Northfield, Birmingham B31 5DS.

Don't forget to include an s.a.e. if you're making an enquiry.

Where Are They?

Frank Emery of Bradford writes with a very basic question that must face many people as they start to cultivate an interest in short wave listening. Frank has an Eddystone 840C communications receiver that's fitted with a b.f.o. and he wants to use it to listen to radio amateurs. The problem is, where do you find amateur transmissions and how do you set-up the receiver?

Fortunately, radio amateurs are very easy to find as their transmissions are restricted to a number of designated bands that are spread throughout the radio spectrum. This location is further aided as most of the amateur signals are concentrated in just a few of those bands. As a rule-of-thumb for day time listening, you will find inter-UK natter on the 3.5MHz band between about 3.6 and 3.8MHz. For European contacts try the 7MHz band between 7.04 and 7.1MHz, whilst longer distance contacts are to be found on 14MHz (14.1 - 14.3MHz) and 21MHz (21.15 - 21.45 MHz) bands. Depending on the local interest you will also find some local activity on 1.8 - 2MHz or Top Band as its affectionately known.

In fact, many amateurs don't refer to bands by their frequency, but use their wavelength instead. This table shows the h.f. amateur bands, their popular 'metre' names and the s.s.b. mode used.

Frequency (MHz)	Band (metres)	Mode
1.810 - 2.000	160 (Top Band)	lower sideband (l.s.b.)
3.500 - 3.800	80	lower sideband
7.000 - 7.100	40	lower sideband
10.100 - 10.150	-	upper sideband (u.s.b.)
14.000 - 14.350	20	upper sideband
18.068 - 18.168	-	upper sideband
21.000 - 21.450	15	upper sideband
24.890 - 24.990	-	upper sideband
28.000 - 30.000	10	upper sideband

If you have a scanner or other v.h.f./u.h.f. receiver you will find most of the amateur traffic concentrated in the 144 and 430MHz bands. Although many different operating modes are used, by far the most common is narrow band frequency modulation (n.b.f.m.).

Returning to Frank's original problem, we now need to help set-up the Eddystone to receive amateur s.s.b. signals. You will no doubt have noticed, from the amateur bands table, that some frequencies use lower sideband, whilst others use upper sideband. This is based on a convention that says that transmissions below 10MHz should use lower sideband, whilst all others use upper sideband. The convention was used throughout the commercial radio world, but has now largely been superseded by the universal adoption of upper sideband as the standard for commercial transmissions.

In order to use the b.f.o. correctly we first need to set it up for optimum reception of these two transmission types. First tune into a strong s.s.b. signal in the 3.5MHz amateur band with your receiver set to a.m. This can be easily recognised as they sound like severely distorted speech. Once you have found the tuning point where the distorted signal is loudest, turn on your b.f.o. and carefully adjust the b.f.o. control until the speech becomes clear. If your receiver has an r.f. gain control you may get better results if you turn the audio volume to maximum and use the r.f. gain control to adjust the volume.

Once you haye managed to convert the Donald Duck style gibberish into English, make some form of mark against the b.f.o. dial as you have now established the correct setting for lower sideband reception. Now repeat this whole process using a signal in the 14MHz amateur band. To receive amateur s.s.b. signals you now just turn on the b.f.o. and set the b.f.o. dial to u.s.b. or l.s.b. as appropriate and use the main tuning control to find the stations.

A New Scanner

Link Electronics have sent me details of a new scanner they are stocking. The PRO-2039 is the smaller brother of the PRO-2035. The POR-2039 covers 68-88. 108-174, 380-512 and 806-960MHz and has other features such as hyperscan, search, priority, lock out, scan delay and memory back-up. There are ten banks of 20 memories - not too many to organise sensibly and use easily.

If you'd like some more details, or want to talk about things like part exchange, contact: Gavin Taylor, Link Electronics, 216 Lincoln Road, Millfield, Peterborough PE1 2NE.

Active Callsign

Chris Carrington, the ISWL Publicity Officer, has given me some details of when the International Short Wave League callsign will be in use during 1995. Each month a different ISWL member activates the call GX4BJC/P, except next November when the call will be G4BJC. If you hear (or work) any of the operators activating the callsign, then you can send for a special QSL card. You can either use the Bureau or QSL direct (s.a.e. please) to: David Beale G0DBX/G-10618, Kenwood, London Road, Louth, Lincolnshire LN11 8QH.

January	Bill G4EHU
February	Alan G4GQH
March	Paul G4EQQ
April	John G4KJV
May	David G0DBX
June	Bernard G3JFD
July	Geoff G4CPA
August	Mike G4ICC
September	Philip G4DMS
October	Chris G0IYZ
November	Dick G2BRR

news

Jason Project - Special Event Stations....

Two special event stations are due to be on air March 5, calls are GB0JAS and GB6JAS. The GB0 station will operate mostly on the h.f. bands, schedules are being arranged with British research vessels in the North and South Atlantic. GB6JAS will concentrate on the 433 and 50MHz bands in an attempt to give Novices a good opportunity to work a Special Event Station, 144MHz (s.s.b. and f.m.) and other v.h.f./u.h.f. will be used as appropriate. Other planned events are - live NOAA/METEOSAT demonstrations - satellite tracking and communication using OSCAR satellites - and more to be announced.

Amateur radio links to other Jason sites are also being planned and a similar Special Event Station at the National Museum and Galleries On Merseyside is being investigated. local radio clubs will be involved, and the RSGB will be represented. Several importers and retailers have kindly offered to lend equipment.

For more details contact: **Alan Clayton G7HZZ (QTHR)** or via **Jason Amateur Radio Special Events, British Geographical Survey, Keyworth, Nottingham NG12 5GG. Tel: (0115) 9212857, Fax: (0115) 9363385** or by E-Mail: K_ARC@UK.AC.NERC-KEYWORTH.VAXA

DTI Invite Applications for PAMR Licences

Applications are invited for a new licence for the provision of trunked public access mobile radio services in Band III of the radio spectrum are being invited for the Birmingham area

Applications had been invited for two licences in May last year. Following a competition in the summer only one licence was awarded. The DTI has received further interest in the other new licence and therefore has decided to invite applications from interested parties.

SWM Book Service Prize Winner

The winner of the December £50 prize has been won by Mr P B Martin of Merseyside. Mr Martin was one of our readers entered in our monthly draw for those of you who bought books from the *SWM* Book Service in November. You, too, could be a winner, so if you're looking for a radio book you can do no better than use the UK's largest supplier of radio publications.

SPECTRE at ITC

We have just received news of a project concerning the development of digital terrestrial television, being run by the ITC.

The development of digital television in the existing u.h.f. terrestrial and is likely to prove the most significant advance in broadcasting technology in the 1990s.

The project which dates back to 1988, it s being carried out under contract to the ITC by National Transcommunications Ltd (NTL).

The SPECTRE work is co-ordinated with other technological research activities in Europe through a collaborative project called dTTb (digital terrestrial television broadcasting) which comprises Europe's key broadcasting organisations and consumer electronics companies.

Further information can be obtained by contacting the **ITC at Kings Worthy Court, Kings Worthy, Winchester, Hants SO23 7QA.**

Qatari VIP Visits RSGB HQ

The Minister for Energy and Industry of the State of Qatar, His Excellency Mr Abdullah bin Hamad Al-Attiyah, visited the RSGB headquarters at Potters Bar as a conclusion to his recent visit to the UK.

President-Elect Clive Trotman GW4YKL accepts a gift on behalf of the Society from His Excellency Mr Abdullah bin Hamad Al-Attiyah, A71AU, the President of the Qatar Amateur Radio Society.

Following a tour of the building given by RSGB officials, the Minister took the opportunity to operate the station GB3RS, and contacted G4ARZ located in Kent.

National Transmitter News

New BBC FM Transmitters

January 4 Hemdean, Reading. This new station brings good stereo f.m. radio reception to about 74000 people throughout the Reading area. The transmitter is located at Tredegar Road, Hemdead in the Caversham area of Reading and is broadcasting the following BBC Radio-

Radio 1 99.4MHz, Radio 2 89.8MHz, Radio 3 92.0MHz and Radio 4 94.2MHz. This station uses a **vertically** polarised antenna.

Reception advice is available from either:

BBC Engineering Information
White City
201 Wood Lane
London W12 7TS
Telephone: 0181-752 5040
or
ITC Engineering Information
Kings Worthy Court
Kings Worthy
Winchester
Hampshire SO23 7QA
Telephone: (01962) 848647

Television Relay Stations

December 14 Portnahaven, Islay a new relay station opened provided jointly by the BBC and the ITC. The station is located on a 17m mast on Cnoc Mor a hilltop about 1km west of Portnahaven. It is designed to bring good television and teletext reception to approximately 340 people throughout Portnahaven and Port Wemyss.

Station Details

Channels:	
BBC 1 (Scotland)	33
BBC 2 (Scotland)	26
ITV (Scottish TV)	23
Channel 4	29
Antenna Group:	A
Polarisation:	Vertical
Effective Radiated Power:	10W

December 20 Wooler, Northumberland a new relay station opened provided jointly by the BBC and the ITC. The station is situated about 25km south of Berwick-upon-Tweed, it has been jointly built by the BBC and NTL. Located about 1km to the south of the town, it is designed to bring good television and teletext reception to approximately 450 people in Wooler, the valley to the south of the town, and the village of Doddington.

Station Details

Channels:	
BBC 1 (North East)	22
BBC 2 (North East)	28
ITV (Tyne Tees)	25
Channel 4	32
Antenna Group:	A
Polarisation:	Vertical
Effective Radiated Power:	10W

Radio and TV DX News

The new BBC TV channel for Europe opens January 26th from Eutelsat II F1 @ 13°E. Programming will be over the 24 hours and offer news and general information biased towards the European audience. It's a joint venture between the BBC and Pearson PLC, the programmes will be in the clear. And another UK based channel - TV Asia - will be transmitting via Astra 1D over the 24 hours in the new low-band segment at 10.788GHz vertical. TV Asia has a help line for viewers having difficulty in retuning from the existing FSS channels to the new 1D transponder. TV Asia will be beamed up to Astra 1D from the NTL Earth station near Winchester.

With several Arabic states seeking to progress local TV distribution by MMDS (terrestrial microwave transmission @ 2.5GHz-ish) and thus gain control over actual programme offerings, trouble occured recently in Iran when the authorities arrived to remove viewers' satellite dishes. In the Ekbatan district of Tehran the locals turned away government officials intent on confiscating the receiving dishes. The police were then summoned, fighting broke out, including small arms fire with several folk being arrested. The authorities are concerned over the satellite programming culture that could blight the youth of Iran.

Viewers to Intelsat K cannot have failed to notice the new programme *TeleNoticias* that is now being transmitted into Europe from the studio base in Miami, Florida. The Spanish language news service opened 1 December 94 and reckons on a potential audience of 370 million across the Americas and Europe. Reuters carries a 42% interest in the programme company.

Happy news for Italians with their government signing up 11 transponders on the soon to launch Eutelsat II F6 - Hot Bird 1 and later Hot Bird 2. Included in the channel offering will be RAIs 1,2 and 3; TV group Telepiu have four with the others available for leasing and it's expected that Finivest and Warner Brothers may go on board.

Into Asia and India intends to up her satellite transmissions to 60 channels within the next few years utilising digital compression. With the extra capacity available Doordarshan reckons to offer more regional languages together with two Hindi film channels. During the next few months TNT, MTV, HBO and sports channel ESPN will arrive across India. Early December saw Murdochs Star TV with Zee TV launch a new Hindi language service - 'EL TV' which will offer a basic entertainment and film menu broadcasting in Tamil, Bengali and Hindi. As programming expands the early evening slot will be dedicated into Tamil. Doordershan's 'Elite' channel that should have opened last month has been delayed until March/April '95, the authorities being none too happy with the programme formula that would have included open discussion and criticism about the local government. Arianspace will launch India's INSAT 2C in August next which will carry eight transponders, brother INSAT 2D will launch the following Summer.

'Teleport London International' has launches 'UK/US Connections', a transatlantic video service for both part time, occassional and full time customers. Their London facility can access five US cities directly via the TDRSS satellite at 41°W in C Band.

Thailand's Shinawatra group with bookings arriving for their Thaicom 2 bird are now planning a third satellite - Thaicom-3 - at a cost of 5000 million Bahts. Transponder loading will be 24 @ C Band with only eight in Ku-FSS band with the footprint extending from Central Asia down to New Zealand. Both industrial and direct to home users (DTH) will make use of this future satellite.

With increasing rivalry for transponder use, Intelsat is planning a new Ku Band only satellite dubbed Intelsat KX. KX-A is thought likely to slot mid Atlantic to obtain trans-Atlantic traffic - and to shadow the PAS-1, Orion 1 and future PAS-3 birds. KX-B will slot further to the East and cover the European land mass offering DTH facilities as well, again offering a commercial threat to both Eutelsat and SES Astra.

New German channels upcoming may be Kabel 2 (entertainment); SAT-2 (entertainment); Reise TV (travel), Viva-2 and COM-TV (both music channels). All in theory could be on-air by June 1995 using Eutelsat capacity. It could soon be the end of the road for TV SAT at 19°W with rumours that the DBP may close down all services and flog the bird to Scandinavian interests for slotting at either 1°W or 5°E. The DBP may also withdraw all TV services from DFS Kopernikus 3 @ 28°E and use the craft for general telecomms use only. Also likely to uplink from Germany onto Telecom 1C @ 3°E during 1995 is a Korean language channel. Using KBS programming (ex Seoul) the service will be scrambled probably in Nagravision, based around a subscription package and offering news, sports and general entertainment.

Happy First Birthday

The CQ Centre computer bulletin board, which is dedicated to all facets of amateur radio and short wave listening is one year old. Access is totally free, the system is available 24 hours a day at all popular modem speeds 300 and 14400bps. The BBS provides news (RSGB, WIA, AMSAT and ARRL), E-Mail and conferencing (Fidonet and Chatnet), plus all the very latest amateur radio software for PC compatible and Amiga computers.

Currently the system has approximately 100Mb (compressed) of radio-related files, plus a further 500Mb (compressed) of general interest software. Files are available for downloading even to first-time callers. The Board has two nodes, one on (01753) 595468 and two on (01753) 593524. The CQ Centre is a local call from the following area codes: (0171), (0181), (01895), (01923), (01753), (01628), (01784), (01494), (01334), (01372), (01276) and (01932).

Errata

One Chip Panoramic Adapter. January 1995.

Some incorrect component values crept into the circuit diagram (Fig. 5). Resistors R2 & 3 should be 22Ω, R9 47kΩ, capacitor C17 should be 1μF. The Parts List gave the correct values. Our apologies for any confusion that might have been caused.

SKYCOM

Skyview Systems, well known for their software decoding, weather and environmental monitoring packages are to launch a new division, Skyview Communications (SKYCOM). Skyview Sytems have sold over 20000 copies of their Weather FAX software in various formats, as well as a large number of weather stations.

The new division will provide a retails outlet specialising in amateur radio and short wave data products in addition to continuing to supply a large range of amateur weather monitoring equipmet. SKYCOM will be based at the Skyview HQ in Colchester, Essex and will be headed up by Steve Jelly G6URJ who was responsible for customer and dealer support of data products during his time with Lowe Electronics. Roger Barker G4IDE will also be providing his support in both the paket radio and software areas.

The new division is planning to launch a number of other own brand products, and will be having a special promotion on their *SYNOP* Synoptic weather charting software package. **Skyview Communications (SKYCOM), Skyview House, Alresford, Nr. Colchester, Essex CO7 8BZ. Tel. (01206) 82315 Fax. (01206) 825328.**

Listen With Grandad

by Leon Balen & David Leverett

"Young man - my first wireless was a Wootaphone 4-valve, cabinet model with . . ."

LISTENING TO

The NRD-535 *With A Subtle Difference*

The NRD-535 is a fine receiver, and fully confirms the JRC leadership in this particular field. However, even the best can be improved in specific areas; and after lengthy evaluation of the NRD-535 we decided that there were worthwhile improvements which we at Lowe, with our knowledge and specialist expertise, could introduce to the more discerning listener - for it is the true 'listener' who will appreciate what we have done.

First we thought that the audio from the NRD-535 was not totally easy on the ear, and detailed investigation showed that the audio response had been 'tailored' to suit the rather round shouldered response of the IF filtering. So, we went back to the IF filters and specified a higher performance SSB crystal filter with a 6dB bandwidth of 2.4kHz and a typical shape factor of 1.8:1; with less than 1dB passband riple. For AM, we fit a more expensive filter with a 6dB passband of 5.7kHz and a shape factor of 1.5:1. The response of these new filters is very flat within the passband, with steep symmetrical sides giving excellent adjacent channel rejection. The use of these more expensive filters allowed us to flatten the audio response of the receiver giving a much clearer sound quality and a real improvement in intelligibility both on communications and broadcast stations.

We have noticed in the past that the audio output power from most modern receivers is barely adequate for driving a good loudspeaker, and since we now had top quality audio from the NRD-535, we designed and fitted a completely new audio power amplifier with enough power (3W at 5% distortion) to enable the user to sit back and enjoy that quality to the full.

The use of synchronous AM demodulation and/or ECSS is an established feature of many newer receivers, and fitting the optional CMF-78 ECSS board to the NRD-535 provides the user with the potential to recover good audio from signals which are subject to selective fading.

However, we noticed a tendency for the ECSS to unlock during deep fades and then fail to re-lock after the fade. We now have a series of detailed modifications to the ECSS unit which removes this tendency and also improves the recovered audio.

The Lowe Electronics modification pack definitely makes a good receiver into an outstanding receiver. When we sent a sample of our modified NRD-535 to Jonathan Marks at Radio Nederland, he confirmed that the results were quite remarkable and said so in no uncertain terms. We think that you will agree.

Naturally, these modifications cost a little more, but to complete the whole package we also pre-age the master reference oscillator in the receiver, check out the alignment and issue an individual test certificate with each one. And because we are proud of our work we add a discreet badge to the front panel to tell you that you own a receiver with a difference.

The 'Lowe' NRD-535. *We make a good receiver into an outstanding receiver.*

- *New high specification IF crystal filter for SSB*
- *New high specification IF filter for AM*
- *New calculated audio bandwidth 'flattening'*
- *New higher power audio output system*
- *New tighter specification ECSS system*
- *Pre-ageing and 'burn-in' of master oscillator*
- *Individual test certificate for each receiver*

NRD-535	**£1549**
CMF78	**£279**
CFL243W	**£415**
Modifications *(fitted at time of purchase)*	**£117**

BERKSHIRE
3 Weavers Walk
Northbrook Street
Newbury
Tel: (01635) 522122

NORTH EAST
Mitford House
Newcastle Int. Airport
Newcastle Upon Tyne
Tel: (01661) 860418

SCOTLAND
Cumbernauld Airport
Cumbernauld
Strathclyde
Tel: (01236) 721004

WALES & WEST
79/81 Gloucester Rd
Patchway
Bristol
Tel: 0117-931 5263

LOWE

Lo
Chesterfield Roa

THE WORLD

Decoding starts here . . .

Computers have changed the lives of almost everyone, particularly in the world of short wave and airband. Powerful software for decoding transmitted data is now readily available allowing short wave listeners access to wide ranging communications systems from RTTY news and weather transmission to detailed weatherfax images and our latest product, AIRMASTER, gives access to ACARS data sent from aircraft.

AIRMASTER

Decoding software and interface for ACARS - Aircraft Communications and Reporting System. Find out what's going on up in the skies! Works with any scanner as the signal source - just tune to 131.725MHz. AIRMASTER is the simplest and cheapest way to decode ACARS! **£89.00** plus P&P.

MODEMASTER2

Decodes FAX, RTTY, FEC, NAVTEX and Morse code. A truly comprehensive decoding package for IBM compatible PCs. Supplied complete with demodulator. MODEMASTER2 - just **£139.00** plus P&P.
MODEUP - Upgrade your original MODEMASTER to V2.0 - also adds NAVMAPS facility. **£49.00** plus P&P.

SYNOP

Decodes SYNOPTIC data to give text based weather information and real-time maps showing rainfall, temperature and pressure, etc. The data is collected by monitoring RTTY signals which report actual conditions and is collected from land based stations and ships at sea. In addition data is also transmitted by aircraft in flight. Data is updated on a three-hourly cycle. Be your own weather forecaster! SYNOP just **£149.00** plus P&P
SYNOPKAM adds SYNOP decoding to popular KAM or KAMPLUS TNCs **£89.00** plus P&P. WXMASTER adds SYNOP decoding facilities to MODEMASTER, increasing its versatility. **£89.00** plus P&P.

MULTISCAN

Control program for popular receivers including those from AOR, Yaesu, Kenwood, Icom and JRC. Allows scanning, searching and an excellent database is included, fully editable to configure for your own use. Demo disk available - just send six first class stamps and ask for 'Multiscan demo disk'. MULTISCAN just **£75.00** plus P&P.

SEARCHLIGHT

Control and recording software for AR3000A running under Windows. An excellent piece of software using the full potential of the AR3000 or AR3000A. A database is included and you can build on this to customise it for your own use. A rather nice feature for those with SoundBlaster cards in their PCs is that if it finds activity when scanning, it will digitally record what it hears for later playback. Demo disk available - just send six first class stamps and ask for 'Searchlight demo disk'. SEARCHLIGHT just **£99.00** plus P&P.

A little note regarding P&P - most of the above software packages are fairly lightweight and can be posted for £3.00. In the past this has resulted in delays and losses. A better service is to use our courier delivery which is just £5.00 for a 48 hour service.

You can pick these up from any Lowe branch or order by telephone or fax or E-mail via the Internet.

We've now expanded our communications systems to include the Internet. You can contact via E-mail for speedy processing of orders or information requests. We have two Internet addresses for your convenience, orders@lowe.demon.cc.uk. to place your order or if you would just like information on any of our products, use info@low.demon.co.uk.

Please include your postal address and daytime telephone number.

SOUTH EAST
Communications Hse.
Chatham Road
Sandling, Maidstone
Tel: (01622) 692773

YORKSHIRE
34 New Briggate
Leeds
North Yorkshire
Tel: 0113-245 2657

SOUTH WEST
117 Beaumont Road
St. Judes
Plymouth
Tel: (01752) 257224

EAST ANGLIA
152 High Street
Chesterton
Cambridge
Tel: (01223) 311230

ve Electronics

, Matlock, Derbyshire DE4 5LE Tel: (01629) 580800 Fax: (01629) 580020

grassroots

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

* Short Wave Magazine & Practical Wireless in attendance

rallies

January 28: The Lancastrian Radio & Computer Rally is being held at the University of Lancaster. There will be all the usual traders, refreshments, a bar and Bring & Buy. There is excellent access to this rally, five minutes from either Junction 33 or 34 on the M6. Admission is £1. Doors open at 10.30am for the disabled and 11am for everyone else. Further details from **Sue** on **(01524) 64239.**

February 5: The South Essex ARS Radio Rally is being held at The Paddocks, Long Road, Canvey Island, Essex, (The Paddocks is located at the end of the A130). Doors open at 10.30am. Bring & Buy, trade stands and home-made refreshments available. Talk-in on S22. Admission is £1. Free car parking. **Roger G0LTO** on **(01268) 693786** or **Ken** on **(01268) 755350.**

February 12: The Cambridge & District Amateur Radio Club are holding their annual rally and car boot sale at the Ambulance Station, New Addenbrookes Hospital, Cambridge at 10.30am (traders from 8am). Further info from **George Benton G0OEL** - Rally Secretary - on **(01954) 719273/200072**.

February 12: The 4th Northern Cross Rally is being held at Rodillian School on the A61 between Leeds and Wakefield (near Jn. M1/M62). Doors open at 11am (10.30am for disabled visitors and Bring & Buy). £1 entry. There will be the usual dealers and groups, bar and refreshments available plus a Morse test on demand with two passport photos. Talk-in on 144 and 430MHz. **Dave Gray** on **0113-282 7883.**

February 19: The RSGB VHF Convention is being held at Sandown Park Exhibition Centre. Further details can be obtained from **G3MVV** on **(01277) 225563.**

February 25: The 10th Rainham Radio Rally is to be held at the Rainham School for Girls, Derwent Way, Rainham, Gillingham, Kent ME8 0BX. It is very easy to find from Jn. 4 of the M2 motorway the A278 or from the A2 from Rainham. Doors open at 10am, 9.30am for disabled visitors. There will be the usual trade stands, plus a few new ones selling computers. Many special interest groups will be represented, ie. RAYNET, RNARS, Packet, KRGroup and Kent TV Group. There is also a talk-in on S22 by GB4RRR, a Bring & Buy, licensed bar, and snacks and refreshments also available with somewhere to sit and eat. Admission is £1, children under 14 free. Further info. from **Martin G7JBO** on **(01634) 365980** any reasonable time.

***March 11/12**: The London Amateur Radio & Computer Show will be held at Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London N9. Doors open at 10am to 5pm each day. There will be a trade show, lectures, Bring & Buy, on-demand Morse tests, facilities for the disabled, bars, restaurants, special interest groups and ample free parking. For further information you can contact **Steve White G3ZVW** on **0181-882 5125.**

March 12: Wythall Radio Club will be holding their annual Radio Rally at Wythall Park, Silver Street, Wythall (near Birmingham, on the A435, just two miles from Junction 3 on the M42). Doors open at 10.30am to 4pm. There will be the usual traders in three halls, a marquee, a bar and refreshments and a Bring & Buy stall, run by the club. Talk-in on S22. Admission only £1. **Chris G0EYO** on **0121-430 7267.**

***March 19**: The Norbreck Radio Rally, Amateur Radio, Electronics & Computing Exhibition is being held at Norbreck Castle Hotel, Exhibition Centre, Queens Promenade, North Shore, Blackpool. There will be extended free car parking and a free shuttle service. Novice Licence details and practical demonstrations, a Bring & Buy stall, talk-in on S22 and lots more. Admission is £1.50, over 65s £1 and under 14s free. Doors open at 11am to 5pm. Disabled entry through ramped entrance, 10.45am. More info from **Peter Denton G6CGF** on **0151-630 5790.**

If you're travelling a long distance to a rally, it could be worth 'phoning the contact number to check all is well, before setting off. The Editorial staff of *SWM* cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct.

Editor

AVON

Bristol International RC: Tuesdays, 8pm. The Fighting Cocks Public House, Hengrove. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l.s or CBers can get together and have a good natter and do things that you do in radio clubs. PO Box 28, Bristol BS99 1GL.

RSGB City of Bristol Group: last Tuesdays, 7pm. New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. January 31 - Radio investigation service. Dave. 0117-967 2124.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. February 1 - 10m activity evening, 8th - Loop antenna demonstration, 15th - Aircraft magazine evening, 22nd - Short wave listeners night. For more information ring (01275) 834282 on a Wednesday evening.

DEVON

Plymouth RC: Tuesdays, 7.30pm. The Royal Fleet Club, Devonport, Plymouth. January 28 - Annual dinner dance, 31st - Business meeting and natter night. F. P. Russell on (01752) 563222.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. February 17 - AGM. Peter G4UTO. (01803) 864528.

FIFE

Dundee ARC: Tuesdays, 7pm. College of Further Education, Graham Street, Dundee. January 31 - Members mini-lectures, February 7 - Construction night, 14th - Shack and equipment security: Tayside Police, 21st - Construction night. GM4FSB, 30 Albert Crescent, Newport-on-Tay, Fife DD6 8DT.

GREATER LONDON

Crystal Palace & DRC: 3rd Saturdays, 7.30pm. All Saints Church Parish Rooms, Beulah Hill, London SE19. February 18 - AGM. Wilf G3DSC on 0181-699 5732 or Bob on (01737) 552170.

Southgate ARC: 2nd & 4th Thursdays, 7.30pm. The Pavilion, Winchmore Hill Cricket Club, Firs Lane, Winchmore Hill, London N21 3ER. January 26 - London Amateur Radio & Computer Show team briefing and strategy plus club radio on the air, February 9 - Digital signal processing in communications by Mr Harvey Collins, 23rd - Club radio on the air, a chance to improve your operating techniques. Brian Shelton G0MEE. 0181-360 2453.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road SW19. January 27 - Surplus equipment sale, February 10 - On air, general activity. Michael J. McCarthy G0AWQ. (01737) 351313.

HAMPSHIRE

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. February 7 - Club night. S. Swain (01705) 472846.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. February 14 - Technical Topics - Radcom. Barry Taylor. (01527) 542266.

KENT

Medway AR & TS: Fridays, 7.30pm. Community Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. January 27 - An evening with Rob Mannion, Editor of *Practical Wireless*, February 10 - Construction contest. George Packham. (01634) 685585 or Alan Stanley. (01634) 201462.

NORFOLK

Norfolk ARC: Wednesdays, 7.30pm. Formal and informal meetings at The Norman Centre, Bignold Road, Off Drayton Road between 'Asda' and Three Mile Cross Roundabout, Norwich. February 1 - DF equipment, bring your's to the club, 8th - Night on the air/construction QRP and Morse practice, 22nd, Night on the air, construction QRP and Morse practice. Mike G4EOL. (01603) 789792.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. February 13 - RSGB video presentation. Howard G1JGY. (01623) 423697.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. January 27 - On air h.f. and v.h.f. plus construction, February 3 - Open forum - members only, 10th - Construction plus on air h.f. and v.h.f., 17th - Surplus equipment auction by Julian G0LXX. Julie Brown G0SOU. (01509) 672734.

OXFORD

Oxford & DARS; 2nd and 4th Wednesdays, 7.45pm. The North Oxford Grove House Club. Terry Hastings G0CFN. (01865) 863526.

SHROPSHIRE

Salop ARS: Thursdays, 8pm. Oak Hotel, Shrewsbury. January 26 - DX cluster GB7MDX, talk by G4UJS, February 9 - Equipment sale (not junk), 16th - RAE tuition and workshop evening, 23rd - 23cms the easy way, talk by G8DIQ and G4EAB. Ian Davies G7SBD, QTHR. (01743) 463711.

SOMERSET

Yeovil ARC: Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. January 26 - Club station on air and committee meeting, February 2 - Operating techniques by G3KSK, 9th - Applying for planning permission, 16th - RAE class, members request night, 23rd - First broadcast in Britain by G3MYM (75th anniversary). Cedric White, QTHR. (01258) 473845.

SUFFOLK

Haverhill & DRC: 2nd Mondays, 7.30pm. Samuel Ward Upper School, Chalkstone Way, Haverhill. February 20 - AGM. Rob Proctor G4PZW. (01440) 704637.

WARWICKSHIRE

Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. February 13 - Talk by John Badger G4YZO of Badger Boards. Mr A Beasley G0CXJ. (01608) 682495.

WEST MIDLANDS

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

WEST YORKSHIRE

Denby Dale ARS: Wednesdays, 8.30pm. Pie Hall, Wakefield Road, Denby Dale, West Yorkshire. February 1 - We are sailing by Ken G0CVJ, 15th - Radio controlled aeromodelling by David Brian. Denby Dale ARS also provides RAE, Morse and Novice RAE classes and is a registered City & Guilds examinations centre for both the RAE and Novice RAE exams. Further details from the examination secretary Brenda G4OTE on (01484) 424776 or secretary Kevin G1FYS on (01484) 547553 for club activities.

WILTSHIRE

Trowbridge & DARC: 3rd Wednesday, 8pm. The Southwick Village Hall, Southwick, Trowbridge. February 1 - Annual sale of surplus equipment. Ian G0GRI. (01225) 864698.

New Products

This month's round-up of new products, books and catalogues.

PRO-2039 from Link

Baby brother of the PRO-2035 the PRO-2039 is the new 200 channel base station entering the Realistic range ready for 1995.

Frequency coverage is 68-88MHz, 108-174MHz, 380-512MHz and 806-960MHz. All the usual Realistic features are present including hyperscan, search priority, lock-out scan delay and memory back-up. Memory is configured as ten banks of 20.

For further information, contact **Gavin Taylor** at **Link Electronics, 216 Lincoln Road, Millfield, Peterborough PE1 2NE. Tel. (01733) 345731 Fax. (01733) 346770.**

Test with Kenwood from Lowe

Lowe Electronics is pleased to announce the introduction of the Trio-Kenwood range of general purpose test and measuring instruments into its chain of retail outlets and mail order operation.

Lowe Electronics, whose head office is in Matlock, also has outlets in Cumbernauld, Bristol, Plymouth, Newbury, Newcastle upon Tyne, Leeds, Cambridge and Maidstone. Each branch will stock and support a number of instruments and will be able to provide in-store demonstrations.

Trio-Kenwood has a broad range of instruments including Oscilloscopes, Power supplies, Audio, Video, and r.f. testers, plus general purpose instruments that include Multimeters, Frequency Counters and Function Generators. The key benefits claimed for Kenwood instruments are their high quality and long term reliability coupled with excellent performance and good value. For further information contact: **Lowe Electronics Ltd. Chesterfield Road, Matlock, Derbyshire DE4 5LE.**

Translate Weather Charts

Philip Mitchell has just released the fourth edition of his book *Interpretation of Facsimile Weather Charts*. This 73 page A4 book covers equipment required, description of the World Weather Watch network and the Global Telecommunications System. There are example of the various types of maps that are transmitted around the globe, with chapters dedicated to each. Finally a reference section provides a list of frequencies, decoding equipment, station addresses and recommended reading. Priced at £8.95 it is available from:
Mitchell Radiobooks, 2 The Marlowes, Newbury, Berks RG14 7AY. Tel. (01635) 48633.

The Best Straight Key in the World?

Morse Keys produced in limited quantities and featuring all hand made parts are the recipe for what is likely to be come a collector's item.

With its heavy polished marble base, solid brass arm and bearing block, fully adjustable ball and cone bearings, you can set a contact gap as fine as you like, and it will not vary, even during the longest of operating sessions

The polished, hand turned, hard wood knob is of improved design and shape, with a concave top surface to reduce fatigue.

A key is engraved with maker's name, serial number and, if required, owner's Callsign.

Full details and a colour photograph are available, on receipt of 100 x 225mm s.a.s.e. from **Derek Stillwell, Instrument Maker, 27 Lesley Owen Way, Shrewsbury, Shropshire, England SY1 4RP**

Satellite Secrets

If you're thinking of doing anything at all with satellite TV, or already have a system, *Satellite Secrets Revealed* is for you. Includes all aspects of DTH (Direct to Home) satellite broadcasting which will help the newcomer, the owner of an existing system and even installers in the trade. 256 pages of information - half of which are devoted to curing faults. Topics include: reducing repair costs, motorised systems, scrambled channels, secret handset codes, external accessories, professional installation tips. A practical and non-technical look at the subject by Jack Armstrong. £19.95.

Lake Electronics

A new catalogue is now available detailing the Lake Electronics range of kits. Featured are several new products, including - the DTR7-5 Transceiver, the TU4 ATU - a new 80W tuner incorporating a sensitive s.w.r. meter and balun and the CPO-5 Morse Practice Oscillator. All Lake kits are supplied complete with all hardware required. The catalogue is supplied free when you provide an s.a.e. and is available from **Lake Electronics, 7 Middleton Close, Nuthall, Nottingham NG16 1BX Tel. 0115 - 938 2509**

The Rig Review

Ever wondered what the specification is for the secondhand receiver you've seen in Trading Post or what bands are covered? How much did it cost when new, what modes are offered? Well, Twrog Press have the solution in *The Rig Review*. Available as either a booklet or on a PC disk both are priced at £5.00 including P&P. Featuring approximately 490 pieces of equipment - a must. Available from **Twrog Press, Penybont, Gellilydan, Blaenau Ffestiniog, Gwynedd LL41 4EP.**

S.M.C., A.R.E. & REG WARD

THE UK'S NO1 INDEPENDENT RETAILER FOR ALL YOUR RECEIVER REQUIREMENTS
Established 1958

Unlike some of our competitors who offer "freebies", gift vouchers or 'free' finance, we believe in a more straight forward approach simply LOWER PRICES. This seems to have upset a few of the opposition. However, our customers aren't complaining at paying less and that's what matters to us!! In 1995 we intend to expand our offers with a "special" every month so watch this space for amazing savings!!

This months special

YUPITERU MVT 7100

SAVE £70

ONLY £319

Offer valid from pub date until 28th Feb

HF RECEIVERS

KENWOOD R-5000 Carr D
100kHz-30MHz..... OUR PRICE **£899**

ICOM R-71E D
100kHz-30MHz..... OUR PRICE **£985**

ICOM R-72DC D
100kHz-30MHz..... OUR PRICE **£749**

ICOM R-100 C
500kHz-1.8GHz..... OUR PRICE **£565**

AOR AR3030 D
30kHz-30MHz..... OUR PRICE **£659**

YAESU FRG-100 D
50kHz-30MHz..... OUR PRICE **£445**

FREE PA11C mains power adaptor
FREE FF5 150--500kHz low pass filter

SCANNING RECEIVERS

YAESU FRG9600 Carr C
60-905MHz ..... OUR PRICE **£529**

ICOM ICR-1 B
2-905MHz..... OUR PRICE **£355**

ICOM ICR-7100DC D
25MHz-2GHz .... OUR PRICE **£1229**

AOR AR3000A D
100kHz-2036MHz .. OUR PRICE **£849**

AOR AR8000 B
500kHz-1900MHz . OUR PRICE **£419**

AOR AR2000 B
500kHz-1300MHz. . OUR PRICE **£279**

AOR AR1500EX B
500kHz-1300MHz . OUR PRICE **£315**

ANTENNAS

Diamond D130 outdoor Discone antenna 25-1300MHz RX, Tx 50, 144, 430, 1200MHz amateur bands C
£79.95

Comet CH-600MX BNC whip 120-1300MHz RX, Tx 144, 430, 1200MHz amateur bands A
£25

MULTIBAND RADIOS

SONY

ICFSW100E	OUR PRICE £179	B
ICFSWIE	OUR PRICE £159	B
ICFSW7600G	OUR PRICE £159	B
ICFSW55	OUR PRICE £249	C
ICFSW77	OUR PRICE £359	C
PRO-80	OUR PRICE £315	B
AIR-7	OUR PRICE £269	B

ROBERTS Carr.

R808	OUR PRICE £109	B
R817	OUR PRICE £169	C
R818*	OUR PRICE £199	C

* built in cassette

TNC's & Data Modems

SMC are now importing direct from the factory the famous AEA range of Data Terminals and at AMAZING SAVINGS FROM PREVIOUSLY ADVERTISED PRICES.

		Carr
PK88	PK-88 VHF/UHF Packet TNC	£129.00 B
PK-232/MBX	Multimode data terminal with Pactor and Gateway	£299.00 C
PC-Pakratt for windows	Windows based terminal program	£79.00 B
NEW PK-12	Low cost Packet TNC with 14K mail drop memory	£119.00 B
100K/PK-12	100K Maildrop option for PK12	£39.95 A

Tereleader TM

TNC24MkII	Multimode modem, Packet, CW RTTY FAX + PSK modem	Carr Now only £269.00 C
TNCμ2/MkII	Mini Packet TNC suitable for portable operation	Now only £175.00 B

Special Offers subject to availability Carriage B=£5.00 C=£7.50 D=£12.50 E=£16.50

Service Department Direct Line Monday - Friday 9am - 5pm (01703) 254247
Showroom Hotline Tel: (01703) 251549 HQ Main Office Tel: (01703) 255111

Access VISA

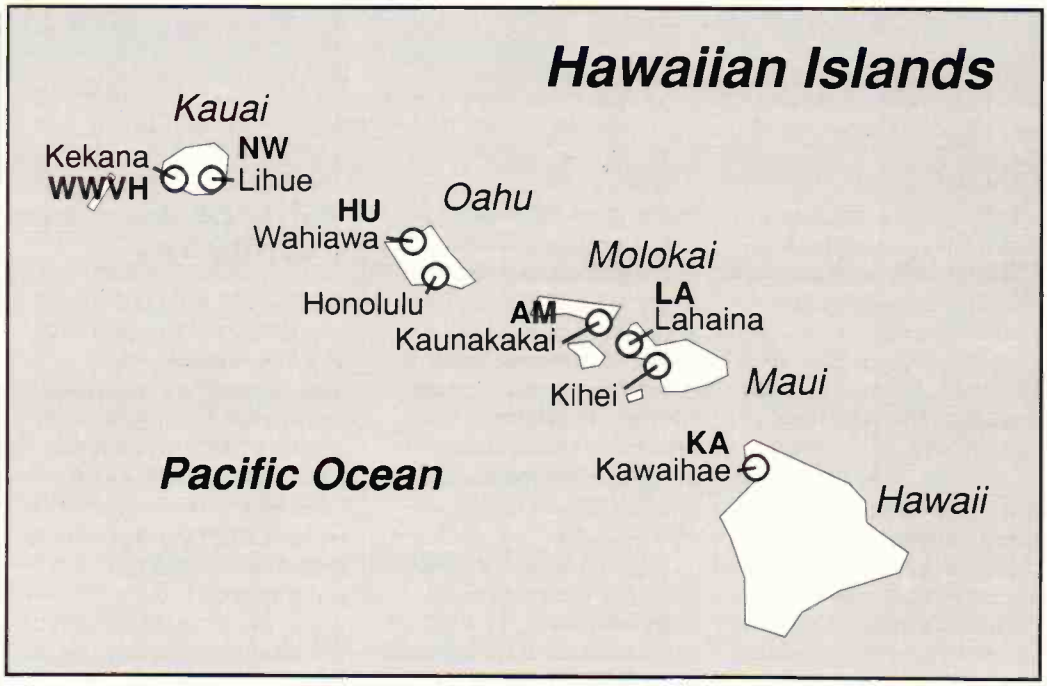
SOUTHAMPTON	LONDON	AXMINSTER	LEEDS	CHESTERFIELD	BIRMINGHAM
SMC HQ	*ARE Communications*	*Reg Ward & Co*	*SMC (Northern)*	*SMC (Midlands)*	*SMC*
S M House, School Close	*6 Royal Parade*	*1 Western Parade*	*Nowell Lane Ind. Est.*	*102 High Street*	*504 Alum Rock Road*
Chandlers Ford Ind Estate	*Hanger Lane, Ealing*	*West Street*	*Nowell Lane*	*New Whittington*	*Alum Rock*
Eastleigh, Hants SO5 3BY	*London W5A 1ET*	*Axminster EX13 5NY*	*Leeds*	*Chesterfield*	*Birmingham B8 3HX*
Tel: (01703) 251549/255111	*Tel. 0181-997 4476*	*Tel. (01297) 34918*	*Tel. 0113-235 0606*	*Tel. (01246) 453340T*	*Tel. 0121-327 1497*
Fax: (01703) 263507	*Fax: 0181-991 2565*	*Fax: (01297) 34949*	*Fax: 0113-235 0155*	*Fax: (01246) 453340*	*Fax: 0121-327 6313*

Hawaii Calls

Dr. Adrian M. Peterson takes a look at the Hawaiian short wave scene.

Recent announcements in DX programmes and radio magazines indicate that the new short wave station in the Hawaiian Islands is nearing compleition and that they hope to be on the air with test broadcasts before the end of the year. This new station begins a new era in short wave broadcasting from the Hawaiian Islands.

However, not so well known these days is the fact that there was an earlier era of short wave broadcasting from this exotic location in the central Pacific. The full story of short wave broadcasting from Hawaii is indeed fascinating, so let's go back to the earliest beginnings.



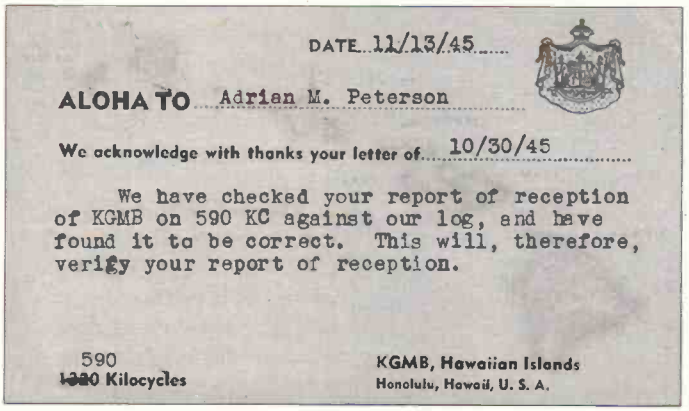
Marconi Spark Stations

Historically, the first wireless stations located in the islands of Hawaii were established on March 1 1901, when even spark transmissions were still very young. At that time, Marconi was just 27, it was only six years since his earliest wireless experiments in Italy, and he had not yet made his famous 'first' across the Atlantic - the letter S in Morse code from 2YT in Poldhu to the Cabot Tower near St. John's in Newfoundland.

These early spark wireless stations were established by the Mutual Telephone Co., and all operated with spark gap transmissions on what we would now call the long wave band. These stations were established on five islands in the Hawaiian group for inter-island communication, and they were identified shown in Table 1.

Table. 1.

Original Call	Later Call	Island	City	Range (km)
HU	KHK	Oahu	Wahiawa	640
KA	KHN	Hawaii	Kawaihae	480
AM	KHO	Molokai	Kaunakakai	48
LA	KHL	Maui	Lahaina	480
NW	KHM	Kauai	Lihue	480


DATE 11/13/45

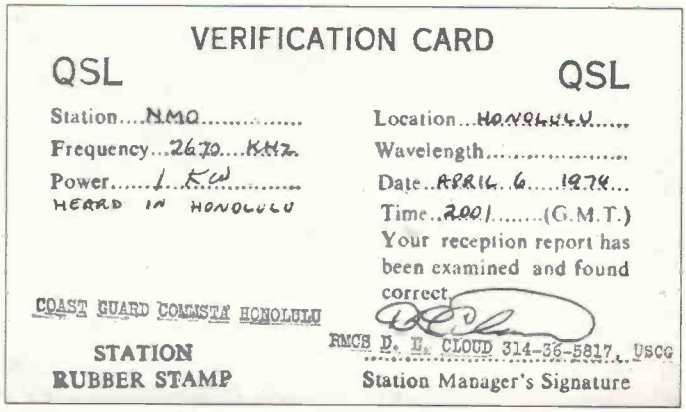
ALOHA TO Adrian M. Peterson

We acknowledge with thanks your letter of 10/30/45

We have checked your report of reception of KGMB on 590 KC against our log, and have found it to be correct. This will, therefore, verify your report of reception.

590 ~~1320~~ Kilocycles

KGMB, Hawaiian Islands
Honolulu, Hawaii, U. S. A.


VERIFICATION CARD

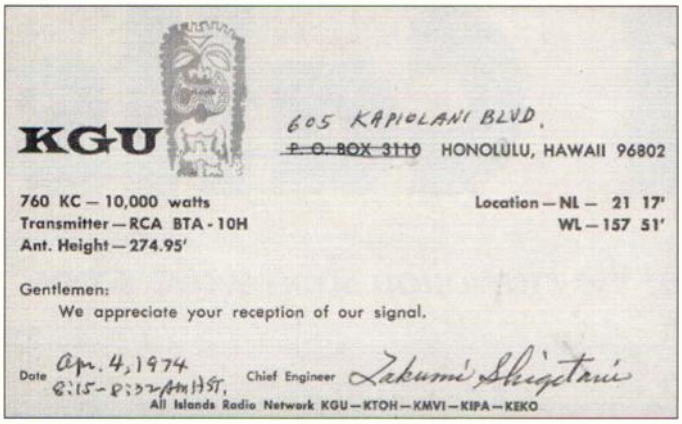
QSL QSL

Station NMO
Frequency 2670 KHz.
Power 1 KW
HEARD IN HONOLULU

Location HONOLULU
Wavelength
Date APRIL 6 1974
Time 2001 (G.M.T.)
Your reception report has been examined and found correct.

COAST GUARD COMSTA HONOLULU
STATION RUBBER STAMP

RMCS D. E. CLOUD 314-36-5817, USCG
Station Manager's Signature


KGU

605 KAPIOLANI BLVD.
~~P. O. BOX 3110~~ HONOLULU, HAWAII 96802

760 KC — 10,000 watts
Transmitter — RCA BTA - 10H
Ant. Height — 274.95'

Location — NL — 21 17'
WL — 157 51'

Gentlemen:
We appreciate your reception of our signal.

Date Apr. 4, 1974 Chief Engineer Takumi Shigetani
8:15 - 8:30 AM HST.
All Islands Radio Network KGU — KTOH — KMVI — KIPA — KEKO

1. The significance of each callsign is underlined in Table.1. AM seems to combine morning and Molokai and NW signified North West, the location of the island of Kauai in the Hawaiian group.

2. In those days, transmitters were not rated in kW but rather according to the coverage area.

MW Broadcasting Begins

Radio broadcasting in Hawaii began on May 11 1922, just six months after the famous KDKA was launched, with not one, but two stations taking to the air. These two stations were both located in Honolulu, KDYX with 250W on 227.1, (1320kHz) and KGU with 500W on 270m (1110kHz).

Station KDYX soon became the more famous KGMB, which callsign was later taken over by the TV outlet, station KGU is still on the air today with its original callsign, and now on 760kHz with 10kW.

Utility Broadcasting

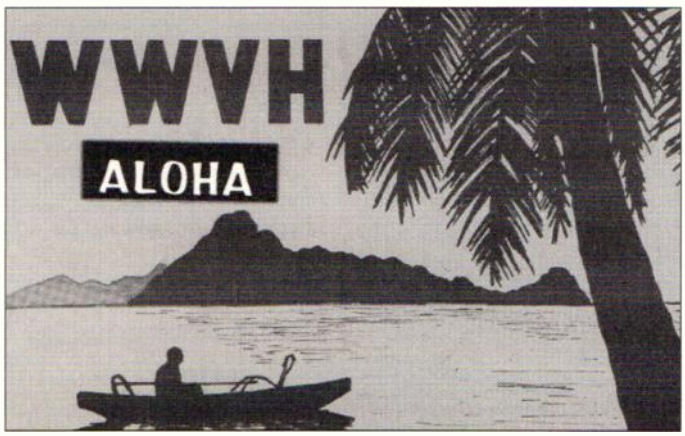
In the era just before the commencement of World War II, the RCA communication station at Kahuka relayed radio programmes from Honolulu to the US mainland on short wave channels. Although this was really a direct point to point relay, DXers in Pacific area reported hearing these programmes, the most famous of which was *Hawaii Calls*.

QSL cards were issued for these broadcasts, by both the RCA communication station and the medium wave station on relay. For example, KIO Kahuka was heard on each Thursday in the early part of 1937 on 25.6m with a Hawaiian programme of 1½ hours duration and in November 1942, KGMB Honolulu conducted short wave programme tests to San Francisco on 16.7m *via* the RCA transmitters at Kahuka, KHE and KLL.

Voice Of America - Utility Era

To fill in the void before the completion of the OWI-VOA station in Hawaii, VOA programmes were relayed by the RCA communication station at Kahuka under a broadcast callsign KRCA. Later again, this station also relayed AFRTS programmes to the Pacific and UN programmes to Asia, but under the old callsigns in the three letter series. All of these relays were made on out of band communication channels.

The VOA-AFRTS usage of the RCA communication station extended form 1942 to 1944, and was dropped when VOA Hawaii was commissioned. However, UN programmes in Chinese were heard over this same station at the end of 1950, as KUH27 on 17.900MHz.



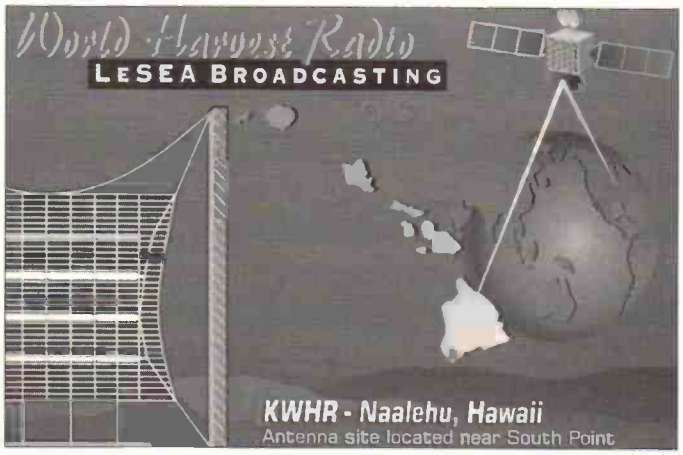
Voice Of America - KRHO

The Voice of America relay station in Hawaii was located on the main island on Oahu. The first transmitter, designated as KRHO made its inaugural broadcast on December 25 1944. This was a 100kW transmitter and studios were in downtown Honolulu.

The second transmitter, designated as KRHK was installed in 1949. The antenna farm consisted of six rhombics beamed towards Asia and Pacific areas. Callsigns were abandoned in 1950, and the station identified on air simply as VOA Hawaii.

When the VOA stations at Dixon and Delano in California were commissioned, VOA Hawaii became redundant. This station was then used only occasionally, on a fill-in basis for the mainland stations. It disappeared from scheduling in 1968, and was dismantled shortly afterwards by the VOA engineer who later transferred to Colombo, Sri Lanka as their resident engineer.

Interestingly, the short wave station VOA Hawaii was relayed for a short period of time towards the end of the Pacific war by the Australian radio ship *Apache*. This mobile station



has been designated as the first WVLOC, but when on relay from Honolulu it took the relay identification of KRHO.

Chronohertz WWVH

The first location for the time and frequency station WWVH was at the edge of the Pacific near the town of Kihei on the island of Maui. This initial station made its first broadcast in November 1948. However, the land was low lying and subject to ocean flooding during storms, and, in addition, the equipment was not air conditioned.

A new 30 acre site was procured at Kokole near the town of Kekana on the island of Kauai and the transmissions of WWVH were transferred in July 1971. Today, WWVH uses a total of seven transmitters, five of which are on the air at any one time. They radiate with 10kW on 5, 10, 15 and 20MHz and 2.5kW on 2.5MHz. The signals from chronohertz station WWVH Hawaii can readily be identified by the woman's voice announcing the time.

Other Utility Stations

Three other communication stations are also currently on the air in Hawaii, using frequencies in the utility band for voice broadcasts. These are:

- NMO, US Coastguard Station at Honolulu
- NPM/NAX US Navy at Pearl Harbour
- KVM, Honolulu Volmet, the FAA weather station for the international airport. This station is actually located in the volcanic crater at Diamond Head at the end of Waikiki Beach.

New KWHR

And now, the latest short wave station in Hawaii. This new and modern facility is KWHR located in the volcanic lava area on the western edge of the big island, Hawaii, One curtain antenna is beamed toward Asia and a log periodic towards Australia and New Zealand.

The single 100kW transmitter, designated as *Angel 3*, is expected to be commissioned before the end of this year. This station is part of the LeSea radio network, which also operated short wave station WHRI on the edge of Indianapolis, with *Angel 1* and *2* each at 100kW.

Hawaii Calls was the well known short wave programme heard on Sunday afternoons in earlier days from Hawaii. For a quarter of a century now, this exotic Pacific islands group has not been represented on the short wave bands, but soon, it will be heard again. Once more, *Hawaii Calls*! ■

NEVADA

1969 - 1994

YUPITERU

As Yupiteru's authorised distributor in the UK, we stock their full range including accessories and spares. All Yupiteru is in stock now and ready for immediate despatch.

WE WILL, WITHOUT HESITATION, MATCH ANY GENUINE ADVERTISED PRICE.

Call us now – we guarantee you won't be disappointed!

MVT-7100 ...With SSB.....£389
MVT-7000 ...Standard Model.....£289
MVT-8000 ...Mobile, with PSU.....£369
VT-225 .....Civil/Military Airband.....£249
VT-125 .....Civil Airband.....£189

FREE LEATHERETTE CASE WITH EVERY YUPITERU SCANNER THIS MONTH

YUPITERU ORIGINAL ACCESSORIES

MVT 7000 ...Leatherette Carry. Case.....£17.95
MVT 7100 ...Leatherette Carry. Case.....£17.95
VT125/150 .Carrying Case.....£17.95
VT225 .....Leatherette Carrying Case .£17.95
VT125 .....Original Handbook.....£7.95
VT225 .....Original Handbook.....£7.95
MVT7000 ....Original Handbook.....£8.95
MVT7100 ....Original Handbook.....£8.95
MVT8000 ....Original Handbook.....£9.95
VT125 .....Original Replacement Ant..£12.95
VT225 .....Original Replacement Ant..£29.95
MVT7000 ....Origin.Rep. T/Scapic Ant..£16.95
MVT7100 ....Origin.Rep.T/Scapic Ant...£17.95

AOR SCANNERS

AR8000 - NEW

Why not pay by three post dated cheques for this new scanner from AOR. See bottom right hand panel for full details. Alternatively part exchange your old scanner.

★ 500 KHz to 1900 MHz
★ 1000 memory channels
★ Many new features.....~~£449~~ **£399**

AR 8000 SOFT CASE
Protect your AR 8000 with this original soft protective case.....£17.95

AR3000A

Full coverage from 100KHz–2036MHz with a host of features including RS232 Interface for computer control. USB, LSB, CW, AM, FM and WFM modes. **Now available from stock at only £899 – £50 off list price!**

SCS SOFTWARE For AR300A computer control, Logging system, Spectrum display, Freq data base etc.....**£59.95**
Demo disk available.....**£1.50** inc. P&P

AR1500EX H\Held, 1000 Channel Memory 500 KHz - 1300 MHz. with SSB.....£349

NEVADA MS1000

Our own superb base scanner with many features.

★ 500 KHz - 1300 MHz (with gaps)
★ 1000 Memories
★ Auto Tape Switch
★ Audia Squelch.....**£299**

BEARCAT

BEARCAT 220XLT

★ A new handheld scanner covering right up into the high 900MHz bands.
★ Ideal – Airband, PMR, Amateur and Marine Bands
★ Includes Mains charger
.....SPECIAL OFFER **£199**

BEARCAT 65XLT

A very simply to use budget handheld. 10 memory channels. An ideal beginners model!

★ Freq.range 66-88,137-174,406 - 512 MHz.....**£99.95**

BEARCAT 2500XLT

New redesigned case 400 programmable memories, wideband coverage (25-1.36GHz)
★ Auto Store
★ VFO Control
★ Inc. Nicads & charge.....**£299**

TRIDENT SCANNERS

TR 2400 H\Held 1000 Ch. Mem. 100 KHz - 2060 MHz with fitted BFO.....£369
TR 1200 H\Held 1000 Ch. Mem. 500 KHz - 1300 MHz No Gaps.....£299
TR 980 H\Held 125 Ch. Mem. 5 -1300 MHz Good Starter!.....£249

COMMTEL SCANNERS

COMMTEL 202 H/Held 50 Ch. Mem. 66-512 MHz with gaps
New.. Ideal For Airband.....£139.95
COMMTEL 205 Base, 400 Ch. Mem. 25 - 1300 MHz with gaps.....£344.00
COMMTEL 204 H\Held, 200 Ch. Mem. 68 - 1000 MHz with gaps.....£249.95
COMMTEL 203 H\Held, 200 Ch. Mem. 68 - 960 MHz with gaps.....£199.00
COMMTEL 102 H\Held, 10 Ch. Mem. 66 - 512 MHz with gaps.....£99.95

NETSET SCANNER

PRO 44

50 channel scanner ideal for Aircraft, Marine, Public Services etc. 66 -88,108 -174, 380 -512 MHz.
Supplied Free this month with Nicad/Charger worth £20!
Price.....**£129.95**

NICAD BATTERIES

UNIDEN

BP205 Slide on Bat. Pack 100/200XLT..£29.95
BP220 Bat. only 220XLT.....£19.95
BP200 Bat. only 100/200XLT.....£19.95
BP2500 Slide on Bat. Pack 2500XLT....£29.95

BLACK JAGUAR

BP05 Batt. only for BJ200.....£17.95

SINGLE NICADS

AA 1.2V 500 mAH Nicad Cells.....£1.25
AA 1.2V 620 mAH Nicad Cells.....£1.45

SKY SCAN DESK TOP

A wide band antenna for use at home. Covers 25 - 1300 MHz c/w base, coax & BNC connector. Height 36". Can be used on your car when static.....**£49.00**

SCANMASTER® - HIGH QUALITY ACCESSORIES

SCANMASTER BASE ANT.

New high quality wide band receiving antenna uses fibre glass/stainless steel,with 4 small radials. 'N' type connector.
Length 1.1 mtr.....**£39.95**

SCANMASTER DISCONE

A Quality wideband stainless steel discone. Range 25-1300 MHz with N'Type connector. Transmits on 2m, 70cms.....**£49.95**

SCANMASTER DOUBLE DISCONE

A high performance wideband antenna offering gain over a convential discone. Stainless steel construction with mounting kit and short pole.
★ 25-1300MHz
★Wide TX range.....**£59.95**

SCANMASTER MOBILE

A Complete, ready-to-go magnetic mount wideband antenna.
★ 100-1000MHz
★ Fitted cable & BNC Connector.....**£29.95**

SCANMASTER ON GLASS

Discreet but effective wide band mobile antenna 25-1300 MHz supplied with cable/BNC connector.
Price.....**£29.95**..p&p£2.75

AIRBAND FLEXI WHIP

Will give optimum performance on Civil Airband Length:- 2ft with BNC.....**£13.95**

RUBBER DUCK

General purpose antenna with BNC connector.....**£11.95**

NOMAD PORTABLE RECEIVING ANTENNA

The NOMAD is a fully portable flexible wire scanning receiving antenna. Covering both VHF & UHF it's compatible with all scanning receivers. Simply suspend it with the cord supplied.
★ Optimised for airband
★ 4M Coaxial Cable
★ Fitted BNC.....**£19.95**

AMPLIFIED SPEAKERS

Boost the output of your scanner with this pair of amplified speakers. Will run off batteries or 6V adaptor (not supplied). Each speaker gives 2.5W audio output.....**£29.50 Pair**

SCANMASTER SP-55

A low noise pre-amplifier with even better performance, improved circuit design & selectable band poss filters to optimise the receiving range of your choice. 25-1500, variable gain & attenuation. Powered from batteries or 12V DC.....**£69.95**

SCANMASTER GW-2

Low noise GoAs FET pre-amp covering 1-1400MHz with variable gain of -3 to +20dB (requires PP3 battery)...**£59.95**

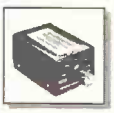
SCANMASTER BASE STAND

A fully adjustable desktop stand for use with all handhelds fitted BNC and Coaxial fly lead.....**£19.95**

SCANMASTER MOBILE MOUNT

Mounts on air vent grills on the car dashboard. Allows easy and safe operation of most handhelds.....**£9.95**

SCANMASTER NOTCH FILTER



A variable 30dB notch covers 85 to 170 MHz to eliminate music, tones, and voices that break through onto the frequency you are listening to. With low insertion loss the filter can be left in line and helps reduce interference from shortwave broadcasts below 1.7MHz.....**£29.90**..P&P £2.75

REVEX - High gain scanner antennas.
HX800 Rubber duck. Wideband Ant, 150mm long.....**£18.95**
HX7000 Flexi Whip. Wideband with gain up to 1 GHz. Length 1500mm BNC.**£20.95**
HX9000 Flexi whip. Covers 8 bands to 1 GHz. High gain reception BNC....**£29.95**

BOOKS...

SHORTWAVE CONFIDENTIAL LIST
Very latest frequency update- Just In!.....£9.99
SHORT WAVE COMMUNICATIONS
A beginners must for S/wave listening...£8.95

NEW FOURTH EDITION UK SCANNING DIRECTORY
Now with spiral binder and even more frequencies! – order yours now.
Price: £17.50 POST FREE

TWO NEW HOT SELLERS!

SCANNER BUSTERS
Overcome new technology and listen in to what you want to hear. 64 pages packed with info on how to get more from your Scanner.Includes first class frequency lists showing where to tune and explains many of the new technologies now in use.....**£4.95**

EAVESDROPPING ON THE BRITISH MILITARY

A fascinating book that tells you how to tune into British Military Communications with ease. With this book and Short Wave or Scanning receiver a secret world will open up providing hours of enjoyment.
Price.....**£17.50**

USE YOUR CREDIT CARDS FOR SAME DAY DESPATCH

ORDER HOTLINES: TEL: (01705) 662145 FAX: (01705) 690626

HUGE STOCKS - FAST DELIVERY - FULL SERVICE BACKUP

. . . Now in our 25th Year . . . Buy With Confidence From NEVADA!

THE VERY BEST RECEIVERS FROM DRAKE USA

DRAKE R8E

- ★ 100KHz - 30MHz wide coverage
- ★ Passband tuning
- ★ Built-in Pre-Amp & Selectable AGC
- ★ Twin VFO's & Timer Functions
- ★ Dual Noise Blanker
- ★ RS232 Interface for Complete Control

The R8E's performance is truly staggering, it has a full compliment of filters; synchronous AM detector; multiple scan facilities; 100 memory channels; plus all mode coverage. Why not part exchange your old receiver for this latest model from the USA, we offer excellent PX deals call our hotline now! **£1195**

DRAKE SW8

- ★ Short Wave Coverage 500KHz-30MHz
- ★ VHF Airband (116-136MHz)
- ★ VHF FM (87-108MHz)
- ★ AM/FM/SSB

240 V AC adaptor included

A top class portable Short Wave Receiver with VHF airband and FM coverage. Drake have incorporated a quality large front-mounted speaker, direct frequency access keypad, four antenna inputs and complete portability with fitted telescopic whip antenna an optical NiCads. Also included are 70 programmable memories, a dual mode clock timer, synchronous AM detector. **£649**

NOISE KILLERS

DIGITAL AUDIO FILTERS FROM TIMEWAVE TECHNOLOGY USA

Hear weak signals, reduce noise, eliminate heterodynes and interference with these new Digital Audio filters from Timewave. They have received Rave reviews in the UK and all over the world.

TIMEWAVE DSP-9 VER.2

A new version 2 unit giving excellent results on SSB/CW includes noise reduction and AGC **£189**

TIMEWAVE DSP-9 PLUS

My favourite! Covers SSB/CW & PACKET, AMTOR, RTTY, GTOR data modes. Incorporates noise reduction, multiple automatic heterodyne notch filters, AGC preset Easy to use at the touch of a button..... **£239**

TIMEWAVE DSP-59 PLUS

Top of the range multi mode covers same modes as DSP-9 PLUS but has front panel control of filter combinations, over 320 available settings for every situation you may encounter..... **£299**

MASTHEAD SWITCH

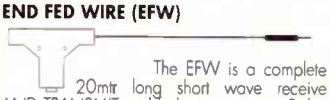
Run 2 Ants from one coax. with this remote M/H switch Good to 1.3 GHz 'N' Connectors **£49.95**

NEW! British Made High Quality Products:- DRAE

LONGWIRE BALUN (DLB)

Matches end fed long wires to 50 ohm coaxial cable, helps on receive reduce noise and interference and allows transmit up to 100Watts. Fully moulded for full weather protection. **£39.95**

END FED WIRE (EFW)



The EFW is a complete 20mtr long short wave receive AND TRANSMIT end fed wire antenna. Balun fed to reduce noise and interefence pick up. Uses high quality "Flex Weave" copper wire and handles up to 100 Watts RF (with ATU). Covers 1 - 30 MHz **£59.95**

SHORT WAVE RECEIVING ANTENNA

- ★ 1 - 30 MHz frequency coverage
- ★ Fitted balun for optimum performance
- ★ Suitable for all types of receiver
- ★ Only 14 metres long **£59.95**

GLOBAL AT2000

New SWL ATU with Q Selector to prevent interference. (100KHz - 30MHz)..... **£96.95**

GLOBAL CX201

Two Way Antenna Switches

Switch your receiver between 2 antennas with this high quality switch.

CX201 PL259 Sockets..... £18.95
CX201 'N' Type Sockets..... £26.95

RECEIVERS

ICOM

IC-R72DC	..New 12V Version	£799.00
IC-R7100DC	New 12V Version	£1295.00
IC-R100	(500 KHz - 1.8 GHz)	£599.00
IC-R1	H/held scanner	£395.00
IC-R71E	Short Wave Receiver	£995.00

KENWOOD

R-5000	(100 KHz - 30 MHz)	£995.00

YAESU FRG-100

Compact Shortwave Receiver, ideal for both beginner & Pro alike! Comes complete with free P.S.U. £499.00

LOWE

HF-225	Receiver	£479.00
D-225	Synchronous DET	£43.95
HF-150	Receiver	£389.00
HF-150M	Marine Version	£429.00
IF-150	RS232 I/face HF-150	£39.95
PR150	Pre Selector	£199.95
SP150	Spkr c/w filter + meter	£189.00
Key Pad	For Direct Freq. Entry	£39.95

ROBERTS

RC817	Multi band radio	£169.99
RC818	Multi band w/cass	£199.99

SONY

As a Sony Shortwave Centre we carry the full range of Portable Radios -

SW 7600G	New with SSB	£179.99
SW100E	Save £20	£179.00
SW55	Save £30	£249.00
SW77	Save £40	£359.00
AN1	Act. Ant.(150 - 30 MHz)	£59.95
AN3	Gen. Purp.Ant	£59.95

ERA MICROREADER

New Version 4.2

Decodes CW,AMTOR, RTTY, SITOR. Special Offer :- Microreader w/leads, instructions & Freq. List Save £10 ..... ~~£199~~ **£189**

AR3030

A new Short wave receiver from AOR with full features. Available from stock for fast delivery

SAVE £40 ..... ~~£699~~ **£659**

STEEPLETONE MBR8

Top of the range multi-band radio, LW/ MW/VHF Air & Marine Bands plus Shortwave Broadcast Bands. AM DF Ant., Mains/Battery **£89.95**

SANGEAN ATS803A

A full coverage Short Wave Receiver with AM, FM & SSB reception. It features excellent sensitivity and filtering - easy push button control and direct BFO tuning for SSB. **£129.95**

TRADING POST

SCANNING RECEIVERS

Bearcat 142XL Base, boxed	£99.00
Bearcat 50XL	£70.00
Bearcat 2500XLT	£210.00
Black Jaguar H/Held Scanner	£125.00
Fairmate HP100E	£185.00
Goodmans ATS 802 pocket S/W RX	£40.00
MS1000 base scanner	£199.00
Netset Pro 44 Boxed	£99.00
Realistic Pro 35	£110.00
Realistic Pro 39	£170.00
Realistic Pro 2022 Boxed	£140.00
Sangean ATS803A bxd,vgc	£95.00
Sony Air 7	£125.00
Win 108 Airband VHF	£150.00
Yupiteru MVT-7000 hand-held, boxed	£239.00
Yupiteru VT225	£185.00

SHORTWAVE RECEIVERS

Bearcat DX1000-Very Rare	£295.00
Drake R8E Ex.Demo as New!	£850.00
JRC 515 V.Rare RX	£495.00
Kenwood R2000 Mint Condition	£375.00
Kenwood R600 Mint Condition	£375.00
NRD 525 V.Rare. V.G. Cond. Ideal Beginner	£235.00
Sangean ATS-803A boxed	£95.00
Sony SW7600 Pocket RX with SSB	£105.00
Sony 2001 receiver	£120.00
Sony 2001D Boxed V. Sought After	£185.00
Trio R1000 general cov receiver	£350.00
Yaesu FRG7700 + FRA7700	£425.00
Yaesu FRG 8800 + VHF	£499.00
Yaesu FRG9600	£375.00

STATION ACCESSORIES

ERA Microreader - Old Version	£60.00

VIDEOS

Interesting and Very Informative from CQ communications USA.

- ★ Getting Started in Ham Radio
- ★ Getting Started in Packet Radio
- ★ Getting Started in Amateur Satellites
- ★ Getting Started in DX'ing
- ★ Getting Started in Contesting

Running time approx. 50 mins..... **£19.95**

PSU101 MK IV

A combined desk stand and pwr supply/charger for handheld scanners. Suitable far most popular models. Special versions avail. Call for details..... **£29.50**

PSU101TA 9V Version..... **£29.50**

EP300 - High quality earphone as used by many public services ideal for scanners - fits snugly in and over the ear..... **£13.95**

LOW LOSS COAX

Improve your scanner reception with this super low loss coax from Japan. Double screened it is good for frequencies up to 3 GHz.

5D-FB (5.9mm Dia.)	85p/mtr
8D-FB (9.0mm Dia.)	£1.95/mtr
PL259 Connector for 5D	£1.40
BNC Connector for 5D	£3.75

NEW CATALOGUE

Now Available!
48 Pages of Colour
Scanners, Shortwave & Ham Radio
Send £2 for your copy now, includes a £2 Vouchers

NEW - VECTRONICS AT100

ACTIVE ANTENNA & PRE-SELECTOR

If you are an apartment or flat dweller you no longer need to suffer poor reception due to antenna restrictions. Now with the new AT100 portable active shortwave antenna you can receive 300KHz to 30MHz indoors with the supplied whip. The AT100 can also be used as a preamplifier with an existing outdoor antenna to peak signals in the band you want to hear. The unit is fully portable using a 9V battery or may be powered from a 240V adaptor (not supplied)

Price..... **£79.95**
AC Adaptor... **£7.95**

PAY BY THREE POST-DATED CHEQUES

ON ANY ITEM OVER £100 IN VALUE

Simply divide the price into 3 equal payments. Write 3 cheques dated in consecutive months starting with today's date. Write your **TELEPHONE NO.,CHEQUE CARD NO. & EXPIRY DATE** on the back of each cheque. Post them to us, enclosing your name and address & we will (subject to status), send your goods immediately.

SHOWROOMS:- 1A MUNSTER ROAD, PORTSMOUTH PO2 9BS

MAIL ORDER:- 189 LONDON ROAD, PORTSMOUTH PO2 9AE

A Day In the Life of a Radio Inspector - The Old Wire Fault

The Radio Inspector has more interference problems to cure. J. Edward Brown tells all.

Today we'll go into the country to bang a few power poles," Kilocycle Ken the senior radio inspector said. Young Golly, the trainee groaned. "I feel stupid, me, a grown man, swinging a 6lb sledge against a power pole."

"Radio inspectors do appear mad at times, but kicking the pole and belting it with a sledge hammer or a rubber mallet are quick ways of agitating the loose hardware, which could be causing radio and television interference."

Bread and Butter

Kilocycle Ken lectured Young Golly as they drove on the motorway, but that was his job. "In the old days, public spirited citizens, sometimes with the help of the city authorities, set up interference committees to find power line troubles, and have power supply authorities do something about their noisy lines, sort of Neighbourhood Watch Committees of the airwaves. It was the only way. Then, in New Zealand, and most other old British Empire countries, the Post Office, or it's equivalent, took over the job.

"In the United States the power companies themselves look for and then fix their interference problems. The FCC has never been involved like us."

Young Golly said, "I hate power line interference. There's so much of it."

"It's our bread and butter, but we have to have good relations with power boards so that they'll do what is required. Some are co-operative. They'll turn out a fault man or a line gang if the radio inspector suggests a problem can be solved, but others won't, depends on the engineer in charge, or the foreman. Some power boards will throw the switch at any time, some throw up their hands in horror at the thought of cutting off their consumers without advertising in the newspaper for weeks beforehand.

Of course some power boards have difficulties arranging shut-downs, out in the country they have long single feeder lines, and no alternative feeds which you get in towns, and if they shut down then the farmers complain they can't milk their cows.

"Some boards now use hotsticks on the lines - the linesman working with insulated equipment on live lines. I wouldn't do it for a thousand quid, myself."

"A thousand pounds is not much these days," Young Golly said.

"Old expression," Kilocycle Ken said.

"Old man," Young Golly muttered.

Challenging

"Power line interference is challenging, and frustrating. It's difficult to evaluate from the ground, so you have to listen, but the sound of binders, loose disc strains, cracked pin insulators, drop-out fuses, are all different, but even so, you can get fooled."

"Do you suffer from noises in the head?" Young Golly asked.

"Don't be cheeky, otherwise you'll get a boot up the bum."

"I'll complain to the Union - only joking."

Kilocycle Ken said, "If the power board men trust you, they'll do what we ask, but make too many mistakes and they'll never co-operate again. One can make embarrassing errors, hear the interference, say it's the pole, get a shut down organised, all the insulators and hardware is changed, power is restored and the interference is back, instantly. Eventually you find the source three poles away, maybe you have been bamboozled by the reflected noise.

Acts of God

"Some power line problems are almost acts of God, like lightening strikes, some are caused by sloppy work, a linesman who wants to get home early or get to the pub does a quick job, puts binders over plastics without stripping, and soon there is interference spitting through the plastics, in layman's language, or he doesn't tighten the bolts and the hardware enough, eventually it works loose so we get trouble.

"And there are faulty insulators produced by factories, and galvanised hardware which is rusty before it's even erected.

"But actually we have a specific case of interference to look at, and once again it's an old problem, interference at a school teacher's house which is almost under the 11kV line, and there's an adjacent 110kV line which has been known to give trouble.

"We can't belt the steel 110kV line towers with a hammer."

"We'll reserve that for the 11kV wooden poles. I've been coming here so long that I can remember several different school teachers, and their children. A long time radio inspector, like a long time doctor to a family, can have a relationship, seeing the children grow up, and maybe he'll attend to their children's complaints one day - especially if they continue to live under high tension lines."

"Doctor Ken," Young Golly said.

"I sometimes feel like a doctor, diagnosing the ills of the radio or television, tracking down sources of troubles to ears and eyes, like a doctor, then curing it."

Rugby Fanatic

The standard government built house, yellow weather boards, red corrugated iron roof, was in a fold of hills, with a typical two-room country school adjacent. Sheep grazed. On a water pipe mast 5 x 5 stacked Yagis. "Unfortunately pointed into the 11kV, but nothing could be done about that." Kilocycle Ken said.

All right and proper ie a school teacher's house, a row of encyclopaedias was racked below the new 29in Mitsubishi with Teletext. A child of about five, injured by playing rugby last Saturday, so the school teacher's wife said, lay on the couch watching *Play School*. "Rugby, at his age?" Kilocycle Ken said.

"His father is a rugby fanatic," she said. "And the interference started during the big game."

Scones

The picture was grainy, but watchable.

"There it is!" the boy said.

A series of dashed lines across the screen, moving up at the power mains frequency of 50Hz. Then it ceased for a few seconds, then back again.

"Would you like a cup of tea?" she asked, "I've just put scones in the oven, be about ten minutes."

BELTING IT WITH A SLEDGEHAMMER . . .

"We'll try and find this interference quickly." Kilocycle Ken promised.

Young Golly unpacked the ultrasonic detector and pointed it at the line. There was no interfering noise. There was noise when the parabolic dish was pointed at the grass.

"Probably a pipe with running water supplying the school, all iron pipes here." Kilocycle Ken said.

"Might be circulating earth currents from the line to the pipe too," Young Golly said.

Still Alive

Kilocycle Ken said, "Once, I was using the ultrasonic detector, gave it to the linesman to hold up closer to a 33kV line - he put it on the line."

"And you're still alive?"

"I tore the headphones off very quickly."

"But your brain has been addled ever since?" Young Golly said.

"I got a shock, I can tell you, figuratively, not literally, although a tingle ran down my body, stupid man, nearly killed us both."

Young Golly swung the dish.

Kilocycle Ken said, "I can remember this structure above the house causing trouble 20 years ago, and for no real reason. They change all the insulators and it'll stop for a couple of months, then back it comes. A shower of rain instantly stops the interference."

Young Golly said, "So, it's dust combination, coal from that power generating plant which is what - about a mile away?"

"Almost no television signal is the real reason," Kilocycle Ken said.

"What are those things like spikes on the top of the towers?" Young Golly asked. "Lightening arresters?"

"No, they are special for this area, to stop shags alighting. They have long excreta which can instantly short the lines, and are difficult to find. Spikes keep the birds off."

Young Golly looked at Kilocycle Ken suspiciously. "Is that what we're looking for now?"

"Who knows? Put on your hard hat and belt that pole."

A reaction? Difficult to say. "Let's walk the line," Kilocycle Ken said.

Binoculars

The line swooped across paddocks, disappearing into the distance. "Just be grateful we've got lightweight gear." Kilocycle Ken wore the binoculars.

"I thought The Chief took those to the races," Young Golly said.

"He does."

"Isn't that misuse of Government Property?"

You could be right, but I don't have much faith in binoculars, looking up you can rarely see cracked insulators, cracked or split crossarms or loose hardware, the only way is to go up and have a good look, and that's a job for a linesman."

They stopped at each wooden pole, hit it and pointed the ultrasonic gear, then listened to the Sprague 610 receiver.

Six poles along there was a positive reaction to the bang with the hammer. "Ahh," Kilocycle Ken said. "Look, in mid-span up there, a piece of number 8 fencing wire, a couple of feet long. See it swinging in the wind? That's why it's intermittent. The old wire fault, common in country areas with gang-mowers and those huge hedge cutters. Sometimes the wire fences get cut and a piece of wire is thrown up over the line. We'll tell the power board, they'll get a cherry-picker to flick it off."

"Time for a cup of tea," Young Golly said. ■

MONSTI

AR-8000

The ultimate handheld scanner. Covers 0.5–1900MHz. *FOR ONE MONTH ONLY WE ARE GIVING AWAY A FREE BSS-1300 BASE ANTENNA WITH THIS RECEIVER.*

SAVE £100

£419

Yupiteru MVT-8000

Still UK's number one low priced desk top scanner. ~~£449~~

SALE PRICE **£325**

Includes PSU

NEW UK SCANNING DIRECTORY 4th Edition

Packed with frequencies. From 25 to 1300MHz.

£17.50 INCLUDING FREE P&P

THE ONLY SERIOUS GUIDE.

Yupiteru MVT-7000 SPECIAL OFFER

The UK's best selling mid price scanner. (1–1300MHz) All mode inc. NiCads & Charger. ~~£369~~

SAVE £100

FREE PA-600 POWER AMP

£269

SALE OFFER

PRO-2035

1000 memory base station scanning receiver. Covers 25-1300MHz.

FREE DSS 1300 WORTH £45

£349

SCAN BUSTERS

How to tune into more frequencies and beat new technology.

ONLY

£4.95

+ £1.00 P&P

PRO-44

A superb scanner for airband plus.

66.88/108–174/380–512MHz

£114.95 P&P £5

See review in December issue

OPT-3300

The latest mini freq. finder from Optoelectronics (smaller than a packet of cigarettes.) Inc. NiCads/Charger/Ant. (1MHz–2.8GHz) ~~£169.95~~

£139.95

P&P £5

TSA-6201

Superbly styled extension speaker

£14.99

P&P £1

PRO-43

200 channel scanner covers 66-88, 118-174, 220-512, 806-999MHz.

~~£249~~ Sale price (30 days only)

£199

PA-600

New from YUPITERU. Have you ever use your scanner in the car or at home & could hardly hear it? Here's the answer. The mini power amp connects to handheld o/p spkr – needs ext. spkr. (Lead/batts supplied)

FREE THIS MONTH – EXTENSION SPKR

£29.95

P&P £2

SPECIAL OFFER AR 1500EX

0.5–1300MHz all mode, includes NiCads, charger & Case. ~~£349~~

£299

Includes free long wire

New Scanmaster SP-55 Scanner Pre-Amp

Will sit on top of handheld. Internal battery (supplied). Ultra slim new shape. 25-1500MHz (with switched filters).

£74.95

+FREE delivery

SCANNING ACCESSORIES

P&P £1 on any of the following:

OP-51	Case (7100)	**£17.95**
OP-50	Case (7000)	**£17.95**
CA-8000	Case (8000)	**£17.95**
CA-7200	Case for PRO 43/44	**£14.99**
QS-200	Air vent mount H/helds	**£9.99**
QS-300	Desk mount H/helds	**£19.99**
NE-1023	Scanner ant (rubber)	**£8.99**
NE-1012	Scanner ant (black telescopic)	**£9.99**
TSC-2602	Scanner ant (rubber)	**£22.95**
ABF-125	AOR airband filter	**£24.50**
S.W.F.H.	S.W. guide lists everything from 0-30MHz	**£12.95**

GET MORE OUT OF YOUR SCANNER WITH ONE OF THESE SUPERB ANTENNAS

BSS-1300

Double nest of dipoles. The ultimate base antenna! Receives 10–1300MHz. Supplied with 10m coaxial lead and BNC plug fitted. 34" high, loft or outdoor mounting use a flat wall or pole mount.

£69.95

Delivery £3

DSS-1300

Low profile desk top nest of dipoles receives 10–1300MHz. Supplied with coaxial cable and BNC plug fitted.

£44.95

Delivery £3

MSS-1300

Car magnetic mount version of the DSS-1300. (BNC plug and coaxial cable supplied).

£44.95

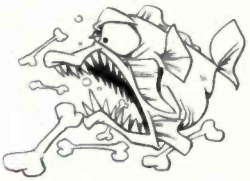
Delivery £3

NB. ANTENNA MOUNTS VERTICALLY

REVIEWED SHORTWAVE MAGAZINE DECEMBER 1994

HAYDON COMMUNICATIONS

ER SALE



Yaesu FRG-100

Superb HF receiver comparable to others of a much higher price. ~~£549~~.

This month **£499** + FREE CTU-8 & PSU worth £70

Sangean ATS-803A

Our best selling low priced portable short wave receiver. All modes including s.s.b. ~~£129~~.

£119.95 + FREE delivery

New Howes CTU-8 (ATU)

Ready built! Ready to go! 0.5–30MHz. Improve your s.w. receiver with this little beauty.

Reviewed in January **£49.95** + FREE delivery

Drake R-8E

The famous short wave receiver from the USA. A superb performer and the only model to include all filters fitted as standard.

New RRP ~~£1199~~ **£989** While stock last

ROBERTS RC-818

Excellent SW receiver. Portable or desk top with built in tape deck.

Sale price **£199**

Roberts RC-817 as above but with no tape deck

Sale price **£169**

GLOBAL AT-2000

Superb quality A.T.U. Covers 100kHz-30MHz

ONLY **£95** P&P £4

Kenwood R-5000

The ultimate s/w receiver from Kenwood. It's performance against styling is unsurpassed to date. ~~£999~~

£PHONE

NEW SW-100

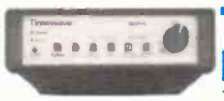
The smallest recvr there is! (0.1–30MHz all mode)

~~£199~~ **£179.99**

ALSO STOCKED

Sony SW-7600	~~£179~~	**£159.99**
Sony PRO-80	~~£349~~	**£299.99**
Sony SW-77	~~£399~~	**£349.99**

WHY NOT PART EXCHANGE YOUR OLD PORTABLE FOR ONE OF THE ABOVE. ***TOP PRICES PAID.***



TIMEWAVE DSP-9 PLUS

The ultimate digital noise filter. Previously reviewed with top rating.

Sale price **£224.95**

FL3 also available **£145** inc P&P

MBR-8

This low priced short wave receiver is a must for the beginner. So full of facilities that we don't have space to list them all here.

£69.95 DELIVERY £6

Long Wire Kit

For those of you who need a good HF antenna – here it is. The complete kit (everything you need) from 10ft to 150ft all for **£24.95**

+ FREE delivery (connector not supplied)

FOR THE BEST PART-EX DEALS AROUND – GIVE US A CALL

AR-3000A

The ultimate desk top scanner. 0.1-2GHz. As new **£749**

E.R.A.	Display unit	**£179**
SR-001	Din sized scanner	**£249**
PRO-2032	As new	**£189**
FRG-9600	VGC	**£319**
R-7000	As new incls remote	**£749**
MS-1000	As new	**£219**
MVT-8000	As new	**£299**
AR-950	VGC	**£179**
PRO-2006	As new	**£225**

AR-3030

Superb quality HF receiver..... **£599**

FRG-100	As new	**£419**
R-5000	As new inc VHF Cvtr	**£799**
R-72	As new	**£599**
H.F.-150	As new	**£249**
R-70	VGC	**£449**
R-1000	VGC	**£299**
R-8E	VGC	**£799**
ICF-2001D	As new	**£199**
Roberts R-817	As new	**£149**
Sony SW-22	As new	**£49**
Opto 2810	Freq counter	**£139**

MVT-7100

Handheld scanner covers 0.1-1650MHz. One only. As new **£299**

AR-8000	As new. No box	**£349**
MVT-7000	As new	**£229**
AR-1500EX	As new	**£269**
DJ-X1	As new	**£229**
AR-1000	VGC	**£189**
MVT-5000	VGC	**£179**
PRO-80	As new	**£199**
VT-125	As new	**£129**

NB: ALL PRICES INCLUDE VAT

★ Outside office hours 01850 586313 ★ Mail Order: Same Day Despatch ★

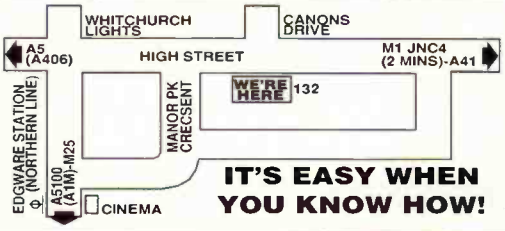
Sales/service:– (Phone/Fax) – **0181-951 5781/2**

132 High Street, Edgware, Middlesex HA8 7EL

Close to Edgware underground station (Northern Line). Close to M1, M25, A406.

★ FREE PARKING ★ ★ OPEN:– MON-SAT 10-6PM ★

DELIVERY (UK MAINLAND) 24HR £10 / 48hr £7.50



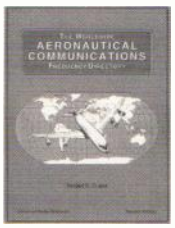
OOKSHELF

nd to a welter of broadcasts and communications. A
er will help you to get more out of your listening and
what's currently sitting by my receiver . . .

LOWE B

Radios are great things, opening your mi
number of good books kept by your receiv
expand your knowledge. Here's

WORLD AERONAUTICAL COMMUNICATIONS FREQUENCY DIRECTORY



Quite the best guide to HF airband monitoring we've ever seen. Extensive explanations, including a chapter covering ACARS.

£19.95 plus £3.00 p&p

CALLSIGN '95

New from Photavia Press

A useful companion to AIRWAVES '94, this book gives you an alphabetical listing of civil and military aviation callsigns. For military traffic, this allows you to discover the aircraft type, the air arm it belongs to, it's unit code, squadron and base. For civil callsigns, you can find out the three-letter air traffic prefix, company or operator and country of origin. A super book that will help you get more out of airband monitoring. 108 pages, A5.

£7.95 plus £1 p&p

AIRWAVES '94

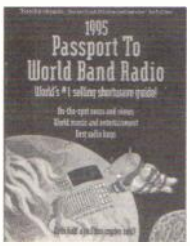
from Photavia Press

The best frequency guide we've ever sold for the airband enthusiast. Covers H.F., civil and military frequencies. Comprehensive coverage of UK stations, listed by airfield and cross-referenced by frequency. Major European frequencies are also covered. 88 pages, A5.

£7.95 plus £1 p&p

PASSPORT TO WORLDBAND RADIO '95

The definitive guide to English language short-wave programs. Also crammed with informative articles about world radio stations and the broadcasters themselves and a very comprehensive guide to buying short-wave receivers.



£14.95 plus £2.00 p&p

UNDERSTANDING ACARS

by Ed Flynn

All the necessary information including: Report Forms, Abbreviations, Airport identifiers, Airline identifiers, and much much more.

£9.95 plus £2.00 p&p

HOBBYIST'S GUIDE TO COMINT COLLECTION AND ANALYSIS

By Tom Roach

Communications intelligence (COMINT) is considered by most governments as the most sensitive and secret of all their intelligence activities. Now you can get in on the act! This book covers the equipment you need, how to put it all together and then how to analyse the material collected. An excellent little book that makes fascinating reading.

£19.95 plus £2.00 p&p

INTERPRETATION OF FACSIMILE WEATHER MAPS AND CHARTS

By Philip C Mitchell

Decoding weather information is one of the many things you can do with a short-wave receiver and a computer. What you do with the maps and charts received is then a problem! Recently updated, this manual provides over 70 pages of useful information that will help you interpret what you receive. 73 pages, A4 size.

£8.95 plus £2.00 p&p

WEATHER REPORTS FROM RADIO SOURCES

By Philip C Mitchell

A useful little publication covering many aspects of weather watching. Includes broadcast sources as well as VOLMET stations, there is even a guide to "decoding" VOLMET data. UK sources are covered as well as the major regions of the world. 35 pages A4 size.

£6.95 plus £2.00 p&p

You can pick these up from any Lowe branch or order by 'phone or FAX or E-mail via the Internet.
We've now expanded our communications systems to include the Internet. You can contact via E-mail for speedy processing of orders or information requests. We have two Internet addresses for your convenience, orders@lowe.demon.cc.uk. to place your order or if you would just like the information on any of our products, use info@low.demon.co.uk. Please include your postal address and daytime telephone number.

Lowe Electronics

Chesterfield Road, Matlock, Derbyshire DE4 5LE Tel: (01629) 580800 Fax: (01629) 580020

LOWE

VLF LOOP

Experimental Electrostatically Shielded Loop Antenna

Richard Q Marris is noted for his experimental loops and his latest design offers interesting possibilities for the lower frequencies.

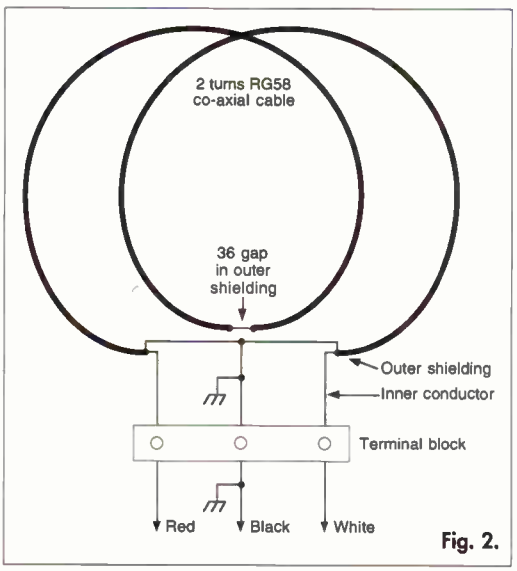


Fig. 2.

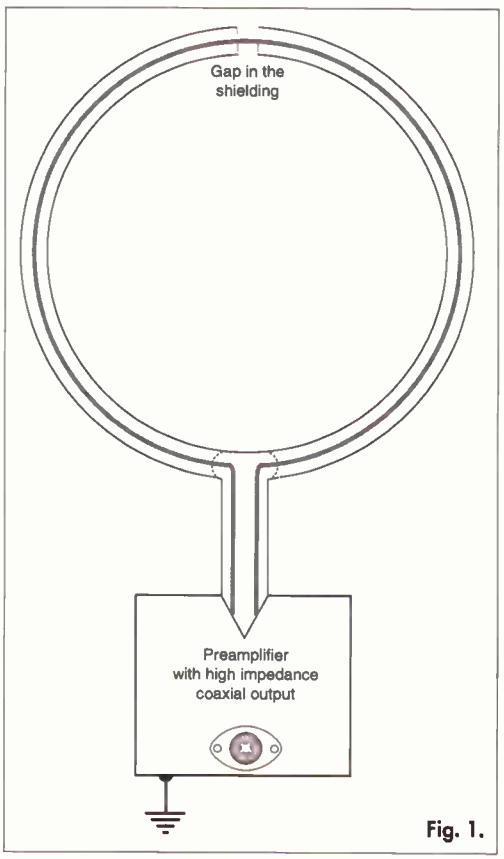


Fig. 1.

Shielded loop antennas take the form of a non-magnetic metal tube enclosing the loop conductor winding. This shield must not form a continuous electrical path, so a small gap in the shield is usually made opposite the feed point, as shown in **Fig. 1**.

The deep directional null, peculiar to the shielded loop, greatly reduces the ambient noise, together with most forms of interference whether atmospheric, adjacent stations or the vast amount of man-made electrical noise especially prevalent in built-up areas.

Though the shield slightly reduces the 'pick up' of the loop, this is more than compensated for by the resultant 'clean' signal, which can then be amplified by a simple, low-cost, low consumption, pre-amplifier.

The Design

In the final experimental design, a 2-turn, 765mm internal diameter loop is used, with the gap in the shield located at the bottom. The use of two turns somewhat raises the signal level and the impedance.

The loop uses the inner conductor of a length of RG58 co-axial feedline, the outer braid acting as the electrostatic shield, with a 37mm break in the in the centre of the shield, ie. at the bottom. The loop is held *in situ* with semi-rigid 25mm o/d clear plastics tubing as described later.

The pre-amplifier, **Fig. 3**, uses a low cost, low voltage/current, op-amp circuit. After many experiments the LM 386 was selected. This has a bandwidth, specified by the makers, of 300kHz, which can, however, be manipulated a little higher. The specified supply voltage can be 4 to 12V d.c. at 4-8mA. The gain is about 25dB, but this can be increased to as high as 200dB.

However, to obtain the widest possible bandwidth, it was found experimentally that the supply voltage should be 8 - 9V, and the gain adjusted to about 25dB. The gain could be increased to around 200dB by connecting a 10µF capacitor between pins 1 and 8 of the LM 386, which may be acceptable for the audio frequencies, but at the r.f. frequencies being used gives a considerable narrowing of bandwidth and a tendency to instability.

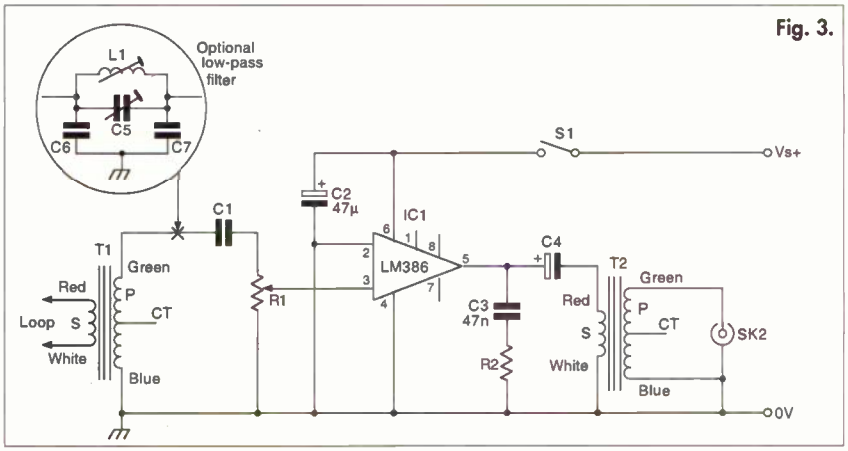
The circuit is quite conventional, except for the fact that component values have been selected for maximum bandwidth, and that small audio output transformers T1 and T2 are used for input and output coupling/matching.

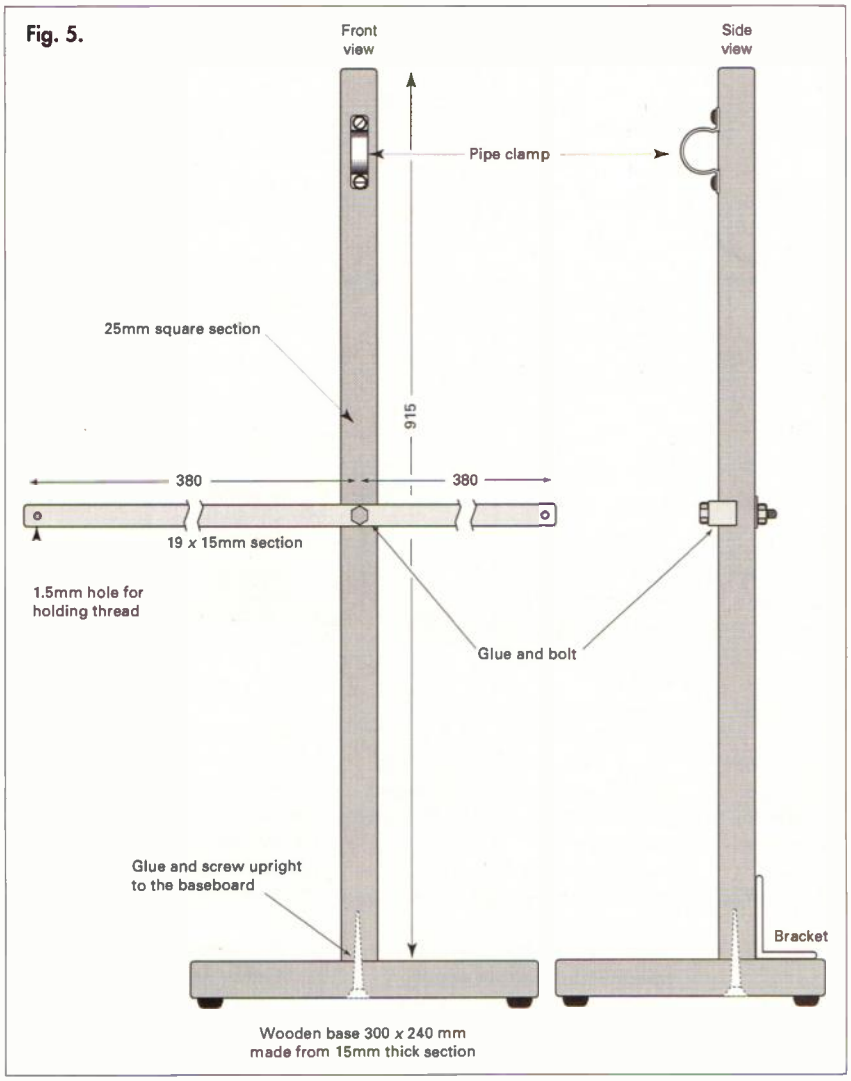
These transformers are iron cored components, normally used as audio frequency output transformers, but if the type is carefully selected, it will pass frequencies up to, and even including, most of the medium wave band. The usual low impedance secondary winding (S) of T1 is used for coupling the very low impedance loop, to the high impedance input to the LM 386 *via* the centre tapped high impedance primary (P).

An identical transformer T2 performs a similar function with the low impedance secondary winding (S) connected to the LM 386 8Ω output and the transformer primary winding (P) is used as a coupling coil to the high impedance input of the v.l.f./l.f. converter in use.

It will, of course, also couple to a receiver requiring an end-fed long wire antenna and ground connection. Alternative output impedances can be obtained by using the whole of the high impedance winding (P) as shown in **Fig. 3** or half that winding using the centre tap (CT) and the lower grounded end, or using the centre tap connection with the two outer ends of the winding joined together in parallel.

The antenna arrangement shown covers 2 to 300kHz, with no noticeable fall off up to about 400kHz and acceptable results to 500kHz.





As both the loop antenna and amplifier are wideband, it is possible that anyone living near a medium wave broadcast station will experience breakthrough from that station. To eliminate this, the optional low pass filter/trap shown in **Fig. 3** can be used. Capacitor C5 can be up to 300pF, as required, to eliminate breakthrough and is made up of a 100pF 'postage stamp' trimmer with parallel capacitors added.

Construction

The simple timber frame is shown in **Fig. 5**. It consists of a heavy base (300 x 240 x 15mm), a timber vertical member (915 x 25 x 25mm) and a lightweight crosspiece (760 x 19 x 15mm). The whole is assembled with glue and screws as shown. The final assembly is given an application of teak wood stain.

The shielded loop assembly is shown in **Fig. 6** and consists of 96in of 25mm o/d (19mm i/d) clear plastics semi-rigid tubing. This tubing is, among other things, used for garden pool fountain plumbing, so try your local garden centre.

Into this tubing is inserted a length of RG58 co-axial feedline. Firstly a 37mm gap is made at the centre of the RG58 as shown. This gap is located at the bottom of the loop assembly.

The clear plastics tubing, bent round in a circle and the two ends of the RG58 pushed around inside the plastics tubing form two complete turns. It will be necessary to rub a little thin oil on the ends of the black outer sheathing of the RG58 to facilitate its passage around the inside of the plastics tubing. With the whole assembly being in a circle, the ends are terminated as shown in **Fig. 6**.

The tube-enclosed loop is next mounted on the main frame assembly, with plastics pipe clips as shown in **Fig. 8**. Strong thread is used to hold the loop to the ends of the crossboom.

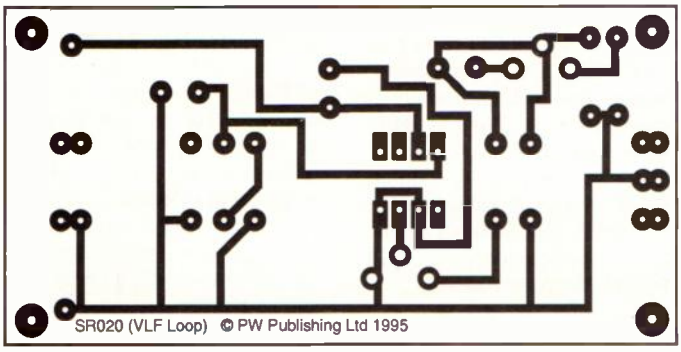
The ends of the loop and the twisted ends of the copper braiding are connected to a terminal block fixed to the baseboard. The input to the amplifier is also connected to this terminal block, **Fig. 7**.

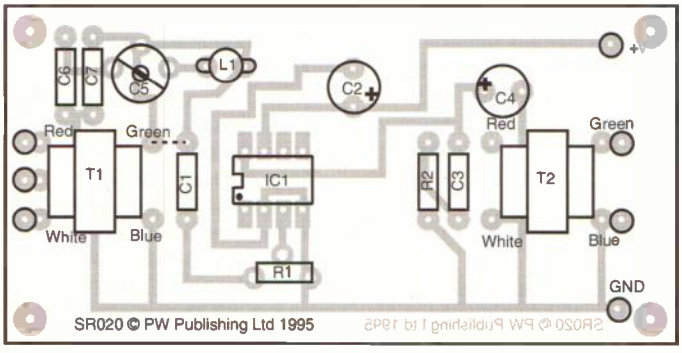
The amplifier is assembled on a p.c.b. The layout is shown in **Fig. 4** and the circuit in **Fig. 3**. Minor variations of the layout are quite in order, depending on the physical size of the capacitors used, etc. The LM386 can be mounted in a low profile 8-pin i.c. socket if you do not feel up to soldering it directly to the p.c.b.

The On/Off switch S1 and the output phono socket SK 2 are mounted at the front of the circuit board, for easy access when in use. A PP3 battery provides the necessary 9V supply at 4-5mA.

The amplifier is mounted on the timber baseboard of the loop, using short pillars. Ideally

Fig. 4: Fullsize p.c.b. track pattern and compound layout for the loop amplifier of Fig.3.

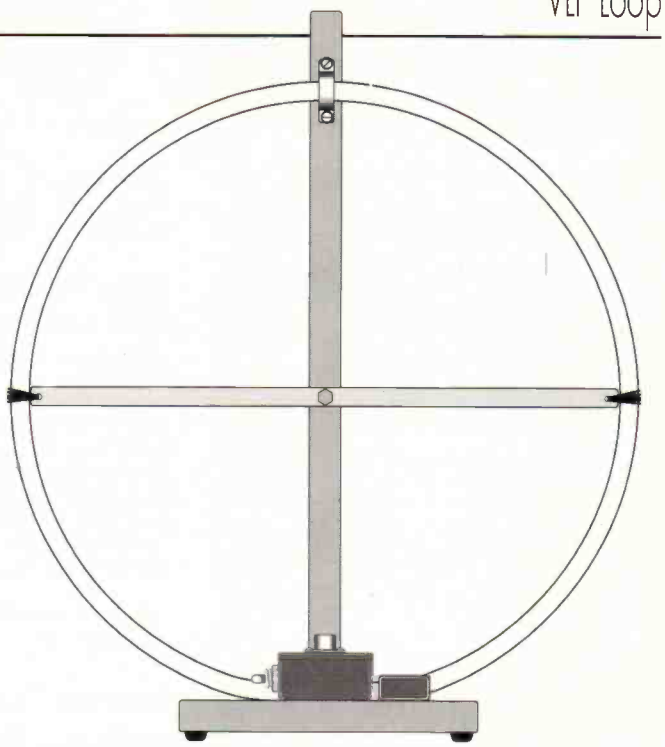




the amplifier should be in a screened box, but as this is an experimental design, everything has been assembled in open-plan, so that on-going modifications can be made with ease.

In Use

This experiment shielded loop and amplifier has proved to be most effective, supplying adequate 20-25dB gain and give sharp nulling which keeps all forms of interference to an absolute minimum. The antenna has been used within the range 2 to 400kHz with occasional use to 500kHz. ■



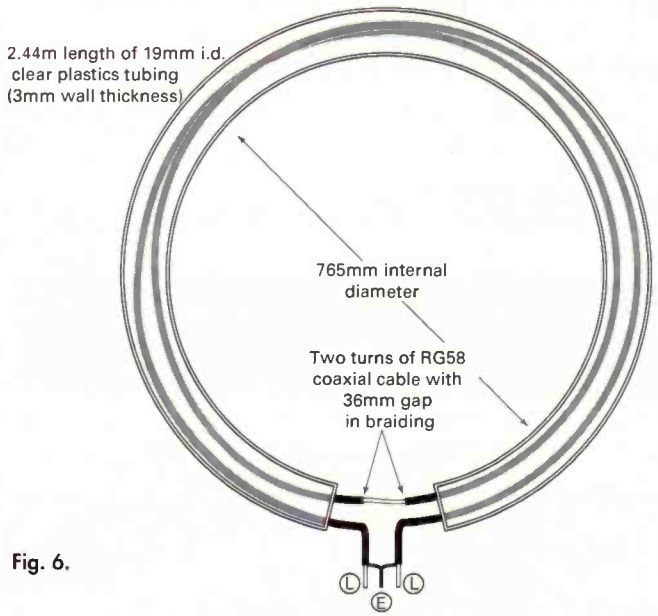


Fig. 6.

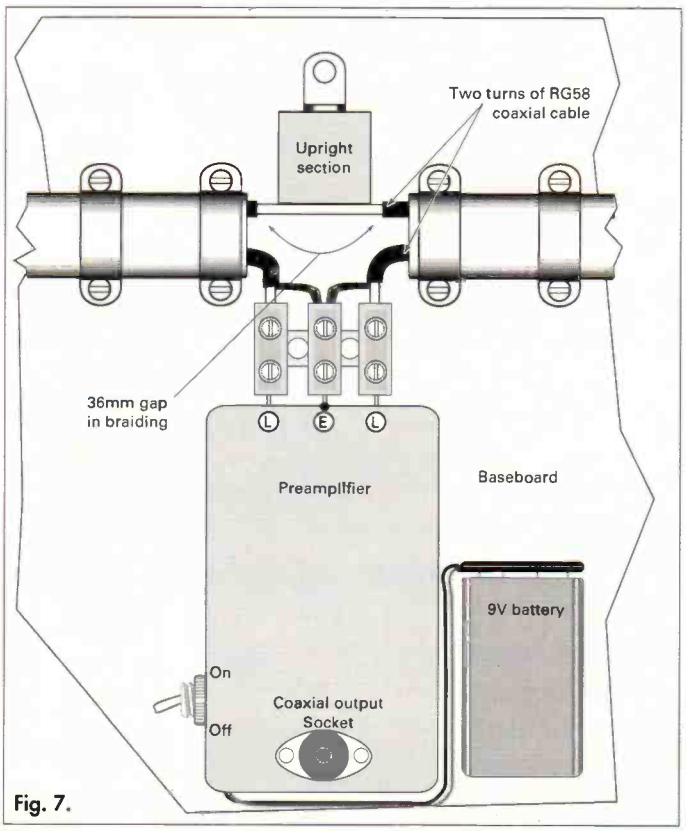


Fig. 7.

You Will Need

Amplifier

Resistors		
Carbon film 0.5W		
10Ω	1	R2
Potentiometers		
Vertical preset		
10kΩ	1	R1
Capacitors		
Electrolytic 16V		
1µF	1	C1
47µF	1	C2
470µF	1	C4
Polyester		
47nF	1	C3
Semiconductors		
Integrated circuits		
LM386	1	IC1

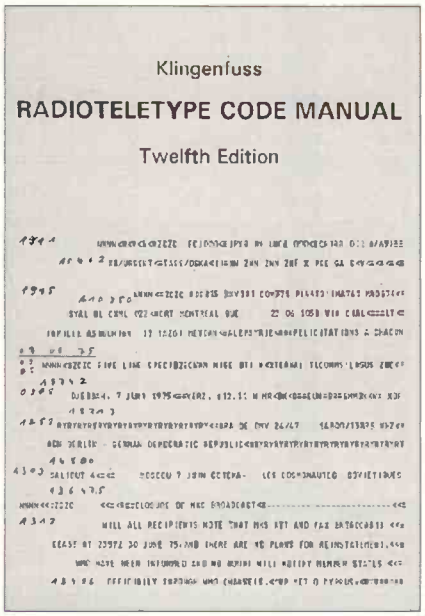
Miscellaneous
Phono socket (SK2); 8-pin low profile i.c. socket; Microminiature s.p.s.t. toggle switch (S1); Printed circuit board; Audio output transformer (2), (T1, 2, Tandy 273/1380.

Optional Low Pass Filter/Trap

Capacitors		
Ceramic		
470pF	2	C6, 7
Trimmer		
300pF	1	C5(see text)
Inductors		
560µH	1	L1 (Toko 303LN-1133)

Loop Assembly
Length of RG58 co-axial cable 6m long; Terminal block, 2-way; Semi-rigid clear plastics tubing, 25mm o/d (19mm i/d) 2.5m long (as used for garden pools, etc.) Plastics pipe clips (5); Wood 25 x 25mm 915mm long; Wood 7/16 x 3/4in 760mm long; Wood 300 x 240 x 15mm; Screws; Glue; Wood dye; Strong thread.

BOOK BONANZA


Klingenfuss

RADIOTELETYPE CODE MANUAL

Twelfth Edition

SAVE £2.50

Radioteletype Code Manual
12th edition
Klingenfuss

This is a book well deserving shelf space in the utility listener's shack. It is the definitive reference on utility RTTY. Featured are explanations of systems used, modulation types, teleprinter alphabets, both standard and non-standard including Arabic, Cyrillic, Greek and Japanese.
Sections on Maritime Mobile SITOR systems, including ARQ, FEC and derivatives, selective calling and NAVTEX, multi-frequency shift keying, packet radio to name but a few.

If you are a serious utility listener, or want to be then you cannot afford to miss this offer.

Normal Price £11.00

Offer Price £8.50 plus £1.00 carr. (UK). £1.75 (overseas)

To order your copy(ies) please use the form on page 91, for your convenience we have filled in the details for you.

THE UK's BEST SELLING AMATEUR RADIO MAGAZINE

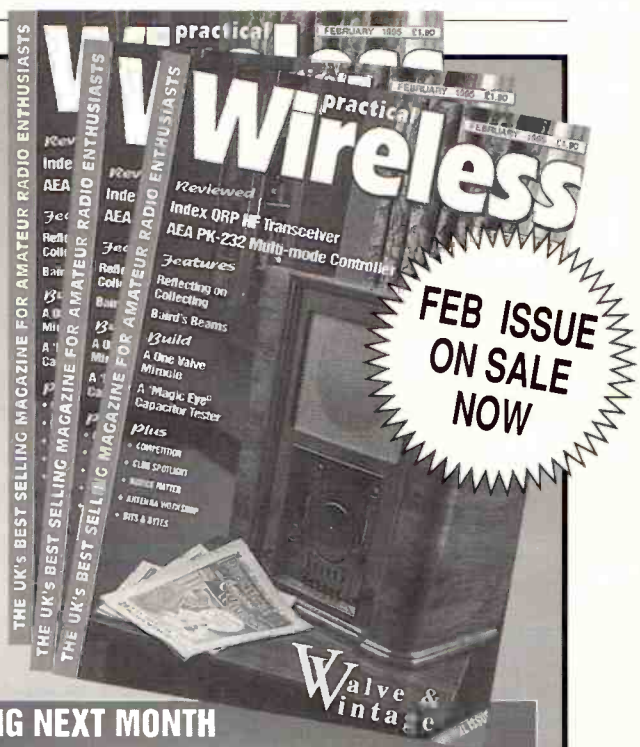
VALVE & VINTAGE SPECIAL

★ **FEATURING:** THE BAIRD TELECHROME STORY
★ **BUILD:** A ONE VALVE MIRACLE
A 'MAGIC EYE' CAPACITOR TESTER
★ **REVIEWED:** THE INDEX QRP PLUS
THE AEA PK232MBX

REGULARS EACH MONTH

EVERYTHING FOR THE RADIO AMATEUR

★ NOVICE NATTER ★ CLUB SPOTLIGHT ★ ANTENNA WORKSHOP
★ BITS & BYTES - THE COMPUTER IN YOUR SHACK ★ VALVE & VINTAGE
★ REGULAR REPORTS ON ALL THE BANDS ★ NEWS & FEATURES
★ COMPETITIONS AND LOTS MORE!



FEB ISSUE ON SALE NOW

COMING NEXT MONTH

Look out for the March issue - ON SALE 9th February

MOBILE SPECIAL
Part 1 of the PW Martlet Project
Reviewed: The Yaesu FT900AT
Build: A Simple 1.8MHz Transverter
Plus: London Show Guide

FREE
PW 70cm (430MHz) REPEATER DATACARD

SWM TRAVEL

There's A Great Vintage Collection Waiting For You At The Dayton '95 HamVention!

Come Fly With *PW* To The Biggest Amateur Radio Show In The World - Explore The Giant Flea Market And Discover Vintage Wireless In The USA

With over 1000 stalls, the Dayton HamVention flea market has something for everyone. Rob Mannion G3XFD spotted this beautiful old 'Zenith' Console wireless for sale at the bargain price of $50. Even though it was a giant set, the Delta Airlines 'pack & dispatch' department (actually at the show, literally only yards away) could have sent it home for him...for a very reasonable price. Whatever your interest, whether it be the latest hand-held transceiver or vintage communications receiver, you'll thoroughly enjoy Dayton. It's not just an amateur radio event...it's a show for the whole family.

Although many couples join us, your partner doesn't have to enjoy the hobby to appreciate the *PW* HamVention trip. There's so much to see, so much shopping and great company to be had on the holiday of a lifetime. And it only costs £650 per person (based on sharing a twin-bedded room).

You can join Rob Mannion G3XFD and the *PW* party when our 1995 holiday starts on Tuesday April 25 at Gatwick when we fly out to Cincinnati. After transfer by coach to Dayton we'll be staying for six nights at the Englewood Holiday Inn. There's a good choice of eating places nearby, the Hotel has a good swimming pool and is very close to the HamVention itself.

We've arranged a visit to the world famous United States Air Force Museum and there's also an optional shopping trip to see Cincinnati and the famous 'Skywalks'.

The £650 includes return flight, meals on the flight, transfers to and from Cincinnati Airport, six nights at the Holiday Inn, HamVention ticket, Air Force Museum excursion, all local taxes and the new UK Airport Tax of £10. (We'll be pleased to arrange sharing of a twin-bedded room if you're travelling alone).

DAYTON

For further details on the *PW* 1995 HamVention Holiday please contact our professional tour organiser Andy Garside of Gulliver's Groups & Incentives at Fiddington Manor, Tewksbury, Gloucestershire GL20 7BJ. Tel: (01684) 293175, FAX: (01684) 290093. Alternatively you can call Rob Mannion on (01202) 659910 (between 1 and 2pm only please) to discuss the holiday.

GAREX TUNABLE ANTENNA FILTER

Normally costing £27.95 inc. P&P.

SAVE £4.15

OFFER PRICE £23.80

The Garex Tunable Antenna Filter provides a deep notch that can be tuned over the frequency range 85 - 175MHz. Used in the antenna lead to the receiver, it will enable you to effectively remove an interfering signal within this band, as long as it is not closer than 10MHz to the wanted signal.

This unit will be of use to the airband enthusiast and scanner user suffering from breakthrough from high power v.h.f. broadcast, p.m.r. or police transmitters.

The connections to the filter are by BNC sockets and a BNC to BNC lead approximately 500mm long is also supplied.

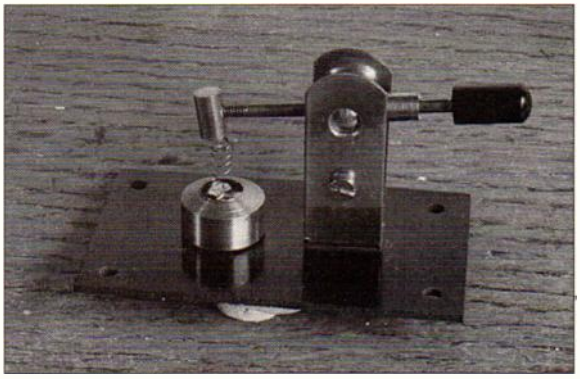
★ **Please use the Order Form on page 91 for this offer.**

Post & Packing free to subscribers. Non-subscribers pay £1.00 for P&P(UK). Overseas readers - please enquire for postal charges.

Don't delay Save £4.15 today!

SUBS CLUB OFFER ALSO OPEN TO NON-SUBSCRIBERS

By permission of the Postmaster General.....



An 'open' crystal detector made by the author.

A nostalgic look at the early years of radio with Eric Westman.

The sight of a primitive home-made crystal set of the early 1920s, to the hi-tech young person of today, usually provokes a guffaw of derision and disbelief. How, he asks, could grown people have been so thrilled with such a childish contraption of wood and wire?

Simple Life

The answer lies in the social conditions existing at that time. For most people, life was simple and narrow. Few homes possessed a bathroom, telephone or car. Lighting in towns was often by gas rather than electricity, and in the countryside by paraffin lamp or candle.

Entertainment in the home consisted mainly of reading, women knitted and sewed and a typical youth did fretwork. A fortunate home might posses a wind-up mechanical gramophone and a few ten inch or twelve inch 78r.p.m. records, often as classical music. Really fortunate homes sported an upright piano in the parlour, on which hymns were played on Sundays.

Outside the home, entertainment in towns would be a silent black and white movie at a cinema, in the country a rare 'social evening' in the village hall. Holidays abroad were not the same for the masses, who would be lucky to have any holiday at all. News was obtained solely from newspapers and magazines.

Simple Apparatus

So, when the word spread that it was possible to receive in the home, on simple apparatus that could be made by a reasonably intelligent person, such delights as news bulletins, talks and music, there was an enormous demand for information on how to make this apparatus.

Weekly and monthly wireless magazines suddenly proliferated, publishers brought out a series of 'how to make' booklets (such as those in the Radio Press series), and anyone professing to be knowledgeable on the subject was sure of free drinks for passing on often dubious information.

Today, there is no difficulty in acquiring a domestic radio, you just go into a shop and buy one. But in 1922, before the advent of the British Broadcasting Company, it was quite a different matter.

The would-be listener to whatever broadcasting was then available had first to struggle through a mass of red tape, erect a lengthy aerial system high above his garden - and then build his own receiver!

First the Permit

His first step was to apply to the Secretary of the General Post Office for a permit to set up his proposed receiving set. In return he would receive a copy of the conditions under which the permit would be granted. He had next to produce evidence that he was British, together with two satisfactory references from unrelated 'persons of standing' who were themselves British.

He ought also to provide a birth certificate, but this could be waived is the referees testified that they knew he was of British birth. To own a receiving set, it was important to be British!

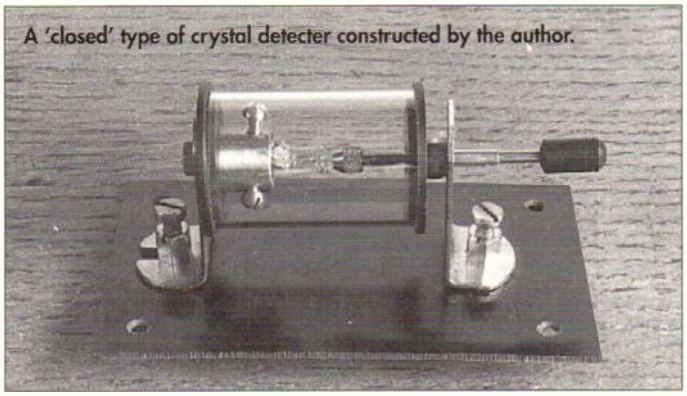
The applicant was informed that his installation would be subject to the approval of the Postmaster General, and when it was set up, he would have to 'observe the secrecy of correspondence' and 'conform to such regulations as the Postmaster might prescribe'. And pay an annual fee of ten shillings (equivalent to about £5 of today's money).

His aerial had to be no more than 100 feet (30.6 metres) high and, if a single wire affair, not more than 100 feet (30.6 metres) long, including the lead in. However, if he aspired to a multi-wire array, the total length of all wires, together with the lead-in, could increase to 140 feet (42.7 metres).

After filling in the form and enclosing a dimensioned sketch of his proposed aerial array (lead-in wired included) together with his first annual remittance, the applicant sent it all off and, whilst eagerly awaiting his permit, studied one of the available books purporting to tell him how to build his own receiver.

His permit to install a wireless receiver at last arrived, the applicant learnt from it that he must not make any use of any message the apparatus received, nor divulge it to any person other than properly authorised officials of His Majesty's Government. The apparatus had to be open to inspection at all reasonable times by properly authorised Post Office officials, and the permit was subject to withdrawal at the Postmaster General's discretion. Finally, he was warned that thermionic valves must not be used without previous permission from the same august person.

It was not necessarily the last regulation, with its overtones of more red tape and detailed applications, that decided many would-be listeners to start off by building a crystal set. Such a receiver would be relatively easy and inexpensive to make and required no costly low tension or high tension batteries to operate it. But whatever he decided to construct, he had better not do it without first getting official permission and buying a licence. All postmen had orders to report any aerials



A 'closed' type of crystal detecter constructed by the author.

they saw while performing their 'walk'.

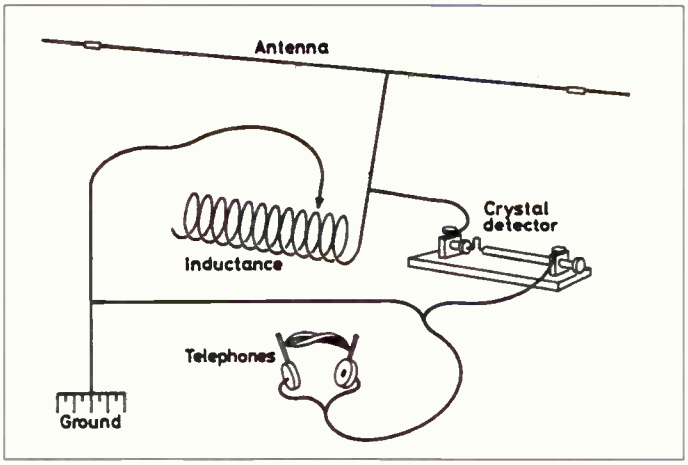
Legally Entitled

Having done, paid and noted all of the foregoing, the applicant was now legally entitled to own a wireless receiver - provided it had no valves. He would have to build a crystal set.

His first task would be to erect his aerial in conformity with the diagram he had submitted. Typically, the aerial ran from a tall pole or tree at the bottom of the garden to the chimney-stack of the house, supported at each end on porcelain insulators, with a lead-in wire down to the window of the room in which the receiver would be installed.

It entered the room by means of a 'lead-in tube' fitted tightly in a hole drilled through the wooden window frame. The earth was often a copper tube about 750mm long hammered into the ground outside the window, with a heavy wire running from it to a second lead-in tube in the window frame.

Popular wisdom decreed that the soil round the earth tube should be kept damp, so a periodical bucket of water was sloshed over it. Those who shared the widespread fear that lightning would strike their aerial and destroy their receiver, if not themselves, fitted a lightning arrester out of doors between the aerial and earth lead-ins. In its simplest form, this could be a discarded automobile spark-plug, improvisation was often resorted to.



The basic requirements for receiving wireless signals appeared in an article by the author published in *Practical Wireless*, December 1982.

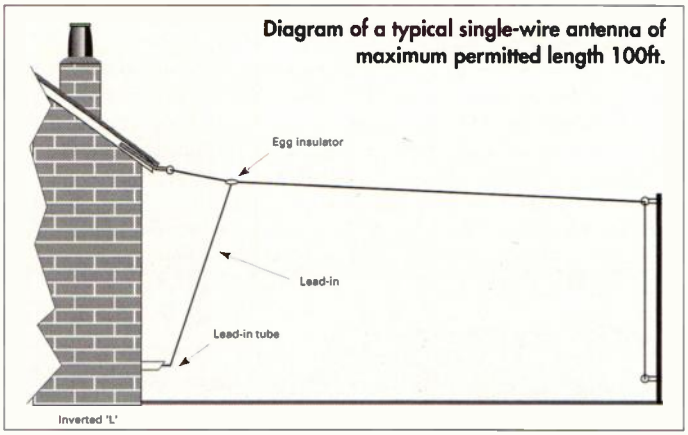
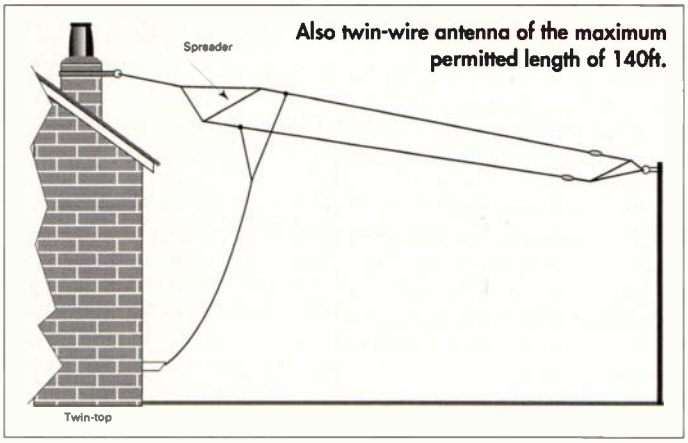


Diagram of a typical single-wire antenna of maximum permitted length 100ft.



Also twin-wire antenna of the maximum permitted length of 140ft.

Deciding Which Circuit

Having established his aerial and earth systems, the constructor had to decide upon a circuit for his set. Again, simplicity and cheapness were usually the criteria. Since there was likely to be only the one station - Two Emma Toc, the experimental Marconi transmitter at Writtle - within his range of reception, he had no need to elaborate tuning arrangements.

The simplest method would suffice, and this could well be a solenoid, typically of 100mm diameter, wound with 22 or 24s.w.g. double cotton covered wire for perhaps 150 turns, and tapped every ten turns. To tune his set to the station, he would merely connect his aerial to whichever tapping gave him the loudest reception.

Should he desire a more precise tuning arrangement, he could add to his solenoid ten more turns, each one tapped. Thus he could achieve 'coarse' tuning by means of his 'tens' tappings and 'fine' tuning by connecting his earth to one of the 'singles' tappings. To make a 'de-luxe' version he could connect the two sets of tappings to two semicircles of brass studs on the front panel, with a wiper arm in each semicircle to select the tappings required.

Another method of selecting the required number of turns was by means of a narrow bared track running the length of the solenoid. Along this track could be slid a brass contact. A second track and contact could be employed to auto-couple the aerial to give good station separation (by the standards of those items) when more transmitters became available.

If the constructor could afford it, for components were relatively expensive in those days, he could do without the tapping arrangements and buy a 500 or 1000pF variable condenser to connect in parallel with the solenoid and so achieve very smooth tuning.

Yet another method of tuning was by means of a variometer. A popular version consisted of two 'pancake' coils of perhaps 100mm diameter, connected in series

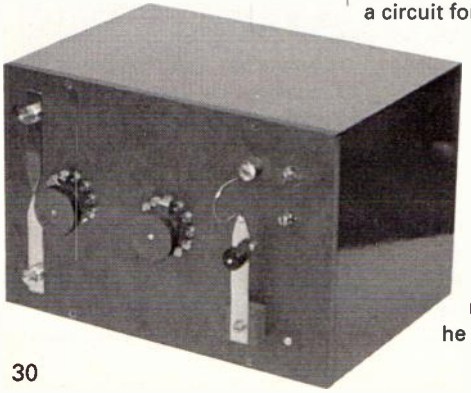
Tuning was effected by moving them closer to, or futher from each other. Each pancake coil was made from a disc or stiff cardboard with an odd number of equally spaced slots cut inwards from the periphery to within, say, 30 millimetres of the centre of the disc.

Wire was wound round the disc, in one slot and out of the next, until, when the required number of turns were wound on, the discs had taken on a basket work appearance. One of the coils would be permanently fixed to a base, while the other was pivoted so that it could be swung very closely across the face of the fixed coil. The disadvantage with this method was the rather small range of frequencies covered.

Detection Required

Having tuned in his signal by whatever means, the constructor had next to arrange to rectify it. He could buy a commercially made 'crystal

A crystal set built recently . It is tuned by the use of both 'coarse' and 'fine' switches in accordance with the design issued by the US Bureau of Standards 1921 and fitted in a cabinet.



ASK ELECTRONICS LTD

We also stock a range of books for frequency scanning

248/250 TOTTENHAM COURT ROAD, LONDON, W1P 9AD • Tel: 0171-637 0353/0590 • Fax: 0171-637 2690

YOUR SONY SPECIALIST

All products covered by a total manufacturers guarantee

ICF-SW77 Similar specification to the ICF-2001D but with 160 memories & labelling facility £349.95
ICF-SW55 ..... £249.95
ICF-SW100 ..... £175.00
ICF-SW100S £249.95
ICF-SW1E £149.95
ICF-SW7600G £159.95
ICF-PRO80 ..... £299.95
AIR-7 ..... £249.95
ICF-SW30 ..... £89.95
ICF-SW33 ..... £109.95
ICF-SW22 ..... £69.95
ICF-SW10 ..... £44.95
AN-1 Active SW ant £59.95

ROBERTS

RC-818 ..... £184.95
R-817 ..... £159.95
R-808 ..... £94.95
R-617 ..... £120.95
R-621 ..... £59.95
R-101 ..... £49.95

AS ADVERTISED IN SW MAGAZINE

GRUNDIG AT ASK

Sattalite-700 ..... £349.00
Yachtboy-500 ..... £159.95
Yachtboy-400 ..... £120.00
Yachtboy-230 ..... £65.95
Yachtboy-222 ..... £52.95
Yachtboy-206 ..... £37.95
Yachtboy-205 ..... £30.00
Concertboy-230 ..... £35.95

MAIL ORDERS WELCOME ON THE ABOVE PHONE NUMBERS. FAST-EFFICIENT-CONVENIENT TO YOUR DOOR STEP!!

We also have in stock a range of Frequency Scanning Guides

UK Scanning Directory 4th Edition £17.50
The VHF/UHF Scanning Guide £12.95
Monitoring the World Above 30MHz £19.95
Shortwave International Frequency H/Book £14.95

Panasonic

RF-B45L
digital SW receiver £139.00
RF-B65D
digital SW receiver & ssb £165.00

SW Receivers

LOWE

HF-150 ..... £355.00
KEY PAD £34.95
PR-150 ..... £190.00
IF-150 interface £34.95

HANDHELD & BASE SCANNERS

YUPITERU

MVT-125II air band £169.95
MVT-150 FM marine £169.95
VT-225 civil & military airband £239.00
MVT-7000 100kHz-1300MHz (no gaps) £259.00
MVT-7100 500kHz-1650MHz £365.00
MVT-8000 home base 8MHz-1300MHz £349.95

AOR

AR-1500EX 500kHz-1300MHz £310.00
AR-2800 500kHz-800MHz, 800-1300MHz £395.00
AR-2000 500kHz-1300MHz £274.95
AR-8000 100kHz-1950MHz no gaps £415.00
AR-3000A 100kHz-2038MHz home base £840.00
AR-3030 30kHz-30MHz home base £615.00

TAX FREE FOR EXPORT. MAIL ORDER IMMEDIATE DESPATCH. GOVERNMENT & LOCAL AUTHORITY ORDERS WELCOME

YAESU

FRG-100
50Hz-30MHz £509.95
FRG-9600
60MHz-905MHz £525.00

AIRCO

DJ-X1D
200KHz-1300MHz £295.00

ICOM

ICR-1
100KHz-1300MHz £349.00
(The smallest hand held scanner)
ICR-7100 homebase £1220.00

All products are subject to a posting & packaging charge

PLEASE MAKE ALL CHEQUES PAYABLE TO ASK ELECTRONICS AT 248-250 TOTTENHAM COURT ROAD, LONDON W1P 9AD

For the best prices give us a call on: **0171-637 0353**

NEVADA

SCANMASTER®

High Quality Scanning Accessories

SCANMASTER DOUBLE DISCONE

A high performance wideband antenna, offering gain over a conventional discone. Stainless steel construction with standard PL259 connector, mounting pole plus brackets. Superior performance on Air, Marine and PMR bands.

★ 25-1300MHz
★ Ultra wideband TX capability

SCANMASTER WHIPS

Flexi Whip...£14.95
Higher gain wideband whip and transmit capability on 2m and 70cms.

Rubber Duck...£11.95
General purpose replacement antenna with fitted BNC type connector.

SCANMASTER MOBILE

Complete 'ready to go' magnetic mount wideband antenna. Frequency range from 100 to 1000MHz. Fitted with coaxial cable and BNC plug.

SCANMASTER DISCONE

A quality wideband stainless steel discone with frequency range 25-1300MHz. Low loss 'N' type connector. Able to transmit on 2m and 70cms.

SCANMASTER BASE STAND

A fully adjustable desk top stand for use with all hand-helds. Fitted coaxial fly lead with BNC and SO239 connectors.

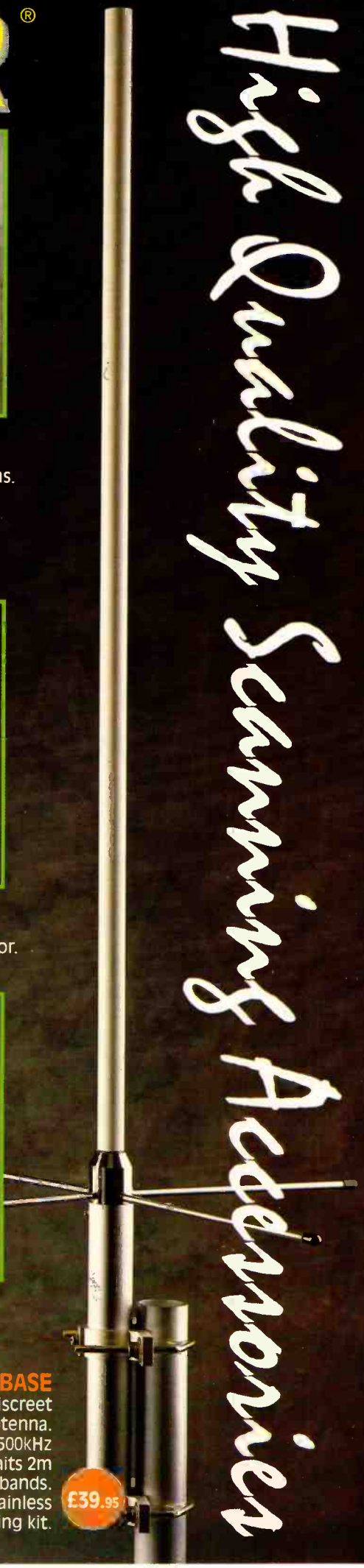
SCANMASTER MOBILE MOUNT

Mounts on air vent grills on a car dashboard to allow easy and safe operation of most hand-helds.

SCANMASTER BASE

Wideband discreet fibreglass vertical antenna. Frequency coverage 500kHz to 1500MHz. Transmits 2m and 70cms amateur bands. Complete with stainless steel mounting kit.

£39.95



Available from your local dealer or direct from

NEVADA COMMUNICATIONS

189 LONDON ROAD, NORTH END, PORTSMOUTH PO2 9AE

USE YOUR CREDIT CARD FOR SAME DAY DESPATCH

ORDER HOTLINE: (0705) 662145 Fax: (0705) 690626

detector' of either the 'open' or 'enclosed' type, or, he could make his own.

In the latter event he had, basically, to fix a piece of a certain type of mineral (the size of a dried pea or even smaller) so that it was held immoveably and then arrange for the end of a thin wire 'catswhisker' to bear gently upon it, so that the tiny radio frequency currents passing through the device became rectified.

But this desired effect was by no means easy to obtain, as not all of the surface of the crystal would provide rectification. The catswhisker had to be manoeuvrable so that it could be steered onto a 'sensitive spot' on the crystal at which rectification did occur. But that was not all. The pressure of the catswhisker upon the crystal was extremely important for too much or too little meant that the arrangement would not rectify at all, or at best, only imperfectly, with diminished volume for the listener.

The most popular material for a crystal was lead or 'galena'. This was obtainable at a price, from commercial suppliers, each of whom claimed his product to be the best and gave it a fancy name, usually ending in '-ite'.

As most homes used solid fuel, the experimenter could search in his coal house until he found a lump of coal streaked with pyrites - 'fool's gold'. A sliver of this would often give excellent rectification.

One of the drawbacks of the crystal set was the intricate business of 'tickling the crystal' with the catswhisker until, at last, it rested on a sensitive spot at the right pressure. The least vibration, such as someone walking across the room, could completely disturb the setting, and the tedious process would have to be gone through again.

There remained only the matter of headphones. He would have to buy them. There was no practicable way an unskilled man could make them, and they would be his greatest item of expenditure so far.

Ideally, he needed a double headphone with two earpieces having a total impedance of at least 4kΩ. If he couldn't rise to that, he would have to make do with a single earpiece. An alternative method was to buy a pair of cheaper 120Ω headphones and connect them by means of a suitable transformer to the output of the crystal set.

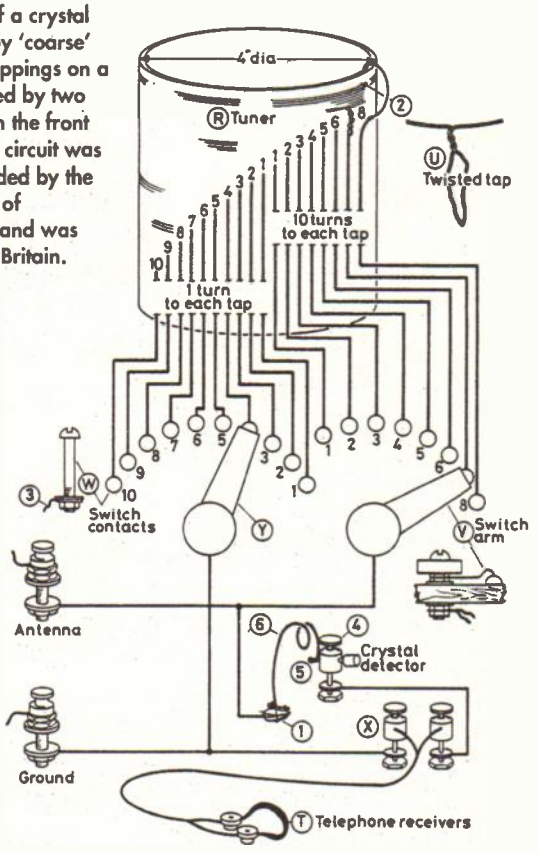


Diagram of a crystal set tuned by 'coarse' and fine tappings on a coil, selected by two switches on the front panel. This circuit was recommended by the US Bureau of Standards and was popular in Britain.

Time to Tickle

Now, at last, he could try out his handiwork. Having made sure that it was the time of day at which the transmitter was operating, that everything was connected correctly and that no-one was moving or talking in the room, he could set his tuning device at a midway position, don his headphones (which could have cost him a full week's wages) and begin to tickle the crystal.

If, while doing that, he heard in his headphones a faint voice or a snatch of music, he knew that he had 'struck lucky' on a sensitive spot. It was now a matter of adjusting the pressure of the catswhisker.

That done, such that he was receiving sounds at perhaps low volume, he would adjust his tuner in the hope of making reception louder. It is highly likely that in the process, the slight vibrations that he created would have dislodged the delicate setting of the catswhisker and crystal so that he would have to recommence 'tickling'.

Provided he was pretty close to the transmitter - certainly well within 30 kilometres of it - and his aerial wire was pointing more-or-less towards it, his earth plate or rod was damp, his tuning accurate and his crystal setting at the optimum, then his strength of reception might be great enough for him to actually make out the words of the speaker! And if it were a good bit better than that, he could borrow his wife's large mixing bowl and place his headphones in it, so that the sound was more concentrated and his whole admiring family, if they kept extremely quiet, could hear it.

This was reception at its most primitive. It would not be long before he bought a more stable crystal selector, such as a 'Perikon' type in which two dissimilar crystals are pressed gently together, or a carborundum detector which required an additional rheostat and 4.5V dry battery, this was the most stable detector of all.

Improved Tunning

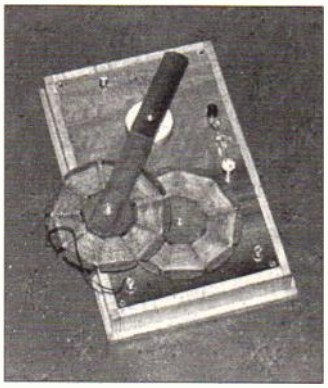
When a second transmitter opened within range, he would probably need to improve his tuning arrangements. But whatever expensive additions he could be prevailed upon by clever advertising to make his basic crystal set, he was not likely to improve its performance to any great degree.

Such a crystal set as this would be unsuitable for the crowded wavebands of today. The writer has made many replicas of early crystal sets, following instructions published in 1922/3 and though they are capable of receiving several stations at a volume that the early pioneer would never have believed attainable, it is rarely possible to separate them completely.

However, more complicated sets were made by early enthusiasts that did separate, adequately, such stations as were then receivable. But with all the extra expenditure on more variable condensers, coils and other devices, the listener-in would have been better advised to build himself a more efficient valve, receiver - with reaction, when that arrived.

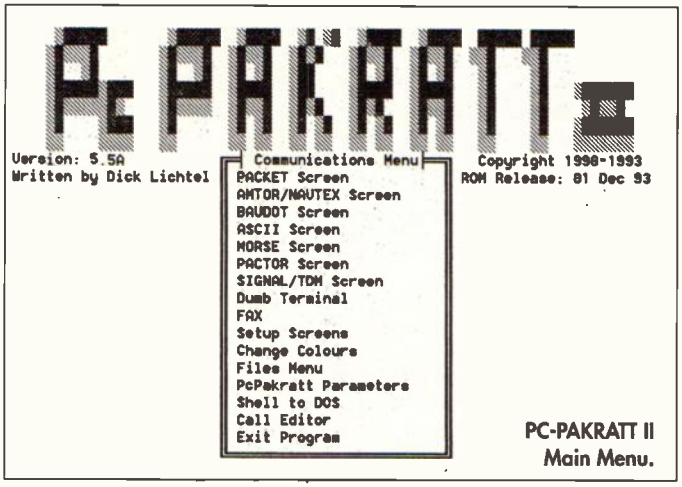
Nor forgetting of course, to first send off for another form to get permission from the Postmaster General! ■

Variometer consisting of two 'pancake' coils mounted on a crystal set made by - yes, you've guessed it - the author!



AEA PK232MBX

Mike Richards takes at look at this popular data controller from a short wave listening perspective.



PC-PAKRATT II Main Menu.

Perhaps the best testimony to the AEA PK232MBX is the fact that it's survived for so long through a period of great change. The secret of this survival may well lie in its basic design, which allows the unit to be easily upgraded as new modes and transmission techniques are developed. Although there have been many reviews covering its amateur radio use, few have looked at it as I am now, purely as a decoder for the utility listener. This is particularly relevant as the receive modes have now been enhanced to cover RTTY, Packet, SITOR, PACTOR, CW, FAX, NAVTEX and ARQ-E.

Data Controller?

I ought to start by explaining what is meant by a data controller. In the most simple terms a data controller is a device that takes tones produced by a utility station direct from the receiver and produces a decoded output in a form that can be displayed on any computer or dumb terminal. In effect this means the controller has to produce an output in ASCII format which is the standard used by just about all computers. A dumb terminal is simply a keyboard and monitor that can send and receive ASCII data. The most important parts of the data controller are the initial conversion from audio to digital and the decoding algorithm to convert this digital output into ASCII format.

Microprocessor

You will not be surprised to hear that at the heart of every data controller is the ubiquitous microprocessor. This processor not only handles the decoding, but accepts user commands from the dumb terminal or computer to determine the way in which the decoding is processed. With micro-processors becoming ever more powerful, so are the range of options available from the data controller. One particularly useful offshoot is the development of analysis modes where the data controller attempts to identify transmissions without any guidance from the operator. This can be particularly useful for those new to utility listening as finding your first decodable station can be quite daunting. The real progress with the development of data controllers came with the introduction of Packet radio for amateurs. This called for a Terminal Node Controller (TNC) to be connected between the transceiver and the computer. It was this development that provided the volume of sales to justify the development of units such as the PK232MBX reviewed here. The only problem with this line of development is the inclusion of a wide range of features that are only really of value if you're sending as well as receiving data. However, this is a small price to pay for the overall level of sophistication. Let's now take a closer look at the latest version of the PK232MBX data controller.

Hardware Set-up

Despite the comprehensive facilities provided by the PK232MBX, the inter-connections were quite straight forward. As seems to be standard practice with amateur gear, the PK232MBX was not supplied with its own power supply. However, the demands were quite modest, needing just 12 to 16V d.c at about 800mA. There are a wide range of power units available at reasonable prices that could meet this requirement.

The connection to the computer was equally simple using the supplied 25-way D connector. This linked the D connector on the rear panel of the PK232MBX with the serial port of the computer or dumb terminal. If your computer or terminal is fitted a nine-way serial port, you will need to buy an adapter from your local computer shop.

The audio connection to the receiver was also very well thought out, with two switchable inputs provided. These two inputs align with a typical amateur set-up where different transceivers may be used for v.h.f./u.h.f. and h.f. operation. Each of the two inputs has both a 5-pin Molex connector and a standard 3.5mm jack. For the utility listener, it's only necessary to use the jack connection as the other socket gives access to the transmitter switching and audio feeds.

That completes the basic configuration, but there are a number of optional connections that can be used. The first of these is the provision of an oscilloscope output via a 5-pin DIN socket on the rear panel. This provides an X and Y output that can be connected to an oscilloscope to create a very accurate tuning indicator.

For the more advanced user there is also an external modem socket that can be used to connect a dedicated modem for specific modes.

The remainder of the rear panel sockets are provided to support interconnections to a transceiver.

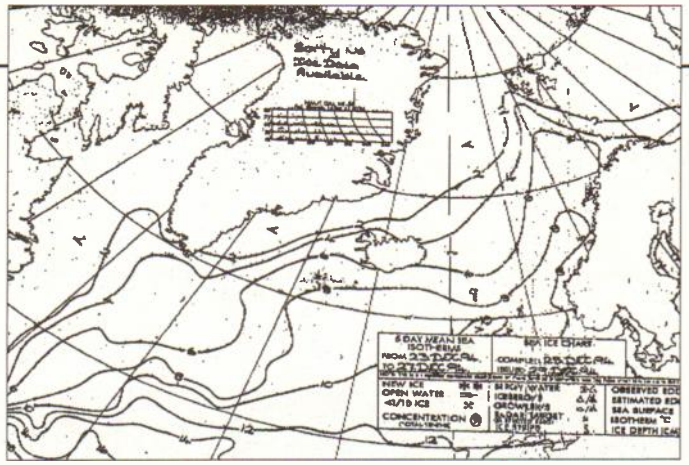
Documentation

The level of documentation supplied with the PK232MBX really was exceptionally good and stands out as a good example to many other manu-facturers. The main operating manual was a good 25mm thick and covered just about every aspect of the unit's performance. There were separate sections covering the computer and radio installation which gave detailed instructions for the complete installation. This was backed up with a very good appendix that provided detailed connection information for just about every transceiver system ever built!

The core of the manual was taken up with detailed coverage of each of the main operational modes with lots of detailed guidance and good use of diagrams.

The first of the appendices contained an excellent command summary that gave a detailed description of each command. This was particularly useful once the system was up and running as you could very quickly get the answer to any queries.

For the technically minded, there was even a full schematic diagram and parts list. The diagrams were presented as A3 size pull-outs and were very clear and easy to use. The manual was rounded-off with



PK232MBX Fax image.

two very good indexing systems. The first was located at the front of the manual and provided a subject related index whilst the other provided a key-word index and provided a reference to every occurrence of the specified key-words.

This comprehensive documentation should satisfy the requirements of just about everyone - you just need a bit of patience if your itching to get on the air.

Software Installation

Despite the PK232MBX's ability to work with a simple dumb terminal, it is more often than not connected to a computer running a special driver program. Because of the PK232MBX's long history, there is very good software support readily available. Software drivers from AEA are available for IBM PCs and compatibles, Apple Macintosh and Commodore 64 and 128 computers. One of the key points about the software drivers is that they operate in what is called HOST mode. This is where the computer takes complete control of the PK232MBX and can directly report on, and set, any of the PK232MBX's facilities.

For this review I had copies of PC-Packratt II, PKFax and MACRATT for Apple-Macintosh computers.

All of the packages were supplied with very comprehensive and weighty manuals covering all aspects of the operation. The information was very thorough and gave very precise step-by-step instructions for the complete range of facilities. If there was a criticism it was that the sheer volume of paperwork that made it difficult to know where to start when you wanted to get on air quickly.

MACRATT

To install MACRATT on an Apple-Macintosh computer you simply copied the MACRATT and set-up files to your applications folder and double-clicked on the MacRATT icon to run the program. Once installed, there was a certain amount of confusion as to which set of instructions to follow to complete the initial configuration. Whilst the on-screen text told you to type a *, the manual said to select a host mode from the Settings menu. The right answer appeared to be to follow the manual, but even this was confusing as to find the required HOST mode setting you had to scroll down the main settings menu. Once the initial set-up had been completed subsequent start-ups were trouble free. I wasn't very impressed with the MACRATT software, at least from a listener's point of view. It was far too complicated, with multiple windows showing all manner of connection information. Whilst this can be very useful if youre running a multi-mode transmitter set-up, it's way over the top for utility listening. Given enough time you could probably work your way through the configuration options to provide a simpler display. However, your best bet may be to get hold of a later shareware driver from a public domain source or CompuServe network.

PC-PAKRATT II

PC-PAKRATT II was a very different beast and was well suited to the needs of the utility listener. Installation was again very simple from the two 3.5in disks. The first disk contained the PAKRATT software with the dedicated FAX software residing on the second disk. With the contents of both disks copied to the hard disk, this DOS based software could be run. Initial configuration of the software and the PK232MBX was a mainly automatic process with suggested answers for any user adjustable settings such as setting the computers serial port to match the requirements of the PK232MBX. Once installed and configured you were presented with a main menu listing all the operational modes and user options. There was even a direct link to run the FAX program from within PC-PAKRATT. Upon entering any of the operational modes you were presented with a window at the top of the screen for transmitted text followed by a much larger main window for the display of received text. At the bottom of the screen was a status display showing the key parameters for the respective mode, e.g baud rate, signal polarity, etc. If you needed a reminder of the available commands there was on-line help available for all the PC-PAKRATT screens.

One particularly useful aspect was the provision of a set-up screen for each of the operational modes. This enabled you to pre-set many of the common settings to match the type of signals you monitor so making operation much slicker.

Another handy feature was the provision of a log keeping system. This could be called from any of the operational screens and was a very convenient way of logging stations as the're heard.

The supplied FAX utility was also very easy to use, though you did need to make sure you had the full base RAM available.

Although you can run PC-PAKRAT as a DOS shell from Windows, I suffered one or two crashes and you do need to be sure you have sufficient base RAM available. If you're a keen Windows user then a Windows version is available, but it wasnt supplied for review.

Basic Operation

A better view of the PK232MBX itself can be had by looking at the way the unit operates in its basic command mode. This is the mode you would use with a dumb terminal or computer without a tailor made driver program. Although not as friendly as a dedicated driver program, it's still very usable.

When operating in this mode you are presented with a basic screen prompt (cmd:). From this prompt the PK232MBX's various operating modes and facilities can be accessed by typing simple commands.

The use of these commands has been simplified such that in most cases only two or three characters of the command actually need to be typed.

The best way to show this is to cover an example. In order to start receiving RTTY signals all you have to do is type BAudot or just BA for short. The PK232MBX will then start processing the audio input with the decoded data appearing on the dumb terminal screen. Of course there are a number of parameters associated with RTTY decoding that also need to be set. Examples are baud rate, shift, polarity and unshift-on-space. The commands for these features are Rbaud, Wideshift, RxRev and USOS respectively. Although this may seem quite complex, the commands are very well summarised in the rear of the manual and most have logical names, so they are easily remembered.

All the text based modes were accessed and set-up using similar command sets so further simplifying operation. The operational modes included in the review model were: RTTY, ASCII, Packet, Morse, SELFEC, FEC, ARQ, ARQ-E, NAVTEX, PACTOR, FAX and SIAM. This latter mode was particularly interesting as it provided automatic signal analysis. By activating this mode, the PK232MBX attempted to identify the transmission speed and mode of the current signal. In doing this it would repeatedly analyse the signal and report the result with a confidence factor ranging from 0 to 9. As soon as you were happy with the result, typing OK caused the PK232MBX to automatically switch to that receive mode with all the parameters set to match the signal. The only point of caution here is that the PK232MBX operates in pre-set baud rates and cannot switch to any intermediate rates. So, if the SIAM mode says a signal is 52 baud RTTY, the PK232MBX will try to receive it at the nearest available speed, i.e. 50 baud.

Whilst operating in Command

mode you can call-up a list of all the operational settings by typing the command DISPlay. This can be very useful after youve been adjusting the settings to match a particular signal.

The only system that was a little more complex to use in command mode was FAX reception. This is because a FAX image cannot be displayed on a dumb terminal in ASCII format. The solution used by the PK232MBX is to send the FAX image direct to a printer. The printer is connected to the PK232MBX using a special Y cable that's available as an optional extra. This cable connects to the serial port of the PK232MBX and has two output cables one of which goes to the dumb terminal, whilst the other goes to a 'standard' parallel printer. Once connected, this printer link can also be used to provide hard copy of any received text from the other modes. In FAX mode the printer is used as the only display device for the received image.

Performance

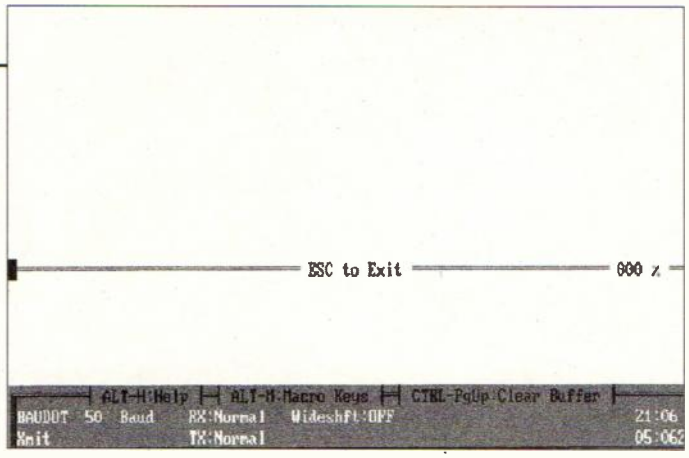
For the on-air tests I used the PK232MBX connected to a Lowe HF-150 receiver via a Datong FL3 audio filter unit and fed by a random wire antenna. For clean reception of utility signals, accurate tuning is essential. This is one area where the PK232MBX's built-in tuning indicator scored well. The indicator utilised a row of ten l.e.d.s that operated like a mini-spectrum analyser and moved in sympathy with the alternating tones of the utility signal. Setting the correct tuning point was done by adjusting the receivers tuning so that the brightly illuminated l.e.d.s straddled the centre point of the display. The only exception to this was Morse reception where the receiver was set so that the left-hand l.e.d. flashed in synchronisation with the required signal.

Clean Copy

One of the main advantages of the PK232MBX over some of the excellent PC based decoding systems is the inclusion of a very effective programmable audio filter. This filter is automatically set to the optimum value depending on the chosen reception mode. This additional filtering enables the PK232MBX to produce clean copy in conditions where other simpler decoding systems start to fail badly. Whilst you can produce a similar effect by using a good external filter, it never really matches the performance from a dedicated internal filter system. This increased performance was evident throughout the review and I was particularly impressed with the PK232MBX's ability to pick-out ARQ and PACTOR signals in the presence of quite strong interference. It seemed to be very good at coping with situations where there were strong interfering tones on the channel.

I was intrigued to see how effective the SIAM mode could be at making life easy for the new listener. The performance turned out to be rather an unusual balance of good and bad points. My first test was to tune into Bracknell Met on 4.489MHz (RTTY 50 baud, 400Hz shift) and see if the PK232MBX could identify the mode. I was amazed to find that, despite the strong clear signal, it failed to even reliably identify the speed. All manner of results were produced ranging from 41 to 56 baud with a variety of transmission modes. Next, I tried to identify a SITOR signal which is usually more difficult because of the intermittent nature of the transmission. I was pleasantly surprised to find that it very quickly locked on to the signal with the correct mode and a high confidence factor. After typing OK the PK232MBX promptly switched to the correct mode and produced error free text. I went on to try the remaining synchronous modes and all were very quickly and accurately identified. I can only conclude that the SIAM algorithm must be designed to handle synchronous signals rather better than asynchronous RTTY signals.

FAX reception was next to come under the microscope and for this I used the PK-FAX driver program. One point you should note about the PK232MBXs FAX reception is that its only able to receive black and white images - there's no provision for grey scales. Whilst this is fine for weather charts and text news images, it provides very much reduced resolution when receiving photographic images such as press photos or satellite pictures.



PC-PAKRATT RTTY Screen.

Despite these limitations, the FAX mode worked extremely well and you should find a sample print with this review. In addition to basic manual reception, the PK232MBX was able to use the APT tones to automatically start and stop FAX reception. The PK-FAX program even included facilities for fully automatic, unattended reception of FAX images.

Summary

Although the PK232MBX was designed primarily for the amateur radio market, there is clearly plenty of opportunity for use by utility listeners. For those with less common computers or just a dumb terminal, the PK232MBX could be the ideal way to open up the world of utility listening. One other important advantage with the PK232MBX is the ease with which new modes can be added.

The PK232MBX costs £329 and is available from **Martin Lynch, 140-142 Northfield Avenue, Ealing, London W13 9SB. Tel: 0181-566 1120.** Martin can also supply PC-PAKRAT for DOS at £29.95 or the Windows version at £79.95. The MACRATT normally retails at £59.95, but Siskin, 2 South St., Hythe, Southampton SO45 6EB, Tel: (01703) 207155 have the package on offer for *Short Wave Magazine* readers at £39.95. My thanks to both Martin Lynch and Phil Bridges at Siskin for the loan of products for this review. ■

Specification

Demodulator:	Limiter-discriminator
Filter:	8-pole Chebyshev 0.5dB ripple bandpass filter
Receive Modes:	RTTY, ASCII, Packet, Morse, SELFEC, FEC, ARQ, PACTOR, NAVTEX, FAX and SIAM
Processor:	Zilog Z-80
RAM:	32Kb
ROM:	Up to 128Kb
Radio Interface:	2 x 5 pin Molex connector 2 x 3.5mm jack
Input/Output:	Receive audio Transmit audio ± push-to-talk (+25/-40 V d.c.) External squelch Ground
External Modem:	5-pin Molex TXD, RXD, DCD, PTT and ground (TTL levels)
Direct f.s.k. Outputs:	Normal and reverse
Oscilloscope Outputs:	Mark (stop) and Space (start)
CW Keying:	Positive +100V d.c. max at 100mA Negative -30V d.c. max at 20mA
Terminal Interface:	RS-232C 25-way DB25 connector
Terminal Data Rates:	Autobaud 110, 300, 600, 1200, 2400, 4800 and 9600
Tuning Indicator:	10-segment bargraph
Power Requirements:	+12 to 16V d.c. at 800mA
Size:	280 x 210 x 63.5mm
Weight:	1.36kg

For Everything In Packet Radio,
There Is Only One Make To Choose From

When AEA appointed their U.K. distributors, they wanted to ensure maximum support to their end users. They chose MARTIN LYNCH & SISKIN ELECTRONICS for this very reason. Since October last year the retail prices have been reduced and remember, buying from either company will ensure you get products designed for the U.K. market. Phone or fax your order through today.

DSP-2232 & 1232

The only DSP (Digital Signal Processing) Data Controller available. The DSP-1232 with 2 switchable ports, and the DSP-2232 with 2 simultaneous ports, provide a new level of performance & versatility in data controllers.

RRP £799.95 & £649.95

PK-232MBX

Probably the best selling Data Controller in the world, the PK-232MBX is the Radio Modem to choose if you want all modes, including Morse Code, Baudot, (RTTY), Ascii, Amtor/Sitor 476 & 625, Pactor, HF & VHF Packet, B&W Fax tx/rx, Navtex & Amtex. As with the PK-900, the PK-232MBX now includes "SIAM" and is compatible with the popular TCP/IP networking protocol via KISS mode.

RRP £329.95

PK-12

The very latest replacement for the PK-88, the tiny PK-12 not only comes with more features, but its cheaper too! The PK-12 is a 1200 baud VHF packet controller ideal for those of you who are looking at getting started in digital communications. Full-featured mail drop facilities including internal lithium battery back-up.

RRP £139.95

Isoloop 10-30

Magnetic Loop

This high-Q, high efficiency antenna is perfect for Amateurs (and professionals), living in areas with antenna restrictions, The IsoLoop is a compact (only 35") diameter, rugged low profile design, allowing 150 watts of RF anywhere between 10 and 30MHz. Efficiency ranges from a staggering 96% on 28MHz to 72% on 14MHz and because of the high-Q design, TVI is reduced still further over "conventional" antennas. The IsoLoop includes 50ft of control cable and a new improved antenna controller.

RRP £399.95

PK-900

When you're ready to step up from the best selling PK-232MBX, then take a look at the PK-900. Dual simultaneous ports, switchable via a single keystroke, will still allow the user to receive two signals at the same time. Internal firmware includes SIAM - Signal Identification & Acquisition Mode, automatically identifying the incoming mode of transmission - takes out the guess work! Add the optional 9600 baud modem and you're satellite ready!

RRP £479.95

PK-96

Whilst others are still having a five course lunch waiting for 1K of data to transfer, you can enjoy the incredible speed of using a new PK-96 and find yourself with hours of free time on your hands! The PK-96 takes over from where the old PK-88 left off. It comes standard with 1200 baud AFSK tone signalling, as well as 9600 baud G3RUH compatible direct frequency modulation, making the PK-96 an ideal high speed terrestrial, or satellite data controller.

RRP £199.95

PC-Pakratt for Windows

Operate the entire range of AEA controllers from one package. Run two controllers at once, run other programmes on your PC (in Windows), whilst controlling your data controller. Additional features include seperate windows for mailbox operation, QSO Logging, file transfers and more.

RRP £79.95

Other AEA Products

IT-1
8 preset auto tuner for IsoLoop
RRP £269.95

SWR-121
Digital FULL visual display 1-32MHz Antenna Analyser
RRP £389.95

SWR-121 V/U
As above, but Range: 120-175, 200-225, 400-475MHz
RRP £449.95

KK-1 Keyboard Keyer
The ultimate high speed keyboard keyer
RRP £199.95

AEA FAX 111
NEW! Computer control s/ware for DATA DECODING
RRP £139.95

The full range of AEA products are always available. Call, write or Fax today.

MARTIN LYNCH
G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE
140-142 NORTHFIELD AVENUE, EALING,
LONDON W13 9SB
Tel: 0181 566 1120 Fax: 0181 566 1207

SISKIN ELECTRONICS LTD., PC HOUSE, 2 SOUTH STREET,
HYTHE, SOUTHAMPTON SO45 6EB.
TEL: 01703 207155 or 207587 FAX: 01703 847754

Everything For The Listener

Sextant World Clock
Both 12 and 24 hour times
Day & Night Shadow
World times at a glance
Major cities shown

£39.95

New 10th Edition

Short Wave International Frequency Handbook

£12.95

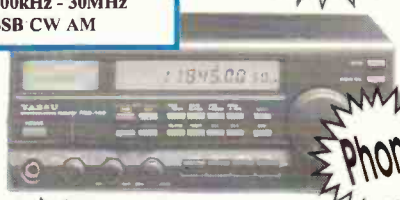
(Postage £2 extra)

- *Completely Revised*
- *10,000 entires 500kHz - 30MHz*
- *Marine, Aviation, Military, Press etc*
- *Every entry monitored and checked*
- *All old information removed*
- *192 A4 size pages beautifully bound.*
- *Frequency, callsign and mode*
- *Location and times etc.*

Phone order today: 0702 206835

VISA

Yaesu FRG-100
500kHz - 30MHz
SSB CW AM



Phone

HF-150 £389

Great News - 32 Branches

All our scanners are now available from all 32 branches of Maplin Electronics. There's one near you. You'll get the convenience of a friendly Maplin store plus our technical backup and after sales service if anything goes wrong. For your nearest store give us a call.

Second Hand

Mobile/Base Scanners		
FRG-9600	Yaesu 60 - 990MHz	£219
ICR-7100	Icom 25MHz - 2GHz	£999
Handheld Scanners		
AR-1500EX	0.1-1300MHz inc SSB	£269
AR-1000	8-600/805-1300MHz	£219
Bearcat 50XL	Bands - 10 channels	£79
Pro-41	Handheld Scanner	£99
Pro-34	66-88/108-174/380-512/806-960	£139
MVT-5000	25-550, 800-1300MHz	£199
MVT-7100	Latest model	£299
VT-225	Airband civil & Military	£169
Air-8	Sony - SSB SW + VHF	£139
Short Wave		
ICF-760L	Portable short wave	£69
Grundig YB400	Portable SW with SSB	£89
FRG-8800	Yaesu - superb design	£499
ATS-803A	Desk Portable SW with SSB	£89
ICF-SW77	Sony super portable	£299
D2935	Philips portable SW	£89
ICF-7600DS	Portable with SSB + AC psu	£115
FRG-7700	100kHz-30MHz	£249
Accessories		
Opto 2300	Counter 1 - 2.4GHz	£129
Opto-1300	10MHz - 2.4GHz counter	£129
MFJ-1278	Data controller	£199
Robot-800	RTTY/CW terminal	£179
FL-2	Datong audio filter	£79
ERA	Microreader ver 4.1	£129
Tiny-2	Packet TNC	£99

MVT-7000

100kHz - 1300MHz Scanner Receiver

The MVT-7000 is a classic scanner. We've looked at some of the new names but they don't match the Yupiteru range for reliability or sensitivity! Make no mistake, Yupiteru are still the leaders.

~~£289~~

MFJ-16010 Scanner Aerial Tuner

An amazing little atu that matches any length of wire perfectly to your scanner or transceiver. Covering 1.8 - 30MHz it transforms your short wave reception.

£49.95

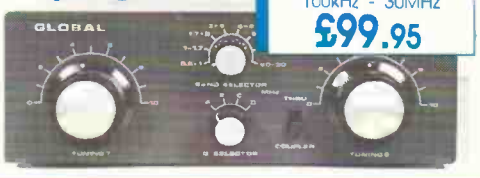
MBR-7
Short Wave
& VHF
AM FM
Batt. or Mains
£69.95

Carriage £5.00

New AT-2000 Rx ATU

Hear the difference!
Unique "Q" Selector

The Best Receiver ATU - Amazing!
100kHz - 30MHz
£99.95



DJ-X1D Scanner

AM - NFM - WFM
200kHz - 1300MHz

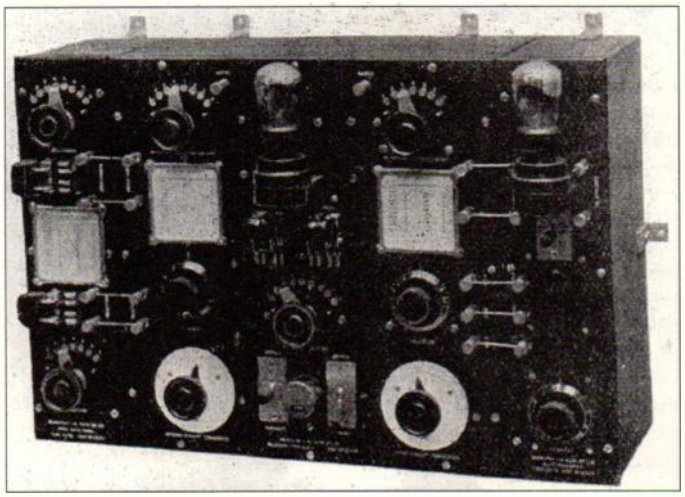
- No gaps
- 100 Memories
- Battery Saver
- Ni-cads & Charger
- Fully programmable
- Helical whip
- LCD readout
- Rotary tuning knob
- Tough case
- Very sensitive

Offer Price £299

Shop and Mail Order; 22, Main Rd., Hockley, Essex. SS5 4QS Tel: (01702) 206835 Fax: 205843
VISA Branch Shop: 12, North Street, Hornchurch, Essex. RM11 1QX Tel: 01708 444765 ACCESS
MAIL ORDER To Hockley - 24 Hour Answerphone and Fax. Open 6 Days 9am - 5.30pm

Things They Didn't Tell Me

John Cave refects on his experiences as a ship's Wireless Operator.



Marconi MR4 Receiver
Showing long wave panel (Type 229) on left, main one-valve receiver (Type 226) in centre and Note Magifier (Type227) on right.

The Chief came in to relieve me, and after scrutinising my night's efforts, asked for the Stocks. "The Stocks?", I asked nervously. "Yes. The Stocks and Shares", he snapped. "They always used to follow the press!".

It was four o'clock in the morning. I'd just finished my first wireless watch at sea, and suddenly discovered why Rugby had sent all those figures and fraction bars.

I had become hooked on wireless at a very tender age. Despite my previous reluctance at being 'clamped', our neighbour had eventually persuaded me to don a pair of headphones. As a lad of seven, I was terrified, when suddenly, as if by magic, I heard music coming all the way from London and my fears quickly disappeared.

He showed me how at a touch of the tuning, people could be heard talking or singing. It was all strange and rather frightening, but I was fascinated!

My new found friend was an enthusiastic 'ham', and it was not long before most of my spare time was being spent in the shack. In amongst trying to wind coils and learning to solder I became a eager listener as he tried to teach me the rudiments of wireless, although most of it was above my head.

He had a tremendous gift of beguiling me with stories about well known wireless engineers and their discoveries, often spending hours talking about the new beam stations and how they would revolutionise communication.

Worldwide Travel

In 1937 I spotted an advertisement in *Practical Wireless* which suggested that a delightful lifestyle, as well as world-wide travel, was available to those who looked to their future and trained to be a Marine Radio Officer. It had instantly appealed to me, as to many others, to be the answer to a natural urge for travel and adventure. More important, as well as satisfying a hobby, it would be the beginning of a career in a growing industry.

My parents, who had other ideas, were more hesitant. Questions were asked, alternatives suggested. However, after much discussion and investigation by father, I was eventually given their blessing and very shortly afterwards found myself among a most unlikely bunch of students from all walks of life.

They were the sons of farmers, shopkeepers, colonial civil servants, businessmen and landowners, their ages ranging from sixteen to twentysix, or more, all with the same strong desire - to get our 'tickets' and go to sea as quickly as possible.

Several of the older ones only intended to stay at sea for perhaps a couple of years, long enough to satisfy their travel urge, and then pursue an entirely different career for which some of them had already qualified.

After gaining the First Class Certificate, a few intended to remain for the required five years sea service before applying to join BOAC as Flight Radio Officers. Others were to find their niche in the Diplomatic Wireless Service among the far flung British Embassies, and a small minority eventually became involved with the technical and commercial aspects of communications. Only a fragment of the original class remained at sea.

The syllabus for the certificates, which were issued by the Postmaster General, covered a wide degree of both theory and practice as well as the complete knowledge of international regulations, operating procedures and general world geography.

The Second Class Certificate took at least twelve months of full time study and rather restricted the holder to cargo boats. To be in charge of passenger liners, or to be considered for other appointments, a First Class Certificate having more advanced theory, radiotelephony and direction finding, as well as higher Morse speed of 25w.p.m. was needed.

Both the *Admiralty Handbook of Wireless Telegraphy* and *Dowsett's Handbook for Wireless Telegraphists* was used extensively for our theoretical studies. The former was an excellent publication, even though the current 1932 version still expressed capacitance in Jars. *Dowsett's Handbook* on the other hand contained a great deal of theory, but was more useful in describing the actual apparatus that we could expect to be using.

Nearly all sea going appointments were made by one of three companies. Marconi, Siemens or International Marine Radio. I'd never heard of the latter at that time, and as Marconi was still a magic word to me, I applied to them. Within a matter of days, I had been called to Liverpool by the inevitable telegram, passed a medical and been appointed to a cruise liner.

Typing Practice

My first Chief, who claimed that most people called him Nat, soon brought up the question of typing. When asked about such experience and I'd replied in the negative, he became unaccountably angry. Mumbling something about "all being the damned same" he mentioned the name of my predecessor, suggesting that we both suffered from the same defect. It did not bode well. That chap had been something of a *Victor Ludorum* at College.

Company policy, according to Nat, was to put juniors on passenger ships, where at least

two senior men would be able to show them the peculiarities of running a ship's radio station.

"An excellent idea'" he admitted to me, but went on to explain. "Most seniors just don't have the time. Now, if they had pre-sea schools, I'd be the first to go ashore to teach the young fellas!"

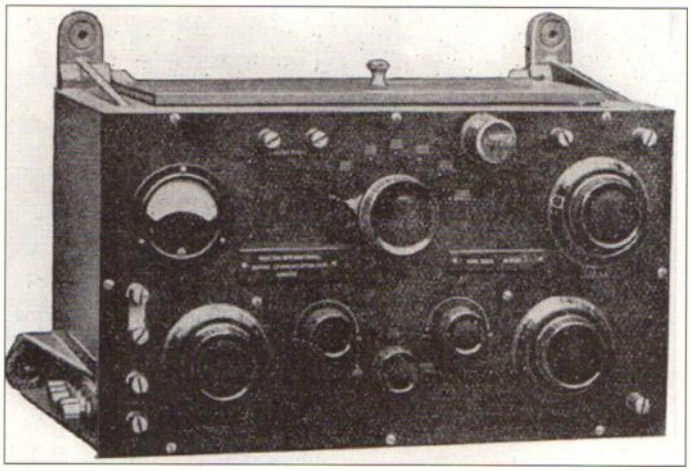
Producing a well worn piece of paper, he began to detail my duties. It would seem that after I'd finished the 'graveyard' watch, from noon until four o'clock in the afternoon, and the same from midnight, there would be plenty to keep me busy in the forenoon - if I could keep awake. "It's a good watch", I was assured, "hardly anything to do except get the traffic lists and press at night. Excellent time to practice typing!"

Traffic lists were made up with the callsigns of those ships for whom there were messages and was transmitted by Rugby (GBR) on 18.750m (16kHz) twice daily. It was a world-wide system, with the messages being sent in callsign order after the list. If your ship appeared in the list there was nothing else for it but to wait until all the messages ahead of your own were transmitted.

At night, these had to be cleared by 0138GMT to make way for British Official press, known as *Shipress*. This carried the official version of the world's political news for publication in the ship's newspaper next day.

On my first night at sea, I had copied well over a thousand words of this press when Rugby paused, and then began to send a series of figures and fraction bars, none of which seemed to follow a pattern or make any sense. Dismissing it as nothing to do with the news, I slipped a stencil into the typewriter and began the long process of typing out my first press efforts, with two fingers.

After his early morning outburst, the Chief sat down to sip at his cocoa, while I explained how the Stocks and Shares had been missed. No doubt it had all happened before, or perhaps I pleaded



Marconi 352A Receiver
Typical pre-war multi-range marine receiver, covering 15000 - 2000m.

my case well, for he was apparently satisfied. It was very simple when he showed me how they were always sent out in a prearranged way. My first crisis was over. The passengers would get their full paper tomorrow.

Several weeks later a far more serious crisis was happening in Europe. Prime Minister Chamberlain was in Munich and World War II was being postponed. *Shipress* became the most sought after item in the ship's newspaper.

Lucky to Transmit

Nat was rather dubious about letting a first trip junior loose with any transmitter and I considered myself lucky when he allowed me to advise local coast stations of our arrival or departure if it fell in my watch. This was essential information which they would then pass onto the postal telegraph and cable authorities so that the world, and Lloyds, would know of our whereabouts.

Despite having only an incandescent lamp to keep the interior dried out under all conditions of humidity and temperature the type 398 CW/ICW short wave transmitter, with an l.c. drive and rated at 500W remained relatively stable on 36m (8MHz) and 24m (12MHz), the most favoured marine communication bands at that time.

Short wave working was handled by the senior men, undoubtedly because the optimum propagation conditions happened in their morning and evening watches. Not that they appreciated the help given by this phenomenon, for I can vividly recall the cursing of these two experienced operators as they became hard pressed to contact busy Portishead Radio (GKT, GKC) and clear traffic before propagation conditions deteriorated.

After prolonged calling with no result, the frequency would be shifted a fraction by manual tuning and the calling would start again, repeating this procedure until at last they were answered by a harassed search operator.

Daylight working on 19 metres (16MHz) was always rather dubious, and this band was never considered as a really useful frequency. No doubt equipment stability has a great part to play in this as few marine transmitters had master oscillators. We were never more than 2000 miles from the UK while I was on that ship, and with hindsight, we would probably have been better off with a long wave transmitter in the 2000m band (135kHz). They were still in quite common use, as I was soon to find out.

A simple and quite adequate receiver in general use at that time was the Marconi 352A, a good old workhorse, built like a battleship. It was a two valve regenerative set (HL2, LP2), having a continuously switchable range from 20000 to 200m (150 to 1500kHz) with plug-in coils to cover short wave form 200 to 16m (1500kHz to 18.75MHz). Having such a wide range, it covered all the bands allocated to marine transmission as well as Rugby.

Battery Powered

For several years I worked with this model in various parts of the world, and although it left something to be desired as far as selectivity and sensitivity were concerned, I cannot remember ever missing anything of consequence because of this.

There was a less well known receiver devoted to short wave, between 15 and 80m (20 to 3.7MHz) known as the model 521. It consisted of two h.f. stages and a detector, followed by two stages of l.f. amplification or note magnifiers, as Marconi preferred to call them.

Power for these receivers was obtained from rechargeable lead-acid h.t. and l.t. accumulators which were located with the 24V heavy duty emergency batteries in a locker situated, with some forethought by the builders, on the deck above.

Direction Finding Introduced

By the late 1930s, direction finders were beginning to be fitted on the better class of cargo boat, already having become mandatory on passenger ships above 5000 tons gross some years previously. In the majority of cases, advantage was taken of their usefulness as an aid to navigation, but despite growing reliability there was still some doubt about their results in certain quarters where the 'log and lead' brigade held favour.

Our ship fortunately belonged to the majority. In fine weather, radio and visual bearings were often taken simultaneously when the point or lighthouse could be seen. In this way, confidence was gained and the d.f. accurately checked.

Our ship had the old

"...sometimes pause to perform his party piece for my benefit."

fashioned style of Bellini-Tosi direction finder 'loops'. Unlike the familiar round loops, they were made up by vertically mounting two rectangular coils of stranded copper wire at 90° to each other on a huge wooden framework.

The equally spaced turns of the coils were held firmly in place by stand-off insulators. Being fitted above the Bridge, on monkey island, and completely exposed to wind, weather and even cargo stevedores, it regularly needed checking for any broken or damaged wires and insulation. This meant making sure that all turns were still taut and the insulators were free of cracks, soot or paint, or all three together.

Another problem was crew members broadcast antennas. These were just starting to come about and it was difficult to convince their owners that they had to be taken down every time a bearing was needed anymore than the maze of halyards and stays from which they were equally suspended. I once spent the better part of a day trying to find out why a 4° error had suddenly appeared. Eventually, it was traced to a cunningly hidden private antenna.

All this was very time consuming, but with constant checking the electrical balance of these vintage loops was assured, so that the 'null' point was as near perfect as possible and the bearings to within ±2° of the quadrantal curve provided at the time of calibration.

Trigger Happy

There were just the two of us on my last passenger trip and the Chief, who was in many ways an extraordinary man, expected his assistants to be able to cope with things on their own initiative. It was not unexpected and came as a welcome change. Undoubtedly it was this ship which gave me the experience and confidence that would soon be needed.

To guard the remaining eight hours of continuous distress watch on 600m (500kHz), an auto alarm was fitted. This was the first I'd met, and I was not impressed by it's performance. The Chief claimed this particular one to be trigger happy, as the slightest sign of atmospherics or congested signalling (QRM) would send the thing off.

If the call was not attended to immediately the Bridge, where a similar alarm bell was fitted, always took great delight in sending down a watchman to see if anybody was awake.

The both of us had a great deal of work to get through. We were running to South America and consequently the press in Spanish from E1 Pacheco was published on board, as well as *Shipress* from Rugby. To my great relief the Chief, who'd been on this run for years, 'volunteered' to take the Spanish press. In return I was to look after *Shipress*.

It never failed to amaze me how the Chief could handle the foreign press in such a detached manner, until I learnt that he had started his working life as a telegraphist on one of the big daily newspapers. He always typed the stencil directly with the translated and edited English version by following several words behind. Never once did I know him to make a mistake.

While doing this he would sometimes pause to perform his 'party piece' for my benefit. Taking out his tobacco, he would then select a cigarette paper and tease a small amount of tobacco onto the paper. Laying this to one side he would catch up with his typing and then roll and seal the cigarette.

Finally, after once again catching up, he would carefully light the cigarette and enjoy his first breath of Justman's 'licht' shag. I've yet to hear of anyone achieving such a triumph, or even approaching it. What a telegraphist!

Pleasant Swing

The 2kW long wave c.w. transmitter with which we were fitted gave a very useful range of more than 4800km on the busy 2000m (150kHz) band which was in use day and night by many of the larger liners. The interference was unbelievable, but with constant use of the reaction control and complete concentration on the pitch of the incoming signal, I soon got the hang of things, and thoroughly enjoyed my long spells at the key.

Morse quality at British coast stations was remarkably high, most of the operators having been trained to the old Post Office standards. Some operators tended to create their own distinctive style, usually by lengthening the dashes or altering the spacing. The result was to 'swing' the Morse, which made it very pleasant to read and created a 'fist' for that particular person.

Another characteristic in more or less general use on medium wave was the way in which the ship station initiating a call on 600m (500kHz) would signal his intention to shift to the working wavelength of 705m (425kHz). When acknowledging he would disregard the callsign of the distant station and send 'de Gxxx', immediately followed by the word 'up' and then the long version of the figure seven (– · · ·), a short version of zero (–) and finally a short five (·). It sounded especially effective when using an l.c. driven transmitter if the operator slowly tuned up as he sent the last two figures. This gave the impression of urgency and competence.

Bug keys were starting to become heard, usually from American ships, but speed adjustment always seemed to be set too high, with the result that they were difficult to decipher and unpleasant to read unless a skilled and practised hand was on the other end.

At Last - My Own Station

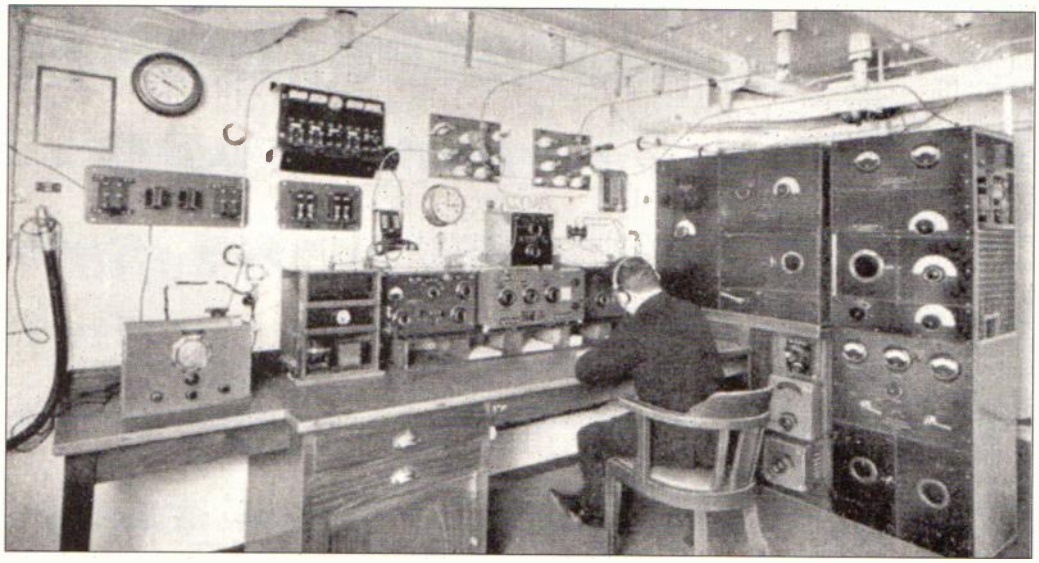
Time finally arrived when I was given a ship station to myself, and some station! She was an old northeast coast collier, so old in fact that the builder's plate in the engine room told she had been plying her trade on the North sea before my employer had made his famous discovery!

Being a 'weekly' boat, the crew fed themselves and the cook was given an allowance for 'Marconi'. Ninepence a day I believe it was. But he could work wonders with that. She was the sort of ship that would grow on one if you were so inclined. Happy and scruffy, but going to delightful places like Brixham, Bremen and Hamburg.

The interior of the cabin was sparse, and consisted of a small bench above which a receiver of doubtful age was attached to the bulkhead. This was the model MR4B, which was originally intended to be a one valve set (Type 226) with a wave range of 300 to 3000m (100 to 1000kHz).

To cope with advances taking place, and the opening of Rugby in 1925, a long wave panel (Type 229) had been added to the left hand side and a stage of low frequency amplification (Type 227) to the right. Both of these panels were connected to the main receiver by heavy copper wires which passed through binding posts and were held firm by finger screws.

The transmitter was a 250kW quenched gap spark set, tuned to three medium wavelengths, 600m (500kHz), 705 metres (425kHz) and 800m



Typical 1930s Marconi passenger ship installation showing 2kW CW/ICW long wave transmitter type 388/387/389 and antenna distribution switches. On the desk can be seen 250W QG emergency transmitter and type 352A and 521 receivers. The receiver on the extreme left is used for broadcast reception.

(375kHz). The 800m wavelength was reserved for sending direction finding signals so that a coast station could take the bearings of the ship, when requested, and if she was not fitted with a direction finder herself, it was also used for medical and navigational safety messages.

This gave a useful range of about 160km, but as we were only sailing around the United Kingdom and the Continent, it was more than adequate. A few months of this and I found myself being despatched to a deep sea ship bound once again to South America, but this time to Rosario, 320km up river from Buenos Aires.

Very soon I began to understand just how economically some ships were operated. To conserve coal the dynamo was seldom run throughout daylight hours at sea, and not at all during late evening in port. Those that were committed to staying on board reverted to a paraffin lamp suspended in gimbals, known as the 'bulkhead dynamo'. Under such conditions the 24V wireless room emergency lighting became a welcome luxury.

Burnt Surfaces

The further south we went, the quieter it became. Rugby, with 500kW of power, at last resolved into a definite tuning spot instead of covering half the dial, and for the want of something to do, the tarnished equipment brasswork began to receive an undue amount of attention.

The spark gap was dismantled, checked for burnt sparking surfaces, cleaned where necessary with crocus paper and reassembled with fresh mica separators to replace those that were cracked. Hardly a screw head was left untouched.

Eventually one of the crew would have an anniversary, or there would be a death in the family, and then our callsign was included in the Rugby traffic list. Replying to such a telegram was not so easy and would take perhaps a whole watch of intermittently calling GTZM (the collective callsign of Marconi ships) or CQ, requesting a ship fitted with short or long wave to relay the message to Portishead.

Perhaps the crew member did not want to spend his money on a full rate telegram and so he was advised to use a Ship Letter Telegram (SLT) which would be posted from Portishead and arrive the following day. Although there were quite a number of passenger ships on that run, I knew from experience how busy they would be. Eventually one of the larger cargo boats who was either enthusiastic, or just felt plain sorry for you, would respond and the message would be despatched.

With such a limited transmitter range, any long distance traffic was always relayed by another ship station. If this was not possible, really urgent messages would have to be passed through the nearest coast station within range. If you were still unfortunate enough to be too far away, there would always be some poor, ill-equipped soul like yourself that would come up and could make the relay.

The return voyage was a different kettle of fish. As the ship got closer to home, various operators could be heard advertising that they would be posting in the UK on a certain date. This was their way of advertising the *wireless-poste* service.

The receiving ship undertook to post the messages, which were on an attractive form, on arrival in the United Kingdom. With a number of ships detailing their arrival dates the sender had a number of options to meet his particular need, and many outward bound vessels took advantage of its comparatively cheap cost.

Mauretania

It was unfortunate after offering ships in the area a postal service that we ran into a real grandfather of a storm, putting us back several days and meant having to re-arrange the offer. During this time I took a number of weather reports, among them one from the *Mauretania* who stated in her synopsis that she was 'experiencing heavy weather. Speed reduced to 19 knots'.

The last few days of the voyage meant tidying up the ends of the paperwork, checking that message breakdown charges had been abstracted correctly, the battery log completed, requisitions for next voyage made out and finally, any repairs needed. This latter item nearly always included 'deckhead caulking to be investigated' in the older ships that had only wooden decks. I recall one ship that I sailed on later where there was a 4V reading between the two decks in wet weather!

By now, the Spanish civil war was in full throe and I learnt that one could make a packet by running blockade with 'Potato Jones' and the like. Nothing came of this enquiry and I presumed that Captain Jones and his ilk had ample supply of more experienced operators from which to choose.

Another thought was to transfer to the deep sea fishing fleet, where it was said they had better and more modern equipment and large amounts of cash could be made to supplement my meagre income by boiling fish livers, apparently the operator's perks.

Before I could put this into action things quickly resolved themselves, and I found myself joining a ship in Mount Stewart dry docks, Cardiff, that was to take me almost twice around the world, first stop the American west coast.

Unanticipated Changes

We were two days east of the Panama Canal when I took the usual traffic list from Rugby that evening. It included the first of the Admiralty lettered messages. The date was Sunday 3rd September 1939. Things were soon to change in a way that none of us had anticipated. ■

AOR™ The radio spectrum at your fingertips

The **AR3000A** has established itself as a high performance base mobile receiver offering an extremely wide frequency coverage of 100 kHz - 2036 MHz and all mode receive. The introduction of the **AR3000A PLUS** provides even greater performance and capabilities. What is the plus? Plus five custom modifications applied as standard: Switchable narrow AM filter for improved shortwave listening, switchable WFM filter for WEFAX reception, 10.7 MHz I.F. output and switch for compatibility with the SDU5000, tape relay with independent contacts and switched audio, discriminator output. Further custom modifications are available and may be applied to existing units. Simply request the descriptive leaflet and price menu for full details.

AR3000A PLUS £949

SDU5000 £699

The **SDU5000** is a spectrum display unit designed with the AR3000A in mind. Locating brief transmissions has never been so easy, by using the MAX facility any transmission within ± 5 MHz may be identified and signal strength measured in dBm. A small modification is required to the standard AR3000A to provide compatibility but the **AR3000A PLUS** is ready to go. (The SDU5000 will also operate in conjunction with the AR3000 but facilities are reduced - a small modification to the AR3000 is still required). **ATTENTION ICOM OWNERS** - A new ICOM ROM will shortly become available for the SDU5000, this will provide compatibility with the ICR9000, ICR7100 & ICR7000.

The **AR3030** is The New Classic of short wave receivers. Coverage is from 30 kHz - 30 MHz all mode. The special offer continues for a short while so you may still choose a **free option** of VHF airband converter 'OR' VHF marine converter 'OR' Collins 2.5 kHz SSB filter 'OR' Collins 500 Hz CW filter 'OR' Concerto PC software for Windows when purchasing a new AR3030.

AR3030 £699

The **AR8000 UK** receiver is with out doubt the most full featured wide band hand held receiver on the market today. Frequency coverage is from 500 kHz - 1900 MHz without gaps and all mode reception.
The display provides twin frequency readout and alphanumeric comments for memory and search banks.
The receiver may also be operated via computer using the optional CU8232 interface.
The AR8000 UK is a remarkable receiver.

AR8000 UK £426

Many more items available - call for details:

- *AR2000 hand held receiver*
- *AR1500EX hand held receiver with SSB*
- *CU8232 control interface*
- *WA7000 wide band aerial - active on short wave*
- *LA320 short wave desktop loop aerial*
- *DA3000 discone aerial 25 MHz - 2000 MHz*
- *MA500 mobile aerial with magnetic base*
- *SEARCHLIGHT Windows software for AR3000A*
- *AORSC DOS software for AR3000A*
- *Concerto Windows software for AR3030*
- *Software for the AR8000 under development*
- *Plus soft cases, leads, batteries etc.*

Fast mail order available for direct orders. Most items are available from dealers throughout the UK and Eire.

AOR (UK) LTD, Adam Bede High Tech Centre, Derby Road, Wirksworth, Derbys. DE4 4BG ENGLAND Tel: 01629 825926 Fax: 01629 825927

TURN YOUR DREA

WITH FREE FINANCE

No catch, no extended payment schemes - no interest! If you are in full time employment or retired/invalidity benefit then you can probably take advantage of our free finance option. Call or write today for details.

IF YOU DON'T WANT TO TAKE ADVANTAGE OF MY FREE FINANCE I'M ALWAYS HAPPY TO ACCEPT CASH, CHEQUE, CREDIT CARD OR TRADE-IN. JUST CALL 0181 - 566 1120 TODAY FOR EXPERT ADVICE.

I promise you the best overall deal in the U.K. Get ringing, or you'll miss the bargains!
***Please NOTE prices & monthly payments are based on 17.5% VAT & no more price increases! E&OE.**
Martin Lynch is a licensed credit broker.
Full written details are available on request.

★★★★★★★★★★★★★★★★★★★★★★★★★★

NEW ICOM IC-R7100HF "GT" ALL MODE, 60kHz - 2000MHz

Up until now, the only way HF was possible on this excellent VHF/UHF receiver was to fit an internal "converter" using the set as a "tunable I.F.". After a considerable amount of research and design, Graham Tingey, our Chief Engineer, has developed a more positive solution. Without the use of any "after-fit" internal converters, Graham has reprogrammed the set to tune the entire range from 60kHz to 2GHz. As before, frequencies below its usual 25MHz are tuned by depressing the original dimmer switch, now re-labelled HF. Removing the converter board ensures greater stability, strong signal handling and sensitivity.

The modifications are available to any customer already owning an ICR-7100 for only £199.95, including VAT & return delivery. (U.K. mainland). For customers wishing to purchase a new IC-R7100 with the HF "GT" conversion, the price is only £1489.00.

Available on FREE Finance.
Deposit £529, 12 x £80.00, ZERO APR.

ACCESSORIES - ALWAYS A MASSIVE SELECTION AVAILABLE. CALL OR MAIL ORDER!

MLB-1 Magnetic long wire balun, eliminates noise off feed line ..... RRP **£44.95**

DATONG AD270/370 Active antenna that really work! Indoors or outside ..... RRP **£59.95/£79.95**

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

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

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

DIGITAL FILTERS - STOP UNWANTED NOISE - TRY A DSP FILTER TODAY

TimeWave DSP9+ Favourite of the RadCom team ..... RRP **£239**
TimeWave DSP9. Budget version of the 9+ ..... RRP **£169**
TimeWave DSP59. All mode DSP. ..... RRP **£299**
JPS NTR1. The easiest to use DSP. ..... RRP **£199**
JPS NIR10. The ultimate all mode DSP. ..... RRP **£399**
Datong FL3 ..... RRP **£149**

DECODERS AND DECODING SOFTWARE

ON DEMONSTRATION AT MARTIN LYNCH

Universal M400
Stand alone RTTY/SITOR/FEC/GOLAY/DTMF/CTCSS & ACARS DECODER ..... RRP **£399**

Universal M900
As per M400 but output to VDU + CW operation. No ACARS. ..... RRP **£529**

Universal M1200
Internal full-height "PCB" decoder for installing into PC. All mode RRP **£399**

Universal M8000
The professional man's choice. VGA colour monitor required.... RRP **£1325**

AEA PK-232MBX
All mode TX/RX TNC. Hooks up to your PC. Easy to use ..... RRP **£329**

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

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

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

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

HL

AM INTO REALITY

SCANNERS

AOR-8000
RRP **£426**
Deposit £45, 12 x £31.75
Plus **FREE** Scanning Directory!

Yupiteru MVT-7100
RRP **£389**
Deposit £41, 12 x £29.00
Plus **FREE** MyDEL 2513 Flexi antenna!

AOR 3000A
RRP **£949**
Latest "PLUS" Spec,
Deposit £99, 12 x £70.75
Plus Mods, **FREE!**

Bearcat 220
RRP **£199**
The easiest Scanner to use!
FREE NICADS & CHARGER!

VT-225
RRP **£269**
The best Civil+Military Scanner comes with **FREE** Air Guide!

RECEIVERS

Kenwood R-5000
RRP **£999**
Deposit £99, 12 x £75.00 Plus **FREE** SSB or CW FILTER!

Yaesu FRG-100
RRP **£549**
Deposit £69, 12 x £69.00 Plus **FREE** POWER SUPPLY UNIT!

AOR- 3030
RRP **£699**
Deposit £99, 12 x £50.00 Plus **FREE** ShortWave Antenna!

Lowe HF Europa
RRP **£699**
Deposit £99, 12 x £50.00 Plus **FREE** ShortWave Antenna!

JRC NRD-535
RRP **£1549**
Deposit £499, 12 x £87.50 Plus Datong AD-370 Active **FREE!**

Lowe HF-150
RRP **£389**
Deposit £53, 12 x £28.00
Plus **FREE** ShortWave Antenna!

Lowe HF-225
RRP **£479**
Deposit £79, 12 x £33.33
Plus **FREE** BOOKS worth upto £25!

Drake R8E
RRP **£1199**
Deposit £179, 12 x £85.00

CHECK OUT MY 'ELLITE' RANGE OF USED EQUIPMENT

Yaesu FRG-8800 2 to choose from	**£425**
Yaesu FRG-100 As new!	**£399**
Icom IC-R71E Very good condition	**£595**
Icom IC-R70E As IC-R71E w/o keypad	**£495**
Lowe HF-150 As new, with PSU	**£325**
Lowe HF-225 3 to choose from	**£325**
Sony ICF-2001D With airband	**£189**
Sony IC-SW7600 Latest portable	**£129**
Drake R8E Like new	**£899**
AOR AR-3030 1 month old	**£499**
Yupiteru MVT-7100 With box etc.	**£285**

All used equipment is supplied with a Martin Lynch guarantee for complete peace of mind.

Yes I Would Rather Buy From Martin Lynch!

MARTIN LYNCH
G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE

0181-566 1120

140 - 142 NORTHFIELD AVENUE, EALING, LONDON W13 9SB

AFTER HOURS: 0973 339 339
FAX: 0181 - 566 1207

Access · VISA · SWITCH · RSGB · AMERICAN EXPRESS

Master Dealer YAESU
Officially appointed "Master Dealer" by YAESU U.K.

Lord Haw Haw

The War's Most Famous Broadcaster

Eric Westman deals with the life of the man who broadcast nightly from Germany to Britain during almost the entire duration of the war in Europe.

'Germany calling! Germany calling! Here are the Reichsender Hamburg, Station Bremen and DJA on the 31 metre band. You are about to hear our news.....'

Through millions of loudspeakers in Britain during the Second World War, the voice of the enemy was eagerly received in the blacked-out homes of news-starved listeners.

When Britain declared war on Hitler's Germany in September 1939, an oppressive censorship descended upon these islands. A Ministry of Information dictated what new Britons were to receive or, more usually, not receive. An air of gloom pervaded as all cinemas and theatres were closed, and radio programmes consisted to a large extent of Sandy Macpherson playing dreary music on a theatre organ.

Cheerful Listening

In desperation, radio listeners tuned around the wavebands for something cheerful to listen to, and found it in the stimulating broadcasts of Lord 'Haw Haw'. Witty, humorous and informative, he became the talk of Britain and quickly gathered an audience of millions of regular listeners.

Ten days after Britain's declaration of war, the *Daily Express* radio critic wrote about the enemy broadcaster, "He speaks English of the haw, haw, dammit-get-out-of-my-way variety..... From his accent and personality I imagine him with a receding chin, a questing nose, thin yellow hair brushed back, a monocle, a vacant eye and a gardenia in his buttonhole."

This was the original 'Lord Haw Haw', as he became known. In real life he was Wolff Mittler, a German playboy who had received part of his education in Britain. He was 1.88 metres tall, snobbish with an aristocratic voice and he soon became favourite among British listeners.

Tribute To Success

Tribute to Mittler's success was paid by two popular British comedians, the Western Brothers, in their characters as effete English aristocrats, when they introduced a topical comic song, 'Lord Humbug of Hamburg.'

'Who is this chap who hits the high spot,
The greatest comedian, now, of the lot,
The definite radio star number one,
The life of the party, the bundle of fun?
(drawl) Lord Haw Haw, the Hambug of Hamburg,
The comic of Eau de Cologne.'

Mittler's stint as 'Haw Haw' was a short one, and in his place came the man best remembered as 'Haw Haw', who filled the position from Autumn 1939 until Germany's surrender in 1944. Apart, that is, from the rare days off when his place was taken by his stand-in, Sinister Sam.

New Broadcaster

The new 'Haw Haw' was William Brooke Joyce, an American of naturalised English and Irish parents, born in New York in 1906. After his family moved to Ireland in 1909, William was educated at Roman Catholic schools where, during a fight, his nose was broken and never reset. This gave his face a ruffianly appearance and endowing his voice with its peculiar nasal timbre, later to be his 'trade mark' on the radio waves.

In 1921, the family who were frantically pro-British, moved from the newly formed Irish Free State to England. After a brief spell under age in the British Army, William continued his education and graduated to Birbeck College, London University, in September 1923, studying English Language and Literature. He obtained a First Class Honours Degree in June 1927 and was well versed in Latin and Greek. By then he had married for the first time.

While acting as a steward at a Conservative meeting in 1924, Joyce had received a deep slash with a razor causing a permanent scar extending from the corner of his mouth to his right ear. This added to his thuggish appearance.

Union Of Fascists

William Joyce joined Sir Oswald Mosley's British Union of Fascists in 1933 and four years later started his own party, the National Socialist League. At street corner meetings, he was often embroiled in fights, and although barely 1.7 metres tall he was an extremely proficient brawler. Unknown to him, he had for some years been under observation by Scotland Yard's Special Branch.

Joyce's first marriage, from which he had two daughters, was dissolved in 1936. Earlier in 1937 he married another fascist, Margaret White. For the next two years he agitated for a pact with Hitler's Germany, believing Germany and Britain should ally themselves against the USSR. He was intensely pro-British with a hatred of Jews and Communists, and although still a US citizen, in 1933 he obtained a British passport by giving Ireland as his birthplace.

This inaccuracy on an application form was eventually to cost him his life. The passport expired in August 1939 and on the 24th of that month he applied for it to be renewed for one year.

Joyce had been tipped off by a Secret Service operative that in the event of war, he would be interned. War was now imminent and although having no clear plans, the Joyces hurriedly quit London for Berlin.

War On Germany

Eight days later, Britain declared war on Germany. Now in danger of being interned by the Germans instead of by the British, Joyce applied for work at the English-speaking department of the Reichsrundfunk (German Radio). On September 11 he was given a trial news bulletin to read over the air.

A week later he was formally taken on by the Reichsrundfunk. Meanwhile, in England, two policemen had

ransacked his flat - but their quarry had flown.

At first, Joyce read out scripts provided by Goebbel's Ministry of Propaganda, but was later allowed to write his own very pungent material. Soon his popularity in Britain became so immense that a survey conducted for the British Ministry of Information (or Ministry of Mis-information as Joyce jeeringly referred to it) found that six million Britons listened regularly to this humorous 'voice of the enemy' and as many as eighteen million listened from time to time.

British newspapers even published the times and wavelengths of his transmissions. Comedians imitated his drawling adenoidal sneer, as did schoolboys who squeezed their noses with two fingers to get the correct tonal effect!

Phenomenal Success

In appreciation of his phenomenal success as 'the English voice of Germany', both Goebbels and Goering sent him boxes of cigars at the Reichsrundfunk's 1939 Christmas celebrations.

The British authorities were, of course, not pleased with the enemy broadcaster's huge following here. In an effort to lure listeners from him they began to enliven the dull wartime BBC radio with brighter programmes and prestigious propaganda speakers.

Others who were not amused by 'Haw Haw' included outraged army officers who wrote furious letters to the papers about him and zealous patriots who refused to listen to him on principle.

By now, Joyce had turned his 'title' to his own advantage and always introduced himself on the air as 'Lord Haw Haw'. He did not yet know that in Britain, his true identity had been discovered. A Special Branch Inspector who had kept observation on him during the 1930s had recognised his voice.

Early Broadcasts

During his early broadcasts, Joyce would often solemnly intone 'Where is the Ark Royal?' The Ark Royal was Britain's only modern aircraft carrier and the Germans believed it had been sunk, but faulty torpedoes from a U-boat passed under the ship instead of striking it. It would be another two years before torpedoes did sink it.

Joyce often wrote and acted out over the air, humorous sketches, including dialogues between Schmidt, a smart German, and Smith, a monocled silly-ass Englishman, who were supposed to be residing at the same hotel in neutral Switzerland. Schmidt always got the better of the dialogue. Although showing the Englishman in such a poor light, these dialogues were widely listened to in Britain.

So popular had 'Haw Haw's' broadcast become, that Duff Cooper, Britain's Minister of Information, employed 'Cooper's Snoopers' to listen for defeatist talk in Britain, and two men were prosecuted for passing on information they said 'Haw Haw' had given on the air. After the British débâcle at Dunkirk, British prisoners of war were allowed to record messages to be broadcast to their relatives during 'Haw Haw's' programme.

German pilots who had bombed Britain broadcast their experiences to this country. One talked fondly of 'our bomb' which the crew had dropped on Portsmouth and then returned for another one to deliver.

His programme included such novelties as a running commentary on an aerial dogfight over France, in which two Spitfires were supposedly shot down and, after the invasion of the USSR, recordings of artillery barrages on the Eastern front.

Regular Readings

'Haw Haw' regularly read out the amount of British shipping claimed to have been sunk by U-boats. In 1942 when the Battle of the Atlantic was at its height and Britain's shipping losses were enormous, Eric Westman, the author, remembers 'Haw Haw' after listing our losses for that month, sneering in his drawling voice, 'Britannia rules the waves - from underneath!'.

In Britain, a sort of folklore had grown up around the enemy broadcaster and rumours abounded about his supposed intimate knowledge of situations in various places in Britain. One, which is still doing the rounds, was that he broadcast that the Town Hall clock of Eastbourne was ten minutes slow - and so it was!

Others that were whispered around the country and still figure in old folk's reminiscences, claimed that 'Haw Haw' broadcast that certain buildings in certain areas (the Co-op building in Bristol was supposed to be one) would be destroyed by German bombers that night and, of course, according to the story they were.

The author took part in a Radio 4 programme about 'Haw Haw' in which a woman claimed that his broadcast on December 23 1940 told listeners that the Stamford Hill area of Manchester would be bombed that night and the threat was duly carried out. Fortunately, there exists a transcript of Joyce's broadcast of that date, as monitored in Britain, and it shows that he never said anything remotely resembling it.

The BBC monitors who listened to all his transmissions describe these stories as 'rubbish' and assert that in all the time he broadcast, he never mentioned any specific objective. But he usually told us the next day which towns had been attacked, information that our authorities tried to keep a secret.

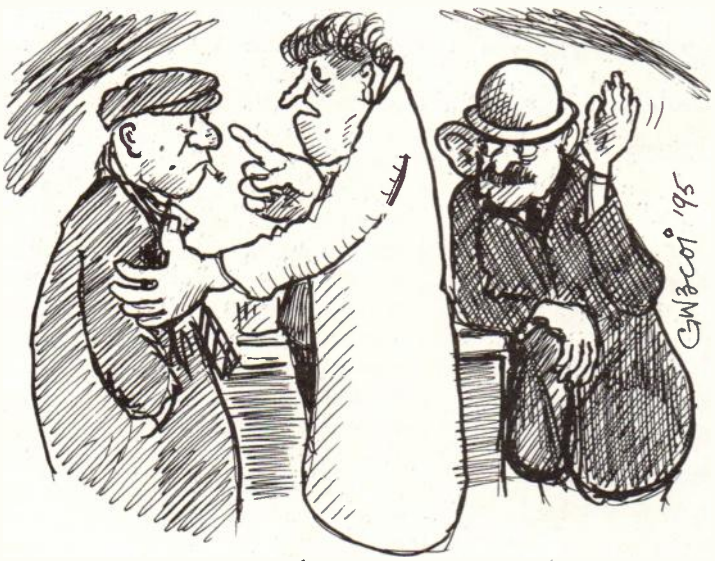
Life In Germany

'Haw Haw's' life in Germany was not without incident. He wrote a book called '*Twilight over England*' that was published in Berlin in 1940 and posthumously in America in 1982. He was promoted with an increase in salary, and awarded a holiday in Nazi-occupied Norway.

In 1941 he and his wife divorced, but remarried the following year. The peak of his career was reached in 1944 when he was awarded the Kriegsverdienstkruez (War Merit Cross) First Class and a certificate signed personally by Adolf Hitler. Meanwhile, in England, the Joyce's family home had been destroyed in a German air-raid and five months later his father died - of a broken heart, the newspapers claimed.

As the war continued, many of 'Haw Haw's' early audience deserted him. Germany was suffering defeats on all fronts and the British audiences preferred listening to glowing stories of Allied successes from the BBC to 'Haw Haw's' excuses for Germany's failures. Still, he voiced his belief that Britain and Germany should be allies, not enemies.

When the Soviet Army crossed Germany's borders, Joyce was conscripted into the Volkssturm, Germany's version of the Home Guard. Did he recall the withering scorn he had poured upon Britain's Home Guard in 1940? Joyce had no opportunity to defend the Propaganda Ministry in his Bataillon Wilhelmplatz unit for, with the Soviet Army preparing for its onslaught on Berlin, Joyce and his wife were moved to Hamburg, where he continued broadcasting.



War Nearly Over

With the War in Europe nearly over, Goebbels ordered the Joyces to be taken to neutral Ireland by U-boat, but no

Continued on page 51

Building and Using the Lake TU3

Kevin Nice builds himself a new a.t.u. utilising a very cunning use of a length of ribbon cable as a tapped inductor.

The Problem - you need to match a random length of wire to your h.f. receiver over a wide range of frequencies, your pocket is not very deep.

The Solution - switch on the soldering iron, order a Lake Electronics TU3 Antenna Tuner Kit, wait for the postman to arrive and get building.

When the package arrives you will find a comprehensive array of parts. Accompanying the components and metalwork is a set of assembly instructions. These are in the form of three A4 double-sided photocopied pages. One sheet is dedicated to explaining how to install and operate the unit once completed. If you chose the ready-built option this is all the documentation that you would get. The remaining sheets, i.e. four sides are assembly instructions. These take the form of a logical, staged list of operations to be carried out.

The first step is essential in commencing the construction of any kit - check that all parts have been supplied (you would be surprised how some 'kits' don't do this. I dutifully checked that the alleged contents of this one were all present. You'll be pleased to know that they were. With the first major hurdle crossed, on with the rest of the work! The rest of the instructions are split in to nine sections with stages in each section. There is a tick box by each step to allow you to keep track of where you have got to. It really is very difficult to go wrong this way.

The major components are two rotary switches - one twelve way to select the tapping on the coil and the second a three way to select mode and a variable capacitor. These comprise the front panel controls. On the rear panel there are the connectors for antenna input and receiver output. There are two Belling Lee type TV connectors and two 4mm terminal posts. The terminal posts are connected in parallel with the input co-axial socket.

Assembly

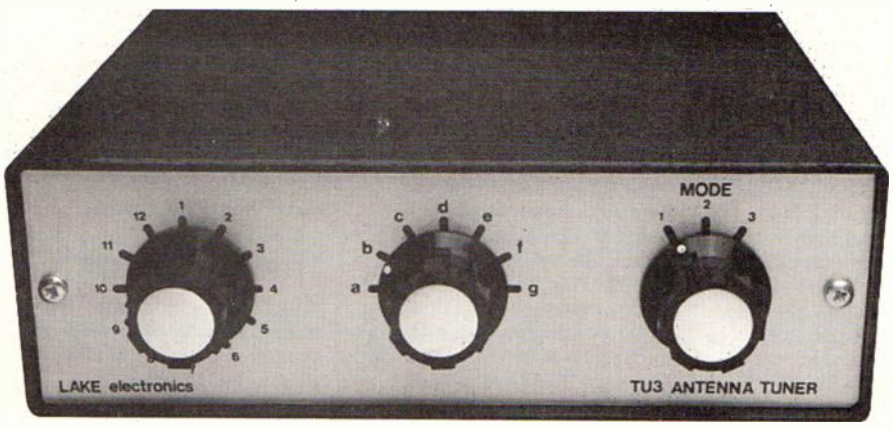
I followed the instruction to the letter and I cannot really criticise them, either for accuracy or clarity. There is always a temptation for the experienced constructor to rush ahead and make assumptions, I had to resist this urge, and it's best if you do as Lake have got it right.

The sequence of events is as follows:

Prepare the p.c.b. by fitting three pins, the 12-way switch must first be prepared by straightening the pins so that they are in line with the shaft. The shaft itself may need shortening to as it needs to be only 30mm in length. A length of green wire must then connected to the switch common. With this done the switch can be fitted to the p.c.b. This is accomplished by butt soldering the tag to the pads of the p.c.b. and is followed by a repeat of the exercise for the other switch

The 'clever coil' which is made of a 180mm length of 24-way ribbon cable with d.i.l. headers at each end comes next, followed swiftly by some eleven links to complete the circuit for the tapped coil. With this done you are on the home straight. Just mount the assembly that you've built on the brackets to the case, fitting the variable capacitor to the front panel, mount the connectors on the rear panel and connect it all up. With that done the case can assembled and you can enjoy your new a.t.u.

If the worst happen and it does not work then there



Front view of the TU3 showing the very pleasing and professional appearance.

are pointers given in the instructions as to what is the likely problem.

It Worked

I was lucky and mine worked first time. However, don't be surprised if yours doesn't as it is so easy to forget one vital step - it usually happen to me. You can avoid disappointment by thoroughly rechecking that you have completed each and every one of the construction steps.

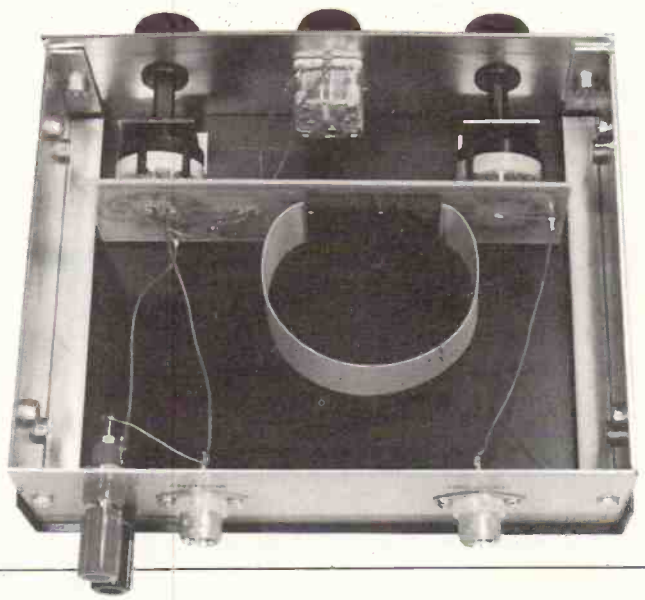
Total assembly time was about an hour and a half from opening the box to trying out the unit out, though if you haven't got any leads with the correct plugs on you'll have to add some time for making those!

The unit has a very pleasing appearance indeed, essential to the user of today's black box commercial receivers. The quality metal case has a pleasant black textured finish, with earthing points having been masked during the painting process so as to provide a good screened enclosure. All holes have been punched, the front and rear panels come complete with back screen printed plastics labels that give an extremely pleasing professional finish. For the price of £44.00 plus P&P this kit represents good value for money. For those who would prefer a ready-built version the price is £54.00 plus P&P For further details of this and the other kits in the range contact: **Lake Electronics, 7 Middleton Close, Nuthall, Nottingham NG16 1BX. Tel. 0115-938 2509.** Thanks to Alan Lake for the opportunity to build the a.t.u. ■

Summary

If you've been itching to try some home construction for the first time but you're not sure you've got the confidence, this is the ideal first project for you. It will be very rewarding putting to use that first station accessory you can really call your own, It is quite possible that the bug may bite and before you know it you'll be building more complicated and ambitious projects, without a second thought.

The TU3 antenna tuner gives good all round performance, and is based on the well-known 'L-Match' The mode switch allows the tuner to be set in any one of three different configurations.



Inside view of the TU3 showing the 'clever coil' made from ribbon cable.

Lord Haw Haw

Continued from page 49

submarine was available. On April 30 1945 with Hitler dead (although Joyce might not have known that), Lord 'Haw Haw' made his last broadcast. It took place after a farewell party in the studio, and his handful of British listeners could tell he was somewhat inebriated.

His concluding words, spoken in a slurred voice were, "You may not hear from me again for a few months.....Es lebe Deutschland! Heil Hitler! And farewell!'"

Issued with false passports in the name of Hansen, the Joyce's moved into Denmark where they hoped to escape into neutral Sweden. The plan miscarried, so they returned to Flensburg in Germany. It was a fatal mistake, for Joyce was recognised by two British army officers.

One of them, Lieutenant Perry challenged him, "You wouldn't be William Joyce, would you?" Joyce reached into his pocket for his false passport but Perry, thinking he was going for a gun, shot him through both thighs, creating four wounds.

Joyce, who had made so many anti-Jewish speeches, never learnt that the British officer who captured him was, in fact, a German Jew serving with the British Reconnaissance Corps.

After hospital treatment, Joyce and his wife were imprisoned in Brussels. There he was held until certain alterations were made to British Law to ensure that Joyce could be hanged, for as the law stood, he had never been guilty of treason.

British Soil

On June 16 1945, the day after the new Treason Act 1945 had been passed, Joyce was flown to England and, once on British soil, charged with treason by having broadcast for the Germans claiming in September 1940 to have become a naturalised German citizen.

In fact, until that date, Joyce had been a US citizen, not British, so could not have been guilty of treason to Britain. When the US came into the war, he was already a naturalised German citizen so was guilty of no treason to the USA. But powerful people in Britain had determined that he should hang.

At his trial in 1945, the prosecution argued that Joyce's improperly acquired British passport required from him allegiance to the Crown. Nevertheless, it seemed likely that Joyce would be acquitted, but the Judge, whom many believed to be biased, came down heavily on the side of the prosecution.

Joyce was found not guilty of two of the charges, but guilty of the third. Mr Justice Tucker then donned the square of black cloth that he had kept ready, and sentenced Joyce to death.

An appeal before the Lord Chief Justice and two other judges were dismissed. A final appeal to the House of Lords was also dismissed, though with one lord dissenting. On 3 January 1946 William Joyce, Lord 'Haw Haw', was hanged at Wandsworth Prison.

So ends the story of the war's most famous broadcaster. As 'Haw Haw' used to say at the close of each transmission, "Thank you for your kind attention". ■

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

Reflections

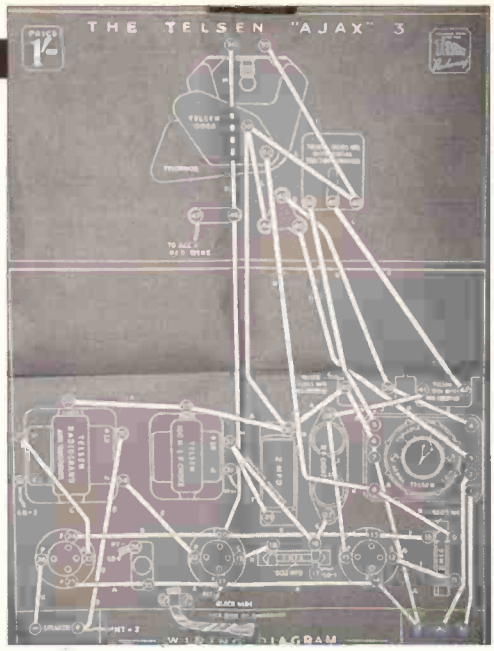


Fig. 1.

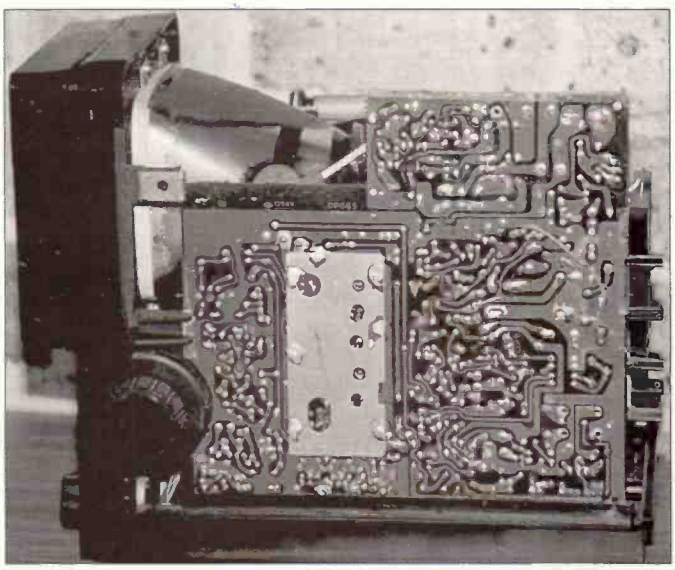


Fig. 2.

There was a great deal of excitement in the worlds of astronomy and radio engineering when, in October 1957, the Soviet Union placed the first artificial satellite into earth orbit. It was called *Sputnik I* and the data it gathered during its short life and its tracking beacon could be heard around 20 and 40MHz.

In the 37 years since *Sputnik I*, thousands more satellites have been placed in earth orbit for communications, scientific and weather purposes. Probes have been sent through the solar-system giving us close-up photographs of the planets. Astronauts have landed on and explored important areas of the moon and made up crews for orbiting space stations. The technology of every allied science, used throughout the space programme, from the tiny Sputnik to the giant Shuttle, has advanced beyond our wildest dreams. However, such projects would not have been possible before the advent of the transistor and micro-chips for use in control systems, computing and communications. I will emphasise this point by showing you how the semi-conductor revolutionised the world of domestic radio.

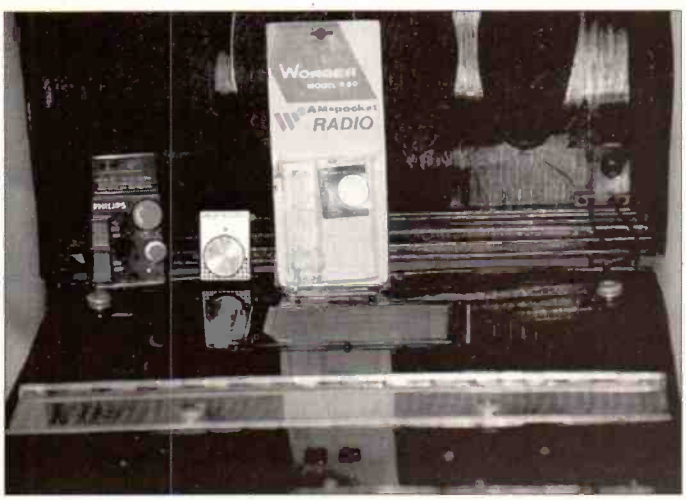
Blueprints

During its first twenty years life it was not unusual to find a blueprint, on how to build a radio, tucked inside our sister magazine, *Practical Wireless*. Blueprints from *PW* and other publications of that era are sought after by present day collectors. You can see that **Fig. 1**, shows a 1930s blueprint issued free with the TELSEN *Radiomag*. Note the 'hand' wiring of the 'AJAX' 3 and compare it with the complex printed circuit board, **Fig. 2**, inside the Plustron TVR5D portable television receiver, made in the 1970s. A couple of years ago, I was looking at a range of sets collected by **David Rudram** (Worthing) and, to show the change in technology, I photographed the group of battery portables shown in **Fig. 3**. From left to right, the Philips 'Sports', Sinclair 'Micromatic' and the Wonder 880 are standing on the massive front panel of a 1920s McMichael 'Long-Range' 4. What's more, the Philips has a.m. and f.m. coverage. The antennas changed too, from a wire-frame - usually in the lid - to the sensitive ferrite rod.

CD-ROM

At one time, armchair astronomers, like me, listened to talks and read books and magazines on the subject. But now, much of the space programme can be seen on a computer screen. Recently, I discovered that among the software programs stocked by PDSL, Winscombe House, Beacon Rd., Crowborough, East Sussex TN6 1UL, is a CD-ROM entitled *Space & Astronomy*. This is by the American software firm Walnut Creek and costs £19 including VAT and P&P. I purchased one and, in my opinion, it's good value for money. The disc contains more than 1000 image files, some 5000 text files and a range of astronomy shareware programs for the user to try. Information about other CD-ROM titles by Walnut Creek and the registration of shareware programs is available from PDSL.

Fig. 3.



Load Up

Space and Astronomy is a DOS program that can be started by typing 'GO' or 'VIEW' at the DOS prompt allocated to the CD-ROM. Most programs assume this is 'D' because drives 'A' and 'B' are for 3.5in or 5.25in floppy discs, 'C' is the hard disc and 'D', if not in use, can be created for the compact-disc drive when fitted. Incidently, I found it saved some conventional memory by making sure that the 'LASTDRIVE' command in the CONFIG.SYS file is set no higher than necessary. In my case the ROM drive is 'D' so I set mine to read LASTDRIVE=D. Often these are set much higher, perhaps even 'Z' when the computer is new. Therefore my command at the DOS prompt 'A', is D: [RETURN] that gives me the 'D' prompt.

Although the above worked on my Packard Bell 486SX using MSDOS 6.2 and WINDOWS 3.1, do check with your computer handbook, or your dealer, before altering your CONFIG.SYS file.

At the 'D' prompt I now type view [RETURN] and the main index of Space & Astronomy's directories appears on screen. These are in alphabetical order and headed images, programs and text. Each entry has a sub-directory, for example, the first of the 27 images directories reads, \images\artistic and is described as "Artistic/Painted Images". Highlight this [ENTER] and you are offered a list of eight titles. Next, highlight any of these and the image of your choice is shown. This highlight bar is used throughout the lists of directories and sub-directories on the disc. A system which I found clear, easy to understand and friendly to use.

Subjects

The 'images' directory includes such subjects as Astronauts, Kennedy Space Centre, the moon, planets, rockets and the Shuttle and, among the 'astronomy related programs' there are such titles as Astronomical Clock, Deep Space, Night Sky, Planet

"YOU'LL NEVER KNOW W

Receiver Bargai

ICOM

IC-R9000 (£4950.00)
(100kHz-2GHz, all mode)
10% deposit @ £495.00, then
36 months interest free @ £123.75

IC-R7100 (£1395.00)
(25MHz-2GHz, all mode)
10% deposit @ £140.00, then
24 months interest free @ £52.29

IC-R100 (£629.00)
(50KHz-1.8GHz, AM/FM)
10% deposit @ £63.00, then
18 months interest free @ £31.44

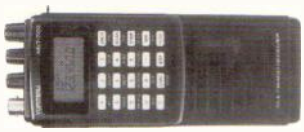
IC-R72E (£859.00)
(100KHz-30MHz, all mode)
10% deposit @ £86.00, then
18 months interest free @ £42.94

IC-R71E (£1059.00)
(100KHz-30MHz, all mode)
10% deposit @ £105.00, then
18 months interest free @ £53.00

IC-R1 (£395.00)
(2MHz-905MHz, AM/FM)
10% deposit @ £40.00, then
12 months interest free @ £29.58

YUPITERU

YUPITERU MVT7100 (£399.95),
(500KHz-1650MHz, all mode)
10% deposit @ £40.00, then
12 months interest free @ £29.99



YUPITERU MVT7000 (£289.95),
(500KHz-1300MHz, AM/FM)
10% deposit @ £29.00, then
12 months interest free @ £21.74

YUPITERU MVT8000 (£369.95)
(8MHz-1300MHz, AM/FM)
10% deposit @ £37.00, then
12 months interest free @ £27.74

YAESU

FRG100 (£559.00)
(500KHz-30MHz, SSB/CW/AM)
FM optional.
10% deposit @ £56.00, then
12 months interest free @ £41.91

FRG9600 (£599.00)
(60MHz-905MHz, AM/FM)
10% deposit @ £60.00, then
18 months interest free @ £29.94

AOR

AOR AR3030 (£699.00)
(300KHz-30MHz, All mode)
10% deposit @ £70.00, then
18 months interest free @ £34.94

AOR AR8000UK (£449.00)
(500KHz-1.9GHz, All mode)
10% deposit @ £45.00, then
12 months interest free @ £33.66

AOR AR3000A (£949.00)
(100KHz-2.036GHz, All mode)
10% deposit @ £95.00, then
18 months interest free @ £47.44

AOR AR1500EX (£349.00)
(500KHz-1300MHz, All mode)
10% deposit @ £35.00, then
12 months interest free @ £26.16

AOR AR2000 (£299.00)
(500KHz-1300MHz, AM/FM)
10% deposit @ £30.00, then
12 months interest free @ £29.88

KENWOOD

KENWOOD R5000 (£999.95)
100KHz-30MHz, (All mode)
10% deposit @ £100.00, then
18 months interest free @ £49.99

KENWOOD R5000+VC20
(£999.95 + £199.95)
(100KHz-30MHz & 108MHz-174MHz,
All mode) 10% deposit @ £120.00, then
24 months interest free @ £44.99

If you're between 18-70 years of age working, retired or disabled, subject to status, you may well qualify for our new special interest free finance. For fast mail order, phone today for your forms.

As authorised main dealers for Kenwood, Yaesu, Icom & Hustler, we can offer a FAST NEXT DAY DELIVERY on most items. For polite, efficient & fast service call "Coastal".

– the traditional retailer –

CHECK THE COMPETITION!

HUSTLER®

THE No1 ANTENNA SYSTEM IN THE STATES. THAT'S CATCHING ON VERY WELL OVER HERE. SEND AN A4 SAE FOR LATEST FULL INFO PACK INCLUDING HRT & PW REVIEWS. WHEN THE SIGNAL MATTERS USE HUSTLER.

VHAT YOU'RE MISSING!"

ns. 0% Finance.

LOWE

Antennas & Accessories, SW, VHF & UHF. Accessories may be added to scanner purchase value & included on financial agreement.
½ size G5RV for 10, 15, 20 & 40Mtrs £16.95 51'.0 Full size G5RV for 10, 15, 20, 40 & 80Mtrs £18.95
102' Double size G5RV 10-160Mtrs £32.95 204'

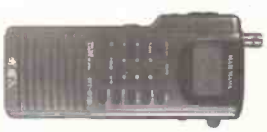
HF-150 (£389.00)
(30kHz-30MHz)
SSB/CW/AM/DATA
10% deposit @ £38.00, then
9 months interest free @ £39.00

HF-225 (£479.00)
(30kHz-30MHz, all mode)
10% deposit @ £47.00, then
9 months interest free @ £48.00

HF-225 Europa (£699.00)
(30kHz-30MHz, all mode)
Deposit @ £63.00, then
12 months interest free @ £53.00

HF-150/PR150/SP150/ RK150/RK150E (£892.90)
Deposit @ £82.90, then
18 months interest free @ £45.00

Maruhama RT-618 (£299.00)
(500kHz-1300MHz, all mode)
Deposit @ £29.00, then
9 months interest free @ £30.00



Hustler 6BTV Vertical £179.95
for 10, 15, 20, 30, 40 & 80Mtrs – 25' 1"

Hustler 5BTV Vertical £160.95
for 10, 15, 20, 40 & 80Mtrs

Hustler 4BTV Vertical £142.95
for 10, 15, 20 & 40Mtrs

Hustler discone £32.95
40-999MHz

Comet mobile scanning antenna £75.00
with 25dB pre-amp 0.5-1300MHz

Homebase stand for scanners/handhelds £19.95

Mobile stand for scanners/handhelds £9.95

Jim M-75 Scanner pre-amp £99.95

Single discone £54.95

Double discone £69.95

Shortwave International frequency handbook £13.95

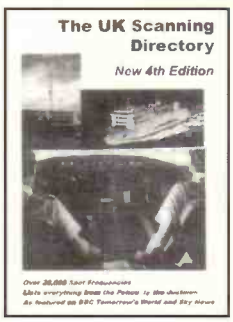
100 SWL UK QSL Cards £4.95

SWL Log Book £3.25

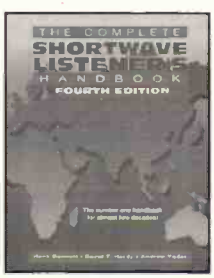
Scanner soft cases ..... *from* £16.95
most models available

ALINCO

DJ-X1D (£299.95)
(200kHz-1300MHz, AM/FM) Deposit @ £29.95, then
9 months interest free @ £30.00



4th Edition UK Scanning Directory (£17.50)



The Complete Shortwave Listeners Handbook (£23.95)

COASTAL COMMUNICATIONS

AMATEUR RADIO FOR THE RADIO AMATEUR

19 Cambridge Road, Clacton-on-Sea, Essex CO15 3QJ

VISA, ACCESS, AMEX, RSGB, DELTA, SWITCH, Licensed Credit Brokers

MON-SAT 9-5pm
WED 9-2pm
01255 474292

Watch, Skyglobe and Skymap. It also has a program about weather forecasting. The space historian has not been forgotten either because in the 'text' section there are selections from JPL Press Releases, NASA Daily News, Space Digest and info about Asteroids. Of course, there is more which, at this moment, I have not had time to investigate.

Atmosphere

I know that many of our readers are interested in astronomy and some are members of the British Astronomical Association and/or their local astronomical society. In addition to the science of radio-astronomy, the DXers among you are keen to know more about those disturbances in the earth's atmosphere which periodically enhance the normal range of terrestrial radio signals. To this end, I publish each month as many reader reports as possible so that we can place on record what happened at a given time.

Tropospheric

"From time to time, I have been able to receive foreign f.m. here in Formby," wrote **Howard Smith**. The most recent occasion was during the good tropospheric conditions last October when he logged stations from Belgium, France, Germany, Holland, Ireland, the Isle of Man and parts of Southern England. Howard used his Blaupunkt car radio when out and a Roberts RC-818 portable, with its own rod antenna, at home. Among the stations he identified were Radio Brussels, Culture, Lens, Frequence Nord, Radios Berlin, Cologne, Hilversum and Ulster, Manx Radio, RTE2, Radio 2CR (Bournemouth) and JFM South (London).

Don't forget to watch your barometer for high pressure Howard and keep an eye on the TV weather reports. Their presenters often give warnings about atmospheric disturbances that cause interference to v.h.f. radio and u.h.f. TV signals.

In November, **Arthur Grainger** (Carstairs Junction) found the f.m. broadcast band 'quiet' until the 23rd when it 'opened'. This event enabled him to add two first-timers, Radio Furness and Red Rose Rock FM, to his DX list.

While at the village of Newtonmore, on the Perth-Inverness road, at 1500 on November 26, **Tom Macadam** (Fintry), using his car radio heard a strong signal on 94MHz. Tom was some 240m a.s.l. at the time and, when the RDS on his set identified it as YLE SUOMI, he realised that the station was located in Finland.

"Over the past two weeks, from November 21-30, the pressure has been predominantly high and some excellent, very strong, signals were received from the Tyne-Tees TX at Bilsdale [Northumbria] on Ch.29," wrote **George Garden** from Edinburgh. George told me that on the 29th a slight fall had set in and, after 1800, the sky was cloudless and the temperature was low. At 2200 he watched a steady, fine grained colour, *News At Ten* from Bilsdale. He then watched the late night 'Weatherview' on BBC2 and noted that, in addition to a belt of fog, the temperature around the Tyne-Tees area that evening was zero. Such points are always worth making George especially when tropospheric paths are disturbed.

Weather

During November I recorded 4.78in of rain compared to 3.05in during the same period in 1993. This was spread over 11 days from the 4th to the 21st inclusive. Amounts of 0.40, 0.55 and 0.78in fell on days 18, 12, and 9 respectively and more than 1.0in fell on the 5th and 14th. In general the temperature was mild, the skies were overcast and often the relative humidity was around 80% for several hours.

'Disgusting' was the only word that *Arthur Grainger* could find to describe the November weather at Carstairs Junction. "It was rather depressing having to open the curtains in the morning and seeing the picture of yet another wet and windy day," said Arthur, who put up with this for the first 3.5 weeks of the month.

The daily variations in atmospheric pressure for the period October 26 to November 25, **Fig. 4**, were taken at noon and midnight by Arthur Grainger (dotted line) in Lanarkshire and myself (solid line) in Southern-England.

Fig. 5: German SSTV.

Fig. 6: Andorran SSTV.

Solar

In October, **Ron Livesey** (Edinburgh), using a 2.5in refractor telescope and a 4.0in projection screen, located two active areas on the sun's disc on days 3, 4, 5, 18 and 28, three on the 31st and four on the 9th, 10th, 11th, 12th and 13th.

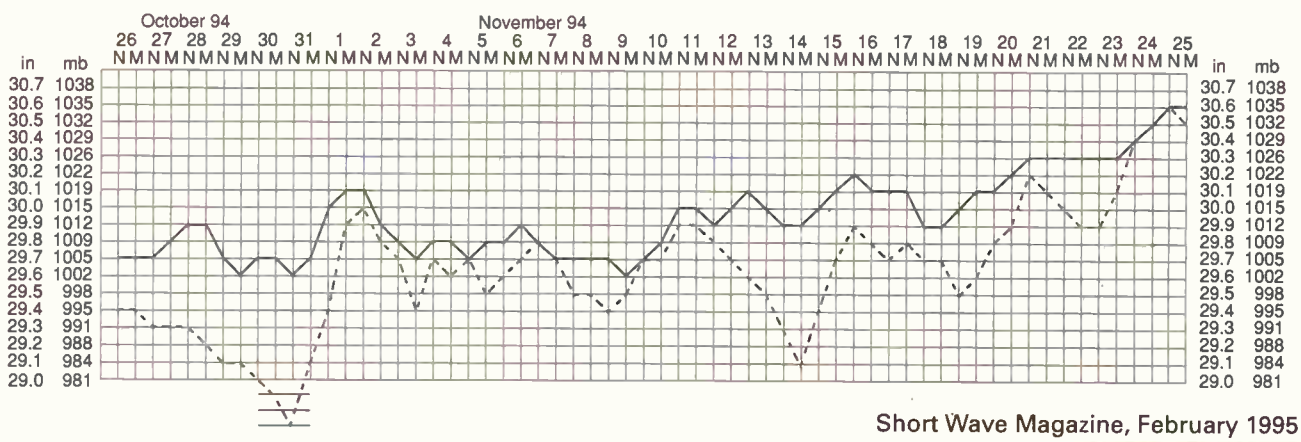
Magnetic

The magnetometers used by **John Fletcher** (Tuffley), **Tony Hopwood** (Upton on Severn), **Karl Lewis** (Saltash), Ron Livesey, **David Pettitt** (Carlisle) and **Tom Rackham** (Goostrey), between them, recorded strong disturbances to the earth's magnetic field during the first five and last three days of October.

SSTV

"Sunday afternoons is like a day at the pictures for me, hi," wrote **John Scott** (Glasgow) about the slow-scan television net on 144.5MHz. During November John also copied calling captions from stations in Germany, **Fig. 5** and Spain and, to his delight, a scenic view from C31HK in Andorra, **Fig. 6**, on the 14MHz band.

Fig. 4.



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

SSB Utility Listening

HF Sideband

Welcome to a new year. By the time you read these words we will be well into 1995. All the experts seem to think that we are right at the bottom of the sunspot cycle, so hopefully this year will see a slight improvement in h.f. propagation. Since I have been compiling this column I seemed to have spent a lot of time writing about the military and their use of h.f. s.s.b. frequencies; during this year I would like to cover more 'marine' news and information, and also cover more 'civilian' things. Last year, I offered a long list of hurricane related frequencies that seemed to go down quite well (if the number of letters I received is anything to go by), and I am now thinking of doing a similar offer later this year. I'm not sure what subject to cover yet, but I'd be interested on hearing your views. As ever, I look forward to reading your letters and logs, so please keep writing in. If anyone has any questions about s.s.b. utility listening, I'll do my best to answer them.

All Change?

Sometime in the past few months the VOLMET broadcast by the Canadian Forces on 6.753MHz have moved slightly to 6.754MHz. I'm not sure when the change took place, but during September I can recollect hearing an annoying warbling signal on exactly 6.753MHz - maybe this was the reason for the change? See **Table 1.** for a list of recent Canadian Forces frequencies that are used for VOLMET broadcasts. It would seem wise to check one or two kilohertz either side of the listed frequencies if you are looking for their transmissions. There are a large number of other frequencies used by the Canadian Forces, but the ones listed come from a recent Canadian Forces Flight Supplement. The callsigns (VEG, VXA, etc.) are the ones that are officially allocated to those stations, but I have never heard them used in their voice broadcasts. I have heard c.w. being transmitted on 5.690MHz at the time one of the VOLMET broadcasts was due to take place, but since I have not yet mastered c.w. I was unable to decode the message - maybe they transmit their callsign in c.w?

I have also recently heard rumours that the US military is to re-align all of its frequencies so that they conform to 3kHz spacing. There seemed to be a subtle change during late November and early December, which may have been the first sign of this changeover actually happening. Some of the USCG frequencies changed by 1kHz (5.696 became 5.695, 11.201 became 11.202), but now in early December they are still using 5.696MHz. Just to confuse matters further, the USCG shore stations are asking stations to contact them on 8.983MHz (i.e., 1kHz down from their old 8.984 frequency). I don't know whether the USAF GHFS frequencies will be changing, but since the most recent *USAF Flight Information Handbook* contains the usual GHFS frequencies, and runs from November 1994 until May 1995, it seems unlikely that they will change while to 'book' is still effective. Maybe they will change next May when the next issue is produced? In any case, I would still like to hear from anyone who hears US aircraft operating on unusual frequencies, or being asked to QSY to a discrete frequency.

Table.1: Canadian Forces VOLMET stations

Lahr AB, Germany - VEG	H+16	5.690, 13.231MHz
CFB Edmonton - VXA	H+20	6.753, 15.035MHz
CFB Trenton - CHR	H+30	6.753, 15.035MHz
CFB St Johns - CJX	H+40	6.753, 15.035MHz

Canada

Some readers may have noticed recently that some Canadian aero h.f. stations have strangely gone quiet, only to be replaced by some new names using the same frequencies. On the NAT-D tracks across the North Atlantic, aircraft flying across the frozen wastes of Canada used to contact Cambridge Bay; this facility has been closed and replaced by some new callsigns transmitting from the old sites. Services operating beyond 88° west now contact Arctic Radio, while those aircraft operating east of 88° west now contact Baffin Radio. The frequencies used by these stations remain the same (2.971, 4.675, 8.891 and 11.279MHz).

Another change involves Iqaluit Radio, which has also changed; now it uses the callsign Montreal Radio. The transmissions originate from Montreal airport, and are satellite linked to the transmitter site up in the Arctic.

Selcalls

I have recently been speaking with the publishers of the excellent *High in the Sky* book, and they tell me that the latest edition of the book is about to appear on the bookshelves. The previous edition contained about 6000 airliner Selcalls and about 2000 biz-jet Selcalls; this new edition is expected to contain over 7500 airliner Selcalls alone. As more and more people listen to h.f. and record what they hear, their logs have helped to swell the size of this book. As yet, I don't know the price of the new edition, but I will let you know the full details when they becomes available.

Stop Press

Effective from 0001 on 22 December 1994, the USAF has re-aligned all it's Global High Frequency Stations to conform to 3kHz channel separation. This means that some long established stations will be moving a few kilohertz either way, and some stations are gaining entirely new frequencies. Those heard so far include; 4.724, 6.712, 6.739, 8.968, 11.175, 13.200 and 17.976MHz (u.s.b.). Doubtless, there will be many others. The US Navy and US Coast Guard have also changed many of their frequencies for the same reason. More details next month.

Traffic Log *(frequencies in MHz, all u.s.b. unless indicated)*

2.378 Stations Mike22/30/40/41/44 and Delta 11/20 passing coded messages and deploying troops and vehicles. Station Mike 22 reported hearing automatic gun-fire close-by; station 'Oscar-Bravo' joined the net and told all stations to be on alert as they had reports of gun-fire in the area. This was at the time that the UN were heavily involved in operations around Bihac in the former Yugoslavia, and this is almost certainly a frequency used by the UN ground forces.

5.643 A SAR mission off the coast of Brisbane, Australia at 25°45'S 15°84'E involving a vessel with steering problems. Sydney ATC asked French Navy 093 if they had a life raft which they could drop. Later, they QSYed to 8.867MHz.

5.680 *QE2* working Plymouth Rescue, requesting e.t.a. for Nimrod Rescue 51 to be in v.h.f. range. The *QE2* was at 5048'N 1300W. Also involved was Sea King Rescue 169 which had flown from RAF Chivenor to Shannon, but was u/s due to a hydraulic leak, so its place was taken by S-61N Rescue 115 operating from Shannon. At one point, Rescue 51 was asked by Plymouth to contact MKL on ARCN 113 (6.697MHz).

6.697 Rescue 51 (an RAF Nimrod) working MKL, initially by voice, and then using CRATT (ciphered-RTTY). Later, they returned here for some more voice communications.

7.866 Israeli MOSSAD station SYN, with a female voice reading 5-letter crypto groups using the phonetic alphabet; one transmission lasted nearly 45 minutes.

8.722 Sydney maritime Radio (VIS) working a ship with the callsign SWWL. This contact was obliterated by Boufarik Radio, Algiers (7TK37) starting to read a traffic list.

8.867 (from 5.643) Sydney ATC asking French Navy 093 if they can hear the beacon on 121.5 MHz, and advising that French vessel 'Mona 3' is *en-route* to provide assistance.

10.820 Israeli MOSSAD station SYN repeating 'S...Y...N...2' phonetically. The '2' at the end of the sequence is thought to signify either a 'test message' or a message used to determine the suitability of this frequency for further messages.

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

Amateur Bands Round-up

Listening to the Amateurs

As I start to write this piece, the late autumnal fogs are hiding the hills, and lowering the insulation resistance of the antenna's insulators. Perhaps those OTs who used two ceramic or Pyrex insulators in series had a point!

A more modern and efficient way is to dispense altogether with insulators, in favour of the use of Nylon or Terylene fishing line as a combined support and long insulator; as the Nylon line is all but invisible it has given rise to at least one report of a flying saucer. This saucer-addict was looking at my Pyrex insulator up aloft, but couldn't see the string holding it up, so he reported it to a flying saucer publication. It takes all sorts!

Conditions

As usual, at h.f. when the A or K index is low, implying little magnetic disturbance, conditions tend to be good for the time in the sunspot cycle. At v.h.f., such events as an Aurora, or a belt of very high pressure lying over the country are things to look out for.

Where 28MHz is concerned, people will often tell us that the band is dead for years on end at the lower part of the sunspot cycle. Much of this 'deadness' is down to lack of activity; in the CQ contest, when the band was 'dead', people were indicating claims of over one hundred countries worked! Also, of course the v.h.f. modes affect the band too, so even at the nadir of the cycle one may find a 'lift' on Two is a pointer to life on Ten.

Letters

I'm afraid the pressure of deadlines means I emptied Box 4 early this month, December, to get copy to Broadstone before Christmas. If any letters arrive later, they'll be used when next month's offering is put together.

'Bargain of the Month' says **Adrian Rees** of Saughall of his new acquisition - he got an FRDx400 covering Top Band to Ten, plus the converters for 144 and 50MHz, and all the filters and calibrator installed for the princely sum of £55. However, even this gem has struggled with Top Band, though Adrian logged IR4T, SP9MJC, DL/UA2FJ, PA3DFT, F6EZV, GW8GT, RB3DDG, DL2DU, US0LX, LX1KC, DL1DCL, OE3IL, SP9ER, OZ1EQ and PA3DFT again. All were on sideband. On 3.5MHz we find 5T5BN, 9K2MU, east coast Ws, K0EA, K6UMB/M running 100W from the car in California, K9KU, N2KK/6, P40J (Aruba), TA1AR, EA8BYL, EA9PB, while 7MHz attended to such as YV5DPO/M, YV5IES, three Cubans and a station logged as A1FF on Abu Ail-Jabal at Tair. At 14MHz we find A35AP, C56/G0MRF, D44BS, EA8EAJ, FK8RA, HL1CY, gaggles of JAs assorted P9/UA0LCC, UA0LEC (c.w.), a bucketful of VKs, VK9ND (Norfolk Is), VO1CO, ZB2GW, and a fat crop of ZLs. It just goes to show what happens when you listen late at night or early in the morning!

When I commented that **Ian McAlister** 'had a thing about islands' we were bang on target. Although based at Maybole nowadays, Ian comes from Arran, and he intends to retire back there....in 20 years, three months and thirteen days on from his letter!! Ian mentions 1A0KM on 14MHz earlier in the year, JX7DFA (Jan Mayen), 5V7DB (Togo), HV4NAC in the Vatican City, 7P8EB (Lesotho), FK8FA (New Caledonia), 3V8BB, 3DA/SP2JXY, not to forget Jacques, FR5ZU, who was snagged signing /T on Tromelin, and /G for Glorioso, as well as /E earlier in the year. All these were new ones, while other stations noted on the band included such as YS1XLH, TR8JH, VE8RCS on Ellesmere Island, FR5HG/E (Europa), FY5FJ, TI9JJP, ZL3RJ, HR2JEP and ZD9BV on Tristan da Cunha. In the CQ WW Ian spotted 3G1X (Chile), 5L2PP (Liberia), L5P (Argentina) and YY22A (Venezuela) making it clear he is referring to the WPX contest. Finally, a mention of the 'International DX Bulletin' net, on 14.212MHz every Saturday at 1400Z in winter and 1300Z in summer, with EA6MR as net control. This is a good one to add to your 'grapevine.'

From Aberdeen **Geoff Crowley** wrote just before he left for another session in the North Sea. He notes that he overheard a station in Inverness commenting that he had heard both sides of a contact between VK and the west coast of USA. That is quite a feat, but to work them would be an even bigger one; some at least of the problem being down to the difference between dawn in the south - where most DXers live - and up in Inverness; this means when the band peaks up north, the Ws have lost the southerners, and hence have assumed the band has gone out. On Top band Geoff logged 4N7ZZ, 9A1CRU, an assortment of DLs, ES stations, with RZ9A as perhaps the start of the show. On Eighty, we see

9V1XQ, a brace of JAs, SV5TS possibly on Rhodes, and Europeans. Skipping 7MHz, Geoff hurried up to 14MHz, for a morning session logging A35SS, A80NJ, D44BS, JA4AO, KH6SU, PY8MD, VKs and ZLs. Another band change, to 21MHz was successful in logging 4X/K8ED, 9K2ZC, C56/G0MRF twice, CN2AQ, J6EHL, various East Coast Ws, PR8MG, S50K, TA3AD, UT0MM, VEs, VK4MRT, VS6WO and ZS6BJ. 24MHz saw a lone 9K2QA, while on 28MHz we see ZS1J, ZS94E plus a few assorted Europeans. One can note how the 28MHz propagation even when it does appear, is predominantly N-S.

Next I see a familiar handwriting from **Dennis Sheppard** in Earl Shilton; Dennis has a FR-100B in the shack now, dipoles for 14/21/28MHz in the loft and an inverted-L running NNW-SSE for 3.5MHz operation. Dennis reckons the FR-100B is more selective than his Trio TR-500S, for his main interest of 3.5MHz listening. Sideband, hereabouts produced such as FG5FC, FM5DN, JA1QJC, JE1OMO, JA2ZL, JA3APL, JA7OEM, JA0BUZ, J69B, JT7FAA (Mongolia), LU1FA, OD5RZ, P40J, SU2MT, T5AR (Somalia), TI4CF, UN9LX, VK4SJP, VK3OZM, VK6ACY, VK7YP, WA6F, W6CCP, W6REC, WA0ETC, 4L7AT, 7X2BK, 8P6JQ and plenty of ZLs. As for the other bands, Dennis is dismissive -" I do listen on others at times."

On the Isle of Sheppey, long-time supporter **Ted Trowell** was just off to the bandage factory for another major operation that will put him out of action for a while; by way of a compensation he offers some QSL Addresses: CR9WAG goes via DL8KWS; EY8AM via DF3OL; J68AC via WA2USA; J28CI via Box 1891 Djibouti; J28FX via F5MGZ; J68WX via WX9E; and 9K2MU via WA4TJK.

Safety

In the earlier years of amateur radio and short wave listening when equipment was almost always home-built I took some pretty outrageous chances with my open chassis and valves wanting high voltages of around 200V in a receiver. Now, of course, I mostly use solid-state equipment and low voltages. However, I do need to mention other dangers. If the antenna falls down in a high wind, can it blow out of your own garden? Can it wrap itself round the wheels of a car? If the antenna gets a near-miss from lightning what will it do to your receiver? Perhaps even more important have you legislated for what might happen in other parts of the house. If you have a mast or tower and a beam, what if it comes down? Insurance helps, of course, - though do read the small print to make sure your antennas and kit are indeed covered - but also consider what you can do to prevent the risk of the mast coming down even if a guy does break. The top of my mast is designed to stay aloft in a gale unguyed; but it has a full set of guys PLUS 'preventers' that will only come into action if a guy failure occurs. Now I can sleep well on windy nights!

Conclusion

That's it for another one. Send your letters as usual to Box 4, Newtown, Powys SY16 1ZZ to arrive, please, by the first of the month. Meantime, enjoy your hobby!

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

Satellite TV News

The Latest from the Clarke Belt

Before checking out satellite sightings we've news of two related units that have direct relevence to our hobby - particularly if you've just come up on the National Lottery! Satellite expert **John Locker** has drawn our attention to a very neat, compact and automatic D/D2MAC decoder made here in the UK by the 'Satellite Trading Company' at Warrington. John has bought one and describes it as a simple switch on and go 'blackbox', connect it with the SCART plugs and off it goes, producing high quality pictures of numerous MAC transmissons. A free card is supplied for six stations including Filmnet, TV1000 etc with higher capacity cards available for Cine Cinema/Canal + at a price - the only user 'adjustment' on the decoder being the action of sliding in the smart card! Called the 'Mini-MAC' it sells at £139 excl. UK VAT from the above at 40 Walton Street, Stockton Heath, Warrington, Cheshire WA4 6NL Tel: (01925) 262259. More upmarket D/D2MAC decoders are available but the 'black box' approach looks good, John speaks well of the device:...and from Germany NKM Elektronik GmbH advise that their new 'ultra low threshold demodulator processor' called DIGITEX is now on sale. With many current manufacture receivers having a demodulator threshold of 5-7dB there is a limitation to the weaker signals levels that can be received without a mass of sparklies (noise). Several manufacturers have introduced threshold extension (Echosphere, Chaparral) that lowers the acceptance signal levels without the problems of smearing and saturated colour 'frying' that arises when bandwidth is reduced whilst still utilising analogue signal techniques.. A need arises, particularly in 'fringe' footprint regions or when using too small a dish, that the threshold still needs to be lower to maximise quality of a degraded signal. NKM after several years of research, based around a 1987 design by Multipoint, has developed a new phase lock loop demodulator utilising both analogue and digital techniques which results in threshold levels down to c/n 2.2dB (the best low threshold receiver now available achieves 3.5dB!). An upmarket version of their Digitex featuring a 'super feedback option' can reach down to 1.4dB c/n! Designed for a u.h.f. i.f., versions for 70MHz are available to order. This, surely, will enable the use of a 1.8m dish at C Band with sensible results. This weak signal breaking technology comes at a price where only the UK Lottery will help - the 2.2dB version sells at DM 1698 and the 1.4dB c/n 'super feedback option' at DM1948 including WG vat. A respected company selling high quality equipment, NKM live at PO Box 1705, 79507 Lorrach, Germany or ring 07621-18571. I've not won the Lottery (so I've not got one!) and only report this information from the manufacturer's technical details to help any reader of this column that has won the jackpot and wants to spend some of it....

Heavenly Sightings

Since my last chronicle we can welcome two satellites into the Clarke Belt, Astra 1D was first seen November 18th heading East at 14°E and on test in Ku-FSS, DBS and Telecom bands, by the 23rd at 18°E full power at 60dBW where she stayed for several days testing out the on-board hardware. The move to 19°E was completed by December 6th with more tests though on the DBS band transponder outputs and by mid December 1D was on station @ 19.2°E. Orion 1 eventually launched November 22nd - over a week late - and should be on station as this is read @ 37°W with 36 Ku band transponders, a welcome hot spot in our Western sky. A week later and luck ran out for another North Atlantic runner, PAS-3 failed to launch December 1st and fell back into the ocean which may well delay other Airianspace launches including the Eutelsat Hot Bird 1. Launches of both Orion and PAS-3 were carried via Intelsat K. A replacement for PAS-3 should be ready for launching within the 12 months. **John Locker** (Wirral) kept a daily diary on the Astra trip and at one stage was able to advise Astra management of downlink tests, they themselves were untold by their own master control!

Sat-zappers can hardly have missed numerous feeds out of Russia concerning the moves for independence in Chechnya. Several reports were logged out of the capital Grozny showing military preparations, Russian fighter aircraft, tanks etc. though the authorities soon acted and restricted SNG output from the region, limiting coverage to reports out of Moscow, supplied footage etc. Eutelsat II F3 @ 16°E was pressed into service for West bound news feeds, interesting to see the 0167 test card though somewhat sparklie - I presume due to the uplink site somewhat off the main footprint boresight.

Other drama during the period was the *Achille Lauro* liner on fire in the Indian Ocean. Due to the remoteness little actuality footage was seen though I monitored the AP-TV (Associated Press) news offerings via Eutelsat II F1 @ 13°E with exclusive 'viewers video' type footage on board the liner with smoke billowing, a string of passengers were passing buckets of water from the swimming pool and tipping down a vent trying to out the blaze in the bowels of the liner. Apart from a few shots of the liner ablaze as viewed from a search aircraft the only other news film was of the rescued passengers landing on shore and onto coach transfers. AP-TV usually come up on 12.562GHz h. with so far clear transmissions. VisEurope (Reuters) sat just below have until recently been scrambling their news offerings but many more are now carried in the clear, hopefully both will continue thus! Whilst on the topic of Reuters, John Locker some weeks ago saw via a Reuters feed the return to Earth of three crew from the MIR space station, landing terrestrially in the grassland/steppes of deepest Russia and hauled out by waiting officials.

A fascinating commercial video presentation was carried for 'Herbalife' via Eutelsat II F1 evening of December 3rd at 12.583GHz including satellite inserts world-wide from their national representatives and regional sales types. The corporate video presentation ran live from the Ed Sullivan Theatre, NY for over 2 hours and gave a fascinating insight into how the company is making millions - and so it seems many of their national reps. Based in the 'States and with a sales convention in Atlanta City 50 days later the membership were urged to increase their turnover and recruit more sales staff, the whole action was that of a pyramid sales operation but everyone seemed to be making piles of $$$! Live reverse satellite feeds into the USA came from Israel, Belgium and Sydney, the presentation was being received in 60 cities across 23 countries. Apart from a few technical hicups the whole show was that of clean cut gloss - it's well worth watching should it be seen again.

With Eutelsat I F4 at 25°E now well into inclined orbit travel, ITN have opted to move their leases onto the more stable I F5 bird at 21°E - checkout 11.140 and 11.180GHz h. - as I did on the 11th December and saw the colour bar pattern and ident 'ITN Chequers' - at this time a demonstration against the Criminal Justice Bill saw numerous bobbies chasing folk over the lawns! With I F5 being under 3°E of the Astra powerhouse slot at 19.2°E, difficulty may be experienced in rejecting Astra breakthrough due to the wider forward beamwidth of a smaller dish which when aimed at 21°E may still be responsive on side lobes from the Astra slot. Eutelsat I F4 does still have carriage such as the Channel 4 *Big Breakfast Show* OB and more conventional OBs such as the 'Family Service' on November 27th from Plymouth 11.134GHz horizontal.

Hands up if you've seen the interesting Philips PM5544 test card on Telecom 2B @ 5°W, using PAL and with idents 'RTL-TV1' and 'STEREONICAM'. Check out 12.628GHz for this treat! And on the subject of test patterns, the same transponder carried prior to the 5544 card a most unusual pattern which included a CD bouncing anti-clockwise against a black background with minimal other detail such as a thin colour bar - this carried the 'Snell and Wilcox' insert ident in the field blanking period at the top of screen. This company is based in Petersfield, Hants.

In the real 'DX' satellite band at 4GHz(C Band) we have several enthusiasts monitoring the Clarke Belt. **Bob French** (Warks) has seen output from Intelsat 702 @ 1°W drop considerably, most of the African feeds have gone leaving only Nile TV much weaker, unusually the French TV5 normally seen on Eutelsat II F1 13°E has also paralled up on 1°W at 3.845GHz RHC though to feeding the French speaking African countries. Sky News is seen winging out on Intelsat 502 @ 21°W on 4.005LHC. more activity though from TDRSS @ 41°W with the 'APTV WASH DC' East bound circuit into Europe on 4.001RHC with full European footprinting. Another SWM reader - **Julian Redwood** (Christchurch) - also has been monitoring TDRSS with a variety of idents seen - Conus Communications; URTV Tape room 3; 'All News Channel'; California 9; KXTV-10 and WBTV. Julian is attempting 1.5GHz L Band reception with a small dipole antenna fitted to his 1.8m dish and wonders if any Immarsat signals can be received ? In recent weeks Julian has fitted a small actuator on the dish to give elevation adjustment for tracking inclined orbiting satellites such as Eutelsat I F4. The new actuator allows movement of the dish in elevation + and - several degrees of the true Clarke Belt tracking arc to optimise the erratic signals from the inclined birds.

Another new channel visible in the UK is 'Teolekompania Minsk' downlinking across Europe from the 11°W Gorizont with programmes typically 1800-2300UTC daily though again an inclined craft giving variable results. **Andrew Sykes** (Kings Lynn) caught this channel on test for just one day prior to programmes. The Minsk programme offers a feast of old cinema films, often as not in English with an interpreter voicing over - a cheap way that avoids dubbing or subtitling, but results are less than entertaining.

S.R.P. TRADING

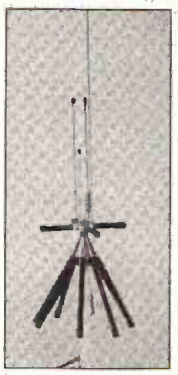
SKY SCAN
Magmount MKII
For improved performance, wide band reception, 25 to 1300MHz. Comes complete with protective rubber base, 4m RG.58 coax cable and BNC connector. Built and designed for use with scanners.

£24.95
+ £3.00 p&p

SKY SCAN
DX V1300 Discone
Most discones only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically mounted antennas. The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.

£49.95
+ £3.00 p&p

SKY SCAN
Desk Top Antenna Model Desk 1300
Built and designed for use with scanners. Coverage: 25 to 1300MHz. Total height – 36ins – 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted.. Ideal indoor – high performance antenna and can also be used as a car antenna when your car is static. REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!



£49.00 + £3.00 p&p

GrundigYacht Boy 500

40 Memory channels with RDS • 1.6 - 30MHz • full s.s.b • complete with P.S.U & carrying case

£189.95 + £5 p&p

Grundig Satelitt 700

TOP OF THE RANGE RECEIVER 1.6 - 30MHz complete with P.S.U, RDS • full s.s.b. • up to 2048 Memory channels

£349.99 + £5 p&p

GrundigYacht Boy 400

40 Memory Channels • Signal meter & carrying case • 1.6 - 30MHz • full s.s.b.

£129.95 + £5 p&p
FREE S.W. ANTENNA worth £14.99

AOR AR8000
The elusive one. Ring for details.

NEW 4TH EDITION UK SCANNING DIRECTORY
£16.95

Clip-on Mini Speaker
Ideal for portable scanners. Swivel clip attaches to your collar or lapel for easier listening while you carry your portable on its belt-clip. With 3.5mm plug.

£7.99 + £1.00 p&p

PRO-44
50 Channel Scanner
66-88, 108-136.975(AM)
137-174,
380-512MHz

inc NiCads and charger worth £20

£129.95 + £5 p&p

Telescopic scanner antenna

Extends portable scanner range. Nine sections, centre loaded. For 1–1300MHz. BNC connector.

£8.99 + £1 p&p

PRO-43
200 Channel Scanner
10 Monitor Channels
£229.95
+ £5 p&p

inc NiCads and charger worth £20

MVT 7100

Specifications
- NFM / WFM / AM / LSB / USB
- 530 kHz – 1650 MHz
- 1000 memory channels
- 500 search pass frequencies
- 10 search bands
- 30 channels per sec. scan speed
- 12v d.c. or 4 x AA power supply
- Back-lit l.c.d. & buttons **RING FOR THIS MONTHS SPECIAL PRICE**

New Carry Case for

PRO-44	COM 204
PRO-43	COM 203
PRO-39	COM 202

£14.99 + £1 p&p

PRO-2006
Special part exchange deals on PRO-2006E, PRO-2035
RING FOR DETAILS

Mail Order: SRP Trading, Unit 20, Nash Works, Forge Lane, Belbroughton, Nr. Stourbridge, Worcs. Tel: (01562) 730672. Fax: (01562) 731002
Shop: SRP Radio Centre, 1686 Bristol Road South, Rednall, Birmingham B45 9TZ. Tel: 0121-460 1581/0121-457 788

A REAL BASE STATION SCANNING RECEIVER

PRO-2035

1000 channel with hyperscan

£349.99 Free P&P

- 1000 memory channels (100 channels x 10 banks)
- 10 limit search banks
- 100 monitor channels
- Accessory: Telescopic antenna and owner's manual
- Display: Large l.c.d. with l.e.d. backlighting
- Large rotary or keypad frequency control
- Dimension: Approx 232 (W) x 210 (D) x 90 (H) mm
- Receiving wave mode:
  - Wide f.m. ➤ TV sound
  - Wide f.m. ➤ f.m. broadcast
  - Narrow f.m. ➤ Business
  - Narrow f.m. ➤ Communication
  - Narrow f.m. ➤ Ham radio
  - a.m. ➤ Aircraft
  - a.m. ➤ CB radio
- Scan and search speed Approx 50 channels/sec. and 50 steps/sec.

TRADE ENQUIRIES WELCOME

FREQUENCY RANGE AND MODE:

Freq (MHz)	Step	Mode
25.000-29.995	5.0kHz	a.m.
30.000-87.495	5.0kHz	n.f.m.
87.500-107.995	50.0kHz	w.f.m.
08.00-136.995	12.5kHz	a.m.
37.000-224.995	5.0kHz	n.f.m.
225.000-400.000	12.5kHz	a.m.
400.005-520.000	12.5kHz	n.f.m.
760.000-1300.000	12.5kHz	n.f.m.

Available now from: **SRP TRADING**

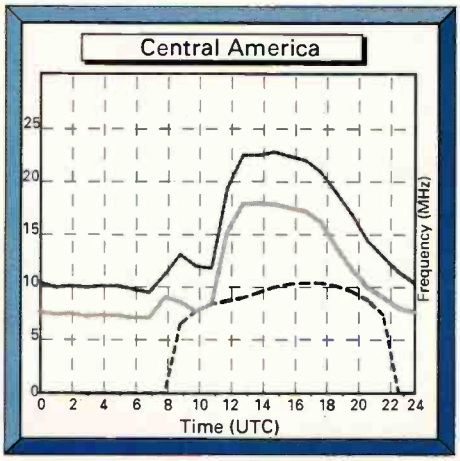
Mail Order
SRP Trading, Unit 20, Nash Works,
Forge Lane, Belbroughton,
Nr. Stourbridge, Worcs.
Tel: (01562) 730672
FAX: (01562) 731002

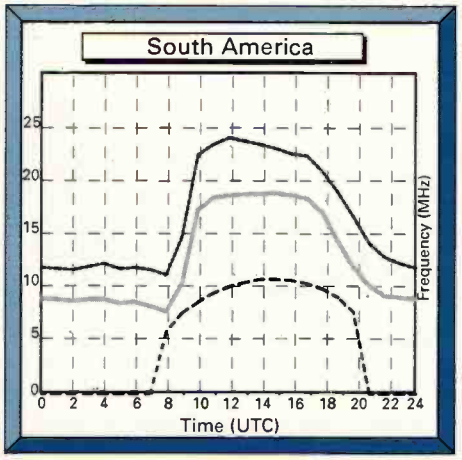
Shop
SRP Trading, SRP Radio Centre,
1686 Bristol Road South, Rednall,
Birmingham B45 9TZ.
Tel: 0121-460 1581/0121-457 7788
FAX: 0121-457 9009

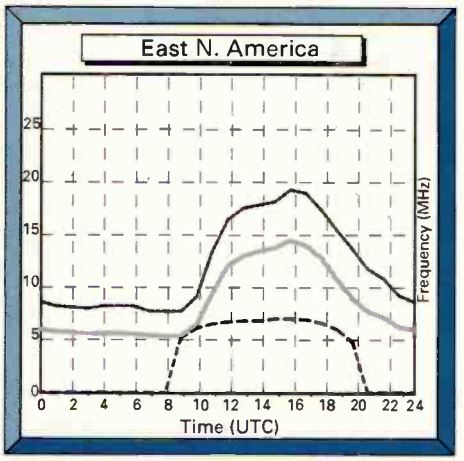
Jacques d'Avignon VE3VIA

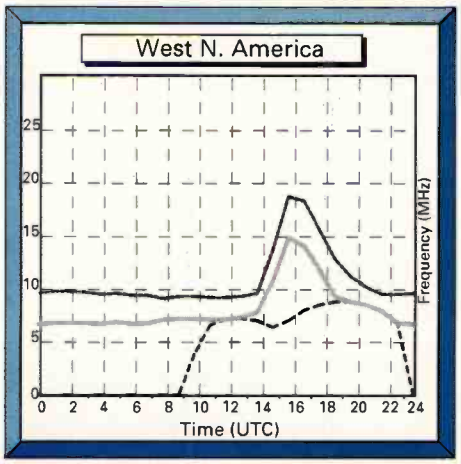
World Propagation Forecasts February

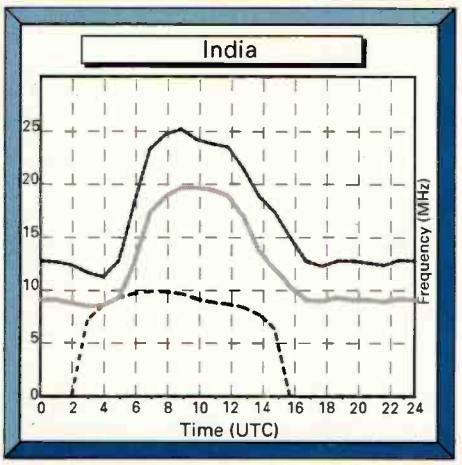
Circuits to London

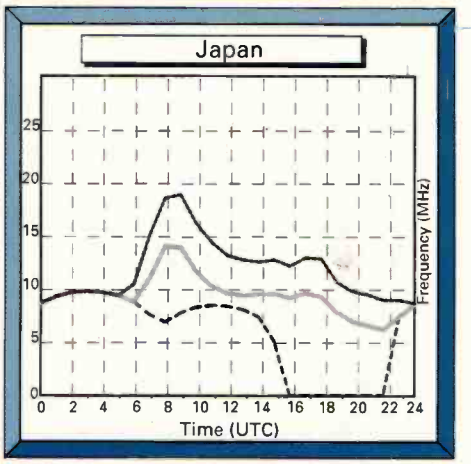


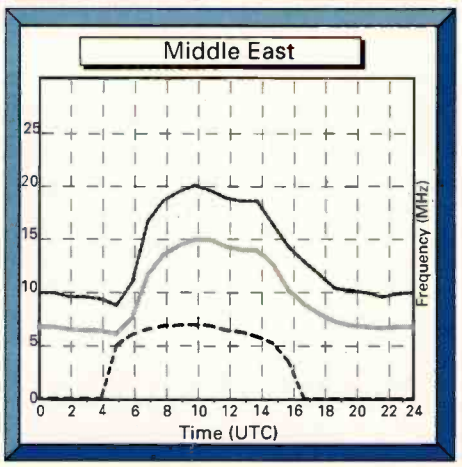


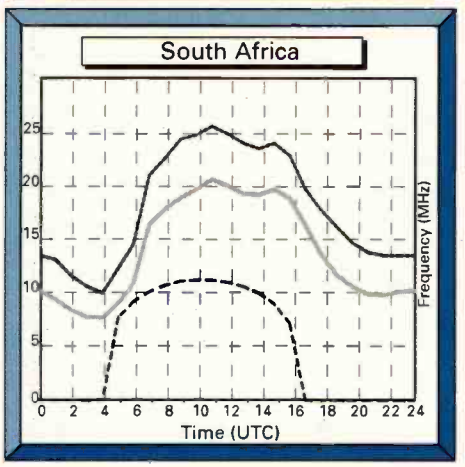


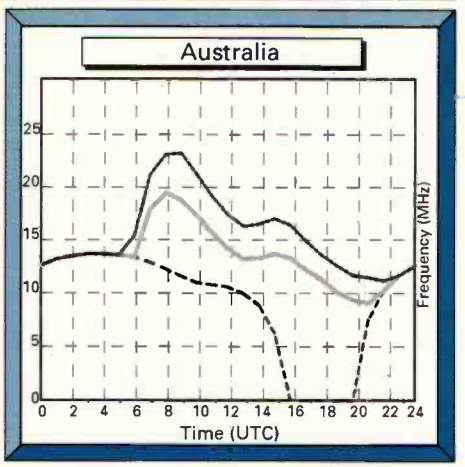












How to use the Propagation Charts.

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

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

Lastly, the upper dashed line, represents the maximum usable frequency (MUF) a 50% probability of success for the path and time.

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

Good luck and happy listening.

Gerry L Dexter, c/o SWM Editorial Offices, Broadstone

Bandscan

America

WWCR's move to 5.065MHz dismays DXers who like to prowl the 4 and 5MHz area looking for rare catches.

It's time again to check out short wave broadcasting activity in the Americas and the Pacific.

ANTARCTICA - The (US) Armed Forces station, AFAN-McMurdo has returned to the air, using 6.160MHz on a 24 hour basis. The station has also increased its power - it's now running 3.2kW.

BOLIVIA - Recent loggings from this country include Radio Perla del Acre on 4600; Radio La Palabra, 4.733; Radio Centenario, 4.855; Radio La Cruz del Sur, 4.875; Radio Norte, 4.940; Radio Mineria, 4.985; Radio Nacional HJuanuni, 5.124; Radio Galaxia, 5.965; Radio Loyola, 5.955; Radio Cosmos, 6095 and Radio La Plata, 9.715MHz.

BRAZIL - Recently logged stations from this country include Radio Super, Tupi, 3.325; Radio Nacional Sao Gabriel, 3.375; Radio Educacao Rural, 4.755, 4.785; Radio Cabocla, 4.845; Radio Brazil Central, 4.985; Radio Brazil Tropical, 5.015; Radio Gazeta, 9.685; Radio Nova Visao, 11.705; Radio Universo, 11.765; Radio Gaucha, 11.915; Radio Bandeirantes, 11.925 and Radio Record, 11.965MHz.

CANADA - A government committee has recommended that funding for Radio Canada International be restored to its former level. In 1991, RCI's budget was cut to the point where it became impossible to continue with anything more than a bare bones service, with nearly all its original programming cancelled. It's also reported that the Canadian Broadcasting Corporation (of which RCI is a part) is scheduled for still more cuts in the 1995 national budget. So, it's very unclear as to whether RCI is to be reborn or continue more or less as is.

CHILE - A rare catch is Radio Patagonia Chilena, broadcasting from Coyhaique on 6.080MHz. This station has been heard around 1000, relaying a newscast from Radio Portales, a medium wave broadcaster.

CLANDESTINE - The ten year old anti-Castro station, Radio Caiman, has left the air. The station, which operated on 9.965MHz, is believed to have been a project of the Central Intelligence Agency. Its initial broadcasts went on for months and contained nothing more than back-to-back Spanish language vocals. The station never did announce any backing group or address, but it was believed to have transmitted from Guatemala or Cost Rica.

COLOMBIA - This seldom heard Radio Nueva Vida, 5.570MHz, has been picked up lately, around 1100. This religious station is only listed for operation in the mornings, local time, so reception in Europe will have to wait until (or if) they institute an evening schedule.

COSTA RICA - Adventist World Radio should, by now, have completed all work on its new transmitting bases at Cahuita, on Costa Rica's Atlantic coast. The base has five short wave transmitters, using 5.030, 6.150, 7.375, 9.725, 11.870 and 13.750MHz at various hours. AWR is changing its name from AWR Latin America to AWR Pan America.

Radio For Peace International now operates its upper sideband transmitter on 17.905 during the daytime. It is also running u.s.b. tests on 12.150MHz from 0000 to 1200.

DOMINICAN REPUBLIC - Radio Quisqueya has reactivated on 6.235MHz and is being heard with Spanish language programming at around 2200.

ECUADOR - The half hour programme of the Ecuadorian government's Radio Nacional del Ecuador is now carried on HCJB's 9.770MHz channel on weekdays at 1730 to 1800.

HCJB is issuing a special QSL for reception of its single sideband transmissions on 21.455MHz.

GUATEMALA - A new religious station here is Radio Cultural Coatan, operating on 4.780MHz, slightly variable. The station is located in San Sebastian Coatan, in the department of Huehuetenango. The station broadcasts mostly in local Indian dialects, reportedly K'anjobal and Chuj, although the station identifications are in Spanish. The transmitter was formerly in use at well known religious broadcaster TGNA, Guatemala City. Engineers from that station helped to get the Coatan station on the air. Sign on is at about 1100 (sometimes a few minutes before), with sign off sometime around 0200.

Adventist World Radio says the future of its 'Union Radio' on 5.980MHz is uncertain. The 10 kW transmitter is said to be very old and only able to put out about 3kW. With the quite effective AWR transmitting facility in Costa Rica now at full capacity, there may not be much need for this station, which currently operates in Spanish and English between 1100-1500 and 2300-0030.

HONDURAS - Radio Luz y Vida, 3.250MHz, has been reactivated and is being heard with Spanish language religious programming around 0200 and later.

KIRIBATI - Radio Kiribati has changed it's frequency - down five to 9.825MHz.

NICARAGUA - The one time clandestine, now legitimate broadcaster Radio Miskut has resumed its broadcasts on short wave, operating on 5.770MHz. It normally does not operate very late by the local clock and is usually gone by 0000.

PARAGUAY - Another station not heard regularly heard is Radio Encarnacion, from the city of the same name. It's been logged on 11.940MHz (slightly variable) around 2230.

Adventist World Radio plans to increase its activity in South America, which will probably include building a new short wave station in Paraguay. No specific site has been chosen yet, but the plans include two, 100kW short wave transmitters at the start, with an eventual addition of one or two more. AWR hopes to have this on the air before the end of this year.

PERU - The short wave scene in this country continues as active as ever. Here are some of the stations North American DXers have been noting recently (frequencies in MHz)

3.197	La Luz Y Vida/Radio Jerusalen, Atahaulpa
3.340	Radio Altura, Cerro de Pasco
4.511	Radio Paurcatambo, Paurcatambo
4.550	Radio Naylamp, Lambayeque
4.753	Radio Huanta dos Mil, Huanta
4.775	Radio Tarma, Tarma
4.810	Radio San Martin, Tarapoto
4.825	La Voz de la Selva, Iquitos
4.855	Radio La Hora, Cusco
4.887	Radio Vill Rica, Villa Rica
4.905	Radio La Oroya, La Oroya
4.955	Radio Cultural Amauta, Huanta
4.966	Radio San Miguel, Cusco
4.970	Radio Imagen, Tarapoto
4.975	Radio del Pacifico, Lima
4.991	Radio Ancash, Ancash
4.996	Radio Andina, Huancayo
5.025	Radio Quillambamba, Quillambamba
5.040	Radio Libertad, Junin
5.069	Ondas Sur Oriente, Quillabamba
5.083	Radio Mundo, Cusco
5.116	Radio Diez FM, Iquitos
5.521	Radio Sudamerica, Cutervo
5.620	Radio Ilucan, Cutervo
6.018	Radio Victoria, Lima
6.045	Radio Santa Rosa, Lima
6.055	Radio Continental, Arequipa
6.190	Radio Oriente, Yurimaguas
6.205	Radio Cusco, Cusco
6.240	Estacio Yurimaguas, Yurimaguas
6.282	Radio Huancabamba, Huancabamba
6.726	Radio Satellite, Santa Cruz
6.803	Ondas del Rio Mayo, Nueva Cajamarca

Reception of most Peruvian stations is usually a chance thing. Sign off times vary from as early as 0100 to as late as 0500 or even 0600. The frequencies given here are all slightly variable. And, of course, almost all the programming is in Spanish.

TONGA - Radio Tonga is off the air and has been for quite some time. They lost their antenna during a hurricane and apparently the station doesn't see getting the short wave side operational again as much of a priority.

UNITED STATES - As you probably know by now, the Voice of America station at Bethany, Ohio was closed on the 14th of November. The people who were employed there have lost their jobs. There will be further cuts and consolidations of official US short wave broadcasting in the months ahead.

SWBC DXers are very unhappy over WWCRs use of 5.065. Although technically not a part of the 60 metre band, there are many foreign broadcasters using this area for local and regional broadcasting. Chances of logging such stations are now much reduced. WWCR is operating on 5.065 during some of the prime DX times - 2300-0800. 5.065 replaces 5.810MHz.

5.810, meantime, is currently being used by KAIJ (formerly KCBI) for tests of a second 100kW transmitter which will also use 13.815MHz. The second transmitter, like the first, will be devoted exclusively to 24 hour a day programming by preacher Gene Scott.

Radio Miami International (WRMI) has further expanded its schedule from the two hours per night it aired initially. WRMI now operated from 2300-0500 and 1100-1500 in English and Spanish. The station is also on from 1900-2000 weekend, in English and German, all on 9.955MHz. WRMI is also carrying the new DX programme produced by Adventist World Radio. Its on the air Saturdays at 0100.

VANUATU - Before long, Radio Vanuatu will be operating new transmitters from a new site on the island. There will be two - one kilowatt medium wave transmitters and two 10kW short wave units.

VENEZUELA - Long time short wave broadcaster Radio Barquisimeto, from the city of that name, is planning a return to short wave using a new 50kW transmitter on its old frequency of 4.990MHz.

That's our quick look at the short wave listening and broadcasting scene in the Americas for this time. We'll do it again in three months and, until then, I wish you good listening!

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

Airband

Grob 109B. *Christine Mlynek.*

I'm writing this at the end of 1994 and so far the weather has been kind. By the time you read this, I expect that it will have deteriorated! There are two major problems for winter flying: visibility and runway braking action.

Visibility is a problem, even when instrument flying, if you can't see to land. If you're lucky, your aircraft, the aerodrome and the crew are all equipped/trained for automatic landing but you still need to be able to see to taxi! Large airports have runway visual range (r.v.r.) monitors at each end of, and in the middle of, each runway (that makes three per runway). The weather report will therefore quote the r.v.r. in metres for the threshold, centre and stop end. Low cloud is the other contributor to poor visibility and most manual landings require the cloudbase to be at least 200ft (100ft in some cases) above the runway.

Runway braking can be reduced by rain, ice or snow. In the case of ice and snow, there is a further hazard if these accumulate on the airframe as they mess up the aerodynamics. Various methods are available to assess runway braking action, but in essence an instrument-equipped vehicle drives along and, when brought to a stop, the forces are measured during the resulting skid! Hopefully the stop is controlled without skidding.

Airborne Radio

Finishing off this topic that I began last month, you will remember that I described the typical airborne radio fit of contemporary aircraft. In response to your requests (such as from **George Tillett G3KXP** of Hornchurch), you will be seeing close-up photos of some of this equipment over the next few months.

Well-known manufacturers' names, some of which are more closely associated with the recent past, are Bendix, Collins, Cossor, King, Marconi, Narco, Racal/Decca and STC. Some less common types are Avcomm, Becker and Delcom. There is little overlap with the manufacturers of hobby-type receivers and scanners, although Icom do produce hand-held airband transceivers. Occasionally, amateur radio suppliers also sell hand-helds. Perhaps the most common purpose for hand-held transceivers is mobile ground-to-air communications such as for balloon retrieval and parachute drop zone control. Some microlights have a hand-held installed, clamped to the airframe.

I won't dwell on the Decca Navigator (really a system from the past) or Global Positioning (GPS - something for the future). Decca, they say, will function until at least 2014. The old-style indicators required interpretation for position-fixing although a moving-map display was an improvement. These days, offerings from companies such as Philips, look just like GPS units with their direct lat/long readout. GPS is dependent on satellites, not all of which are currently available. The system is still regarded as being under test and not acceptable for primary navigation purposes. Take your pick from the many suppliers such as Apollo, Garmin, Magellan, Sony and Trimble.

Your Experiences

Retired pilot **Leslie Greville-Smith G4SUJ** (Wolverhampton) spent some time in the cockpit of a B.757 while returning from Tenerife. He sent me a couple of photos to prove it, but the detail would be too small to print here so I'll tell you about them.

Leslie says that they were in the cruise at FL350 over Brest *en route* for Manchester. I see that both boost pumps are on, feeding fuel from each wing tank. This is unusual except for takeoff and landing, the stages during which a fuel pump failure would be critical. At other times it is usual to extend the life of the pumps by only operating one; perhaps the forward pump outbound, aft on return. The 757 has wing-mounted engines that would be expected to gravity feed even if the pumps failed and hence might lose power but shouldn't flame out altogether.

On the radio side, No. 1 v.h.f. com was on Brest 133.0MHz, but the other tuning display was set to 126.07 (remember that the final 5kHz digit is taken as read and NOT displayed), which is a LATCC *en-route* frequency. When transferred to LATCC from Brest, the captain has only to flick the 'Transfer' toggle switch and the radio will re-tune to the frequency in this other display. It's like having two separate tuning dials/displays, with a switch to determine which is in control.

No. 2 v.h.f. com has 121.5MHz, the emergency frequency, in its second display ready for monitoring but the selected frequency appears to be 126.92 which I can't identify. I'll guess that the Captain was working the radio and the First Officer was handling the aircraft on this return sector.

Other equipment noted by Leslie included the transponder that was set to squawk code 2363 and the h.f. set working 10.072MHz, a British Airways company operations frequency. A placard states that some form of video is on - who was on telly, then, Leslie?

While visiting RAF Valley, **B.D. Goodier GW0PRM** (Colwyn) caught a VC-10 tanker that was supporting a fighter exercise. Also in was US Army Beech RC-12K that engages in electronic warfare, jamming enemy radio and radar. It looks like a standard King Air with a load of non-standard antennas bristling all over it!

Museum Piece

Roderick McKenzie (King's Lynn) recommends the Lincolnshire Aviation Heritage Centre at East Kirkby, Near Spilsby, Lincolnshire PE23 4DE; I have the telephone as (01790) 3207 but I expect a couple more digits have been added recently, so if anyone can update this let me know. On show are Lancaster VII G-ASXX and Hampden I AE436 on rebuild.

Always keen to follow the airshow scene, Roderick found another new Duxford display frequency on 130.5MHz. This is also temporarily occupied by the DH Moth Rally at Woburn.

Information Sources

In December I was unsure as to where readers could purchase *JP Airline Fleets*. This is in fact available from Air Supply, 83b High Street, Yeadon, Leeds LS19 7TA, price £28.50 plus £3.50 inland or £6.00 overseas postage. As I haven't seen a copy myself, make sure it really is what you need bearing in mind the high price.

Not exactly information, but a source of models is described by **Anne Reed RS-87871/G-20126** (Cheltenham). Anne's a regular contributor to this column, but anyone doubting her enthusiasm should see her collection of model aircraft and airport vehicles. Two book-cases are dedicated to it! For £299 plus delivery, Anne could have bought a full model layout with runways, control tower, etc., but understandably found the price a little high. Instead, she recommends the Matchbox series that also includes a model airport as well as the aircraft and vehicles to go with it.

An illustrated catalogue is available from Matchbox Toys Ltd., Swift Park, Old Leicester Road, Rugby CV21 1DZ. As an alternative, 1:600 Schabak or 1:500 Herpa models are sold by The Airband Shop, 192 Wilmslow Road, Heald Green, Cheadle, Cheshire SK8 3BH; Tel: 0161-499 9350. Anne's tip: Matchbox models are often sold in supermarkets, so you can pop them in your shopping trolley and your 'other half' won't notice. I must see if I can get away with this next time I take Chris shopping!

Frequency and Operational News

The November CAA *GASIL* announces the following losses: Halfpenny Green Ground 121.95MHz and Belfast n.d.b. (ADR, 346kHz); alas, both will be heard no more. On the plus side, the UK's first air traffic control frequency in the new 136-137MHz band has been allocated to the LATCC Clacton Sector on 136.55MHz.

Now to help **Geoff Brown** (Northampton) who noted the new balloon frequency in 'Scanning' (December 1994 *SWM*, page 62). As previously covered here, 129.9 has given way to 122.475MHz, which is the new frequency on which balloonists communicate with their ground crews.

More information from the CAA in *AIC* 123/1994. The London Middle Suite (LMS) has just been opened. Like the existing London Upper Sector, this facility is designed to smooth the passage of flights in transit above the Heathrow terminal control airspace. Most traffic here

Dutch Dakota Association's DC-3 visiting Duxford. *Christine Mlynek.*

Abbreviations

AIC	Aeronautical Information Circular
a.t.i.s.	automatic terminal information service
B.	Boeing
CAA	Civil Aviation Authority
com	communications
FL	flight level
ft	feet
GASIL	General Aviation Safety Information Leaflet
h.f.	high frequency
kHz	kilohertz
LATCC	London Area & Terminal Control Centre
MHz	megahertz
n.d.b.	non-directional beacon
v.h.f.	very high frequency

flows north to south or east to west and, up until now, had to contend with frequency changes across the Bristol, Clacton, Daventry, Dover and Worthing sector boundaries. With fewer individually-controlled sectors, more favourable climb profiles can be offered.

The new airspace is mainly between FL155-FL275 hence the description of 'middle.' In addition there is a new airway, B71, eastbound between Honniley and Biggin at FL160, intersecting A47 at the FINMA reporting point (vaguely near Finmere).

You all want to know the frequencies. The new suite will operate 24 hours a day, and the existing London Upper Sector will now become a 24 hour operation. At quiet times, both will be combined on one frequency. New LMS frequencies are: West 132.45 and East 132.6MHz.

Writing from Hull, **Adrian Gant** wants to know if the Humberside a.t.i.s. on 124.125MHz has reduced its power. Nothing official has been promulgated, so perhaps someone with local knowledge could write in?

On a personal operational note, visitors (no more than four at a time) are welcome at my Museum by prior appointment and the contact telephone number is below. There is no admission charge. Unfortunately the subject does not lend itself to larger groups as the small equipment is too difficult to see from any distance and so I am not able to visit clubs to give talks.

The next three deadlines (for topical information) are February 10, March 16 and April 13. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 0181-958 5113 (before 2130 local please).

John Griffiths, c/o 22 Ffordd Beibio, Holyhead, Gwynedd, North Wales

Scanning

Maruhama RT-618 wide band scanning receiver.

This month I'm going to start off with a bit of personal news in response to the mail I get enquiring about it! Cheaper than stamps!

I'm now an ex-lifeboatman. I resigned from the crew at Trearddur Bay in December due to commitments here at college and my plans for completing another two years. In that time my 'place' would deny another person a chance at the station so the honourable thing to do was clear the vacancy. I would find it hard to leave Oxford to make a shout! Seriously, the academic time here added to the time away and also to my plans to change direction and possibly move - on qualifying - inland would all negate the status so, and with a great deal of thought, I decided to resign. That doesn't mean I lose interest in SAR comms, however! I imagine that will remain the same.

Also, note the new address on the column masthead - this should facilitate a faster turnaround. Any mail sent to the old address will be re-routed so don't worry about having sent any there if this is the case.

In December's 'Airband', Godfrey Manning gave useful information on SAR Comms allied to aircraft and touching on other co-opting services. He spoke about the helicopter winchmen - known as 'dope on a rope' by aircrew - and their difficulties in getting in close due to non-communication between winchman and pilot. The link here is the winch operator who watches the winchman under the machine and 'creeps' in according to hand signals from him, as well as advising the pilot as to distance. The hand signals are pretty basic, but also vital. Next time you watch a practice underway, watch for the signals from the winchman on the wire. Having worked with both SARTU - Search And Rescue Training Unit - and 'C' Flight of 22 Squadron out of RAF Valley I can testify that this operation is slick and extremely professional. The training unit practise daily, in a variety of weather conditions, and also carry out CAT boards - which are examinations for the aircrew. 22 Squadron also involve the lifeboat and if you think training looks pretty together then you want to see how professional the SAR squadron itself is!

I've worked with the veritable Wessex, the Puma and even a Chinook from the stern of boats and this reminds me of a training slot we did with a Puma that was in the area on an 'opportunity' basis. This machine is both agile and very deftly handled by her crew. In fact, we were so impressed by the aircrew and their session that, on finals, they thanked us for the opportunity and time and were requested to respray their machine in bright yellow! To the best of my knowledge I know of no user who has a Puma - or its variants - as a dedicated ASR machine but maybe someone out there can tell me differently?

Also, although the Chinook could be used on an emergency basis for ASR, I would not like to be underneath it when it came in! The downdraft from this beast is in the region of 120m.p.h. and it is fierce - take that as read from someone who has worked with them!

Which brings me neatly into a request to you now! I'd like to collect Emergency Service 'stickies' from rescue units of all sorts - civil and military - and, if you're involved and have any spare as 'freebies' then sending them on to me will assure them a good home! I do currently have one from the DGzRS - the German Lifeboat service - plus the RNLI ones but would like to mount many more. Wherever you are in the world - and the magazine gets around I know - if you do have any, or can get any, then consider giving them pride of place in a collection - mine!

Scanning News

A letter from **Theresa Donne** of Shipley asks for more information on radio sets carried by BR trains, in the cab-to-shore network. Well, first, the information that I have to hand is perhaps a bit sketchy but at least it will give you some idea of where to look.

196.900 through to 198.300MHz
204.900 through to 206.300MHz

These are reportedly cab/base radio links although I have not scanned for these at all! I do recall being allowed to see this set up in the rear of a Sprinter type train and was amazed to see just how simple they look. It is reported that they are also easy to use, being made as user-friendly as possible. The hand-set is a traditional telephone type, and antenna mounts are to the front and centre of the cab of the train. In actual practise I wonder if the network uses frequent repeaters, given the terrain used by trains as well as such obvious blackspots like tunnels. I would hazard a guess that the system is a very basic 'mobile' network, with repeaters situated at even distances, with a power output around the 25W r.f. mark, and also booster stations within tunnels and on bridges where reception would be less than perfect. I believe the radio network ties in with the internal BR 'phone network also which would make the system versatile indeed.

Theresa is, by the way, the first woman to write in to the column - so, congratulations! Shows scanning isn't an exclusively male preserve! I wonder if there are other women out there who scan. If so, why not drop me a line to even the imbalance?

David Jessop-Banks of Mildenhall writes and asks if I know the National Ambulance Codes he can hear over the air. I'm aware that a system is in use by certain services but don't know if it is standardised. It is 'colour' coded in the main, with some standard phrases used.

Green	Mobile, available.
White	Non-urgent.
Brown	Non-urgent.
Purple	Temporarily not breathing or dead.
Red	Emergency call.
Blue	Not breathing properly.
Planned Call	Booked but not urgent.
Urgent	With patient, but no lights or sirens.
'H'	EMT Required.
'X'	booking off duty.
Solo	Motorcycle unit.
M5	G-HEMS helio based London.
DA13	London Red Land Rover.
Medic 1-5	Medic aboard G-HEMS.
Medic	Doctor.

It is well to note that certain other services, such as RAF SAR Squadrons, Navy Rescue, and certain Police forces also have helicopters available that can, and have been, used to work in harmony with ambulance services nationwide. I would imagine that, if they carry a medic or paramedic from a medical service, then relay would be via their own control. It would seem unlikely that a 'standard' inter-agency code exists....but maybe you know different!

Communications between military and civilian services is not really aligned, although RAF and Navy helios do carry marine v.h.f. sets as standard fit. I have heard a rumour that Gwynedd Response Teams - Ambulance and Fire Brigades - will carry 156.000 (Channel Zero) - to facilitate co-ordination at marine emergencies for liaison with RAF SAR, HM Coastguard and RNLI units but this is just a rumour as yet. However, the November Whisky callsign as used by the North Wales Police helicopter is reported to be fitted with Marine v.h.f. that makes sense as part of their 'beat' would be coastline work.

From an emergency service point of view this makes sense as frequent co-option between services does go on and, of course, this would be beneficial for ensuring a common link with outfits like HMCG Cliff Rescue Teams when military aircraft are not available to them in a crisis situation. The Police often get heavily criticised over their use of helicopters but they have proved to be a godsend when military machines are tied up elsewhere. It is often forgotten that the Police are involved - but they do have other roles apart from the obvious one.

A letter from **Chris Wilks** of Glasgow asks the eternal question about which is the best scanner available. This is very general and one I am loathe to answer as I haven't a bias for a particular model myself. There are certain criteria I use to determine capability but this is viewed within the area I intend to use the set in. Some scanners are, obviously, superb kit all around while others fall short of being anywhere near perfect. However, having reviewed some sets for the magazine I would reiterate what I say in the reviews I do: Know your area of interest and go for that! In airband monitoring, sets for civ and mil portions perform extremely well as they are not broadband - i.e: built for full range coverage including short wave. Some sets are available for

pure marine v.h.f. work and these would outperform broadband sets easily. However, if you have a licence for a particular area - as I do for Marine v.h.f. - then it often makes more sense to buy a marine hand-held and use that for RX. Sometimes it is also cheaper too!

Having said that, there are sets on the market that I would say are brilliant in terms of function, price and ease of operation. Without being too biased, I would point Chris in the direction of a set like the Maruhama RT-618, which I reviewed late last year. This set was a doddle to operate, was pretty sensitive and also reasonably affordable. Against that advice I would pitch in with the following: You really do need to define the area you have an interest in and go for that first, going 'broadband' or general after. Let's face it: There aren't many of us who enjoy second-hand TV sound on a set when we can see the damned thing on our own monitors!

I do tend to prefer sets without short wave as it is a compromise in reality and no substitute for dedicated s.s.b. work below 30MHz. In fact, I find that my Sony ICF PRO-80 - which is now a bit long in the tooth - is really good below 108MHz though pretty much awful above that with its converter on. It certainly still holds its own against my AOR AR-2000 below 108MHz anyway! It is really 'horses for courses'. Again, Chris asks about things like antennas - and, again, my advice is to take things one step at a time. A hand-held scanner allows you a certain amount of freedom when scanning, as you can go /P or /M or even /MM with it which you would be limited in if you had a base set. If you are looking for permanent siting then by all means go for an external, roof-mounted antenna. It is a bit technical when you come to cables and the like but, as a general rule of thumb, the following applies.

Use low-loss, 50Ω cable (like RG58) on frequencies up to about 150MHz. UR-67 on frequencies between 150 and 400MHz. H-100 above 400MHz.

These are general, personal, recommendations and certainly not written in tablets of stone! Again, beware of claims from some manufacturers that an antenna can cover 150 to 1300MHz! Antennas can make a considerable difference to your set and it is really wise to solicit advice from a reputable dealer when buying one. I have seen antennas on sale at shows for figures like £20 - £40 that are no more than a capped plastics tube with a few haphazard turns of stainless steel wire inside and a PL259 connector on the base. Usually being sold by a man in a parka surrounded by CB sets who gives the impression he knows his stuff. Be careful! You do need to be aware that a radio - any radio - is only as good as its antenna and a good antenna can make tremendous differences to your reception.

You will also need to know some fundamentals if you intend to go under 30MHz. Things like an a.t.u. being needed for long wire, types of set-ups and so on - all freely available through the other columns in this magazine. My advice here is to stay above 30MHz with a scanner, and if you do want to go under that, then buy a dedicated s.w. receiver and put up an efficient antenna system at the best price you can afford. Scanning is really a v.h.f./u.h.f. hobby. Anything below 30MHz is dedicated to short wave listening and above 1300MHz to 'specialists' such as satellite lovers and the like.

With that, I'll shut it down for another month. This is second term time at college and busier than I expected! Write if you have any queries, mail will be forwarded on to me. In the meantime, good scanning. Until next month, 73.

Sony ICF Pro-80.

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

Info In Orbit

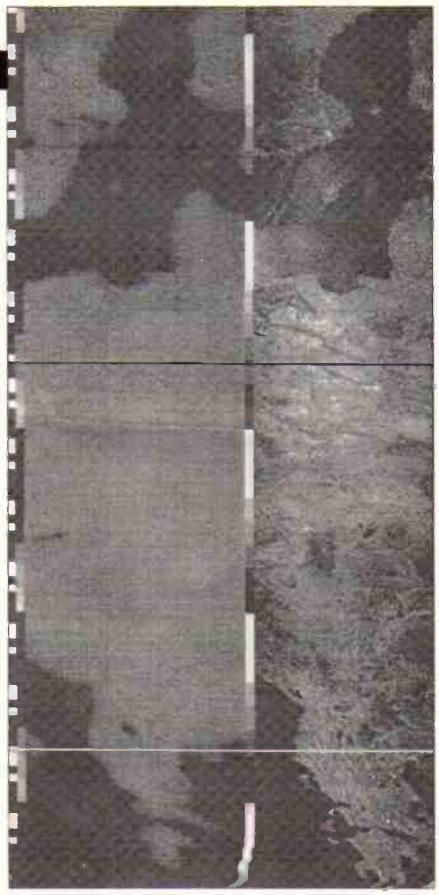


Fig. 1: OKEAN-4 24 November 1994 - L. Harris

I write this just before Christmas festivities get under way, but it will be published in late January when they are long since forgotten! I anticipate spending time sorting out the huge quantity of satellite/astronomy software that has come my way during the last 12 months, some of which I plan to make available for 'Info' readers. There have also been so many 'must keep' type of WXSAT images, that all of my disks are full! Two apparently good satellite tracking programs arrived, which I am determined to check thoroughly before issuing. NOAA-14 was finally launched on 30 December. Transmissions from its beacon on 137.77MHz, were received in Plymouth at 1252 the next day. Visible images were received from 1 January. Full details and pictures in the next edition.

A new option is now available for those requesting Kepler elements - sets of satellites that can be seen visually - impress your friends with your predictive capabilities! Check out the last section of this column for more details.

Current WXSATs

Eyes and ears have been waiting for the launch of NOAA-J (to be called NOAA-14 when orbit is achieved). It was scheduled for December 6, then 12 - see later item. Meanwhile, a limping METEOR 2-21, accompanied by a similarly ill NOAA-11, have continued transmissions. NOAA-10 was inactivated - my last log entry being on November 30, but it may have remained on, a day or two longer.

Only NOAAs 9 and 12 have provided reliable transmissions during recent weeks. METEOSAT-5 is operating the schedule started on October 18, and this provides us with regular pictures from its own scanners, together with selections from METEOSAT-3 (positioned over the east coast of America), and from GMS-4 (positioned near Australia). Not bad for those who only monitor METEOSAT.

OKEAN-4 (1-07), the latest in the OKEAN series of CIS oceanographic satellites, has provided fairly regular transmissions on most easterly passes, during the evening. I received some remarkable pictures as it passed southbound over Europe - radar images stretching for hundreds of miles - see **Fig. 1**, etc.

NOAA-J (14)

NOAA-14 was finally launched on 30 December. Transmissions from it's beacon on 137.77MHz, were received in Plymouth at 1252 the next day. Visible images were received from 1 January. Full details and pictures in the next edition.

A new option is now available for those requesting Kepler elements - sets of satellites that can be seen visually - impress your friends with your predictive capabilities! Check out the last section of this column for more details.

NOAA-J is a joint project of NASA, NOAA (National Oceanic and Atmospheric Administration), and the US Air Force. Launch is from Vandenberg Air Force Base, California, aboard an Atlas-E vehicle, and there is a 10-minute launch window! The 1712kg spacecraft will be launched into a 870km orbit, having an inclination to the equator of 98.86°. The new satellite circles the earth every 102 minutes, passing over the North and South Poles on each orbit of the planet.

Like other NOAA satellites, NOAA-J carries equipment to collect meteorological data, and transmits this information directly to users around the world, to enhance local weather analysis and forecasting. In addition, the satellite data are used for hurricane tracking and warning, for agricultural, commercial fishing, forestry, maritime and other industrial uses.

The satellite, to be known as NOAA-14 in orbit, carries seven scientific instruments, and two for Search and Rescue (SAR). Scientific instruments include the Advanced Very High Resolution Radiometer (AVHRR); the Solar Backscatter Ultraviolet Spectral Radiometer Mod 2 (SBUV/2); a suite of three sounding instruments, consisting of the Stratospheric Sounding Unit (SSU), the High Resolution Infrared Radiation Sounder (HIRS/2I), and the Microwave Sounding Unit (MSU); the Space Environment Monitor (SEM) and Data Collection System (DCS).

The AVHRR, built by ITT, is a scanning radiometer used for remotely determining cloud cover and surface temperature. The SBUV/2, built by Ball Aerospace, is a spectral-scanning radiometer, used for measuring solar irradiance and backscattered solar energy.

The SSU, built by Matra Marconi in Great Britain, will make temperature measurements in the upper atmosphere. The HIRS/2I, built by ITT, detects and measures energy emitted by the atmosphere, to construct vertical temperature profiles from the Earth's surface to an altitude of 40km. The MSU, built by NASA's Jet Propulsion Laboratory, Pasadena, California, detects and measures microwave energy . This, like a conventional radar system, allows it to see through clouds to the Earth's surface. Measurements are made from the troposphere to construct atmospheric vertical profiles to an altitude of 20km.

The SEM is a multi-channel, charged-particle spectrometer that measures the contents of the earth's radiation belts and the particle precipitation phenomena resulting from solar activity. The SEM was built by LORAL (Ford-Philco)/NOAA Space Environment Laboratory.

The DCS, built by Serge Desault of France, collects relevant data from buoys, free-floating balloons and remote weather stations and retransmits the information to ground stations, which send it to Centre National d'Etude Spatials (the French space agency, CNES) central processing facility in France where processing is completed. From there, it is distributed to users and stored on magnetic tape for archival purposes.

The SAR equipment is part of an international search and rescue humanitarian program, known as COSPAS/SARSAT, operated by Canada, France, Russia and the United States. Since September 1982, the program has saved more than 3900 lives. The SAR instruments onboard are the Search and Rescue Repeater (SARR), built in Canada by SPAR, and the Search and Rescue Processor with Memory, built in France by Serge Desault.

NOAA-J joins four other NOAA satellites in polar orbit. NOAA-9 was launched in December 1984; NOAA-10 in September 1986 (recently switched off); NOAA-11, launched in September 1988, and now faulty, and NOAA-12, launched in May 1991.

NOAA-11 was the primary operational afternoon satellite, though its a.p.t. imagery has been unusable for some weeks; NOAA-12 is the primary operational morning satellite. NOAA-J is scheduled to replace NOAA-11 as the primary afternoon satellite. NOAA-13, launched in August 1993, suffered a power failure 12 days after launch, and all attempts to command the spacecraft have been unsuccessful.

The NOAA-J spacecraft was built by Martin Marietta/Astro Space, Princeton, New Jersey. NASA's Goddard Space Flight Center, Greenbelt, is responsible for the construction, integration and launch of the satellite. Operational control of the spacecraft moves to NOAA after it is checked out in orbit.

The Atlas-E launch vehicle was built by General Dynamics (recently acquired by Martin Marietta). The US Air Force manages the Atlas-E program and the Vandenberg Air

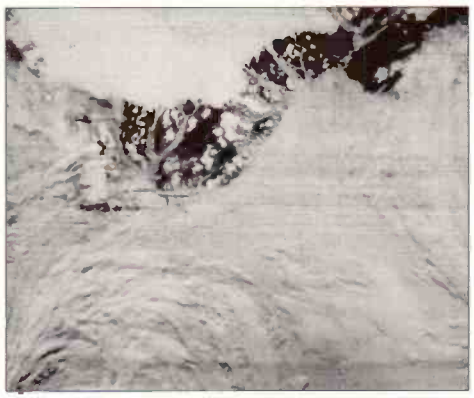


Fig. 2: METEOR 3-5 mid-July from Jim and Hilda Richardson.

Fig. 3: METEOR 3-5 image from W A Wilkinson.

Force Base support efforts.

Thanks to NASA and its associated BBS service for providing this information.

Pictures and Letters

I'm including one of my own this month - an OKEAN-4 (1-07) recorded on November 24, during a south-bound pass from the Gulf of Bothnia, down across Europe, where I lost the signal just south of Greece. My original image shows high resolution from the on-board radar scanner - the right-hand image. OKEAN data often contains high resolution imagery, covering a relatively narrow swath of land; consequently, to produce one continuous picture, I had to resort to 'joining' three OKEAN images. The original pictures were converted to PCX format, loaded into Word-6 (word processor) where each picture was unseemlessly welded! (Even better results can be obtained using bit map editing software - ed.) A few minutes after collecting this picture, I collected a D2 (Europe) format from METEOSAT, to allow comparison with the radar.

Two particularly intriguing pictures came from **Jim** and **Hilda Richardson** who, from their home in Strathkinness, Fife, recorded images from METEOR 3-5 in mid-July. Mount Forel, **Fig. 2** on the south-east corner of Greenland. Unfortunately, my atlas does not show this area in sufficient detail. Jim and Hilda point out the dark patch seen near the edge, and wonder about its nature.

W A Wilkinson G3XJI uses a Cirkit receiver, fed by a turnstile dipole. He built Tom Woolner's interface, published in the October edition, to connect the receiver to his 386SX computer, running JVFAX v7. Using this set-up he received an image from METEOR 3-5 showing a storm off the Libyan coast, as annotated on the picture - **Fig. 3.**

Virus Checks

I have despatched disks to readers throughout the UK and abroad for some months. Last November, a reader wrote saying that there had been a virus on the disk that he received from me. That would be somewhat surprising! When I receive software, either through the post or downloaded from a remote Bulletin Board System, I use two virus checkers. The first is the DOS Microsoft Antivirus program (MSAV), included with the DOS 6.2 operating system; the second is a respected shareware program. Checks are performed regularly, and I have yet to find evidence of any virus.

Decoding Kepler Elements

The number of postbag requests for Kepler elements is amazing - I receive more mail on this topic than anything else. The options provided at the end of the column will be seen to change as new ideas occur.

Many readers have sent queries concerning identification of the parameters used in NASA 2-line Kepler elements, so here is a breakdown of them. Element sets are issued every few days, in the form of a set of three lines, the first containing the formal name of the satellite, the remaining two containing orbital data. Elements are published on the NASA Bulletin Board, for which four telephone numbers are available: (301)306-0010, 0011, 0012 and 0013 - all preceded by the normal international dialling code for the USA. Connection is an initially lengthy process and there seems little reason for UK users to use this source, unless they have free access to the USA telephone network. All this data is available from sources within Britain, even if slightly later. NASA users are given a password (it would not be difficult to 'hack' into mine!), which can be changed.

This example uses WXSAT NOAA-9 elements set, as issued in early December.

NOAA 9
1#15427U#84123A###94339.80935206##.00000100##00000-0##76726-4#0###532

2#15427##99.0291##32.1095#0015811##94.2497#266.0478#14.13666285514502

Both lines contain 69 characters, including spaces (indicated by the # symbol).

Line 1 (discounting the line number) starts with the catalogue number assigned to the satellite - 15427 for NOAA-9. The second group (84123A in this example) refers to launch year (84 means 1984) and orbital part number (-123A). These first groups of figures have no bearing on the current position of the satellite, so some data included in elements is not required by tracking program software. This has confused some newcomers who expected to enter every parameter into their program.

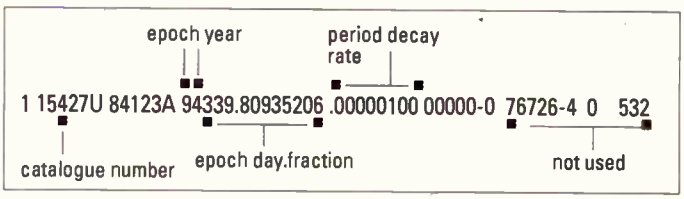
The next group of figures include the exact date and time when the position of the satellite was measured - the Epoch. The first five figures (94339) identify the year (94 means 1994), and the day number (339) - where counting starts on 1 January (day 001). December 31st is day 365 or 366. The decimal part is that of the relevant 24 hour period - so decimal '.5' would mean 1200UTC. Some programs require entry of time in 24 hour notation (hours, minutes and seconds), in which case one must convert the decimal into hours and minutes.

The group immediately following the Epoch is the decay rate, expressed here in the form 0.000001. Some programs require data to be entered in the form $1x10^{-6}$, a simple mathematical manipulation.

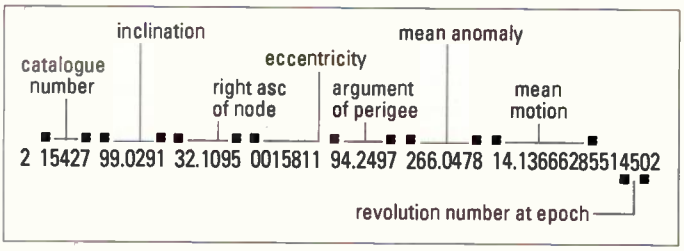
Decay rate is arguably an arbitrary parameter. It measures the instantaneous, combined effect of all perturbing forces - whether caused by the atmosphere or the Moon! Each effect is temporary, and changes in magnitude. Consequently, don't worry about some programs not requesting it! Predictably, low orbiting satellites, such as OKEAN-4 (1-07), have higher decay rates than METEOR WXSATs. Cumulative errors result in predictions gradually losing accuracy with the passage of time.

The remaining groups are not used in most calculations; they include the type of ephemeris and the element set number. The final figure is a line checksum, calculated by an algorithm which uses each parameter and produces a one figure number - this last digit. It helps to maintain data integrity during transmission - possible data corruption being indicated by a checksum error. That covers line 1 parameters.

Summarising Line 1



Summarising Line 2



Line 2 starts with confirmation of the satellite catalogue number - useful where data lines get corrupted during transmissions. The next parameter gives orbital inclination - an immediate indication of whether the satellite can ever be monitored from Britain. Inclinations above 50° mean that the satellite passes high over Britain at some time during its orbits. Shuttle launches having inclinations of 28° cannot pass over the UK.

The next parameter is RAAN - Right Ascension of Ascending Node, followed by Eccentricity. No decimal point is shown for eccentricity - it is assumed, and goes in front of the number, so that shown for NOAA-9 would be entered as 0.0015811.

Parameters Argument of Perigee and Mean Anomaly follow. The final figure is a combination of several parameters. The first sequence is the Mean Motion (MM), given to 8 decimal places. This is the number of orbits per 24 hour period, and indicates how high the satellite is orbiting (MM is 1.0 for geostationary satellites, and about 15 for MIR). Low orbits suffer increased orbital decay, due to the effect of friction caused by the presence of a tenuous atmosphere at low orbital heights. A MM figure above 15 (e.g., a Shuttle) suggests that using a parameter for decay rate could produce more accurate tracking results. Consequently, if you use elements showing a high Mean Motion (more orbits per day, therefore lower orbital height), and the Epoch is over 14 - 20 days old, you can expect the resulting predictions to be astray by at least a few minutes. Shuttle elements are normally only useful for up to 24 hours, mainly due to atmospheric drag and manoeuvres.

Later figures in this group identify the actual orbit number (revolution number) at the time of the Epoch. The final figure is a checksum.

Future Launches

The fifth in the series of Japanese geostationary weather satellites - GMS-5 - is scheduled for launch on 1 February 1995. The series of METEOSAT pictures re-transmitted on channel A2, labelled GMSA, B, C and D, are currently from GMS-4. We can anticipate a change of source.

Early February (2) sees the launch of STS (Shuttle)-63.

Kepler Elements

See last month for details.

Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAA 12 on 137.50MH; NOAA beacons on 136.77 and 137.77MHz; METEORs use 137.30, 137.40 and 137.85MHz and OKEAN-4 is 137.40MHz for many eastern passes.

Timestep

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

If you really are serious about Weather Satellites, phone or write us now for a colour catalogue and find out why the world's experts including Arthur C. Clarke use and recommend our equipment.

Advanced Weather Satellite users will by now have read about our new **TRACK II** prediction software. Full screen colour graphics and 6 simultaneous satellites are just some of the amazing features. For the ultimate in detail we offer **HRPT** digital systems with five 1.1km ground sensors, towns and rivers are clearly visible. For everyday use we also have the **PDUS** digital Meteosat system that takes 2.5km data every 30 minutes. Timestep **PDUS** colour animate is used several times a day by Anglia Television because of its very high resolution combined with spectacular colour. Forecasters will appreciate temperature calibrated 30 minute interval images.

A full range of separate Antennas, Preamplifiers, Cables, Receivers and accessories are held in stock.

Timestep PO Box 2001 Newmarket CB8 8QA England
Tel: 01440 820040 Fax: 01440 820281

NEW FROM PHOTAVIA PRESS PUBLISHERS OF AIRWAVES 94

CALLSIGN 95

The civil section lists alphabetically, 2800 callsigns in current use with airlines, handling agents, governments and other operators, from over 180 countries. The information includes, CALLSIGN, 3 LETTER ATC PREFIX, AIRLINE OR OPERATOR AND COUNTRY OF ORIGIN

The Military section contains over 5000 current and historical tactical callsigns, noted over the past decade. Information includes, CALLSIGN, AIRCRAFT TYPE, AIR-ARM, CODE, UNIT or SQUADRON, BASE plus other relevant information.

The military section not only lists aircraft callsigns, but also COMMAND POSTS, GROUND STATIONS and other military related base stations. There is also details of RAF three letter Tri-graph callsigns, and for certain callsigns a numeric analysis relating to specific types, units and aircraft.

CALLSIGN 95 AVAILABLE NOW / UK £7 - 95 / EIRE & EEC £8 - 95

AIRWAVES 94

Thousands of VHF / UHF airband frequencies. Tower, Approach, Radar, Ground, ATIS, Area Radar, Ranges, Ground Ops, Tactical Radar, Airline Operations, Air Refuelling, Aerobatic Teams, European Area Radar, Stud Numbers, SSR Squawk Codes, Volmet, Air to Air, Squadron Operations, Military Area Radar, Space Shuttle, Metro, Air / Ground.

Lists the current and proposed LONDON CONTROL frequency changes 1994 / 95.

Plus a comprehensive directory of the worlds CIVIL and MILITARY HF communications, including many discrete frequencies. Major World Air Routes, Airlines, LDOC, USAF Global, RAF, Space Shuttle, USN, Volmet, Mystic Star, Domestic HF, NASA, Royal Navy, USCG, Giant Talk, Etc. AIRWAVES 94 is supplied from us with an update sheet.

AIRWAVES 94 / PRICE £7 - 95 UK / £8 - 95 EIRE & EEC

ALL PRICES INCLUDE P & P - CHEQUES & P / O PAYABLE TO

PHOTAVIA PRESS

21 DOWNLANDS - PULBOROUGH - WEST SUSSEX - RH20 2DQ

SERVICE MANUALS

We have what is probably the largest range of Service Information available anywhere. From the Earliest Valve Wireless to the Latest Video Recorders, Colour Televisions, Test Gear, Audio, Computers, Amateur Radio in fact practically anything. Write, Fax or Phone for immediate Quote. Originals or Photostats as available.

Also available. Our FREE catalogue detailing Hundreds of Technical Books and Repair Guides available.

STOP PRESS Now Available. Our Service Manuals Index on P.C. Disc (3.5") for use on your Computer. Just £3.50 with FREE everlasting Updates. Order MP-285.

MAURITRON TECHNICAL SERVICES PW
8 Cherry Tree Close, Chinnor, Oxford OX9 4QY
Tel:- (01844) 351694 Fax:- (01844) 352554

Please forward your latest catalogue for which I enclose 2 x 1st Class Stamps or £3.50 for the Technical Books Catalogue plus Manuals Index on PC Disc(s).

NAME _____

ADDRESS _____

_____

_____

_____ **POSTCODE** _____

Photocopy this coupon if you do not wish to cut the magazine

SCANMASTER TIMEWAVE LOWE MODEMASTER JPS AOR TRIDENT YUPITERU BEARCAT YAESU MARUHAMA SCANMASTER TIMEWAVE LOWE MODEMASTER JPS AOR

SATELLITE & SC

AT SATELLITE & SOUND 2000 WE PRIDE OURSELVES ON OFFERING A 24 HOUR DELIVERY, EXPERT ADVICE AND ABOVE ALL THE LOWEST UK PRICE PROMISE WE WILL MATCH AND USUALLY BEAT ANY COMPETITORS PRICE. WE HAVE A LARGE SHOWROOM WITH FULL DEMONSTRATION FACILITIES. PART EXCHANGE IS WELCOME ON ALL GOOD QUALITY EQUIPMENT. WE ARE ALSO THE UK'S LARGEST SATELLITE TELEVISION DISTRIBUTOR AGAIN OFFERING THE LOWEST UK PRICE.

NOTICE

WE ARE ALWAYS MORE THAN HAPPY TO TALK TO ANYONE ABOUT ANY QUERIES THEY MAY HAVE. WE WILL ALWAYS BE GLAD TO TALK DEALS IF ANYONE OUT THERE HAS A UNIT THEY WISH TO PX OR SELL FOR A BETTER ONE.
CALL US!!

YUPITERU

MVT 7100	£329
MVT 7000	£265
MVT 8000	£340
MVT 225	£245
MVT 125	£185
Case for 7000/7100	£17
Replacement Antenna	£17

AOR

AR 3000 Plus	£935
AR 3000A	£845
AR 8000	£415
AR 3030	£659
AR 2000	£275
AR 1500EX	£314

BEARCAT

220 XLT	£199
65 XLT	£99
890 XLT	£299
2500 XLT	£299

TRIDENT

TR 2400	£369
TR 1200	£299
TR 980	£249

MARUHAMA

RT 618	£299

DRAKE

R8E	£990
SW8	£585
Speaker	£49.95
Software	£59.95
VHF convertor	£225

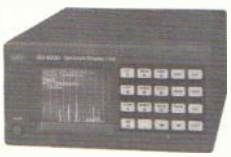
REVEX

HX 7000	£20
HX 9000	£29

HAVE YOU FOUND A BETTER PRICE??
CALL US NOW!!

NEW

AOR 3000A PLUS
Phone for full details
Available NOW!!!



AOR SDU 5000
Spectrum display unit
£695

AOR *3000A upgrade to 3000 plus, phone for details*

AOR 8000
The ultimate Handheld scanner
£415

AOR 3030
HF Receiver
£659

NEW 4th edition Scanning Dir
£16.95

Scanners 3 Peter Rouse
£9.95

YUPITERU MVT7100 AM/FM/SSB
£329

Drake R8E
HF, Twin UFO
£965

Drake SW8
HF/VHF portable
£585

Yaesu FRG 100
HF Base
£449

Sky Scan Magmount
£24

Sky Scan V1300
£49

Sky Scan Desktop
£49

Double Discone
£59

Scan-master Base
£39

Timewave DSP9 V.2
£189

Timewave DSP9 +
£239

LOVE IS

SCANMASTER

Base	£39
Discone	£49
Double Discone	£59
Mobile	£29

TIMEWAVE

DSP 9 V.2	£185
DSP 9 +	£235
DSP 59 +	£295

LOWE

HF 150	£389
IF 150	£39
PR 150	£195
HF 225	£475
SP 150	£POA

SCANMASTER

Desk stand	£19.95
Mobile mount	£9.95
SP55 Pre amp	£69.95
GW2 Pre amp	£59.95
PSU 101 IV	£29.50

MODEMASTER

Modemaster 2	£139

JPS

JPS NTR1	£199
JPS NRF7	£279
JPS NR10	£399

AOR Extras

CU 8232	£80
8000 case	£17
2000 case	£6
DA900	£9.85
WA1500	£5.75
DC2000	£4
CR400	£13.75
MM1	£13.50
BP800	£18
WA7000	£139
DA3000	£79

BARGAIN BUYS

We have a massive stock of 2nd Hand equipment which is constantly changing

Yaesu FT290	£325
Linear for above	£69
Alinco DJX1	£195
Icom 7100	£699
Kenwood R5000	£699

CALL TODAY

Treat your loved one this Valentines day to a gift wrapped book, aerial scanner or anything else they might like!!! (orders for gift wrapped delivery must be in by 8th February for delivery on Valentines day!!!

)UND 2000 LTD

ESSENTIALLY FOR YOU . . . IN FEBRUARY 1995

BEGINNERS INDEX

We have dedicated this page to the beginners out there.
We hope that we will be able to assist new radio enthusiasts in making the right decision for their first time buy.
No start in the amateur radio world is cheap so talk to us and get it right first time. We offer good starting units and we are happy to discuss part exchanging with the more experienced which obviously leaves us with used scanners at unbelieveably excellent prices to get you started!!!!!!!!!!!!!!

BEARCAT 220 XLT

This handheld scanner is highly rated for a first time user boasting modest specifications such as 200 programmable channels, 10 bands including aircraft, a re-chargeable battery pack giving 12 hours listening, turbo scan and turbo search to find that channel quicker and a good facility of channel hopping to get to the favourite ones quicker. It's down side tends to be that there are only 200 channels and does not have the SSB (Single Side Band) for short wave reception. There is no continuous coverage, ie. there are gaps in frequency.
Studio rating = £ Good value for money. 3 stars ***£199.00***

YUPITERU MVT 7000

This unit is a very popular middle purchase with frequency coverage from 8-1300MHz, 200 channel memory with super wide band coverage. The frequency is continous and has no gaps therefore giving complete coverage. The facility of light for the screen when dark is very popular, high speed search function and 3 way power system. This unit is far more sensitive and pulls in the weaker stations dependant on your location.
Studio rating = £ Very good value, easy to use. 4 stars ***£265.00***

YUPITERU MVT 7100

This unit has to be one of the most user friendly on the market today. With a 1000 channel memory facility you have a wealth of choices to listen, again with high speed search function takes the waiting away and also has a scanning function. This enables the receiver to auto stop when picking up a signal. A multi-function display. 12 frequency steps can be selected. Various control functions, tuning dial, pass memory function, key illumination and many more facilities. Whether an expert or beginner you will not go wrong with this one!
Studio rating = £ Excellent, see it to believe. 5 stars ***£329.00***

ALL THE ABOVE HAND HELDS COME WITH CAR CHARGER (EXCEPT BEARCAT), HAND STRAP, CHARGER, BELT CLIP, NI-CADS AND ARE ALL UK SPEC AND NOT GREY IMPORTS.

NEXT MONTH IN "ESSENTIALLY FOR YOU. . . MARCH '95"

"HANDY HINTS ON CHOOSING YOUR HF RECEIVER"

01480 470771

01480 471001

SCANMASTER TIMEWAVE LOWE MODEMASTER JPS AOR TRIDENT YUPITERU BEARCAT YAESU MARUHAMA SCANMASTER TIMEWAVE LOWE MODEMASTER JPS AOR

FAX: 01480 470771
TELEPHONE HOT LINE
01480 471001

NEXT DAY COURIER SERVICE

CHEQUES CASH

Access VISA SWITCH

IN A HURRY?
CREDIT CARD HOLDERS

Showroom
Unit 1,
86 Cambridge Street
St. Neots,
Cambridgeshire
PE19 1PJ

Mike Richards G4WNC, PO Box 1863, Ringwood, Hants BH24 3XD. Compuserve: 100411,3444: Internet Mike@decode.demon.co.uk

Decode

All the Data Modes

Continuing with my explanations of the complex modes this month we'll take a look at the ARQ-E and ARQ-E3 systems. Once you get beyond the basic data modes like RTTY, FAX, c.w. and SITOR, the two systems described here are probably the most common on the h.f. bands. To receive these modes you will usually need one of the more sophisticated decoders such as the Wavecom or Universal range advertised in *Short Wave Magazine*.

Let's now get down to business and see what the mode achieves and how it works. The service provided by ARQ-E and E3 is a full duplex data link operating at baud rates between 48 and 192 baud. In simple terms, this means you can communicate in both directions at the same time, much like a telephone conversation. The alternative to duplex is simplex operation, which is that used for most speech links such as taxis, emergency services , etc. This is where you need to keep handing control of the link from base to remote station and vice versa. The other important facility offered by ARQ-E and E3 is automatic error detection and correction. As we will see later, this is not fool-proof, but has proven to be extremely effective under the difficult conditions encountered on the h.f. bands.

If you've already spent some time looking at the data modes, you will have noticed that they all tend to use their own telegraph alphabet. If you're new to the technicalities of decoding, I'll just run through the purpose of the alphabet again. If we start by accepting that most data links are used to communicate messages in plain text, you will see that we need a way of changing characters of the message into a format that can be handled electronically. Because computers can only deal with numbers, we use a straightforward look-up table to convert any letter to a number. As a further complication the number needs to be in a binary format as this is the only type of number a computer can handle. This table shows a range of conventional (decimal) numbers and their binary counterparts.

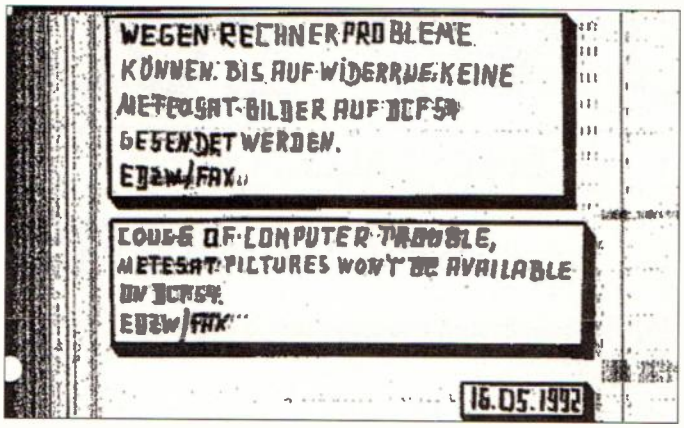
Decimal	Binary
1	1
2	10
3	11
4	100
5	101
6	110
7	111

As you can see, binary numbers are made up from just ones and zeros. When we send these over a radio link we send them as serial data. This means we send just one digit at a time and collect them together at the distant end. The method of sending these numbers over a radio link is also very simple as all we do is use two closely spaced frequencies. The difference between these frequencies is called the shift and is typically around 400Hz. In practice we send the lower of these two frequencies to indicate the digit 1 and the higher frequency for a zero - simple isn't it?

Returning to alphabets, the most common is that used for RTTY signals. This is known as the International Telegraph Alphabet No 2 or, more conveniently, ITA2. In this alphabet each letter of the alphabet is represented by a five digit binary code. If you're mathematically inclined, you will note that five digits doesn't provide enough combinations to cover the letters of the alphabet plus numbers and basic punctuation. This is overcome by the use of a shift character that gives all the codes a second meaning so virtually doubling the number of combinations. Here's a few examples of letters and their respective ITA 2 code along with the codes used for ARQ-E and ARQ-E3.

Letter	ITA2	CodeARQ-E	ARQ-E3
A	11000	0110001	0011010
B	10011	0100110	0011001
C	01110	0011100	1001100
D	10010	0100101	0011100

You can see that the main difference between ITA2 and the ARQ-E modes is the use of seven digit codes. Let's start with ARQ-E and see how the code is constructed. The observant amongst you will have noticed that the middle five digits of the ARQ-E code are the same as the ITA2 code. This is no accident as it was designed this way. All the characters of the ARQ-E code are preceded by a 0 to mark the number as part of the ITA2 code. The only numbers that are sent with a 1 at the front are the three control signals which are alpha, beta and signal repetition. The last digit in the code is called a parity bit and is automatically added to make sure that the number representing each character always contains an odd number of 1s. Although this may sound an odd thing to want to do, it actually forms the key to the error detection system. Because every number should contain an odd number of 1s the receiving station can reject any number that doesn't conform to this format.



Fax received by George Newport.

Whilst identifying a corrupt number is all well and good, what we really need is to be able to ask for the errant character to be sent again so we can rebuild the message accurately. This is where one of the control characters I mentioned plays an important role. The signal repetition or repeat request character is sent by the receiving station whenever an error is detected. This causes the transmitting station to resend the last three or seven characters, depending on the type of link being used. This process will continue until a complete message has been successfully received.

The weakness with this system is that it only checks for an odd number of 1s in each number. If a message had been corrupted by noise but still contained an odd number of 1s the system would not detect the error. Despite this apparent weakness, the system actually works extremely well with acceptably low error rates.

The ARQ-E3 system is very similar except that the ITA3 alphabet uses a different error detection system. In this case the receiver checks each incoming number to make sure it has three 1s and four 0s. Although this is a more robust detection system, it can still be fooled.

Next we need to look at the alpha and beta control characters that are present in both ARQ-E and E3. An important difference between RTTY and the ARQ modes is the use of synchronous transmission as opposed to the asynchronous mode used for RTTY.

So, what's the difference? Well, each element of an asynchronous signal is completely self contained with its own start and stop bits added at the start and end of each character. Because of this the transmitter rests on the lower of the two transmit frequencies in between characters. This is one of the characteristics that can be used to identify a RTTY signal as the pause on a single tone is almost exclusive to RTTY. The synchronous signal used for ARQ differs in that during periods of no traffic, data still has to be sent to keep the transmitter and receiver synchronised. This is achieved using the alpha and beta control characters. One of the great advantages of this system is that you can establish the reliability of the link before trying to send your message. All you have to do is monitor the repeat requests as this still occurs even when sending the alpha and beta control characters.

Most of the more sophisticated communication links have these statistics built-in In a large network of ARQ links you will find that the routing of the traffic is handled automatically with the control software monitoring a number of links on different frequencies and automatically sending the traffic to the link with the lowest error rate.

That concludes this basic outline of the most common of the ARQ modes. If you would like to try your hand at reception or just listen to a signal, try the following frequencies.

6.8475MHz, ARQ-E, 72 baud, French Forces
6.9017MHz, ARQ-E, 192 baud, French Forces
13.3755MHz, ARQ-E, 96 baud, MFA Budapest
14.44MHz, ARQ-E3, 100 baud. French Forces

Radioteletype Code Manual

The *Radioteletype Code Manual* by Joerg Klingenfuss is a vital reference for all who want to know more about the workings of a wide range of data modes. Although the book has been around for many years it's been gradually developed and enhanced and warrants a fresh review. The book is presented in the usual Klingenfuss style measuring 170 x 241mm and running to 170 pages. All the sections are very well indexed making it very quick and easy to find a particular transmission system.

The first four or five sections cover some of the basics of data transmission, with items on propagation, modulation systems and error protection techniques. Included within this section was a very useful cross reference from

baud rate to transmission type. This is particularly handy if you have a decoder with a speed measurement facility. All you have to do is measure the baud rate of the signal in question and then look through the chart to find the most likely transmission type. It won't always give you the precise transmission system, but it is certainly very effective for narrowing down the options.

Next comes a detailed breakdown of the standard RTTY alphabets with a good comparative chart to show the differences between the various systems. This section also includes a few handy flow charts to show exactly how the alphabets are used. Next comes an 82 page section detailing a wide range of non-standard RTTY alphabets including, Arabic, Cyrillic, Hebrew, Third shift Cyrillic, Greek, Korean, Amharic, Thai, 6-element Japanese, four-shift ATU-80 Arabic and Chinese. The Arabic section was particularly comprehensive with a special section giving translations enabling the decoding of Arabic text using a standard (Latin) decoder. Here's a few examples to show you how it works:

AKBF' = press
BCYB = Iran
BWFYCDC! = Africa
BWNIB? = news

This ingenious system provides a double conversion from Arabic text and language through to English. If you're into decoding Arabic news items this section alone justifies the cost of the book.

SITOR was next to come under the microscope with a 19-page section dedicated to a detailed explanation of this mode. Not only was the basic mode explained, but there was plenty of detail of the procedural use of typical SITOR links including selcalls.

The remainder of the book provided individual analysis of what have become known as the complex modes. Included here are: ALIS, ARQ-E, ARQ-E3, ARQ-M, ARQ-N, ARQ-6, ARTOR, AUTOSPEC, CIS, Clover, COQUELET, DUR-ARQ, FEC-A, G-TOR, HC-ARQ, HNG-FEC, Packet, PACTOR, Piccolo, POL-ARQ, RAC-ARQ, RUM-FEC, SI-ARQ, SI-FEC, SPREAD, SWED-ARQ and TWINPLEX. Coverage of each of these modes was aimed at those with some basic communications knowledge and there were plenty of spectrum analyser pics and a number of flow charts to help clarify understanding.

The final sections of the book were devoted to explanations of a number of Morse alphabets and a feature on cryptology.

As just about the only single publication providing technical details of most utility modes, the *Radioteletype Code Manual* 12th Edition is worth its weight in gold. Although the beginner will find the book interesting, it really comes into its own when you have acquired a basic understanding of data communications - I wouldn't be without it! If you would like a copy the *Short Wave Magazine* Book Service can oblige and the current price is £11.00 +P&P My thanks to Joerg Klingenfuss for supplying the review copy. (See page 26 for a special offer of £8.50 for this month Ed)

Guide to Utility Stations

In case you haven't already noticed, the new 1995 edition of *Guide to Utility Stations* is now available. As usual, the main frequency list has been completely updated following intensive monitoring throughout the year. One interesting new development for the detectives among you is the inclusion of a list of unidentified signals. Against each frequency is the measured baud rate plus any other information that may have been established.

Other than the main frequency list itself, my particular favourites are the FAX schedules and the chronological list of press stations.

An interesting development for this year is the release of the main frequency list on 3.5in computer disk. The information can be retrieved using standard database programs such as dBase, Exel, FoxPro, etc. The price is 150DM inclusive of post and packing.

Whilst the main Guide can be supplied by the *Short Wave Magazine* Book Service, you will need to contact Joerg Klingenfuss direct for the frequency list database; Klingenfuss Publications, Hagenloher Str. 14, D-72070 Tuebingen, Germany. Tel: +49 7071 62830.

New Mode?

Mike from Bath has written with details of a new transmission mode that has yet to be identified. The new mode bears a lot of similarities to 250 baud, 850Hz shift ARTRAC (DUP-ARQ) but defies complete analysis. Mike has found these transmissions on the following frequencies:

12.192, 14.802, 7.753, 9.172, 9.182 and 13.937MHz.

Mike has been in contact with various people to find more details, but the best success to date has been to decode it as DUP-ARQ. The only problem being that most systems handle the first six characters OK but leave the rest as white spaces. The best guess so far is that this is a new network being set-up for a Norwegian service. If any of you have any more details I'd be pleased to hear from you.

Mike also asks if anyone can help out with another mystery signal that uses 288 baud ARQ-E and 100 baud RTTY. The station uses the fictitious callsigns C37A and 6XM8 and can be found on the following frequencies; 9.208, 16.311,13.072, 13.418 & 16.311MHz. If you have any details please write or E-mail to me using the address at the top of the column.

Internet Software Sites

As more and more people join the Internet I'm receiving details of good sites for radio related information. The latest compilation has been supplied by the following readers, **Nidge Jones**, **Fred Groeton**, **Jan Nieuwenhuis**, **Sandy Saunders** and **Graham Taylor**.

File Transfer Protocol (FTP) Sites:
FTP. demon.co.uk/pub/ham
FTP.ucsd.edu/hamradio
wb3ffv1.sed.csc.com/
scitsc.wlv.ac.uk/pub/hamradio
(Wolverhampton University)

World Wide Web (WWW) Sites:
http://itre.uncecs.edu/radio/
(shortwave radio catalogue)
http://www.mcc.ac.uk/OtherPages/AmateurRadio.hmtl

If you know of any other good sites please E-mail the details.

Special Offers

Over the past year I have built-up a series of FactPacks and software systems designed to help utility listeners get the most from the hobby. It also provides a way of extending the column into areas I couldn't hope to cover in a regular two page slot. The following list shows the range of items available. As this is strictly a part-time operation please be patient with my replies - I try to turn everything around within a week but this isn't always possible - especially when the printer gives trouble as happened recently!

FactPack 3 - Starting-Out guides the new utility listener through the various decisions that have to be made regarding the choice of receiver, decoder, antenna and popular accessories. In addition to basic set-ups, the guide covers the more advanced station for those that prefer to start further up the market.

FactPack 4 - HAMCOMM/JVFAX Primer has been written to provide a step-by-step introduction to receiving your first RTTY and FAX signal using these popular programs. The FactPack covers installing the software as well as hints on how to set the configuration to match your computer and receiver.

Other offers available are: JVFAX 7, HAMCOMM 3, Day Watson Beginners List, Decode List, Complex Modes List, FactPack 1 Interference, FactPack 2 Decoding Accessories (details as per Nov Decode).

To receive any of these offers just send a self addressed sticky label plus 50p per item or £1.50 for 4, £2.00 for 5, £2.50 for 6 or £3.00 for 7 or 8 items. If you're ordering JVFAX or HAMCOMM you will also need to send a blank formatted 720Kb disk for each program or just one 1.4Mb disk.

Frequency List

This month's selection of frequencies comes courtesy of **John Whitehead**, Peter Thompson, **Dr Martin, Th A. van Duinen**, Day Watson and **Guy Denman**. If you've any logs, large or small, please send them to me at the address at the head of the column.

Freq (kHz)	Mode	Speed	Shift	Call	Time	Notes
117.4	FAX	120	576	DCF37	1946	OFFENBACH MET
134.2	FAX	120	576	DCF54	1949	OFFENBACH MET
2720.0	FAX	60	576	RDE73	1938	SAMARA MET
2845.0	RTTY	75	850	PPB	2050	DN DEN HELDER
3279.0	RTTY	100	400	DHJ51	2055	GRENGEL MET
3360.0	FAX	90	576	RPN71	2002	KIEV MET
3377.2	FAX	90	576	YMA20	2036	ANKARA MET
3657.0	FAX	60	576	RVZ73	2013	ARKHANGELSK MET
4489.0	RTTY	50	400	GFL26	0718	Bracknell SYNOP
4583.0	RTTY	50	400	DDK2	1344	HAMBURG MET
3710.0	FAX	90	576	RGJ61	2010	SAMARA MET
4210.5	SITOR-A	100	170	IAR	1934	ROME RADIO
4220.5	RTTY	75	200	GYU	2012	RN GIBRALTAR
4512.5	RTTY	50	320	ETD3	2323	ADDIS ABABA AIR
5240.0	RTTY	50	400	YZI213	1926	TANJUG BELGRADE
6495.0	FAX	120	576	CFH	0005	CFH Halifax Met
7756.0	RTTY	75	400	SUA34	1710	MENA Cairo
8440.0	CW	-	-	VCS	1900	Halifax shipping mesages
9287.0	ARQ-E3	48	640	TLO	1705	Bangui Africa
10178.0	ARQ-E3	192	400	RFFIC	0840	Paris military
10634.1	RTTY	50	400	CNM37.9X	1622	MAP RABAT
12312.8	RTTY	100	400	5YE	1845	NAIROBI AIR
13966.0	PACTOR-III	200	200	-	1005	CRC Geneva
14709.0	Piccolo-6	-	-	-	215	Coded messages
16273.0	Coqulet-8	-	-	-	1300	French plain text
16179.0	Piccolo-12	-	-	-	2000	Coded messages
16821.0	FEC	100	170	OX2	1319	Lyngby Radio
18916.0	FEC-A	192	400	LCRE	1150	Cairo
18952.0	FEC-A	144	800	TAD	1156	TAD Ankara
19385.0	ARQ-M2	200	400	RFQP	1200	Djibouti

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

LM&S

Long, Medium and Short Waves

Following the alterations that many international broadcasters made to their short wave transmission schedules at the end of September, some introduced further changes in November. As far as possible they are reflected in the data herein, which is based upon actual reception by listeners in the UK and other countries.

In view of the deteriorating conditions in the higher frequency bands further schedule changes may become necessary.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, all logs compiled in the four week period ending November 28.

The long wave regional service of Turkish Radio-TV via Erzurum on 243kHz was heard by **Roy Merrall** in Dunstable at 2251UTC on November 6. Although the level of co-channel interference was high, it was possible to confirm identity by listening to their medium wave outlet at Diyarbakir on 1062. Roy often makes use of parallel transmissions to enable him to confirm the identity of a broadcast - a technique that other listeners may well find useful.

A broadcast from RAI-Radiotelevisione Italiana via their 10kW outlet at Caltanissetta on 189 was received by Roy at 1935 on November 20. The signal was fair, but there was some splatter from the transmissions on adjacent channels.

Medium Wave Reports

Judging by the reports, the propagation conditions at night during the first two weeks of November were unfavourable for the reception of m.w. transatlantic signals. Checks were made on several occasions by **Robert Connolly** in Kilkeel without success.

A broadcast from the Caribbean Beacon, Anguilla on 1610 was heard by Roy Merrall at 2306 on November 8, but reception was far from good. On the 15th he heard sporadic bursts of a religious broadcast from Harbour Light, Grenada on 1400 at 0030. The channel was very noisy. At 0035 he heard Latin American music and singing from a station on 1440, but no ident could be obtained. At best it was SIO122. On the 16th he obtained a clear ident in Spanish from R.Pueblo, Sto.Domingo on 1510 at 0050.

Regular checks were made at night by **Harry Richards** in Barton-on-Humber, but no signals were received until November 25, when the broadcasts from CJYQ in St.John's were clearly heard on 930. By 0157 their signal was peaking 34333.

More favourable conditions were evident on November 26. Between midnight and 0300 **Clive Boutell** (Dovercourt) heard the signals from a number of stations in Canada and the USA. He positively identified VOCM in St.John's on 590; WFAN New York 660; WCBS New York 880; CFBC St.John 930; CBM Montreal 940; CBV Quebec 980; CFRB Toronto 1010, WEVD New York 1050; WBAL Baltimore 1090; also WBBR New York 1130.

The sky waves from stations in the Middle East, North Africa and Europe also reached the UK at night, see chart. The 2000kW transmission from Duba, Saudi Arabia on 1521 was received for the first time by **George Millmore** in Wootton, IoW. He logged it as SIO222 at 1924. He found reception from some stations in N.Africa to be quite good. Many of the low powered Spanish outlets were logged. During daylight, quite a number of the transmissions from Spanish stations were sufficiently strong to cause considerable interference to UK local radio.

Unusual propagation conditions in the daytime were also observed by **John Wells** (E.Grinstead) while searching the band for distant local radio stations. He says, "Reception was more like late evening than daytime, with most channels occupied by Continentals and a high noise level as well."

A marked increase in the strength of the signals from local radio stations was observed after dark by **Alec Griffiths** in Inverness. The transmission from North Sound on 1035, which is normally barely audible in Inverness, was peaking 42222 at 2035.

Towards the end of November, **Andy Cadier** (Folkestone) was on holiday in Majorca. He searched the band with a Walkman radio for broadcasts from the UK and heard ILR Capital Gold on 1548 at 0600! He also heard BBC Europe on 648 from Orfordness.

Laurence Mason (Hassocks) has drawn my attention to two new UK stations, that may start testing in the near future. They are Radio Viva, which has been allocated 963kHz and London Christian Radio, which will set up five transmitters on three frequencies - 1332, 1386 & 1413.

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	J*
153	Donebach	Germany	500	A,C*,D*,E,F*,G*,I,J,K*,L,N,O
153	Brasov	Romania	1200	B*,I*
162	Allouis	Fance	2000	A,C,E,F*,G*,I,J,K*,L*,N,O
171	Nador Medi-1	Morocco	2000	B*,D*,K*,N
171	Kaliningrad	Russia	1000	A,C*,F*,G*,I,J,K*,O*
177	Oranienburg	Germany	750	A,D*,G*,I,J,N*,O
183	Saarlouis	Germany	2000	A,E,F*,G*,I,J,K*,L*,N,O
189	Caltanissetta	Italy	10	H*
198	Burghead BBC	UK	50	L
198	Droitwich BBC	UK	500	A,C*,E,F*,G*,I,,K*,N,O
198	St.Petersburg	Russia	150	G*
207	Munich	Germany	500	D*,G*,I,J,K*,N,O
207	Azilal	Morocco	800	J*
216	Roumoules RMC	S.France	1400	A,C*,D*,E,G*,I,J,K*,L*,N,O
216	Oslo	Norway	200	B*,E*,G*,J*,K*,O*
225	Raszyn Resv	Poland	?	C,D*,E,F*,G*,I,J,K*,M,N*,O
234	Beidweiler	Luxembourg	2000	A,C*,E,F*,G*,I,J,K*,L*,N,O
234	St.Petersburg	Russia	1000	G*,K*
243	Kalundborg	Denmark	300	A,C*,D,E*,G*,I,J,K*,L,N,O
243	Almaty	Kazakhstan	1000	H*
243	Erzurum	Turkey	200	H*
252	Tipaza	Algeria	1500	D*,E*,I*,J*,N*
252	Atlantic 252	S.Ireland	500	A,C*,D,E*,F*,G*,I,J,K*,L,N,O
261	Burg(R.Ropa)	Germany	200	C*,D*,I,J*,K,N*,O
261	Taldom Moscow	Russia	2000	K*,N*
270	Topolna	Slovak Rep	1500	C*,D,E*,G,I,J,K*,L*,N*,O
279	Ashgebat	Turkmenistan	150	H*
279	Minsk	Belarus	500	C,E*,G*,I,J*,K*,N*,O*

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

Listeners:
A: Martin Dale, Stockport.
B: John Eaton, Woking.
C: Alec Griffiths, Inverness.
D: Simon Hockenhull, E.Bristol.
E: Sheila Hughes, Morden.
F: Stephen Jones, Oswestry.
G: Eddie McKeown, Newry.
H: Roy Merrall, Dunstable.
I: George Millmore, Wootton, IoW.
J: Fred Pallant, Storrington.
K: Harry Richards, Barton-on-Humber.
L: Tom Smyth, Co.Fermanagh.
M: John Stevens, Largs.
N: Andrew Stokes, Leicester.
O: Phil Townsend, E.London.

Short Wave Reports

The propagation conditions in the higher frequency bands were far from good during November. Frequently the 13, 16, 19 & 22m bands closed early in the evening. Some broadcasters decided to move their evening transmissions to the 31, 41 & 49m bands, which became very congested.

The **25MHz (11m)** band is no longer being used by international broadcasters because the propagation conditions are unpredictable.

Daily propagation variations have been evident in the **21MHz (13m)** band, but the broadcasts from a number of areas often reached our shores. Those from R.Australia were heard on 21.725 from Darwin (Eng to Asia 0630-1100). Typical ratings during favourable conditions were 44344 at 0939 by **Rhoderick Illman** in Oxted; 45444 at 1018 by **Vera Brindley** in Woodhall Spa; also 35444 at 1050 by **Darren Beasley** in Bridgwater.

Some of the broadcasts logged in the morning came from R.Ukraine Int 21.800 (Uk WS 0900-1700?), noted as 34433 at 1000 by **Peter Pollard** in Rugby; R.Nederlands via Flevo? 21.505 (Eng, Du? to Asia, Far East 0930-1125) 44344 at 1010 by **Chris Shorten** in Norwich; UAER, Dubai on 21.605 (Eng to Eu 1030-1055) 45444 at 1040 by **Simon Hockenhull** in E.Bristol; RFI via Issoudun 21.620 (Fr to E.Africa 0700?-1555) SIO322 at 1055 by **Bill Clark** in Rotherham; BSKSA Saudi Arabia 21.495 (Ar [Holy Koran] to SE.Asia 0900-1200) SIO322 at 1142 by **Philip Rambaut** in Macclesfield; Vatican R, Italy 21.850 (Sp to N/C/S.Am 1100-1215) 35444 at 1200 by **Fred Pallant** in Storrington.

Those noted in the afternoon were RAI Rome 21.535/21.710 (Tt [Home service relay to Lat Am/Africa] Sun only 1330-1700), 45554 at 1343 by **David Edwardson** in Wallsend; DW via Julich? 21.560 (Ger to Asia 1000?-1400) SIO232 at 1345 by **Phil Townsend** in E.London; BBC via Limassol 21.470 (Eng to E.Africa 1400-1615) 44444 at 1432 by **Eddie McKeown** in Newry; WYFR via Okeechobee 21.745 (Eng to Eu 1600-1645) 35333 at 1610 by **Michael Griffin** in Ross-on-Wye; BBC via Ascension Is 21.660 (Eng to W/E/S.Africa 1100-1700) 33333 at 1620 by **Bernard Curtis** in Stalbridge; R.Japan via Moyabi 21.700 (Jap to Eu, M.East, Africa 1600-1700) 24442 at 1620 by **John Eaton** in Woking; Monitor R.Int via WSHB 21.640 (Eng to E.Africa 1600-1850?) SIO344 at 1650 by **Kenneth Buck** in Edinburgh.

The conditions in **17MHz (16m)** band have also varied from day-to-day. When favourable, R.Australia's broadcast to N.Asia via Carnarvon 17.715 (Eng 0200-0400, 0500-0900) reached the UK. It was 25242 at 0805 by **James Duckworth** in Barnet. Also heard in the morning were R.Pakistan, Islamabad 17.900 (Eng to Eu 0800-0845), 55455 at 0815 in Newry; Slovak R.Int via Rimavska Sobota 17.485 (Eng to Aust 0830-0857) 22222 at 0845 in Norwich; Voice of Russia, Moscow 17.765 (Eng WS 0900-1200) 44444 at 0930 by **Sheila Hughes** in Morden; R.Pakistan, Islamabad 17.900 (Eng to Eu 0900?-0945?) 44444 at 0930 in Stalbridge; Channel Africa via Meyerton 17.810 (Eng to Africa 1000-1100) 34343 at 1005 in Woking; Africa No.1, Gabon

Medium Wave Chart

Freq kHz	Station	Country (kW)	Power	Listener
520	Hof-Saale (BR)	Germany	0.2	M*
526	Vatican R.	Italy	5	N*
531	Ain Beida	Algeria	600	D*,N*,O*,V*
531	Torshavn	Faeroe Is.	100	N,P,W*
531	Leipzig	Germany	100	C*,M,O,T,V*
531	RNE5 via ?	Spain	?	M*,O*
531	Beromunster	Switzerland	500	N*
540	Wavre	Belgium	150/50	C,M,O,P,V,W
540	Conamara	Ireland (S)	2	P
540	Sidi Bennour	Morocco	600	J*,O*
549	Les Trembles	Algeria	600	D*,F*,J*,M*,O*,V*
549	Thurmau (DLF)	Germany	200	C*,F*,M*,O,P,V,W
549	St.Petersburg	Russia	1000	P*
549	Quarayyat	Saudi Arabia	2000	L*
558	Rostock(NDR)	Germany	20	P
558	Tirgu Jiu	Romania	200	O*
558	RNE5 via ?	Spain	?	C*,M*,O*,V*
567	Berlin	Germany	100	M*
567	Tullamore(RTE1)	Ireland (S)	500	C,F*,I,L*,O,P,V,W
567	RNE5 via ?	Spain	?	O*
576	Muhlacker(SDR)	Germany	500	C*,M*,O,P,V*,W
576	Riga	Latvia	500	M*,O*
576	Barcelona(RNE5)	Spain	50	O*
585	Orf Wien	Austria	600	O*
585	Paris(FIP)	France	8	O,W
585	Madrid(RNE1)	Spain	200	C*,O*,T*,V*,W*
585	Dumfries(BBCScot)	UK	2	J,M,P
594	Frankfurt(HR)	Germany	1000/400	C*,L*,M*,O,P,V*,W
594	Oujda-1	Morocco	100	O*
594	Muge	Portugal	100	L*,O
603	Lyon	France	300	M*
603	Sevilla(RNE5)	Spain	50	M*,O*,P,V*
603	Newcastle(BBC)	UK	2	C,T,P
612	Athlone(RTE2)	Ireland (S)	100	C,F*,I,L*,O,P,T,V*,W
612	RNE1 via ?	Spain	10	M*,O*,V*
621	Wavre	Belgium	80	C*,K*,L*,M*,O,P*,V,W
621	RNE1 via ?	Spain	10	P*
621	Barcelona(OCR)	Spain	50	M*,O*
630	Vigra	Norway	100	C*,F*,L*,M,P*
630	Tunis-Djedeida	Tunisia	600	D*,F*,J*,O*
639	Praha(Liblice)	Czech	1500	C*,F*,M*,O*,P*
639	RNE1 via ?	Spain	?	C*,L*,M,O,P*,V*,W*
648	RNE1 via ?	Spain	10	M*,T*
648	Orfordness(BBC)	UK	500	A*,C,J*,O,P*,V*,W
657	Neubrandenburg(NDR)	Germany	250	M*,P*,T*
657	Madrid(RNE5)	Spain	20	O*,P*
657	Wrexham(BBCWales)	UK	2	C,J,L*,M*,V
666	Bodensees'dr(SWF)	Germany	300/180	C*,M,O*,T*
666	R.Vilnius	Lithuania	500	K*,M*,P*
666	Lisboa	Portugal	135	C*,M*,O*
675	Marseille	France	600	F*,L*,O*
675	Lopic(R10 Gold)	Holland	120	F*,J,M*,O,P*,S,V*,W
684	Sevilla(RNE1)	Spain	500	C*,M*,O*,P*,V*,W*
684	Avala(Beograd-1)	Yugoslavia	2000	O*,P*,V*
693	Burghead(BBC5)	UK	50	L*
693	Droitwich(BBC5)	UK	150	F*,O,P*,V,W
702	Flensburg(NDR)	Germany	5	M*,N*,O,P*,V*
702	Vadso	Norway	20	P*
702	Zamora(RNE1)	Spain	10	L*,M*,O*
711	Rennes 1	France	300	C*,F*,I,J*,M*,O,W
711	Heidelberg	Germany	5	O*,P*
711	Laayoune	Morocco	600	O*,P*
711	Murcia(COPE)	Spain	5	P*
720	Langenberg	Germany	200	P*
720	Lisnagarvey(BBC4)	Ireland (N)	10	F*,O,P*
720	Norte	Portugal	100	C*,M*
720	Sfax	Tunisia	200	O*
720	Lots Rd,Ldn(BBC4)	UK	0.5	H*,O,V,W
729	Cork(RTE1)	Ireland (S)	10	F*,L*,O,P*
729	RNE1 via ?	Spain	?	C*,M*,O,P*,V*
738	Paris	France	4	O
738	Poznan	Poland	300	F*,M*,O*,P*
738	Barcelona(RNE1)	Spain	500	C*,M*,O*,P*,T*,V*,W*
747	Las Palmas	Gran Canaria	20	M*
747	Flevo(Hilv2)	Holland	400	F*,I,M*,O,P,V*,W
756	Braunschweig(DLF)	Germany	800/200	C*,F*,J*,M*,O*,P*, T,V*,W*
756	Lugoj	Romania	400	N*
756	Redruth(BBC)	UK	2	M*,O,P*
765	Sottens	Switzerland	500	C*,F*,M*,O,P*
774	Abis	Egypt	500	V*
774	Bonn(WDR2)	Germany	5	N*
774	RNE1 via ?	Spain	?	C*,M*,O*,V*
783	Burg	Germany	1000	C*,M*,O*,P*,V*,W*
783	Miramar(R.Porto)	Portugal	100	M*,O*
783	Tartus	Syria	600	P*
792	Prague(Zbraslav)	Czech Rep.	40	P
792	Limoges	France	300	M*O
792	Lingen(NDR)	Germany	5	M*,O*
792	Sevilla(SER)	Spain	20	C*,M*,O*,P*,V*
792	Londonderry(BBC)	UK	1	P
801	Munchen-Ismaning	Germany	300	P
801	St.Petersburg	Russia	1000	O*
801	RNE1 via ?	Spain	?	C*,M*,O*
810	Voru	Estonia	5	O*
810	Madrid(SER)	Spain	20	C*,M*,O*
810	Westerglen(BBCScot)	UK	100	D,F*,I*,J,O,P,V*,W*
819	Batra	Egypt	450	J*,V*
819	Toulouse	France	50	D*
819	Warsaw	Poland	300	M*,O*
819	S.Sebastian(EI)	Spain	5	D*
828	Hannover(NDR)	Germany	100/5	F*,M*
828	Barcelona(SER)	Spain	50	O*
837	Nancy	France	200	O,P
837	COPE via ?	Spain	?	M*,O*
846	Rome	Italy	540	M*,O*,V*,W*
855	Berlin	Germany	100	F*,V*
855	R.Bucharest	Romania	750	P
855	RNE1 via ?	Spain	?	C*,F*,M*,O*,T*
864	Santah	Egypt	500	N*,O*
864	Paris	France	300	C*,F*,M*,O,P,W*
864	Socuellamos(RNE1)	Spain	2	O*
873	Frankfurt(AFN)	Germany	150	F*,M*,O,P,S,V*
873	Zaragoza(SER)	Spain	20	C*,M*,O*
873	Enniskillen(R.UI)	UK	1	P,T
882	COPE via ?	Spain	?	C*,M*
882	Washford(BBCWales)	UK	100	C,D,F*,J,O,P,V*,W
891	Algiers	Algeria	600/300	D*,I*,O*,V*
891	Huisberg	Netherlands	20	M*,O*,P
900	Milan	Italy	600	C*,M*,O*,P
900	COPE via ?	Spain	?	O*,T*,V*
900	Qurayyat	Saudi Arabia	1000	O*
909	Bournemouth(BBC5)	UK	0.025	O
909	B'mans Pk(BBC5)	UK	140	F*,V*,W
909	M'side Edge(BBC5)	UK	200	P,T
918	Plesivec(Sloven'nR)	Yugoslavia	600/100	O*
918	Madrid(R.Int)	Spain	20	M*,T*
927	Wolvertem	Belgium	300	C*,F*,K,M*,O,P,V*,W
936	Bremen	Germany	100	C*,F*,M*,O*,P,T*,V*
936	Venezia	Italy	20	F*,O*
936	RNE5 via ?	Spain	?	P,V*
945	Toulouse	France	300	F*,I*,J,M*,O*,P
954	Brno(Dobrochov)	Czech Rep.	200	F*,O*,P
954	Madrid(CI)	Spain	20	C*,M*,O*,P,T*,V*,W*
963	Pori	Finland	600	F*,O*,P,V*,W*
963	Paris	France	8	M*,O
963	Tir Chonaill	Ireland (S)	10	N*,O*,P,T*,V*
972	Hamburg(NDR)	Germany	300	C*,F*,M*,O*,P,V*,W*
972	RNE1 via ?	Spain	?	P
981	Alger	Algeria	600/300	D*,O*,P,V*,W*
981	Megara	Greece	200	P
990	Berlin	Germany	300	F*,M*,O*,P,T*
990	R.Bilbao(SER)	Spain	10	C*,M*,O*,P,V*
990	Redmoss(BBC)	UK	1	P
999	Schwerin (RIAS)	Germany	20	M*
999	Madrid(COPE)	Spain	50	C*,P
1008	Las Palmas(SER)	Gran Canaria	?	M*,O*,V*
1008	Flevo(Hilv-5)	Holland	400	B*,F*,M*,O,P,V*,W
1017	Rheinsender(SWF)	Germany	600	B*,F*,M*,O*,P, T*,V*,W*
1017	Burgos(RNE5)	Spain	10	P
1026	Graz-Oobl	Austria	100	M*,O*,P
1026	SER via ?	Spain	?	O*,T*,V*
1035	Lisbon(Prog3)	Portugal	120	M*,O*
1044	Oresden	Germany	250	B*,C*,M*,O*,V*
1044	Sebaa-Aioun	Morocco	300	O*
1044	S.Sebastian(SER)	Spain	10	M*,P
1053	Iasi	Romania	1000	I*,O*
1053	Zarogoza(COPE)	Spain	10	C*,M*,O*,P,V*
1062	Kalundborg	Denmark	250	B*,F*,I*,J*,K,M*, O,P,V*,W
1062	Norte	Portugal	100	P
1062	Diyabakir	Turkey	300	N*
1071	Mostar	Bosnia	40	P
1071	Brest	France	20	O
1071	Lille	France	40	B*,F*,I*,M*,P,T*,V,W
1071	Riga	Latvia	50	M*
1071	Bilbao(EI)	Spain	5	O*,P
1080	Katowice	Poland	1500	B*,C*,F*,I*,M*,O*,P,V
1080	SER via ?	Spain	?	M*,O*,P
1089	Durres	Albania	150	O*
1089	Krasnodar	Russia	300	B*,F*,I*,M*
1098	Nitra(Jarok)	Slovakia	1500	B*,C*,I*,M*,O,P*,V*
1098	RNE5 via ?	Spain	?	C*,O*
1107	Batra	Egypt	600	B*
1107	AFN via ?	Germany	10	C*,I,M*,P*,V*
1107	Sitkunai	Lithuania	150	O
1107	RNE5 via ?	Spain	?	C*,J,O*
1116	Bari	Italy	150	O*,P*
1116	Pontevedra(SER)	Spain	5	B*,M*
1125	La Louviere	Belgium	20	C*,M*,O
1125	Oeanovec	Croatia	100	F*,O*
1125	St.Petersburg	Russia	150	P
1125	RNE5 via ?	Spain	?	B*,C*,O*,P*,V*
1134	COPE via ?	Spain	2	M*,O*
1134	Zadar(Croatian R)	Yugoslavia	600/1200	B*,C*,F*,M*,O, P*,V*,W*
1143	Bremerhaven(AFN)	Germany	5	B*,V*
1143	AFN via ?	Germany	1	C*,P*
1143	Stuttgart(AFN)	Germany	10	F*,M*
1143	Bolshakovo(Mayak)	Russia	150	P*
1143	COPE via ?	Spain	2	O
1152	RNE5 via ?	Spain	10	B*,M*,P*,V
1161	Stara Zagora	Bulgaria	500	P
1161	Strasbourg(Flnt)	France	200	B*,J,M*,O*,P*
1170	Tbilisskaya	Russia	1200	I*
1170	Vila Real	Portugal	10	M*
1170	Beli Kriz	Slovenia	300	N*
1179	SER via ?	Spain	?	O*
1179	Solvesborg	Sweden	600	B*,D*,F*,G*,J,M*, O,P*,S*,T*,V*,W
1188	Kuurne	Belgium	5	C*,K,O,P*,V*,W
1188	Reichenbach(MDR)	Germany	5	P*
1188	Szolnok	Hungary	135	B*,M*,O*,T*
1197	Minsk	Belarus	50	P*
1197	Munich(VOA)	Germany	300	F*,M*,P*,V*
1197	Virgin via ?	UK	?	F*,I,O,P*,U*,V,W
1206	Bordeaux	France	100	F*,I*,M*,O,P*,V
1206	Wroclaw	Poland	200	O*,P*
1215	Virgin via ?	UK	?	B*,C,F*,O,P, S,T,U,V,W
1224	Vidin	Bulgaria	500	B*,F*,O*,P*,T*,V*
1224	Virgin via ?	UK	?	P
1233	Liege	Belgium	5	B*,F*,M*,O*,V*
1233	Brno	Czech Rep.	50	P
1233	Tanger	Morocco	200	P
1233	Virgin via ?	UK	?	I,O*,U,V
1242	Marseille	France	150	B*,M*
1242	Virgin via ?	UK	?	F*,P,T*,U,V
1251	Marcali	Hungary	500	B*,O*,P*,V*
1251	Huisberg	Netherlands	10	M*,O*,V*
1260	SER via ?	Spain	?	M*,P*
1260	Guildford (V)	UK	?	O,T*
1260	Kharkiv	Ukraine	50	B*
1269	Neumunster(DLF)	Germany	600	B*,F*,M*,O,P*, O*,V*,W
1278	Strasbourg	France	300	M*
1278	Dublin/Cork(RTE2)	Ireland (S)	10	B*,F*,I*,O,P*, T*,V*,W*
1287	RFE via ?	Czech Rep.	400	B*,F*,M*,O*, P*,V*,W*
1296	Kardzali	Bulgaria	150	F*
1296	Torento	Italy	5	P
1296	Valencia(COPE)	Spain	10	M*,O,T*,V*
1296	Orfordness(BBC)	UK	500	B*,P*,W*
1305	Rzeszow	Poland	100	F*,M*
1305	RNE5 via ?	Spain	?	M*,O
1314	Kvitsoy	Norway	1200	F*,K,M*,O,P,T*,V*,W
1323	Zyyi(BBC)	Cyprus	200	T*
1323	Wachenbrunn(RMWS)	Germany	1000/150	C*,J,M*,W
1323	Moskva	Russia	?	P
1332	Rome	Italy	300	M*,O*,V*
1341	Lisnagarvey(BBC)	Ireland (N)	100	F*,I*,J,O,P,T*,V*,W*
1350	Nancy/Nice	France	100	F*,M*,O,P,V*
1350	Cesvaine/Kuldiga	Latvia	50	F*
1350	Beograd	Yugoslavia	10	P
1359	Arganda (RNE-FS)	Spain	600	P
1368	Foxdale(Manx R)	I.O.M.	20	E,F*,J*,T
1368	Krakow	Poland	60	P
1377	Lille	France	300	F*,I*,K,M*,O,P,W
1377	Ukraine	Ukraine	50	M*
1386	Bolshakovo	Russia	2500	F*,I*,K,M*,O,P,T*,V*,W
1386	R.Ned via B'shakovo	Russia	2500	C*,G*
1395	Lushnje(Tirana)	Albania	1000	C*,F*,J*,M*,O*,V*,W*
1395	Ufa	Russia	?	M*
1404	Brest	France	20	M*,O,P,V*
1404	Dnepropetrovsk	Ukraine	30	B*
1413	Moscow via ?	Russia	?	N
1413	RNE5 via ?	Spain	?	B*,C*,O,P
1413	Pristina	Yugoslavia	1000	M*,P
1422	Alger	Algeria	50/25	O*
1422	Heusweiler(DLF)	Germany	1200/600	B*,C*,F*,M*,O, P,Q*,S,T*,V*
1422	Valmiera	Latvia	50	N*
1431	Nikolayev	Ukraine	400	F*,M*
1440	Kyzylorda	Kazakhstan	?	N*
1440	Marnach(RTL)	Luxembourg	1200	B*,C*,F*,K,O,P,S,V*,W*
1440	Moscow via ?	Russia	?	N
1440	Damman	Saudi Arabia	1600	M*,N*,S*
1449	Berlin	Germany	5	M*,P*
1449	Squinzano	Italy	50	O*,T*
1449	Redmoss(BBC)	UK	2	B*,F*,P*,V*
1458	Lushnje(Tirana)	Albania	500	B*,P*,V*
1467	Monte Carlo(TWR)	Monaco	1000/400	B*,C*,M*,O,P*,V*
1476	Wien-Bisamberg	Austria	600	B*,C*,F*,M*,O*,V*,W*
1476	El Minya	Egypt	10	P*
1481	Dubai	UAE	1500	N*
1485	AFN via ?	Germany	1	N*
1485	Baden-Baden(SWF)	Germany	1	N*
1485	SER via ?	Spain	?	B*,C*,P*,V*
1494	Clermont-Ferrand	France	20	O
1494	Al Karanah	Jordan	1000	M*,N*
1494	St.Petersburg	Russia	1000	B*,C*,F*,I*,M*,O,P*,Q*
1503	Stargard	Poland	300	B*,M*,P*
1503	RNE5 via ?	Spain	?	J*,V*
1512	Wolvertem	Belgium	600	B*,F*,I*,J*,M*, O,P*,R*,T*,V*,W
1512	Jeddah	Saudi Arabia	1000	N*
1521	R.Beijing	China	500	N*
1521	Kosice(Cizatice)	Slovakia	600	M*
1521	Duba	Saudi Arabia	2000	B*,N*,O*
1521	Kazan (R.Moscow)	Russia	20	N*
1530	Vatican R	Italy	150/450	B*,F*,J*,M*,O*,T*,W*
1539	Mainflingen(DLF)	Germany	700	B*,C*,F*,I*,K,M*, O,P,V*,W*
1539	Valladolid(SER)	Spain	5	M*
1566	Nagpur	India	1000	N*
1566	Bandarabbas	Iran	100	N*
1566	Sarnen	Switzerland	300	B*,V*
1566	Sfax	Tunisia	1200	D*,N*,P
1566	Odessa	Ukraine	7	N*
1575	Genova	Italy	50	P
1575	SER via ?	Spain	5	B*,K,O,V*
1584	SER via ?	Spain	2	C*,D*,J,O
1593	Matruh	Egypt	10	N*
1593	Holzkirchen(RFE)	Germany	150	B*,C*,I*,M*,N*, O*,V*,W
1593	Dnipropetrovsk	Ukraine	5	N*
1602	SER via ?	Spain	?	V*
1602	Vitoria(EI)	Spain	10	B*,O,P
1611	Vatican R	Italy	15	C*,W*

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

Listeners:

A:Andy Cadier, Majorca.
B:Geoff Crowley, Aberdeen.
C:Martin Dale, Stockport.
D:John Eaton, Woking.
E:Arthur Grainger, Carstairs Junction.
F:Alec Griffiths, Inverness.
G:Francis Hearne, N.Bristol.
H:Francis Hearne, SW.London.
I:Simon Hockenhull, E.Bristol.
J:Sheila Hughes, Morden.
K:Rhoderick Illman, Oxted.
L:Stephen Jones, Oswestry.
M:Eddie McKeown, Newry.
N:Roy Merrall, Dunstable.
O:George Millmore, Wootton IoW.
P:John O'Halloran, Harrogate.
Q:Roy Patrick, Derby.
R:Clare Pinder, Appleby.
S:Harry Richards, Barton-on-Humber.
T:Tom Smyth, Co.Fermanagh
U:John Stevens, Largs.
V:Andrew Stokes, Leicester.
W:Phil Townsend, E.London.

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	A,C,D,I*,M,R*,S,T
585	R.Solway	B	2.00	A*,L,R*
603	Cheltenham(CD603)	I	0.10	C,F*,H,K*,M,T
603	Invicta SG (Coast)	I	0.10	A,I*,M,S,T
630	R.Bedfordshire(3CR)	B	0.20	A,C,H,M,S,T
630	R.Cornwall	B	2.00	M,P*,T
657	R.Clwyd	B	2.00	A,H,M,S,T
657	R.Cornwall	B	0.50	M
666	DevonAir R	I	0.34	H,M,T
666	R.York	B	0.80	A,C,D,N,R*,S
729	BBC Essex	B	0.20	A,I,M,P,R*,S,T
738	Hereford/Worcester	B	0.037	C,H,M,R*,S,T
756	R.Cumbria	B	1.00	A*,D,H,L
756	R.Maldwyn	I	0.63	C,D,H,M
765	BBC Essex	B	0.50	A,C,E*,I,L*,M,R*,S,T
774	R.Kent	B	0.70	A,E*,M,S,T
774	R.Leeds	B	0.50	C,L*,N*
774	Gloucester(3CSG)	I	0.14	F*,M
792	Chiltern(S.Gold)	I	0.27	A,C,E*,M,S,T
792	R.Foyle	B	1.00	P*
801	R.Devon & Dorset	B	2.00	C,H,L*,M,N,S,T
828	Chiltern(S.Gold)	I	0.20	A,S,T
828	R.Aire(Magic828)	I	0.12	C,N
828	2CR(Cl.Gold)	I	0.27	M,T
837	R.Cumbria/Furness	B	1.50	E*,N
837	R.Leicester	B	0.45	A,C,I,L*,M,R*,S,T
855	R.Devon & Dorset	B	1.00	M
855	R.Lancashire	B	1.50	C,D,L*,N
855	R.Norfolk	B	1.50	A,S,T
855	Sunshine R	I	0.15	H,T
873	R.Norfolk	B	0.30	A,C,E*,I,M,O,R*,S,T
936	Brunel R(Cl.Gold)	I	0.18	M,T
945	R.Trent(Gem AM)	I	0.20	A,C,M,,N,R*,S,T
954	DevonAir(Cl.Gld)	I	0.32	I,J,M,P*
954	R.Wyvern(WYVN)	I	0.16	A*,C,H,I,M,N,T
990	WABC(Nice & Easy)	I	0.09	C,T
990	R.Aberdeen	B	1.00	A,L*
990	R.Devon & Dorset	B	1.00	H,M
990	Hallam R(Gt.Yks)	I	0.25	A,C,N
999	R.Solent	B	1.00	A,H,I,M,T
999	R.Trent(Gem AM)	I	0.25	A,C,N,R*,S,T
999	Red Rose(Gold)	I	0.80	A*,C,D,L*
1017	Beacon R(WABC)	I	0.70	A*,C,D,E*,M,T
1026	Downtown R	I	1.70	D,E*
1026	R.CambridgeshIre	B	0.50	A,C,I,J,S,T
1026	R.Jersey	B	1.00	H,I,J,M,T
1035	Country 1035	I	?	A,C*,G*,I*,M,S,T
1035	NorthSound R	I	0.78	A*,E*,L*,N
1035	R.Sheffield	B	1.00	C,N
1035	West Sound R	I	0.32	D,L*
1107	Moray Firth R	I	1.50	A*,D,E*,I,L*,N,P
1116	R.Derby	B	1.20	A,C,D,I,L*,N*,R*,S,T
1116	R.Guernsey	B	0.50	A,H,I,J,M,T
1152	BRMB(Xtra-AM)	I	3.00	F*
1152	LBC(LondonNewstalk)	I	23.50	A,I*,M,N,S,T
1152	Piccadilly R(Gold)	I	1.50	C
1152	R.Broadland	I	0.83	A,L*,N,T
1152	R.Clyde(Clyde 2)	I	3.06	D,E*
1161	Brunel R(Cl.Gold)	I	0.16	F*,M,T
1161	R.Bedfordshire(3CR)	B	0.10	A,S
1161	Southern Counties R	B	1.00	A,I,M,T
1161	R.Tay	I	1.40	D,E*,L*,N*
1161	Humberside(Gt.Yks)	I	0.35	A*,C,L*,N*
1170	GNR Teeside	I	0.32	D,N*
1170	Hi Wycombe 1170AM	I	?	I,S,T
1170	Portsmouth(SCR)	I	0.12	J,M,T
1170	R.Orwell(SGR)	I	0.28	A,D
1170	Signal R(S.Gold)	I	0.20	C,R*
1242	Invicta Snd(Coast)	I	0.32	A,I*,S,T
1242	Isle of Wight R	I	0.50	H,M
1251	Saxon R(SGR)	I	0.76	A,D,E*,I,J,L*,N,S,T
1260	Brunel R(Cl.Gold)	I	1.60	L*,M
1260	Marcher Snd(Gold)	I	0.64	C,D
1260	Sunrise R	I	0.29	A*,L*,R*,S
1260	R.York	B	0.50	N*
1278	Bradford(Gt.Yks)	I	0.43	E*,N*,R*
1305	Barnsley(Gt.Yks)	I	0.15	A,C
1305	Red Dragon(Touch)	I	0.20	F,L*,M,T
1323	R.Bristol(Som.Snd)	B	0.63	F*
1323	Brighton(SCR)	I	0.50	A,M,S,T
1332	Hereward R(WGMS)	I	0.60	A,C,D,J,L*,R*,S,T
1332	Wiltshire Sound	B	0.30	D,L*,M,T
1359	Essex R(BreezeAM)	I	0.28	A,J,L*,T
1359	Mercia Snd(Xtra-AM)	I	0.27	N,R*
1359	R.Solent	B	0.85	L*,M
1368	R.Lincolnshire	B	2.00	A,E*,I,N,R*,T
1368	Southern Counties R	B	0.50	A,G*,I,M,S,T
1368	Wiltshire Sound	B	0.10	F,M
1413	Sunrise R	I	0.125	J,M
1431	Essex R(BreezeAM)	I	0.35	A,D,J,L*,M,S,T
1431	R 210(Cl.Gold)	I	0.14	D,M,N,T
1449	R.Peterboro/Cambs	B	0.15	A,L*,M,R*,T
1458	Fortune	I	5.00	C,D,L*,P
1458	R.Cumbria	B	0.50	D,L*,R*
1458	R.Devon & Dorset	B	2.00	M,T
1458	R.Newcastle	B	2.00	A,N
1458	Sunrise R	I	50.00	A,C*,D,H*,I*,L*,M,S,T
1476	Guildford(M.Xtra)	I	0.50	A,C,D,E*,I*,L*,M,N*,S,T
1485	R.Humberside	B	1.00	A,I*,L*
1485	R.Merseyside	B	1.20	C,I*,L*,N*,P
1485	Southern Counties R	B	1.00	A,M,S,T
1503	R.Stoke-on-Trent	B	1.00	A*,C,D,E*,I*,L*,M,N*,R*
1521	Reigate(M.Xtra)	I	0.64	A,E*,I*,L*,M,S,T
1530	Huddersfld(Gt.Yks)	I	0.74	C,D,E*,L*,N
1530	R.Essex	B	0.15	A,D,I,J,M,S,T
1530	R.Wyvern(WYVN)	I	0.52	L*,M
1548	Capital R(Cap G)	I	97.50	A,B*,G*,M,N,S,T
1548	R.Bristol	B	5.00	E*,M
1548	Liverpool(City G)	I	4.40	A*,C,E*,L*,N
1548	R.Forth(Max AM)	I	2.20	A*,D,E*,L*
1548	Sheffield(Gt.Yks)	I	0.74	A*,N
1557	Chiltern R(Gold)	I	0.76	L*,N,R*
1557	Southampton(SCR)	I	0.50	M,T
1557	R.Lancashire	B	0.25	C,L*
1557	Tendring(Mellow)	I	0.125	A,J
1584	Kettering(KCBC)	I	0.04	A,N,S
1584	R.Nottingham	B	1.00	A*,C,I,P,R*
1584	R.Shropshire	B	0.50	M
1584	R.Tay	I	0.21	D,E*,I*,L*
1602	R.Kent	B	0.25	A,D,L*,M,N*,Q,S,T

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

Listeners:

A:Clive Boutell, Dovercourt.
B:Andy Cadier, Majorca.
C:Martin Dale, Stockport.
D:Arthur Grainger, Carstairs Junction.
E:Alec Griffiths, Inverness.
F:Francis Hearne, N.Bristol.
G:Francis Hearne, SW.London.
H:Simon Hockenhull, E.Bristol.
I:Sheila Hughes, Morden.
J:Rhoderick Illman, Oxted.
K:Stephen Jones, Oswestry.
L:Eddie McKeown, Newry.
M:George Millmore, Wootton, IoW.
N:John O'Halloran, Harrogate.
O:Harry Richards, Barton-on-Humber.
P:Tom Smyth, Co.Fermanagh.
Q:John Stevens, Largs.
R:Andrew Stokes, Leicester.
S:Phil Townsend, E.London.
T:John Wells, East Grinstead.

17.630 (Fr to W.Africa 0700-1600) 44434 at 1007 in Oxted; R.Pakistan, Islamabad 17.900 (Eng to Eu 1100-1120) SIO444 at 1111 in Rotherham.

Later, Africa No.1, Gabon 17.630 (Fr to W.Africa 0700-1600) was 43443 at 1250 in Kilkeel; BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2030) SIO444 at 1300 by **Tom Smyth** in Co.Fermanagh; RTM Tanger, Morocco 17.595 (Ar to M.East, N.Africa 1400?-1700?) 34333 at 1400 in Bridgwater; BBC via Antigua, W.Indies 17.840 (Eng to N/C.Am 1400-1615) SIO233 at 1400 in E.London; RCI via Sackville 17.820 (Eng to Eu, M.East, Africa 1430-1500) 33333 at 1430 in Hassocks; HCJB Quito 17.490 (Eng u.s.b. + p.c) SIO344 at 1500 in Edinburgh; WEWN Birmingham 17.510 (Ar to M.East, N.Africa 1500-1600) SIO444 at 1500 in Macclesfield; VOA via Tangier 17.895 (Eng to Africa 1630-1900?) 43333 at 1600 in Rugby; WYFR Okeechobee 17.760 (Eng to Eu? 1700?-2000) 45444 at 1706 in Ross-on-Wye; R.Nederlands via Bonaire? 17.605 (Eng to W.Africa 1830-2025) 35333 at 1940 in Woodhall Spa.

Despite the deteriorating conditions, the **15MHz (19m)** band is still regarded by many as the hub of listening activity. Sometimes R.New Zealand's broadcast to Pacific areas on 15.115 (Eng 2051-0715) has reached the UK. It was logged as 22222 at 0713 in Norwich. Two of R.Australia's broadcasts have also been heard here: 15.170 from Carnarvon (Eng to N.Asia 0900-1200), rated 23232 at 1143 in Barton-on-Humber; 15.530 from Darwin (Eng to S.Asia 1100-1300) was 35333 at 1100 in Barnet and noted as 'loud and clear' at 1200 by **Danny Leahy** in Reading.

Also heard in the morning were R.Pakistan, Islamabad 15.625 (Eng 0800-0845?) SIO333 at 0815 by **Francis Hearne** in N.Bristol; UAER, Dubai 15.395 (Eng to Eu 1030-1100) SIO444 at 1030 in Edinburgh; Voice of Greece, Athens 15.650 (Gr, Eng to Eu, Asia, Far East 1000-1050) SIO444 at 1030 in Rotherham; Voice of Turkey, Ankara 15.350 (Tur to Eu 1000-1700) 54554 at 1150 in Wallsend.

After mid-day, VOA via Philippines 15.425 (Eng to SE.Asia 1000-?) was 22332 at 1300 in Kilkeel; BBC via Masirah Is 15.310 (Eng to S.Asia 0900-1400) 33243 at 1328 in Woking; BSKSA Riyadh 15.060 (Ar to M.East 0900-1500) 43433 at 1339 in Oxted; UAER, Dubai 15.395 (Eng to Eu 1330-1400) 43223 at 1349 by Martin Dale in Stockport; R.Finland via Pori 15.400 (Eng to N.Am 1330-1400) 54545 at 1350 by George Tebbitts in Penmaenmawr; Voice of Russia, Moscow 15.465 (Eng WS) SIO444 at 1400 in Co.Fermanagh; Israel R, Jerusalem 15.640 (Eng to Eu, N.Am 1400-1425) 44444 at 1400 by **Clare Pinder** in Appleby; AIR via Aligarh 15.120 (Eng to SE.Asia 1330-1500) 33222 at 1430 in Newry; RCI via Sines? 15.325 (Eng to Eu, M.East, Africa 1430-1500?) 33333 at 1435 in Storrington; BBC via Limassol 15.575 (Eng to M.East 0400-1500) SIO233 at 1440 in E.London; Channel Africa via Meyerton 15.240 (Eng to Africa 1600-1700) 44444 at 1600 in Morden; WEWN Birmingham 15.695 (Eng to Eu? 1600-1658) 33333 at 1600 in Hassocks; BBC via Ascension Is 15.400 (Eng to Africa 1500-2300) 43333 at 1620 in Stalbridge; WYFR via Okeechobee 15.566 (Eng to Eu 1600-?) 55545 at 1620 in Ross-on-Wye; WHRI South Bend 15.105 (Eng to C/S.Am 1400-1800) 33433 at 1645 in Storrington.

During the evening, WWCR Nashville 15.685 (Eng to Eu 1200-?) was logged as SIO333 at 1730 by **John O'Halloran** in Harrogate; HCJB Quito 15.490 (Eng to Eu 1700-2000) 34333 at 1916 in Woodhall Spa; VOA via Greenville? 15.580 (Eng to Africa 1800?-2130) 22222 at 1933 in Rugby.

The **13MHz (22m)** band also has much to offer the listener. The occupants include SRI via Sottens? 13.685 (It, Eng, Fr, Ger, Port to Australia, S.Pacific 0830-1100) 22321 at 0912 in Oxted; R.Tashkent, Uzbekistan 13.785 (Eng to S.Asia? 1200-1228) 43433 at 1213 in Bridgwater; AWR Costa Rica 13.750 (Sp to C.Am 1100-1400) SIO222 at 1215 in Macclesfield; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp to Eu 0400-1800) 44444 at 1230 in Morden; SRI via Sottens? 13.635 (Eng, Fr, It, Ger to S.E/S.Asia 1300-1500) 22332 at 1300 in Kilkeel; ISBS Reykjavik 13.860 (Ic [u.s.b.+ p.c] to Eu 1215-1310) SIO444 at 1310 in Harrogate; UAER, Dubai 13.675 (Eng to Eu 1330-1400) 33333 at 1330 in Hassocks; R.Nederlands via Flevo 13.700 (Eng to S.Asia, M.East 1330-1525) 33233 at 1400 in Newry; Israel R.Int, Jerusalem 13.755 (Heb to Eu, N.Am) SIO333 at 1400 in E.London; R.Pakistan, Islamabad 13.590 (Eng to M.East 1600-1630) 54444 at 1610 in Norwich; UAER, Dubai 13.675 (Eng to Eu 1600-1640) SIO444 at 1630 in Edinburgh; WHRI South Bend 13.760 (Eng to E.USA, Eu 1600-?) 44444 at 1710 in Woking; VOA via Selebi-Phikwe 13.710 (Eng to Africa 1630-2230) 35333 at 1904 in Barton-on-Humber.

Good reception over long distances was noted in the **11MHz (25m)** band. R.Australia via Carnarvon on 11.660 (Eng to S.Asia 1430-1800) was 44434 at 1604 in Barnet. Their transmission to Pacific areas on 11.695 from Shepparton (Eng 1430-2030) was SIO343 at 1630 in Edinburgh. In contrast, their transmission to N.Asia via Carnarvon on 11.660 (Eng 1800-2100) was only SIO111 at 1849 in Macclesfield.

Among the many entries in the reports were ERA Thessaloniki, Greece 11.595 (Gr to Eu 1000-2255) noted as 43434 at 1225 in Woking; Polish R, Warsaw 11.815 (Eng to Eu 1300-1355) 43333 at 1300 in Morden; FEBC Bocaue, Philippines 11.995 (Eng to India, SE.Asia 1300-1600) 23322 at 1315 in Kilkeel; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 54433 at 1425 in Bridgwater; RNE via Noblejas 12.035 (Sp to Europe 0900-1900) SIO444 at 1500 in E.London; R.Pakistan, Islamabad 11.570 (Eng to M.East 1600-1630) 33333 at 1615 in Stalbridge; VOIRI Tehran 11.790 (Eng

to ? 1600-1627) 35553 at 1625 in Wallsend; AIR via Bangalore 11.620 (Hi, Eng to Eu 1745-2230) 33333 at 1745 in Hassocks; R.Nederlands via Talata Volon 11.655 (Eng to Africa 1930?-2025) 24222 at 1934 in Woodhall Spa; R.Globo, Rio de Janeiro 11.805 (Port 0900-0330) SIO444 at 2000 by **John Stevens** in Largs; R.Kuwait via Kabd 11.990 (Eng to Eu 1800-2100) 22222 at 2000 in Appleby; R.Damascus via Adra 12.085 (Eng to Eu 2005-2105) 44433 at 2050 in Ross-on Wye; R.Havana Cuba 11.710 (Eng to Eu? 2100-2200) 34222 at 2100 in Newry; R.Japan via Moyabi Gabon 11.925 (Eng to Eu 2100-2200) 43333 at 2100 in Rugby.

Quite often the propagation conditions in the **9MHz (31m)** band in the morning have enabled R.New Zealand to reach the UK! Their broadcast to Pacific areas on 9.700 (Eng 0759-1300) was logged as 43343 at 0800 in Norwich, SIO322 at 0941 in Macclesfield, 23332 at 1030 in Kilkeel and 25552 at 1245 in Wallsend. An exceptional 54554 was noted at 0800 on December 4 by **Bill Griffith** in W.London. Their cricket commentaries continue at 1300 on 9.655, but reception is often marred by co-channel interference. During the afternoon R.Australia's broadcast to Asia via Carnarvon on 9.770 (Eng 1430-1630) has often been clearly received in the UK. It was a potent 44444 at 1617 in Woodhall Spa.

Also mentioned in the reports were KHBN Medorm, Palau 9.830 (Eng to E.Asia?) SIO222 at 1051 in Rotherham; R.Norway Int, Oslo 9.590 (Norw [Eng Sun] to Eu 1300-1330) 33333 at 1300 in Appleby; SRI via Lenk? 9.535 (Eng to Eu 1330-1400) SIO444 at 1345 in E.London; BBC via Skelton 9.410 (Eng to Eu, N/C.Africa 0300-2300) 43344 at 1434 in Stockport; AIR via Aligarh? 9.910 (Eng to SE.Asia 1530-1545) 44434 at 1540 in Penmaenmawr; Voice of Hope, Lebanon 9.960 (Eng to M.East 1600-1630?) 25442 at 1600 by **Ross Lockley** in Stirling; Voice of Vietnam, Hanoi 9.840 (Eng to Africa 1600-1630) 32332 at 1620 in Ross-on-Wye; AIR via Aligarh 9.950 (Eng to N.Africa 1745-1945) 34322 at 1845 in Oxted; VOIRI Tehran 9.022 (Eng to Eu, M.East 1930-2025) was 25322 at 1931 in Newry; VOA via Gloria 9.760 (Eng to Eu, N.Africa M.East 1700-2100) 35333 at 2041 in Barton-on-Humber; R.Cairo via Abis 9.900 (Eng 2115-2245) 44333 at 2115 in Morden; Voice of Turkey, Ankara 9.400 (Eng to Eu 2100-2150) 44343 at 2120 in Bridgwater; R.Bulgaria, Sofia 9.700 (Eng to W.Eu 2200-2300) SIO333 at 2200 in Co.Fermanagh; Voice of Greece, Athens 9.375 (Gr [Eng 2240-2250] to Australia?) SIO454 at 2230 in Edinburgh; R.Nac del Paraguay 9.735 (Sp 0800-0400) 32443 at 2310 in Woking; UAER, Abu Dhabi 9.770 (Eng to NW.USA 2200-0000) SIO444 at 2315 in N.Bristol.

Some of the broadcasts in the **7MHz (41m)** band stem from the Voice of Nigeria, Ikorodu 7.255 (Eng, Fr, Ha to Africa), logged as SIO333 at 0530 in N.Bristol; WEWN Birmingham 7.465 (Eng to Eu 0900-1200) 55545 at 0900 in Ross-on-Wye; KTBN via Salt Lake City 7.510 (Eng to N.Am 0000-1600) 33222 at 0930 in Stalbridge; Monitor R.Int via WSHB Cypress Creek 7.535 (Ger to Eu? 0900?-0955) SIO444 at 0950 in Rotherham; R.Prague, Czech Rep 7.345 (Eng to Eu 1700-1727) 54545 at 1700 in Penmaenmawr; R.Pakistan, Islamabad 7.485 (Eng to ? 1700-?) 24322 at 1705 in Bridgwater; AIR via Aligarh? 7.412 (Hi, Eng to Eu 1745-2230) 33333 at 1800 in Hassocks; R.Korea via Skelton 7.250 (Eng to Eu 1930-2000) 31422 at 1930 in Newry; VOIRI Tehran 7.260 (Eng to Eu, M.East 1930-2025) SIO344 at 1930 in Edinburgh; R.Australia via Carnarvon on 7.260 (Eng to S.Asia 1430-2100) 43222 at 2011 in Barton-on-Humber; Israel R.Int, Jerusalem 7.465 (Eng to Eu? 2000-2030) 45444 at 2027 in Woodhall Spa; R.Romania Int, Bucharest 7.195 (Eng to Eu 2100-2156) 43433 at 2100 in Stirling; R.Ukraine Int, Kiev 7.240 (Eng to Eu 2200-2300) 44444 at 2200 in Appleby; Vatican R, Italy 7.305 (Eng to Aust? 2245-2305) 44444 at 2245 in Morden; BBC via Hong Kong 7.180 (Eng to W.Asia 2300-0015) SIO222 at 2305 by **Julian Wood** in Elgin; WJCR Upton 7.490 (Eng to E.USA 24hrs) 44444 at 2333 in Woking; Voice of Russia, Moscow 7.105 (Eng WS) 44334 at 0150 in E.Bristol.

Broadcasters using the **6MHz (49m)** band during the evening include R.Austria Int, via Moosbrunn 6.155 (Ger, Eng, Fr, Sp to Eu 0400-2300), rated 45554 at 1348 in Woking; R.Prague, Czech Rep 5.930 (Eng to Eu 1700-1727) 34444 at 1705 in Stockport; R.Australia via Carnarvon 6.080 (Eng to SE.Asia 1630-1900) SIO444 at 1845 in Macclesfield; R.Austria Int via Moosbrunn 5.945 (Fr, Sp, Eng, Ger to Europe 1800-2230) 33333 at 1930 in Hassocks; R.Pyongyang, Korea 6.576 (Eng to Eu, M.East, Africa 2000-2050) 22222 at 2000 in Norwich; China R.Int, Beijing 6.950 (Eng to Eu 2000-2155) SIO333 at 2000 in E.London; VOA via Woofferton? 6.040 (Eng to Eu, M.East, N.Africa 1700?-2200?) 55545 at 2037 in Barton-on-Humber; DW via Sines 5.960 (Eng to Eu 2000?-2050) 32342 at 2048 in Oxted; R.Prague, Czech Rep 5.930 (Eng to Eu 2100-2127) SIO444 at 2100 in Co.Fermanagh; R.Korea Int via Kimjae 6.480 (Eng to Eu 2100-2200) 25212 at 2100 in Newry; REE via Noblejas? 6.125 (Eng to Eu 2100-2200) 32232 at 2110 in Rugby.

Later, VOFC Taiwan via ? 5.810 (Eng to Eu 2200-2300) 22222 at 2200 in Appleby; R.Ukraine Int, Kiev 5.940 (Eng to Eu 2200-2300) was 43333 at 2200 in Morden; R.Budapest, Hungary 6.110 (Eng to Eu 2200-2230) 44544 at 2200 in Stirling; R.Sweden 6.065 (Eng to Eu 2230-2300) 44444 at 2234 in Woodhall Spa; BBC via Antigua 5.975 (Eng to C/S.Am 2100-0600) SIO433 at 2306 in Rotherham; RCI via Sackville 5.960 (Eng to USA 2200-0000) 34432 at 2355 in E.Bristol; R.Budapest, Hungary 6.025 (Eng to N.Am 0200-0230) SIO333 at 0200 in N.Bristol.

Tropical Bands Chart

Freq MHz	Station	Country	UTC	DXer
2.325	ABC Tennant Creek	Australia	2003	D,E,N,P
2.340	Fujian 1, Fuzhou	China	1502	D
2.485	ABC Katherine	Australia	2021	D,E,N
2.850	KCBS Pyongyang	N.Korea	1551	D
3.220	CPBS 1, Beijing	China	1419	D,E,L
3.220	KCBS Wonsan	N.Korea	1555	N
3.220	Channel Africa	S.Africa	0253	F,I
3.220	R.Kara, Lome	Togo	2133	I,N
3.223	AIR Simla	India	1623	E,N
3.240	TWR Shona	Swaziland	1805	E
3.245	AIR Lucknow	India	1518	D,E,N
3.250	R.Pyongyang	N.Korea	1555	N
3.255	BBC via Maseru	Lesotho	2023	E,L
3.270	SWABC 1, Namibia	SW.Africa	2154	B,E,I,L,N
3.277	AIR Srinagar	India	1707	E,F,N
3.290	SWABC 2, Namibia	SW.Africa	1947	E
3.300	R.Cultural	Guatemala	0255	I
3.315	AIR Bhopal	India	1726	B,E,F,N
3.320	R.France Int. via ?	France?	1946	E
3.325	R.Liberal	Brazil	0110	B
3.325	FRCN Lagos	Nigeria	2154	I,L
3.335	CBS Taipei	Taiwan	2054	D,E,N
3.345	AIR Jalpur	India	0045	B
3.355	AIR Kurseong	India	1637	E,N
3.356	R.Botswana	Gabarone	0325	I,N
3.359	RTV Malagasy	Madagascar	1742	E,N
3.365	R.Rebelde, La Julia	Cuba	0140	B
3.365	GBC R-2	Ghana	2121	A,B,I,K,M,N,P
3.365	AIR Delhi	India	1527	B,C,E,N
3.375	R.Nacional S.Gabriel	Brazil	0005	C
3.377	R.Nacional, Mulenvos	Angola	2033	E
3.380	R.Malawi	Malawi	1702	E,N
3.395	BBC via Meyerton	S.Africa	1700	N
3.915	BBC via Kranji	Singapore	2108	B,C,D,E,I, M,N,U
3.940	PBS Hubei Wuhan	China	2215	J
3.945	AIR Gorakhpur	India	1523	E
3.945	Vatican Radio	Italy	2050	G,I,K,P,T
3.950	Qinghai PBS, Xining	China	0025	D,J
3.955	BBC via Skelton	England	1715	B,D,I,K,N,T
3.955	R.Budapest	Hungary	2200	G,P,S
3.955	Kazakh R,Novosibirsk	Kazakhstan	2308	C
3.955	Channel Africa	S.Africa	0340	J
3.960	Xinjiang PBS, Urumqi	China	0030	B,J
3.960	RFE/RL Biblis	Germany	2115	B,J
3.960	R.Budapest	Hungary	0459	J,K
3.965	RFI Paris	France	1715	B,G,H,I,K,N,T
3.970	RFE Biblis	Germany	2120	B,I,J,T
3.970	VOA via Meyerton	S.Africa	1625	J
3.975	R.Korea via Skelton	England	2006	I,J
3.975	R.Budapest	Hungary	2026	B,I,J,T
3.980	VOA via Munich	Germany	2125	B,G,I,J,K
3.985	China R via SRI	Switzerland	2200	B,O,P,S
3.985	SRI Beromunster	Switzerland	1710	B,G,I,T
3.990	Xinjiang BS, Urumqi	China	1623	E
3.990	RFE via ?	Germany	0510	J
3.995	DW via Julich	Germany	2055	B,I,K,P,T
3.995	R.Budapest	Hungary	1750	J,T
3.995	DW via Meyerton	S.Africa	1750	J
4.003	RRI Padang	Indonesia	1644	N
4.500	Xinjiang BS, Urumqi	China	1411	C,E,I,N
4.735	Xinjiang, Urumqi	China	2351	A,D,E,I,N
4.750	Xizang BS, Lhasa	Tibet	0009	N
4.755	R.Educ CP Grande	Brazil	0105	B,I
4.760	Yunnan PBS,Kunming	China	2320	E,N,P
4.760	AIR Port Blair	India	1630	E
4.760	ELWA Monrovia	Liberia	1818	E,I,Q
4.765	R.Integracao	Brazil	0128	C
4.765	R.Rural, Santarem	Brazil	0011	A
4.765	Brazzaville	PR.Congo	1936	A,I,L,N,Q
4.775	AIR Guwahati	India	1502	D,E,N
4.780	RTD	Djibouti	0317	I
4.783	RTM Bamako	Mali	2125	A,B,C,L
4.785	Ecos del Combeima	Colombia	2004	C
4.785	R.Tanzania	Tanzania	0310	I
4.790	Azad Kashmir R.	Pakistan	1719	E,L,N
4.790	TWR Manzini	Swaziland	1815	E,G,N
4.795	R.Douala	Cameroon	1628	C
4.800	CPBS 2 Beijing	China	2333	E
4.800	AQ Santiago	Dom'Rep	0158	K
4.800	AIR Hyderabad	India	1700	C,E,H,L,N,T
4.800	LNBS Lesotho	Maseru	2005	E,I,L,N
4.805	R.Nac.Amazonas	Brazil	0015	B,P
4.810	R.San Martin Tara	Peru	2350	B,C
4.810	SABC Meyerton	S.Africa	2315	A,G,N,Q
4.815	R.Difusora, Londrina	Brazil	0025	B
4.815	R.diff TV Burkina	Ouagadougou	2134	A,C,L
4.820	La Voz Evangelica	Honduras	2331	B,C,I
4.830	R.Botswana, Gaborone	Botswana	1945	A,C,G,I,L,N
4.830	R.Bangkok	Thailand	1456	E
4.830	R.Tachira	Venezuela	0005	B,C,D,N,Q
4.832	R.Reloj	Costa Rica	0832	D
4.835	R.Tezulutlan, Coban	Guatemala	2342	A,C
4.835	RTM Bamako	Mali	1941	A,C,H,I,L,N,Q,T
4.840	AIR Bombay	India	0045	B,E,G,L,M,N,T
4.840	R.Valera, Trujillo	Venezuela	2350	B,C
4.845	RTM Kuala Lumpur	Malaysia	1435	E
4.845	ORTM Nouakchott	Mauritania	2309	A,B,C,I,L,N
4.850	R.Yaounde	Cameroon	2310	I
4.850	AIR Kohima	India	0010	B
4.860	AIR Kingsway(Feeder)	India	1520	C,D,E,M,N,P
4.865	PBS Lanzhou	China	2154	A,B,C,D,E,F, G,L,N,Q
4.865	L.V. del Cinaruco	Colombia	2350	A,B
4.870	R.Cotonou	Benin	2120	C,I,L,Q
4.879	R.Bangladesh	Bangladesh	0100	B,C,E
4.880	R.Nac.Espejo, Quito	Ecuador	0135	A
4.885	R.Clube do Para	Brazil	0015	A,B,I
4.885	R.Difusora Acreana	Brazil	0120	B
4.885	China R, Beijing	China	1429	E
4.885	KBC East Sce Nairobi	Kenya	1800	N,Q
4.890	RFI Paris	via Gabon	0359	I
4.890	DRTS Dakar	Senegal	1700	Q
4.895	R.IPB AM C'po Grande	Brazil	0006	A,C
4.895	Voz del Rio Arauca	Colombia	0040	B
4.895	Pakistan BC	Pakistan	1805	D,E,F,N
4.900	V. of the Strait 2	China	1422	D,E
4.900	SLBC Colombo	Sri Lanka	1530	E
4.905	R.Nat.N'djamena	Chad	1935	A,H,I,L,N,T
4.910	AIR Jaipur	India	1711	E,L
4.910	R.Zambia, Lusaka	Zambia	2015	E,I,L,N
4.915	PBS Guangxi, Nanning	China	1347	E
4.915	GBC-1, Accra	Ghana	2015	A,B,G,I,L,N,Q
4.915	KBC Cent Sce Niarobi	Kenya	1924	I,L,N
4.920	AIR Madras	India	1655	A,E,F,L,N
4.925	R.Difusora, Taubate	Brazil	0055	B
4.925	R.Nacional, Bata	Eq.Guinea	2024	L
4.927	RRI Jambi	Indonesia	2241	Q
4.940	AIR Guwahati	India	1455	E
4.950	R.Nacional, Mulenvos	Angola	1934	E,L
4.950	V. of Pujiang	China	1451	E
4.960	Mulenvos	Angola	2122	L
4.970	PBS Xinjiang	China	1418	E
4.970	R.Rumbos, Caracas	Venezuela	0015	B
4.975	R.Uganda, Kampala	Uganda	2037	I,L,N
4.980	PBS Xinjiang, Urumqi	China	1523	E
4.980	Ecos del Torbes	Venezuela	2132	A,B,C,I,L,M, N,Q,R
4.985	R.Brazil Central	Brazil	2231	A,Q
4.990	AIR Ext Service	India	0015	A,B,I
4.990	FRCN Lagos	Nigeria	0434	I
5.005	R.Nacional, Bata	Eq.Guinea	2003	A,E,N
5.005	RTM Sibu, Sarawak	Malaysia	2237	Q
5.005	R.Nepal, Kathmandu	Nepal	1423	E,N
5.010	R.Garoua	Cameroon	1723	I,N,Q
5.020	PBS-Jiangxi Nanchang	China	0010	A,E,I,K
5.020	La V du Sahel,Niamey	Niger	2026	D,E,I,L,N
5.021	Hanoi	Vietnam	2342	E
5.025	R.Parakou	Benin	2041	A,C,F,I,L,N,Q
5.025	R.Uganda, Kampala	Uganda	1931	L
5.030	BBS Thimpu	Bhutan	1439	E
5.030	AWR Latin America	Costa Rica	0825	Q
5.035	R.Aparecida	Brazil	0705	Q
5.035	R.Educacao Rural	Brazil	0110	A
5.035	R.Bangui	C.Africa	2027	A,C,I,L,N,P,Q
5.040	Voz del Upano, Macas	Ecuador	0409	I
5.040	La Voz de Nahuala	Guatemala	0050	Q
5.045	R.Cultura do Para	Brazil	0053	A,C,Q
5.047	R.Togo, Lome	Togo	2128	A,C,G,H,I, K,L,N,Q
5.050	GFBC Nanning	China	1434	D,E
5.050	R.Tanzania	Tanzania	1925	C,I,L
5.055	RFO Cayenne(Matoury)	Fr' Guiana	0114	A,C,I,Q
5.060	PBS Xinjiang, Urumqi	China	1500	E,K
5.075	Caracol Bogata	Colombia	2330	A,C,D,F,I, K,M,P,Q

DXers:

A: Darren Beasley, Bridgwater.
B: Robert Connolly, Kilkeel.
C: John Eaton, Woking.
D: David Edwardson, Wallsend.
E: P. Gordon Smith, Kingston, Moray.
F: Bill Griffith, W.London.
G: Sheila Hughes, Morden.
H: Rhoderick Illman, Oxted.
I: Eddie McKeown, Newry.
J: Roy Merrall, Dunstable.
K: John O'Halloran, Harrogate.
L: Fred Pallant, Storrington.
M: Roy Patrick, Derby.
N: Peter Perkins, Hemel Hempstead.
O: Clare Pinder, Appleby.
P: Peter Pollard, Rugby.
Q: Richard Reynolds, Guildford.
R: Chris Shorten, Norwich.
S: Tom Smyth, Co.Fermanagh.
T: Phil Townsend, E.London.
U: Julian Wood, Elgin.

Andy Emmerson G8PTH, 71 Falcutt Way, Northampton NN2 8PH

Watching Brief

Our Quarterly Look at Amateur Television

Travel broadens the mind and even if we can't visit far-off places, we may learn something by reading about them. The same applies to our amateur radio and television hobby - there's much to be gained seeing how other people handle things elsewhere.

Someone in a position to comment is **Jonathan Gudgeon G4MDU**, currently in Austria. Some people go there for skiing or a less strenuous holiday but for John it's work (or at least that's what he says). In any case, he has kindly sent some information on the ATV scene over there.

On the face of it, amateur television is organised in a similar fashion to Britain, although Jon's subjective impression is that the TV repeaters are more advanced than in the UK. Several, he notes, have outputs in the satellite part of the 23cm band.

ATVers in Austria get most of their news from the ATV pages of *QSP*, the Austrian national radio club's magazine and also from the German ATV club magazine *Der TV Amateur*. Amateur television activity started on the 70cm band, largely in the 1970s, and has since migrated to the 24, 13 and 3cm bands. Satellite tuners are widely used for receiving ATV transmissions in the 24cm band, whilst LNBs are also converted for direct reception of 10GHz signals. The relative ease of getting on the air, at least for receiving, has not diminished interest in the experimental side of transmission and reception. At the same time, the inertia and apathy which seems to affect other amateur radio modes (at least in Austria) is thankfully missing in ATV, not least because 'it needs two to tango'. Amateur television is a social thing, a people activity, not like, say, packet radio which you can do all by yourself.

Nine Repeaters

There are already nine TV repeaters in Austria, numbered TV1 to TV9, and brief details follow. Note that several have a.m., rather than f.m. outputs.

TV1 (OE5XLL), Linz. Twin inputs on 433.75 and 1.250GHz (both a.m.), output on 1.282GHz a.m.
TV2 (OE5XUL), Ried and not far from Linz. Input 1.250GHz f.m., output 433.75MHz a.m.
TV3 (OE2XHM), Salzburg. Input 1.250GHz, output 434.75MHz, both a.m.
TV4 (OE6XFD), Graz. Input 433.75MHz AM, output 1.280GHz a.m.
TV5 (OE7XLT), Landeck. Input 10.412GHz, output 1.270GHz, both f.m.
TV6 (OE8XTK), near Klagenfurt. Input 2.412GHz, output 1.280.5GHz, both f.m.
TV7 (OE7XST), Innsbruck. Input 2.412GHz, output 1.278GHz, both f.m.
TV8 (OE3XFW), Frauenstaffel, north-east Austria. Frequencies not yet published.
TV9 (OE7XCT), Landeck. Input 2.435GHz, output 10.435GHz, both f.m.

Most of these repeaters are well situated. TV5 and TV9 (Landeck) have an elevation of 2200m above sea level, whilst TV7 is even higher, at 2378m. TV3 and TV6 are just short of 2000m - when are we going to put a TV repeater on top of Snowdon or Ben Nevis? Oh well - just a thought.

An international link on 10GHz to Germany (not far away!) is planned for the Landeck repeaters. All but one of the repeaters use horizontally polarised antennas, the exception being the second repeater at Landeck because two machines are co-sited there. Taking TV5 and TV9 as an example, we find the mode is f.m. vision with a 6.5MHz (not 5.5 or 6.0MHz) audio subcarrier. Deviation on audio is 180kHz, whilst the video bandwidth is 16MHz. ATVers without video transmitters can use the audio channel to take part in ATV link-ups by transmitting on the international ATV calling frequency, 144.750MHz. In general, repeaters use omnidirectional collinears for 70, 23 and 13cm and horns for 10GHz.

TV9 is the newest of these repeaters and has remote control facilities to switch the transmitter between high (10W) and low (1.5W) power. When activated, the repeater first monitors the input signal and checks for video modulation. In addition it is switched on automatically for ten minutes at the start of every hour, in beacon mode. A choice of two video test patterns is available and a welcome greeting is played out on the sound channel, together with the repeater's technical details.

Hams In Space

Back in June (in *Practical Wireless*) I mentioned a planed ATV-in-space experiment aboard the Russian space station MIR. The Bremen (Germany) ATV group was working to provide an ATV link between the station and earth. By the time you read this article the launch date will be close. To recap, a capsule called *Priroda* will be fired into orbit and docked onto MIR. The ATV equipment is due to contain:

(1) a combination 13/23cm antenna,
(2) an antenna splitter,
(3) a 23cm pre-amplifier, and
(4) a p.a. for 13cm.

There are several possibilities: the camera might be mounted fixed by a window, to view the world from space, or it may be used to provide visual contact with an astronaut (who hopefully speaks English). An even more exciting prospect is making Europe-wide contacts in amateur television, although this will not be all that easy - the flight passage of the spacecraft is such that a pass will last a maximum of 20 minutes and antennas will require constant (motorised) tracking, although one of the Bremen team, Manfred Fuetterer DC6FM, has devised a computer control system for this. If a group of amateurs did this and linked in some ATV repeaters a kind of ATV broadcast from space would be possible. Details are still awaited as I write this article but watch the news section for latest developments.

There may be some American involvement too. I received a letter from Elmo Knoch K5YWL in Arkansas, offering the use of a pair of back-to-back splitable ATV repeaters.

"I have a group of ATVers who have already started designing hardware to work with this system," he wrote, "and we feel we can give good exposure to these ATV efforts." He went on to ask about power levels and DC6FM will be responding. Let's hope that everyone does their bit, everything works and for once, ATV can get the high-profile publicity it deserves as amateur radio's most advanced speciality mode.

Amateur television and space are combined in this QSL card which Dick G4RRX received in Norwich after making an amazing mobile SSTV contact with VK3AIH in Australia.

SYNOP

Half Price Special Offer

Skyview Systems, the UK's leading producers of Amateur Radio and Short-wave Radio Software are pleased to announce the opening of their new retail division, Skyview Communications (SkyComm). To celebrate this occasion we have decided to make a very special Half Price offer. For a limited period you can purchase SYNOP, our Synoptic decoding package for as little as £39.95 (Version) or £74.95 (Version 5.5). You can even upgrade your Skyview Fax package with a Synop add on for £39.95

To order your copy, just call us with your credit card details, or send us a cheque for the required amount plus £8.00 p&p

SEND NOW FOR YOUR FREE SKYCOMM CATALOGUE

We have a range of in house software products such as SkyFax, our multi-mode decoding package, and a number of "CAT" control programs for most common Receivers and Transceivers.

We are also dealers for many other products including AEA, Davis, Kantronics, Lowe, PacComm, Yaesu, Icom, etc...

SkyComm

Skyview Communications, Skyview House, Alresford, Nr. Colchester, Essex CO7 8BZ
Tel. 01206 823185 Fax. 01206 825328

RADIO AMATEURS EXAM? PASS FIRST TIME!

Before you enrol check the benefits of RRC'S unique Home Tuition Service

RRC has helped thousands of students to success in their examinations with this unique system of postal tuition, one which guides you, step-by-step, to qualify in the shortest possible time. Only The Rapid Results College offers you all these advantages:

- ☑ A qualified personal tutor
- ☑ Study material prepared by specialists
- ☑ Completely self-contained courses
- ☑ Handy pocket-size booklets
- ☑ Personal study programme
- ☑ Regular marked tests
- ☑ Courses regularly updated
- ☑ 48 hour despatch
- ☑ Free advice before you enrol
- ☑ Telephone Helpline
- ☑ Free 'How to Study' Guide
- ☑ Instalment Plan
- ☑ Free Postage on course material
- ☑ Worldwide Airmail Service
- ☑ Extra tuition free if you don't pass first time

POST COUPON TODAY FOR FREE RADIO AMATEURS PROSPECTUS
Please send me my prospectus as quickly as possible.

Mr/Mrs/Miss/Ms _____

Address _____

_____ Postcode _____

RRC **The Rapid Results College**
Dept. JV156, Tuition House, London SW19 4DS. FREE ADVICE: 0181 947 7272 (9am-5pm)
PROSPECTUS: 0181 946 1102 (24 hour Recordacall Service quoting Dept. No. above).
ACCREDITED BY COUNCIL FOR THE ACCREDITATION OF CORRESPONDENCE COLLEGES CACC

Scanning Receivers

TR2400

- 100kHz to 2060MHz, continuous coverage
- 1000 programmable channels
- SSB, CW, AM, NBFM, WBFM modes
- Search and scan facilities
- Excellent sensitivity
- LC display with signal strength meter
- Supplied with high-capacity ni-cad batteries, mains charger/adaptor, earpiece aerial, carry strap, belt clip, 12Vdc lead and manual.

£369.00
40-12400

MVT7000

- 100kHz to 1300MHz, continuous coverage
- 200 programmable channels
- AM, FM and WBFM modes
- Search and scan facilities
- Excellent sensitivity
- LC display with signal strength meter
- Supplied with ni-cad batteries, mains charger/adaptor, telescopic aerial, carry strap, belt clip, 12Vdc lead and manual.

£289.00
40-17000

MVT7100

- 530kHz to 1650MHz, continuous coverage
- 1000 programmable channels
- SSB, AM, NBFM, WBFM modes
- Search and scan facilities
- LC display with signal strength meter
- Supplied with high capacity ni-cad batteries, mains charger/adaptor, telescopic aerial, carry strap, belt clip, 12Vdc lead, earpiece and manual.

£389.00
40-17100

MVT8000 Base/Mobile

- 100kHz to 1300MHz, continuous coverage
- 200 programmable channels
- AM, FM and WBFM modes
- Search and scan facilities
- LC display/keypad illumination with signal meter
- Supplied with mains adaptor (240Vac use), adjustable whip antenna, mobile mounting kit, 12Vdc lead and manual.

£369.00
40-08000

Full details of all the above are included in our comprehensive catalogue, £1.95 (plus 30p p&p)
All the above are currently in stock and available for immediate delivery. Standard p&p £1.50, next day delivery £5.29 (UK Mainland).

All prices include VAT (at 17.5%)

Cirkit

Access VISA

Cirkit Distribution Ltd
Park Lane · Broxbourne · Hertfordshire · EN10 7NQ
Telephone (01992) 448899 · Fax (01992) 471314

SWM PCB SERVICE

SHORT WAVE MAGAZINE PCB SERVICE

Printed Circuit Boards for *Short Wave Magazine* constructional projects are available from the SWM PCB Service.

The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. Orders and remittances should be sent to:

Badger Boards, 80 Clarence Road, Erdington, Birmingham B23 6AR.
Telephone: 0121–384 2473

Mark your envelope **SWM PCB Service.**

Cheques should be crossed and made payable to: **Badger Boards.**

When ordering PCB's please state the article title, magazine cover date and the Board Number. Please print your full name and address clearly in block capitals and do not enclose any other Short Wave Magazine correspondance with your order.

Please allow 28 days for delivery.

BADGER BOARDS
80 Clarence Road, Erdington, Birmingham B23 6AR
Telephone: 0121–384 2473

TRADING POST

Fill in the order form **clearly** in **BLOCK CAPITALS** - up to a maximum of 30 words plus 12 words for your address, and send it together with your payment of £3.00, to Zoë Shortland, Trading Post, *Short Wave Magazine*, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.
If an order form is not provided due to space constraints, a form from a previous issue can be used as long as the cornerflash or Subscriber Number is attached as proof of purchase of the magazine.
Adverts appear on a first-come-first-served basis. If there is not enough space to feature a Trading Post ad in the issue you request it is automatically entered into the next one. All queries to Zoë Shortland on (01202) 659910.
We cannot accept advertisements from traders, or for equipment which is illegal to posses, use or which cannot be licensed in the UK.

For Sale

137MHz Meteosat receivers, PROSAT II, turnstile aerial, £325. ICS FAXI, cable, printer, £175. PK232, PC PAKRATT, £150. EMP Scanmaster, £35. Timestep WSAT6, Amiga interface, £30. Amiga PACKRATT, £20. Capco RMA-1 loop antenna, £25. Bob, Essex. Tel: (01245) 346894.

AR3000, as new, boxed, £450. John, Norfolk. Tel: (01379) 652043 evenings.

AR3000A top range scanner, six months old and hardly used, boxed and complete with four frequency guide publications covering h.f., v.h.f. and u.h.f., first £650 secures. Tel: Birmingham 0121-705 9351 or (0831) 232434 (mobile).

Aviation videos, as mentioned in January Airband section, Boeing 757, Bristol to Cyprus and Boeing 747 from the cockpit, £12 each. Chris Perkins, Avon. Tel: (01934) 512054 evenings.

Barlow Wadley radio, with original box/handbook, recently re-aligned, fair condition, £150. Tel: London 0181- 340 5705 after 7.30pm and weekends.

Collins 75A-4 manual circuits, £8. 19 Set, MkIII with manual, £8. Headset and mic., £8. Lamps operator, £3. Cossor double beam 'scope, not working, £10. Sony CRF160, part works, for spares?, £10. Tel: Herefordshire (01497) 821465.

Complete collection of 91 *Short Wave Magazines*, since April 1987, v.g.c., one short wave receiver, one v.h.f. receiver, many features with headphones, v.g.c., £65. Buyer collects. Tel: Bucks (01296) 661452.

Datong FL3 filter, £100. ERA Microreader MkII, upgraded, £95. ERA Display RS232, new, £95. Global 1000 ATU, new and boxed, £60. Deecom a.t.u., new, £30. Tel: Warwicks (01926) 54556.

Eddystone 680X, nice order, with instructions, £80, plus £8.50 P&P. Also an EC10 with mains pack. **Eddystones always wanted**, including 960, EB35, diecast speakers, etc. Peter Lepino, Surrey. Tel: (01374) 128170 or FAX: (01372) 454381 anytime.

Fairmate HP100E MkII wideband scanner to 1300MHz, a.m., n.f.m., wide f.m., aerial, car adapter, case, original packaging, only, £145. Tel: Gwent (01600) 716256.

FRG8800, very good condition with manual and box, £350 o.n.o. FRG9600, very good condition with manual and box, £350 o.n.o. Simon, Berks. Tel: (01635) 200865 evenings.

FT902DM transceiver, nine bands, excellent working order, all filters with fist mic., d.c.-d.c. lead and manuals, any test, £425. Bob G0JTD, Wiltshire. Tel: (01793) 823973.

Global AT2000 a.t.u., purchased mid '94, leads and instructions, but alas, no box, lost following house move, £50 o.n.o. Tel: Dereham (01362) 687716.

Grundig Satellit 3400 professional receiver in mint condition, £275. **Wanted Philips D2999**, cash offered. Tel: Herts (01462) 438242.

IC725 h.f. all band transceiver TX 160-10m, RX 500kHz to 30MHz, DDS, 26 memories, ideal for data modes, 10-100W output, good condition, bargain at, £450. Ken G0PPM, Glos. Tel: (01453) 758987.
Icom 71E, first class condition, £500. Trio 2000 with v.h.f., £350. Trio 1000, v.g.c., £200. Trio 600, like new and boxed, £185. Trio 9R-59D general coverage, £50. **Wanted Sony CRF320** or 330. Tel: London 0181-813 9193.

Icom ICR71E wide band receiver, 100kHz to 30MHz, mint condition, manual, boxed, remote control and filters, also external speaker ICSP3, £600 o.n.o. Dave, Somerset. Tel: (01935) 27938 after 6pm.

Icom R71E, excellent condition, £500. Genuine reason for sale, possible part exchange for hand-held scanner, approx, £200. Norman, Suffolk. Tel: (01473) 686228.

Kenwood R5000, v.h.f. converter, slow motion tuning drive, c.w./s.s.b. filters, v.g.c., £750. Redifon R500 with manual voc, £550. Datong FL3, £100. SEM QRM eliminator, £65. FRT7700 aerial tuner, £40. All o.n.o. **Wanted Racal 1792 MA2232 d.f. unit.** Neil. (01323) 483966.

Lowe HF150 receiver, d.c. transformer, good condition, £285. Tel: Edinburgh 0131-668 3158.

Lowe HF150, manual, box, p.s.u., mint, £200. Buyer collects. ERA BP34 audio filter, p.s.u., £20. Tel: Surrey (01372) 456741.

Lowe HF150, mint condition, keypad, p.s.u., whip aerial, £325 plus postage. Datong FL3, mint condition, p.s.u., connecting leads, £125. B. Day, Herts. Tel: (01425) 730537.

Lowe HF225 plus whip aerial, boxed with manual, £325. HF150 plus keypad with manual, £235. Both good condition, carriage extra. Tel: Glasgow 0141-959 7466.

R2000 receiver, excellent condition. VC10 converter, 118-174MHz, boxed and manual, £350. J. Whyte, 28 Church Street, Lochwinnoch, Nr. Glasgow PA12 4AD. Tel: (01505) 842317.

Realistic DX-300 receiver, 0-30MHz, digital read-out, mains, battery, triple conversion, three bandwidths, separate l.s.b., u.s.b., little used, boxed, condition like new, manual included, £85 plus P&P. Bob, Cheshire. Tel: (01244) 310271 evenings.

Redifon R551N receiver, 0-30MHz, a.m., u.s.b., l.s.b., c.w., solid state, built-in a.t.u. and frequency synthesiser, very good receiver, but rather large, 460mm (w), 280mm (h), 460mm (d), v.g.c., £160. **Wanted Butternut HF5B beam** or HQ1 minibeam. Tel: Derby (01332) 372696.

Revco HG series, mobile v.h.f./u.h.f. aerial magmount, coax, 3dB gain, used once, BNC plus, £10. Tel: Newbury (01635) 48633.

Roberts RC818 professional digital 45 memory wide/narrow filter, s.s.b., a.m., f.m., full l.w., m.w., f.m. taperecorder with timer, boxed, mint, £140. Tel: Blackpool (01253) 791395.

Sony CRF320, nice condition, but no manual, £340. Roberts R18 digital world band rec., with cassette, £135. Global a.t.u. 1000, as new, £45. MFJ active antenna, £25, 30kHz/230MHz. Dennis Hawkem, 11 Maplewood Flats, Macclesfield, Cheshire SK11 7RP. Tel: (01625) 615076 most times.

Sony ICF-SW1 compact short wave receiver, complete kit with carry case, including active antenna, mains power supply and all handbooks, a bargain at, £110. Tel: Gwynedd (01286) 870729.

Trio 520S h.f. transceiver plus Kenwood a.t.u., £400. Icom 2m all-mode transceiver, £225 with manuals, excellent condition. ERA filter for s.s.b., c.w., £40. Tel: Co. Durham (01388) 762801.

Trio R1000 RX, excellent condition, manuals, £250 or **exchange for Yaesu FRG7700** or similar RX, can be seen working at QTH. Tel: Essex (01255) 678455.

Universal M-7000 professional decoder, will decode packet, FAX, RTTY, SITOR A.B Morse, ARQ M2, ARQ M4, ARQ E3, ARQ E, FEC A, FEC S, Swed ARQ ASCII, etc, etc, no computer needed, £375. Might exchange computer 386 or scanner. A. Bell, Biggin Hill, Kent. Tel: (01959) 575113.

Yaesu 101ZD transceiver, v.g.c. Howes AA4 active antenna. JIM scanner, pre-amp, RX4 decoding program Spectrum. Sell or exchange HF150 or 225. Tel: Staffs (01283) 568439.

Yaesu 7700 with memory pack, a.t.u. and v.h.f. air band converter, serviced by SMC Ltd., Leeds, in November 1994, £325, v.g.c., buyer collects. John, Leeds. Tel: 0113-270 7964, multi-shift worker, if no reply, try again later.

Yaesu FRG7700 c/w memory option and manual, £265 o.n.o. Yaesu FRG7 communications receiver, £160 o.n.o. **Wanted Kenwood R5000**, must be in good condition, cash waiting! Tel: Kent (01322) 385639 after 5pm or weekends.

Yaesu FRG7700 receiver, FRT7700, a.t.u., FRV7700 v.h.f. converter, boxed with manuals, £275 o.n.o. Collect or carriage extra. Tel: Beds (01462) 812739 evenings and weekends only.

Yaesu FRG8800, mint condition with manual. Datong AD270 active antenna, p.s.u., pre-amp, all in perfect working order, £325. **Wanted PRO34 scanner**. Tel: 0171-729 5429.

Yaesu FRG9600 MkII receiver scanner Raycom, extended coverage 60 to 960MHz, a.m., s.s.b., c.w., f.m.(w), f.m.(n), mint condition, boxed with handbook, £310 o.n.o. Tel: Birmingham 0121-474 6601.

Yupiteru 7100, boxed, complete with two aerials, mains and car adapters, charger, frequency guide and operators manual, only three months old, £290. Geoff, West Wales. Tel: (01639) 851150 after 6pm, answerphone on continuously.

Yupiteru MVT5000 scanner, 25-550, 800-1300MHz, boxed, as new with leather case, £145. Sony PRO80 a.m., f.m., s.s.b., excellent condition, complete, boxed, £140. Both little used. Tel: Dorset (01202) 690845.

Yupiteru MVT7100 hand-held scanner, as new, little used, boxed with Revex HX-7000 antenna, charger, soft case, £330. Tel: Staffs (01543) 671321.

Yupiteru MVT7100 scanner, one month old, unwanted gift, £269. Tel: Bournemouth (01202) 484921.

Wanted

CR100/B28 or B40 receiver, any condition, working or not. Geoff, Merseyside. Tel: 0151-489 7427.

Early shirt pocket transistor radios, especially made by Sony and other Japanese manufacturers. Conditions not important and distance no object. Will collect and pay your price. Make my day, please! Enrico Tedeschi, 54 Easthill Drive, Portslade, Brighton BN41 2ED. Tel/FAX: (01273) 410749.

Ferrite rod aerials, must be half inch in diameter, no more or less. Must be six inches long or more. Peter Tankard, Sheffield. Tel: 0114-234 3030 anytime.

Hoka 3 with all the options, good price paid, no junk please or boy racers. A. Bell, Bigin Hill, Kent. Tel: (01959) 575113.

Multiband radios, Panasonic, Sony, Grundig, Philips, Hitachi, Sanyo, JVC, Hormende, Toshiba, Eska, Sharp and others. Always valid. Please price and postage air. Please write to Sabino Fina, 83042 Atripalda (AV), Italy.

Reward of two Scottish pound notes for acquisition of full technical information on Fantavox HE-50 communications receiver which was left to me by silent key. Tel: Glasgow (01893) 963854 and follow the bouncing ball.

Top prices paid for your German gear of WWII vintage. Looking for receivers, transmitters, accessories. Will collect. Lissok, Rue M. Poedts 9, B-1160 Brussels, Belgium. Tel: 010-322 6737115.

Universal M400 data decoder, must have ACARS or any other decoder with ACARS. Must be in perfect working order. Fred Rowntree, Bucks. Tel: (01753) 885163.

Urgently wanted by disabled pensioner either Lowe SRX30, Heathkit RA1, Howes DXR20, must be good working condition and fair price. Tel: Warwick (01295) 670749.

Wireless World Vol. 31 (July - Dec 1932) and Vol. 46 (1940). Terry G4TZB, Manchester. Tel: 0161-643 6116.

WS18 complete, top price paid. Tel: Nottingham 0115-939 5970.

Exchange

Sony ICF SW30 and WIN108 air band receiver, both as new for Yaesu FRG7 or w.h.y.? Tel: Dorset (01258) 453933 anytime.

TRADING POST ORDER FORM

PLEASE WRITE IN BLOCK CAPITALS

PLEASE INSERT THIS ADVERTISEMENT IN THE NEXT AVAILABLE ISSUE OF *SHORT WAVE MAGAZINE*

A photocopy of this form is acceptable, but you must still send in the corner flash below as proof of purchase.

I enclose Cheque/P.O. for £.....(£3.00)

Made payable to *Short Wave Magazine.*

Name .....

Address.....

.....

.....

.....

.....*Post Code*.....

Credit Card Details

Access VISA MasterCard

Card Number

Signature.....

Expiry date of card.....

FOR SALE/WANTED/EXCHANGE maximum 30 words

	(30)		

CONTACT DETAILS maximum 12 words

			(12)

SWM FEBRUARY 95 TP

BOOK SERVICE

£50 PRIZE DRAW

For every book order received between February 9 1995 and March 8 1995 the name and address of the customer will be entered into our prize draw. On February 9 one name will be pulled from the sack. The lucky person will win a £50 note (a real one!) So why not place an order for that book that you've being thinking about buying and you may be the lucky recipient of £50.

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

TO ORDER:
PLEASE USE THE ORDER FORM ON PAGE 91 OR TELEPHONE THE CREDIT CARD HOTLINE ON (01202) 659930.

LISTENING GUIDES

CALLSIGN 95
The Civil & Military Aviation Callsign Directory

Intended for the aircraft and radio enthusiast to use as a stand alone reference, or as a partner to *Airwaves 94*.
Over 5300 military and 3000 civil callsigns are covered in detail. *108 pages.* **£7.95**

AIRWAVES 94
The Complete HF/VHF/UHF Aviation Frequency Directory
88 pages. **£7.95**

AIR BAND RADIO HANDBOOK
5th Edition
David J. Smith
Air band radio listening enables you to listen-in on the conversations between aircraft and those on the ground who control them, and is an increasingly popular and fascinating hobby. A new chapter on military air band has been added. The author, an air traffic controller, explains more about this listening hobby.
190 pages. **£8.99**

THE COMPLETE SHORT WAVE LISTENER'S HANDBOOK 4th EDITION
Hank Bennett, Harry Helms & David Hardy
This book is a comprehensive guide to the basics of short wave listening. Everything you need to get started as an s.w.l. is explained in a clear and easily understood manner. Receivers, antennas, frequencies,. propagation, Q-codes, etc. are all covered.
321 pages. **£17.95**

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

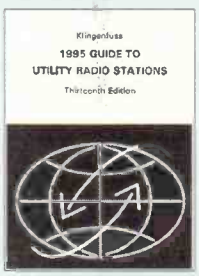
FERRELL'S CONFIDENTIAL FREQUENCY LIST 9th Edition
Compiled by Geoff Halligey
Spirally bound, this easy-to-use reference book covers 1.6 - 28MHz in great depth, all modes and utility services, with new reverse frequency listing showing every known frequency against each callsign, who's using what frequency and mode, what's that callsign?
544 pages. **£17.95**

FLIGHT ROUTINGS 1994
Compiled by T.T. & S.J. Williams
This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America.
122 pages. **O/P**

GUIDE TO FAX RADIO STATIONS
14th Edition
Joerg Klingenfuss

The new edition of this super reference book covers the world's facsimile stations, their frequencies and methods of working. There is a section covering the equipment needed to receive FAX over the radio. To give you an idea of what is available there are many pages of off-air received FAX pictures. *392 pages.* **£20.00**

GUIDE TO UTILITY STATIONS
13th Edition
Joerg Klingenfuss



This book covers the complete short wave range from 3 to 30MHz together with the adjacent frequency bands from 0 to 150kHz and from 1.6 to 3MHz. It includes details on all types of utility stations including FAX and RTTY. There are 19549 entries in the frequency list and 3590 in the alphabetical callsign list plus press services and meteorological stations. Included are RTTY & FAX press and meteo schedules. There are 11800 changes since the 10th edition. *534 pages.* **£30.00**

INTERNATIONAL RADIO STATIONS GUIDE
BP255
Peter Shore
As in 'Broadcast Round-up', his column in *PW*, Peter Shore has laid this book out in world areas, providing the listener with a reference work designed to guide around the ever-more complex radio bands. There are sections covering English language transmissions, programmes for DXers and s.w.l.s. Along with sections on European medium wave and UK f.m. stations.
266 pages. **£5.95**

INTERNATIONAL VHF FM GUIDE
7th Edition.
Julian Baldwin G3UHK & Kris Partridge G8AUU
70 pages. **£2.85**

POCKET GUIDE TO RTTY AND FAX STATIONS
Bill Laver
A handy reference book listing RTTY and FAX stations, together with modes and other essential information. The listing is in ascending frequency order, from 1.6 to 26.8MHz. *57 pages.* **£3.95**

RADIO LISTENERS GUIDE 1995
Clive Woodyear
This is the third edition of this radio listener's guide. Simple-to-use maps and charts show the frequencies for radio stations in the UK. Organised so that the various station types are listed separately, the maps are useful for the travelling listener. Articles included in the guide discuss v.h.f. aerials, RDS, the Radio Authority and developments from Blaupunkt. *68 pages.* **£3.45**

SHORT WAVE INTERNATIONAL FREQUENCY GUIDE

This book contains a comprehensive frequency listing covering 400kHz - 30MHz and is packed with everything from the basics of short wave listening to explaining FAX and RTTY. In this updated version there are many new broadcast and utility stations listed. *188 pages.* **£12.95**

UK SCANNING DIRECTORY
4th Edition
This spiral bound book lists over 20000 UK spot frequencies from 25MHz to 1.6GHz. Articles on scanning in the UK.
335 pages. **£17.50**

VHF/UHF SCANNING FREQUENCY GUIDE
This book gives details of frequencies from 26MHz to 12GHz with no gaps and who uses what. Completely revised and enlarged (February 1993), there are chapters on equipment requirements as well as antennas, the aeronautical bands, and the legal aspects of listening using a scanner.
156 pages. **£9.95**

WORLD RADIO TV HANDBOOK 1994
Country-by-country listing of l.w., m.w. & s.w. broadcast and TV stations. Receiver test reports, English language broadcasts. The s.w.l.'s 'bible'.
£15.95

SATELLITES

NEWNES GUIDE TO SATELLITE TV
Derek Stephenson
This book, the 3rd edition, is a hard bound volume, printed on high quality paper. The author is a satellite repair and installation engineer and the book covers all information needed by the installation engineer, the hobbyist and the service engineer to understand the theoretical and practical aspects of satellite reception with dish installation and how to trouble-shoot when picture quality is not up to anticipated reception. Mathematics has been kept to a minimum.
371 pages. **£18.95**

SATELLITE BOOK - A Complete Guide to Satellite TV Theory and Practice
John Breeds
This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by a expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology.
280 pages. **£32.00**

SATELLITE EXPERIMENTER'S HANDBOOK
2nd Edition
Martin Davidoff K2UBC
The book is divided into four main sections - History, Getting Started, Technical Topics and Appendices. It provides information on spacecraft built by, and for, radio amateurs. In addition, it discusses weather, TV-broadcast and other satellites of interest to amateurs.
313 pages. **£14.50**

SATELLITE TELEVISION
A layman's guide
Peter Pearson
Pictures from space, that's what satellite television is all about. Orbiting satellites, 35000km high, receive TV signals from stations on the earth and re-transmit them back again. This book explains all you need to know to set up your own satellite TV terminal at home, dish and accessories, cable and tuner.
73 pages. **£1.00**

SATELLITE TELEVISION INSTALLATION GUIDE
5th Edition
John Breeds
A practical guide to satellite television. Detailed guide-lines on installing and aligning dishes based on practical experience.
76 pages. **£15.00**

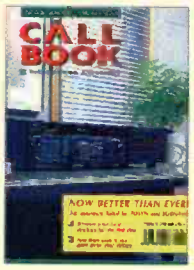
WEATHER SATELLITE HANDBOOK
5th Edition
Dr Ralph E. Taggart WB8DQT
This book explains all about weather satellites, how they work and how you can receive and decode their signals to provide the fascinating pictures of the world's weather. Plenty of circuit diagrams and satellite predicting programs.
192 pages. **£14.50**

WRTH SATELLITE BROADCASTING GUIDE
1994 Edition
Bart Kuperus
This brand new publication, written by one of the experts from the respected World Radio TV Handbook, will be a great help to everyone interested in the world of satellite radio and television. Featuring over 300 pictures and graphics. All the information you need to know about installing your own satellite system. *366 pages.* **£15.95**

AMATEUR RADIO

ALL ABOUT VHF AMATEUR RADIO
W. I. Orr W6SAI
Written in non-technical language, this book provides information covering important aspects of v.h.f. radio and tells you where you can find additional data. If you have a scanner, you'll find a lot of interesting signals in the huge span of frequencies covered, 100-300MHz & 50, 420, 902 & 1250MHz bands. *163 pages.* **£9.50**

AMATEUR RADIO CALLBOOK & INFORMATION DIRECTORY (RSGB)
Latest Edition



The first 124 pages provide a useful information directory with details of specialised clubs, county lists, repeater details, band plans and reference material. Then follows the callbook itself with over 60 000 callsigns including EI and Novice stations. A new section has been added towards the back of the book giving lists of surnames and Inititals of listed radio amteurs followed by callsigns and the same under post-code areas.
508 pages. **£10.00**

AMATEUR RADIO FOR BEGINNERS RSGB
Victor Brand G3JNB
An ideal book for the absolute beginner to the amateur radio hobby. Well illustrated and an interesting read.
65 Pages. **£3.50**

AMATEUR RADIO LOGBOOK
Published by RSGB
This standard spirally bound amateur radio log book has 100 pages and is marked out with the format required in the UK. There are columns for date, time (UTC), frequency, power (in dBW), station worked/called, reports, QSL information and remarks. **£2.99**

AMATEUR RADIO TECHNIQUES RSGB
Pat Hawker G3VA
Anyone who enjoys Pat Hawker's 'Technical Topics' in *Radio Communications* will enjoy this book. An amateur radio manual itself, this paperback book, the 7th edition, can only be bettered by a new edition. A truly excellent reference source with a practical bias.
368 pages. **£9.50**

ANTENNAS AND TECHNIQUES FOR LOW-BAND DXING (ARRL)
John Devoldere ON4UN
This unusual book will be of particular interest to 1.8, 3.5 and 7MHz operators as it's packed with information on antennas and operating tips for 'Top Band to Forty' fans. There are chapters on low band propagation, operating techniques, equipment and for the computer minded there's a chapter on newly-available low band software. *393 pages.* **£14.50**

ARRL HANDBOOK FOR RADIO AMATEURS 1995
This is the 72nd edition of this handbook and contains the best information from previous issues. New for this edition is some information on feedback-loop design for power supplies, a new gel-cell charger project, updates on antenna systems and new coverage of baluns, propagation programs are compared and colour SSTV and telephone FAX machines are also covered. Finally there's a new section on 'for the workbench' with new projects for the reader to build. *1214 pages.* **£19.95**

ARRL OPERATING MANUAL
Another very useful ARRL book. Although written for the American amateur, this book will also be of use and interest to the UK amateur. Topics covered range from short wave listening through operating awards to repeaters, operating and satellites. *684 pages.* **£12.95**

ARRL SATELLITE ANTHOLOGY
The best from the Amateur Satellite News column and articles out of 31 issues of *QST* have been gathered together in this book. The latest information on OSCARs 9 through 13 as well as the RS satellites is included. Operation on Phase 3 satellites (OSCAR 10 and 13) is covered in detail.
97 pages. **£5.95**

ARRL UHF/MICROWAVE EXPERIMENTER'S MANUAL
Various Authors
A truly excellent manual for the keen microwave enthusiast and for the budding 'microwaver'. With contributions from over 20 specialist authors. Chapters covering techniques, theory, projects, methods and mathematics.
446 pages. **£14.50**

THE BRIGHT SPARKS OF WIRELESS RSGB
G. R. Jessop G6JP
This hardback book is well illustrated with some excellent photographs. It pays tribute to and takes a good look at the personalities behind the early days of amateur radio and the equipment they used. A good read. *90 pages.* **£12.50**

COMPLETE DX'ER
Bob Locher
This book covers equipment and operating techniques for the DX chaser, from beginner to advanced. Every significant aspect of DXing is covered, from learning how to really listen, how to snatch the rare ones out of the pile-ups and how to secure that elusive QSL card. *204 pages.* **£7.95**

HINTS AND KINKS FOR THE RADIO AMATEUR
Edited by Charles L. Hutchinson and David Newkirk
A collection of practical ideas gleaned from the pages of *QST* magazine. Plenty of projects to build, hints and tips on interference, c.w. and operating and snippets of information from amateurs who've tried and tested the idea.
129 pages. **£4.95**

HOW TO PASS THE RADIO AMATEURS' EXAMINATION (RSGB)
Clive Smith G4FZH and George Benbow G3HB
The background to multiple choice exams and how to study for them with sample RAE paper for practice plus maths revision and how to study for the exam. The majority of this book is given to sample examination papers so that candidates can familiarise themselves with the examination and assess their ability.
88 pages. **£7.99**

INTRODUCTION TO AMATEUR COMMUNICATIONS SATELLITES
BP290. **A. Pickard**
This book describes several currently available systems, their connection to an appropriate computer and how they can be operated with suitable software. The results of decoding signals containing such information as telemetry data and weather pictures are demonstrated. *102 pages.* **£3.95**

INTRODUCTION TO AMATEUR RADIO *BP257*
I. D. Poole
This book gives the newcomer a comprehensive and easy to understand guide through amateur radio. Topics include operating procedures, jargon, propagation and setting up a station. *150 pages.* **£3.50**

INTRODUCTION TO RADIO WAVE PROPAGATION *BP293*
J.G. Lee
How does the sun and sunspots affect the propagation of the radio waves which are the basis of our hobby? They affect the ionosphere, but differing frequencies are treated differently. Find out how to use charts to predict frequencies that will be the most profitable. What effect will noise have on the signal? Find out with this book.
116 pages. **£3.95**

INTRODUCTION TO VHF/UHF FOR RADIO AMATEURS *BP281*
I.D. Poole
An excellent book to go with the new Novice or full callsign. Nine chapters and an appendix deal with all aspects and frequencies from 50 to 1300MHz. Topics include propagation, descriptions of the bands, antennas, receivers, transmitters and a special chapter on scanners.
102 pages. **£3.50**

LOW PROFILE AMATEUR RADIO - OPERATING A HAM STATION FROM ALMOST ANYWHERE
Jim Kearman KR1S
This book delves into to the techniques of being a 'hidden Ham'. There are chapters on specialised equipment, operating techniques and antennas to name but a few. If you have a fascination for spy type radio equipment or like the idea of having a complete h.f. or v.h.f. rig built in a suitcase, then this little American book is for you. *124 pages.* **£5.95**

MICROWAVE HANDBOOK RSGB
Volumes 1, 2 and 3
Edited By M. W. Dixon G3PFR
Approximately 350 pages (each volume). Vol. 1 costs **£9.99**, Vol. 2 and 3 cost **£14.99** each.

PRACTICAL GUIDE TO PACKET OPERATION IN THE UK
Mike Mansfield G6AWD
Introduces the concept of packet radio to the beginner. Problem areas are discussed and suggestions made for solutions to minimise them. Deals with the technical aspects of packet taking the reader through setting up and provides a comprehensive guide to essential reference material. *220 pages.* **£9.95**

QRP CLASSICS
Edited by Bob Schetgen
Operating QRP is fun. The equipment is generally simple and easy to build, but often performs like more sophisticated commercial equipment. Some QRP Field Day stations operate a full 27 hours on a car battery - it's the perfect equipment for emergency communication when the power fails. Extracts from *QST* and the *ARRL Handbook*.
274 pages. **£9.95**

RADIO AMATEUR CALLBOOK INTERNATIONAL LISTINGS 1994
72nd Edition
The only publication listing licensed radio amateurs throughout the world. Also includes DXCC Countries list, standard time chart, beacon lists and much more. *Over 1400 pages.* **£19.50**

RADIO AMATEUR CALLBOOK NORTH AMERICAN LISTINGS 1994
72nd Edition
Listings of US amateurs (including Hawaii). Also contains standard time chart, census of amateur licences of the world, world-wide QSL bureau, etc. *Over 1400 pages.* **£19.50**

THE RADIO AMATEUR'S GUIDE TO EMC RSGB
Robin Page-Jones G3JWI
This paperback book provides essential information and reading for anyone who has an EMC (interference) problem. With the help of the well-illustrated text and techniques, much of the mystery from the troublesome world of electromagnetic compatibility is removed.
117 pages. **£7.99**

RADIO COMMUNICATION HANDBOOK (RSGB)
6th Edition
Dick Biddulph G8PDS

This long awaited new edition has been extensively up-dated and is full of diagrams and photographs. This book is a complete handbook/reference work and project book all rolled into one. The final innovation is that the necessary p.c.b. templates for the featured projects are provided at the end of the book making them much easier to work from when making your own p.c.b.s. *750 pages.* **£20.00.**

RAE MANUAL RSGB
G.L.Benbow G3HB
The latest edition of the standard aid to studying for the Radio Amateurs' Examination. Updated to cover the latest revisions to the syllabus. Takes the candidate step-by-step through the course.
127 pages. **£7.99**

RAE REVISION NOTES
George Benbow G3HB
If you're studying for the Radio Amateur's Examination, this book could be useful. It's a summary of the salient points of the *Radio Amateurs' Examination Manual*, the standard textbook for the exam. It's A5 size and therefore can be carried with you wherever you go. Easy-to-read, it's divided into 13 chapters with topics like receivers, power supplies, measurements, operating procedures, licence conditions and a summary of the formulae all dealt with. *92 pages.* **£4.99**

REVISION QUESTIONS FOR The Novice RAE RSGB
Esde Tyler G0AEC
In effect Esde Tyler's book could be considered as being a training manual for the NRAE. Answers are supplied and the book provides a useful reference source. *60 pages.* **£5.00**

RECEIVING STATION LOG BOOK
Published by RSGB
£3.50

SPACE RADIO HANDBOOK RSGB
John Branegan GM4IHJ
236 pages. **£12.50**

THE NOVICE LICENCE STUDENT'S NOTEBOOK
John Case GW4HWR
This is the recommended course book for anyone taking the Novice Licence. Covering all aspects of amateur radio and electronics it would be useful to anyone starting out in amateur radio. Every left hand page is for your own notes of explanation.
124 pages. **£5.99**

TRAINING FOR THE NOVICE LICENCE RSGB
John Case GW4HWR
Aimed at the Novice licence instructor this manual provides the syllabus and an excellent framework textbook to help novice, instructor and beginner alike. An excellent basic reference work. *101 pages.* **£6.50**

VHF/UHF DX BOOK
Edited Ian White G3SEK
An all round source of inspiration for the v.h.f./u.h.f. enthusiast. Written by acknowledged experts this book covers just about everything you need to know about the technicalities of v.h.f./u.h.f. operating. *270 pages.* **£18.00**

VHF UHF MANUAL RSGB
G. R. Jessop G6JP
The 4th edition of this well known book is in paperback form. Packed with information for the world of radio above 30MHz. It covers everything from v.h.f./u.h.f. radio history and theory and propagation to projects and techniques. An excellent reference source.
Approximately 1000 pages. **£10.50**

W1FB's DESIGN NOTEBOOK
Doug DeMAW W1FB
This book is aimed at the non-technical amateur who wants to build simple projects and obtain a basic understanding of amateur electronics. Your workshop does not need to be equipped like an engineering lab to be successful as an experimenter. Don't let a lack of test equipment keep you from enjoying the thrills of experimentation. *195 pages.* **£8.50**

W1FB'S HELP FOR NEW HAMS
Doug DeMaw W1FB
This book covers everything from getting acquainted with new equipment to constructing antennas, station layout, interference and operating problems to on-the-air conduct and procedures. *155 pages.* **£8.95**

W1FB's QRP NOTEBOOK
2nd Edition. Doug De Maw W1FB
The new improved and updated 2nd edition of this book, covers the introduction to QRP, construction methods, receivers and transmitters for QRP. This workshop-notebook style publication, which is packed with new designs for the keen QRP operator, also covers techniques, accessories and has a small technical reference section.
175 pages. **£7.95**

WORLD AT THEIR FINGERTIPS RSGB
John Clarricoats G6CL *307 pages.* **£6.00**

YOUR GATEWAY TO PACKET RADIO
Stan Horzepa WA1LOU
What is packet radio good for and what uses does it have for the 'average' amateur? What are protocols? where, why, when? Lots of the most asked questions are answered in this useful book. It included details of networking and space communications using packet. *278 pages.* **£8.95**

YOUR PACKET COMPANION
Steve Ford WB8IMY
This American book goes to considerable lengths to explain in simple terms how the radio amateur can get going on packet, how it works and what the various systems are. There are chapters dealing with assembling a packet station, sending and receiving packet mail and exploring advanced networking systems. *Your Packet Companion* goes a long way to explain some of the mysteries of packet radio. *170 pages.* **£5.95**

BASIC PACKET RADIO
Joe Kasser W3/G3ZCZ. *363 pages.* **£19.95**

DATA REFERENCE

NEWNES AUDIO & HI-FI ENGINEER'S POCKET BOOK
Vivian Capel
190 pages. Hardback. **£10.95**

NEWNES COMPUTER ENGINEER'S POCKET BOOK
255 pages. Hardback. **£12.95**

POWER SELECTOR GUIDE *BP235*
J. C. J. Van de Ven
160 pages. **£4.95**

NEWNES ELECTRONICS ENGINEER'S POCKET BOOK
1st Edition
Keith Brindley
This fact-filled pocket book will prove useful for any electronics engineer. Its comprehensive coverage includes literally everything from electronic physics to abbreviations, information on integrated circuits, applications, component data, circuits and systems. In effect this book provides a very useful portable electronics reference source. *305 pages.* **£12.95**

A REFERENCE GUIDE TO BASIC ELECTRONICS TERMS BP286
F. A. Wilson
Covering everything from Amplitude Modulation to Zener Diodes, this excellent guide is a manual, dictionary and revision book all rolled into one. With concise explanations, clear diagrams and easy to follow examples, this is an essential addition to the library of anyone contemplating taking the RAE. *474 pages.* **£5.95**

A REFERENCE GUIDE TO PRACTICAL ELECTRONICS TERMS BP287
F. A. Wilson
This is a well written clearly illustrated reference guide which, when used on its own, is perhaps of more use to those interested in the contructional side of amateur radio. However, it is of particular benefit to those taking the RAE especially if used in conjunction with *A Reference Guide to Basic Electronics Terms*. *442 pages.* **£5.95**

INTERNATIONAL TRANSISTOR EQUIVALENTS GUIDE BP85
Adrian Michaels
300 pages. **£3.95**

THEORY

CIRCUIT SOURCE BOOK 1 - BP321
R.A. Penfold
Written to help you create and experiment with your own electronic designs by combining and using the various standard 'building block' circuits provided. Deals with filters, amplifiers, voltage comparitors, etc.
182 pages. **£4.95**

CIRCUIT SOURCE BOOK 2 - BP322
R.A. Penfold
Complimentary to *Circuit Source Book 1*, helps you create and experiment with your own electronic designs by combining and using the various standard 'building block' circuits provided. Covers signal generation, power supplies and digital electronics, etc.
214 pages. **£4.95**

ARRL ELECTRONICS DATA BOOK
Doug DeMaw W1FB
Back by popular demand, completely revised and expanded, this is a handy reference book for the r.f. designer, technician, amateur and experimenter. Topics include components and materials, inductors and transformers, networks & filters, digital basics and antennas and transmission lines. *260 pages.* **£8.95**

AUDIO
Elements of Electronics - Book 6 *BP111*
F. A. Wilson
This book studies sound and hearing, and examines the operation of microphones, loudspeakers, amplifiers, oscillators, and both disk and magnetic recording. Intended to give the reader a good understanding of the subject without getting involved in the more complicated theory and mathematics.
308 pages. **£3.95**

BEGINNERS GUIDE TO MODERN ELECTRONIC COMPONENTS BP285. R.A. Penfold
This book covers a wide range of modern components. The basic functions of the components are described, but this is not a book on electronic theory and does not assume the reader has an in-depth knowledge of electronics. It is concerned with practicalities such as colour codes, deciphering code numbers and suitability.
166 pages. **£3.95**

EVERYDAY ELECTRONICS DATA BOOK
Mike Tooley BA. *250 pages.* **£8.95**

FILTER HANDBOOK
A Practical Design Guide
Stefan Niewiadomski
A practical book, describing the design process as applied to filters of all types. Includes practical examples and BASIC programs. Topics include passive and active filters, worked examples of filter design; switched capacitor and switched resistor filters and includes a comprehensive catalogue of pre-calculated tables. *195 pages.* **£30.00**

GUIDE TO CREATIVE CIRCUIT DESIGN
Robert Grossblatt
A book that takes you through all stages of design and building of (mainly) digital circuits, though many of the priciples apply to all forms of design and building. One nugget from the book, 'if you can't replace it - don't use it'.
235 pages. **£17.95**

FURTHER PRACTICAL ELECTRONICS CALCULATIONS & FORMULAE BP144
F. A. Wilson. *450 pages.* **£4.95**

AN INTRODUCTION TO THE ELECTROMAGNETIC WAVE BP315
F. A. Wilson
This little book deals effectively with a difficult abstract subject - the invisible electromagnetic wave. Aimed at the beginner, the book with its basic approach to electromagnetics, antennas, waves, propagation and constraints is a good starting point, complete very simple but clear diagrams and the minimum of mathematics.
122 pages. **£4.95**

NEWNES PRACTICAL RF HANDBOOK
Ian Hickman
This book provides an easy-to-read introduction to modern r.f. circuit design. It's aimed at those learning to design r.f. circuitry and users of r.f. equipment such as signal generators and sweepers, spectrum and network analysers.
320 pages. **£16.95**

THE ARRL SPREAD SPECTRUM SOURCEBOOK
Many readers thought an article about spread spectrum communications in the April 1993 *PW* a spoof, but this book shows the reality of the tecnique. The ten chapters contain descriptions of the basic theory, the designs, and the techniques involved, and there are basic transceiver building blocks for your experimentation. *360+ pages.* **£14.50.**

PRACTICAL ELECTRONICS CALCULATIONS AND FORMULAE
BP53. F. A. Wilson
Written as a workshop manual for the electronics enthusiast, there is a strong practical bias and higher mathematics have been avoided where possible.
249 pages. **£3.95**

REFLECTIONS
Transmission Lines & Antennas
M. Walter Maxwell W2DU
This will help dispel the half-truths and outright myths that many people believe are true about transmission lines, standing waves, antenna matching, reflected power and antenna tuners.
323 pages. **£14.50**

SOLID STATE DESIGN FOR THE RADIO AMATEUR
Les Hayward W7ZOI &
Doug DeMaw W1FB
Back in print by popular demand! A revised and corrected edition of this useful reference book covering all aspects of solid-state design. Topics include transmitter design, power amplifiers and matching networks, receiver design, test equipment and portable gear.
256 pages. **£10.95**

TRANSMISSION LINE TRANSFORMERS
Jerry Sevick W2FMI
This is the second edition of this book, which covers a most intriguing and confusing area of the hobby. It should enable anyone with a modicum of skill to make a balun, etc. Topics include analysis, characterisation, transformer parameters, baluns, multimatch transformers and simple test equipment.
270 pages. **£13.50**

CONSTRUCTION

CIRCUIT SOURCE BOOK 2 BP322
R. A. Penfold *214 pages.* **£4.95**

COIL DESIGN AND CONTRUCTION MANUAL
BP160
B.B. Babani *106 pages.* **£2.50**

G-QRP CLUB CIRCUIT HANDBOOK
Edited by Rev. G. Dobbs G3RJV
This paperback book has been compiled from circuits published in the G-QRP Club journal *Sprat* from the years 1974 to 1982. Essentially it's a collection of circuits and projects covering everything from receivers, transmitters, antennas and accessories together with sed QRP test equipment. This book is aimed at the keen constructor and provides all the information required to build the host of projects described.
96 pages. **£8.50**

HOW TO DESIGN AND MAKE YOUR OWN PCBs *BP121* R. A. Penfold
The purpose of this book is to familiarise the reader with both simple and more sophisticated methods of producing p.c.b.s. The emphasis of the book is very much on the practical aspects of p.c.b. design and construction. *66 pages.* **£2.50**

MORE ADVANCED POWER SUPPLY PROJECTS
***BP192* R. A. Penfold**
The practical and theoretical aspects of the circuits are covered in some detail. Topics include switched mode power supplies, precision regulators, dual tracking regulators and computer controlled power supplies, etc. *92 pages.* **£2.95**

PROJECTS FOR RADIO AMATEURS AND SWLS
BP304 R. A. Penfold
This small book covers the construction and use of radio frequency and intermediate frequency projects, and audio frequency projects. Under the first heading ideas include a crystal calibrator, an antenna tuning unit, a wave trap, a b.f.o. and other useful projects. On the audio side projects include a bandpass filter, a by-pass switch, a c.w./RTTY decoder and many other practical ideas and suggestions for the home constructor.
92 pages. **£3.95.**

POWER SUPPLY PROJECTS BP76
R. A. Penfold
This book gives a number of power supply designs including simple unstabilised types, fixed voltage regulated types and variable voltage stabilised designs.
89 pages. **£2.50**

SHORT WAVE SUPERHET RECEIVER CONSTRUCTION *BP276*
R.A. Penfold
A general purpose receiver to build, from antenna to audio, described in understandable English. *80 pages.* **£2.95**

TEST EQUIPMENT CONSTRUCTION
***BP248.* R.A.Penfold**
Describes, in detail, how to construct some simple and inexpensive, but extremely useful, pieces of test equipment. Stripboard layouts are provided for all designs, together with wiring diagrams where appropriate, plus notes on their construction and use. *104 pages.* **£2.95**

50 (FET) FIELD EFFECT TRANSISTOR PROJECTS
BP39
F.G.Rayer
50 circuits for the s.w.l., radio amateur, experimenter or audio enthusiast using f.e.t.s. Projects include r.f. amplifiers and converters, test equipment and receiver aids, tuners, receivers, mixers and tone controls.
104 pages. **£2.95**

COMPUTING

BUILD YOUR OWN IBM COMPATIBLE (SECOND EDITION)
Aubrey Pilgim
If you're considering building, or upgrading an IBM compatible computer, this book could prove ideal. Chapters deal with the Motherboards, video cards, input/output boards and floppy and hard disks. Fancy adding an image scanner? This and much more information may be found here. *244 pages.* **£17.95**

INTERFACING PCs AND COMPATIBLES BP272
R. A. Penfold.
86 pages. **£3.95**

ELECTRONIC PROJECTS FOR YOUR PC BP320
R. A. Penfold.
102 pages. **£3.95**

INTRODUCTION TO COMPUTER COMMUNICATIONS (AN) *BP177*
R. A. Penfold
Details of various types of modem and their applications, plus how to interconnect computers, modems and the telephone system. Also networking systems and RTTY.
72 pages. **£2.95**

NEWNES AMATEUR RADIO COMPUTING HAND BOOK
Joe Pritchard G1UQW
Shows how radio amateurs and listeners can 'listen' to signals by reading text on a computer screen. This book also covers the application of computers to radio 'housekeeping' such as log-keeping, QSL cards, satellite predictions and antenna design as well as showing how to control a radio with a computer. *363 pages.* **D/P**

PCs MADE EASY. Second Edition
James L. Turley
A friendly, comprehensive introduction to every personal computer - including Macs! This book is packed with valuable tips on every aspect of computer technology available today and will help you to get comfortable with your computer - fast. *438 pages.* **£14.95**

UPGRADE OR REPAIR YOUR PC
Aubrey Pilgrim
Aimed at the owners of the IBM compatible computer, this book provides a very straightforward and easy to read guide on upgrading. The author has adopted a friendly and informative style and the there are many excellent illustrations. Typically American in approach and style, the book provides much information and an excellent read.

RADIO

THE WORLDWIDE AERONAUTICAL COMMUNICATIONS FREQUENCY DIRECTORY 2nd Edition
Robert E. Evans
This book covers aeronautical radio communications, voice and digital, within the range of h.f. and v.h.f./u.h.f. frequency bands. Commercial, military and para-military operations are included. Divided into logical sections, it provides useful infomation and frequencies on almost anything and everything airband.
260 pages. **£19.95**

UNDERSTANDING ACARS 2nd Edition
Aircraft Communications Addressing and Reporting System
Ed Flynn
Here is the information you need to understand and decode the Aircraft Communications Addressing and Reporting System, otherwise known as ACARS. Deals with the equipment needed as well as message format and type.
80 pages. **£9.95**

AIR & METEO CODE MANUAL 14th Edition.
Joerg Klingenfuss
Detailed descriptions of the World Meteorological Organisation Global Telecommunication System operating FAX and RTTY meteo stations, and its message format with decoding examples. Also detailed description of the Aeronautical Fixed Telecommunication Network amongst others.
358 pages. **£20.00**

HIGH POWER WIRELESS EQUIPMENT
Articles from Practical Electricity 1910 -1911
Edited by Henry Walter Young
305 pages. **£7.70**

LATEST INTELLIGENCE
James E. Tunnell, edited by Helen L. Sanders
A directory and dictionary of terms used in communications. The terms are laid out alphnumerically making it easy to decipher those obscure terms that you hear. More than 35 000 codes, terms acronyms and slang in use around the globe. *305 pages.* **£16.95**

MARINE SSB OPERATION
J. Michael Gale
How do you stay in touch when you sail off over the horizon and into the blue? What you need is a single sideband radio, a marine s.s.b. This book explains how the system works, how to choose and install your set and how to get the best out of it. There is also a chapter on amateur radio with the emphasis on the increasingly important maritime mobile nets. *96 pages.* **£10.95**

MARINE VHF OPERATION
J. Michael Gale
A v.h.f. radiotelephone is essential equipment for any sea-going boat, but what can you do with it? Who can you call, and how do you make contact? Which channel do you use, and why? What is the procedure for calling another boat, calling the family through the telephone system, or making a distress call? This book will tell you.
47 pages. **£7.95**

PASSPORT TO WORLD BAND RADIO 1995
This book gives you the information to explore and enjoy the world of broadcast band listening. It includes features on different international radio stations, receiver reviews and advice as well as the hours and language of broadcast stations by frequency. The 'blue pages' provide a channel-to-channel guide to world band schedules.
416 pages. **£14.50**

RADIOTELETYPE CODE MANUAL 12th Edition
Joerg Klingenfuss
This book gives detailed descriptions of the characteristics of telegraph transmission on short waves, with all commercial modulation types including voice frequency telegraphy and comprehensive information on all RTTY systems and c.w. alphabets. *96 pages.* **£11.00**

AN INTRODUCTION TO SCANNERS AND SCANNING BP311
I. D. Poole
This book is ideal for anyone wanting to know what scanning is, and how it works. There are also chapters on radio in general, covering antennas, radio waves and how they travel, types of transmissions, broadcasting and amateur radio. All in all a superb starter book. *152 pages.* **£4.95**

SCANNERS 2
Peter Rouse GU1DKD
The companion to *Scanners*, this provides even more information on the use of the v.h.f. and u.h.f. communications band and gives constructional details for accessories to improve the performance of scanning equipment. *261 pages.* **£10.95**

SCANNERS 3 PUTTING SCANNERS INTO PRACTICE. New Edition 4th Revision
Peter Rouse
The title *Scanners 3* has been chosen to avoid confusion, as the book has undergone a virtual rewrite since *Scanners 3rd Edition* was published. Although written by the late Peter Rouse, Chris Lorek G4HCL has edited and 'finished off' this, the latest in the *Scanners* series. Including frequency lists, and for the first time, a section on the h.f. bands. Also listed are full British bandplans from 25 to 2000MHz, as well as a section on scanner and accessory dealers. *271 pages.* **£9.95**

SHORT WAVE COMMUNICATIONS
Peter Rouse GU1DKD
Covers a very wide area and so provides an ideal introduction to the hobby of radio comms. International frequency listings for aviation, marine, military, space launches, search and rescue, etc. Chapters on basic radio propagation, how to work your radio and what the controls do, antennas and band plans. *187 pages.* **£8.95**

WORLDWIDE HF RADIO HANDBOOK
Martyn R. Cooke. *124 pages.* **£6.95**

1934 OFFICIAL SHORT WAVE RADIO MANUAL
Edited by Hugo Gernsback
A fascinating reprint from a bygone age with a directory of all the 1934 s.w. receivers, servicing information, constructional projects, circuits and ideas on building vintage radio sets with modern parts. *260 pages.* **£11.60**

MORSE

INTRODUCING MORSE
Collected Articles from *PW* 1982-1985
48 pages. **£1.25**

SECRET OF LEARNING MORSE CODE
Mark Francis
Updates for the Novice Licence. Designed to make you proficient in Morse code in the shortest possible time, this book points out many of the pitfalls that beset the student. *84 pages.* **£4.95**

BEGINNERS

ELECTRONICS SIMPLIFIED - CRYSTAL SET CONSTRUCTION
BP92 F. A. Wilson
Especially written for those who wish to take part in basic radio building. All the sets in the book are old designs updated with modern components. It is designed for all ages upwards from the day when one can read intelligently and handle simple tools.
72 pages. **£1.75**

ANTENNAS (AERIALS)

AERIAL PROJECTS *BP105*
Practical designs including active, loop and ferrite antennas plus accessory units.
96 pages. **£2.50**

ALL ABOUT VERTCAL ANTENNAS
W. I. Orr W6SAI & S. D. Cowan W2LX
Covers the theory, design and construction operation of vertical antennas. How to use your tower as a vertical antenna and compact vertical designs for restricted locations. All about loading coils and a.t.u.s.
192 pages. **£7.50**

ANTENNA EXPERIMENTER'S GUIDE
Peter Dodd G3LDO
Although written for radio amateurs, this book will be of interest to anyone who enjoys experimenting with antennas. You only need a very basic knowledge of radio & electronics to get the most from this book. Chapters include details on measuring resonance, impedance, field strength and performance, mats and materials and experimental antennas.
200 pages. ***£8.90***

ANTENNA IMPEDANCE MATCHING
Wilfred N. Caron

Proper impedance matching of an antenna to a transmission line is of concern to antenna engineers and to every radio amateur. A properly matched antenna as the termination for a line minimises feed-line losses. Power can be fed to such a line without the need for a matching network at the line input. There is no mystique involved in designing even the most complex multi-element networks for broadband coverage.
195 pages. **£14.50**

ANTENNAS FOR VHF AND UHF BP301
I. D. Poole
Antennas are a very important part of any receiver or transmitter and in this book the author gives a general background to antenna operation as well as describing antennas that are suitable for v.h.f. and u.h.f. operation. Chapters include Basic Concepts, Feeders, The Dipole, Aerial Measurements and Practical Aspects. There is something of use for everyone with an interest in antennas in this book.
104 pages. **£4.95**

ARRL ANTENNA BOOK
17th Edition
This volume now in its 17th edition contains essential information regarding propagation and constructional details of just about every type of antenna known to man. Included is a 3.5" diskette contain in PC programs for Yagi analysis, propagation forecasting, transmission line analysis and other. A definite must.
732 pages. **£18.95**

ARRL ANTENNA COMPENDIUM
Volume One
Fascinating and hitherto unpublished material. Among the topics discussed are quads and loops, log periodic arrays, beam and multi-band antennas, verticals and reduced size antennas.
175 pages. **£9.50**

ARRL ANTENNA COMPENDIUM
Volume Two
Because antennas are a topic of great interest among radio amateurs, ARRL HQ continues to receive many more papers on the subject than can possibly be published in *QST*. Those papers are collected in this volume. *208 pages.* **£9.50**

ARRL ANTENNA COMPENDIUM
Volume Three
Edited by Jerry Hall K1TD
As the title suggests, this book is the third in the continuing series on practical antennas, theory and accessories produced by the ARRL. The book reflects the tremendous interest and activity in antenna work, and provides a further selection of antennas and related projects you can build.
236 pages. **£9.50**

BEAM ANTENNA HANDBOOK
W. I . Orr W6SAI & S. D. Cowan W2LX
Design, construction, adjustment and installation of h.f. beam antennas. The information this book contains has been complied from the data obtained in experiments conducted by the authors, and from information provided by scientists and engineers working on commercial and military antenna ranges.
268 pages. **£7.50**

HF ANTENNA COLLECTION (RSGB)
Edited by Erwin David G4LQI
This book contains a collection of useful, and interesting h.f. antenna articles, first published in the RSGB's *Radio Communication* magazine, between 1968 and 1989, along with other useful information on ancillary topics such as feeders, tuners, baluns, testing and mechanics for the antenna builder.
233 pages. **£10.99**

HF ANTENNAS FOR ALL LOCATIONS RSGB
Les Moxon G6XN
This book provides a reference source for all h.f. antenna work, whether it be for fixed, mobile or using test equipment. In effect it is a manual on antenna work, with useful tips, projects and ideas.
322 pages. **£13.99**

INTRODUCTION TO ANTENNA THEORY *BP198*
H. C. Wright
This book deals with the basic concepts relevant to receiving and transmitting antennas, with emphasis on the mechanics and minimal use of mathematics. Lots of diagrams help with the understanding of the subjects dealt with. Chapters include information on efficiency, impedance, parasitic elements and a variety of different antennas. *86 pages.* **£2.95**

PRACTICAL ANTENNAS FOR NOVICES
John Heys G3BDQ
In this guide, written especially for newly qualified holders of the UK novice Licence, John Heys describes in detail how to build simple but efficient antennas for each of the Novice bands up to 434MHz, as well as useful ancillary equipment to ensure that they are working correctly. A complete chapter is devoted to the safety and common-sense aspects of installing and using a transmitting antenna.
This book will be invaluable not only to Novices, but also to any beginning amateur looking for easy-to-build antenna systems that really work. *52 pages,* **£5.99**

PRACTICAL ANTENNA HANDBOOK
2nd Edition
Joseph J. Carr
As the name suggests, this book offers a practical guide at everything to do with antennas, from h.f. to microwaves. It also has sections on propagation, transmission lines, antenna fundamentals and a helpful introduction to radio broadcasting and communication. The book neatly balances a practical approach with the minimum of mathematics, good diagrams and a lively text. *437 pages.* **£23.95**

PRACTICAL WIRE ANTENNAS RSGB
John Heys G3BDQ
Many radio enthusiasts have to be content with wire antennas. John Heys' practical approach to wire antennas provides plenty of ideas and projects to help get the best out of a simple system. A helpful book, and good reference source. *100 pages.* **£8.50**

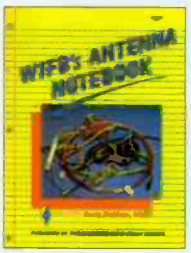
G-QRP CLUB ANTENNA HANDBOOK
Compiled and edited by P. Linsley G3POL & T. Nicholson KA9WRI/GW0LNQ.
This book is a collection of antenna and related circuits taken from *Sprat*, the G-QRP Club's journal. Although most of the circuits are aimed at the low-power fraternity, many of the interesting projects are also useful for general use. Not intended as a text book, but offers practical and proven circuits. *155 pages.* **£5.00**

RADIO AMATEUR ANTENNA HANDBOOK
W. I. Orr W6SAI & S. D. Cowan W2LX
Yagi, Quad, Quagi and LPY beam antennas as well as vertical, horizontal and sloper antennas are covered in this useful book. How to judge the best location, DX antenna height, ground loss and radials.
188 pages. **£7.50**

RECEIVING ANTENNA HANDBOOK
Joe Carr
Your receiver is only as good as your antenna. This book is a complete guide to high performance receiving antennas. It is a comprehensive examination of antennas intended specifically for receiving purposes. An essential addition to your technical library, the listeners antenna bible. *189 Pages.* **£17.50**

SIMPLE, LOW-COST WIRE ANTENNAS FOR RADIO AMATEURS
W. I. Orr W6SAI & S. D. Cowan W2LX
Efficient antennas for Top Band to 2m, including 'invisible' antennas for difficult station locations. Clear explanations of resonance, radiation resistance, impedance, s.w.r., balanced and unbalanced antennas are also included.
188 pages. **£7.50**

W1FB'S ANTENNA NOTEBOOK
Doug DeMaw W1FB
This book provides lots of designs, in simple and easy to read terms, for simple wire and tubing antennas. All drawings are large and clear making construction much easier. There is no high-level mathematics in this book, just simple equations only when necessary to calculate the length of an antenna element or its matching section. *123 pages.* **£6.95**



YAGI ANTENNA DESIGN
Dr James. L. Lawson W2PV
This book is a polished and expanded version of a series of articles first published in *Ham Radio* following on from a series of lectures by the author, who was well-known as the expert on Yagi design. Chapters include simple Yagi antennas, loop antennas, effect of ground, stacking and practical antenna design.
210 pages. **£10.95**

25 SIMPLE AMATEUR BAND AERIALS *BP125*
E. M. Noll
63 pages. **£1.95**

25 SIMPLE INDOOR AND WINDOW AERIALS *BP136*
E. M. Noll
50 pages. **£1.75**

25 SIMPLE SHORT WAVE BROADCAST BAND AERIALS *BP132*
E. M. Noll
63 pages. **£1.95**

25 SIMPLE TROPICAL AND MW BAND AERIALS *BP145.*
E. M. Noll
54 pages. **O/P**

£50 PRIZE DRAW
If you are ordering a book don't forget you'll be entered into our prize draw. See the top of page 87 for full details.

FAULT FINDING

GETTING THE MOST FROM YOUR MULTIMETER *BP239*
R. A. Penfold
This book is primarily aimed at beginners. It covers both analogue and digital multi-meters and their respective limitations. All kinds of testing is explained too. No previous knowledge is required or assumed.
102 pages. **£2.95**

HOW TO USE OSCILLOSCOPES & OTHER TEST EQUIPMENT *BP267*
R.A. Penfold
Hints and ideas on how to use the test equipment you have, to check out, or fault find on electronic circuits. Many diagrams of typical waveforms and circuits, including descriptions of what waveform to expect with particular faults, or distortion in audio amplifiers. *104 pages.* **£3.50**

MORE ADVANCED TEST EQUIPMENT CONSTRUCTION *BP249*
R.A. Penfold
A follow on from *Test Equipment Construction (BP248)* this book looks at digital methods of measuring resistance, voltage, current, capacitance and frequency. Also covered is testing semi-conductors, along with test gear for general radio related topics.
102 pages. **£3.50**

TROUBLESHOOTING WITH YOUR TRIGGERED-SWEEP OSCILLOSCOPE
Robert L. Goodman
This book steers you through the various features - old and new - that scope technology provides and is an invaluable guide to getting the best out of your scope. An overview of available scopes will help you choose the one that best suits your needs. Areas covered include spectrum analysis, test applications, multiple-trace displays, waveform analysis, triggering, magnified sweep displays, analogue and digital scopes, etc. *309 pages.* **£17.50**

MORE ADVANCED USES OF THE MULTIMETER *BP265*
R.A. Penfold
This book is primarily intended as a follow-up to BP239, *Getting the most from your Multi-meter*. By using the techniques described in this book you can test and analyse the performance of a range of components with just a multi-meter (plus a very few inexpensive components in some cases). The simple add-ons described extend the capabilities of a multi-meter to make it even more useful. *96 pages.* **£2.95**

OSCILLOSCOPES, HOW TO USE THEM, HOW THEY WORK. 3rd Edition
Ian Hickman
248 pages. **£15.95**

TELEVISION

ATV COMPENDIUM
Mike Wooding G6IQM
This book is for those interested in amateur television, particularly the home construction aspect. There isn't a 70cm section as the author felt this was covered in other books. Other fields such as 3cm TV, are covered in depth. A must for the practical ATV enthusiast. *104 pages.* **£3.00**

GUIDE TO WORLD-WIDE TELEVISION TEST CARDS. Edition 3
Keith Hamer & Garry Smith. *60 pages.* **£4.95**

INTERFERENCE

INTERFERENCE HANDBOOK (USA)
William R. Nelson WA6FQG
How to locate & cure r.f.i. for radio amateurs, CBers, TV & stereo owners. Types of interference covered are spark discharge, electrostatic, power line many 'cures' are suggested. *250 pages.* **£9.50**

MAPS

NORTH ATLANTIC ROUTE CHART
This is a five-colour chart designed for the ATC in monitoring transatlantic flights. Supplied folded.
740 x 520mm. **£6.50**

RADIO AMATEURS MAP OF THE WORLD
This a brightly coloured map clearly showing callsign prefixes for the world and is up-to-date with recent European boundary changes. Supplied folded in a clear plastic wallet.
980 x 680mm. **£5.95**

QTH LOCATOR MAP OF EUROPE
Traxel DK5PZ
Radio Map Service
This comprehensive map of the European callsign area has now been updated and enhanced. This well thought out, coloured map covers from N. Africa to Iceland and from Portugal in the west to Iran in the east. Folds to fit into the 145 x 240mm clear envelope.
1080 x 680mm. **£5.95**

SUBSCRIPTION RATES HELD UNTIL 31 MARCH 1995

SUBSCRIPTIONS
SHORT WAVE MAGAZINE - 1 YEAR
❑ £22.00 (UK) ❑ £25.00 (Europe)
❑ $45* (USA) ❑ £27.00 (Rest of World)

SPECIAL JOINT SUBSCRIPTION WITH PRACTICAL WIRELESS (1 YEAR)
❑ £39.00 (UK) ❑ £42.00 (Europe)
❑ $75* (USA) ❑ £45.00 (Rest of World)
* $ cheques only please.
Please start my subscription with the .....issue.

SUBSCRIBERS' CLUB OFFER Page 28
❑ Please send me .....Garex Tunable Antenna Filter(s) @ £23.80 post free (UK).....£

SPECIAL OFFER Page 28
❑ Please send me .....Garex Tunable Antenna Filter(s) @ £24.80 inc P&P (UK).....£
(Overseas readers please enquire).

BINDERS
❑ Please send me .... *SWM* Binder(s) @ £5.50 each. £
Postal charges: £1 for one, £2 for two or more (UK & overseas surface)

BOOK BONANZA OFFER
❑ Please send.....*Radioteletype Code Manual(s) 12th Edition* @ £8.50 .....£

.....£
.....£
.....£
.....£
.....£
.....£

Postal charges.
UK: £1 for one, £2 for two or more. £
Overseas:
£1.75 for one, £3.50 for two or more. £
NEW FASTER NEXT DAY SERVICE (UK)
(For orders received am) £3.75 £

GRAND TOTAL £

ORDER FORM

FOR ALL MAIL ORDER PURCHASES IN SHORT WAVE MAGAZINE

We have re-designed our Order Form to accommodate the new Cardcharge service for Subscribers. This enables Subscribers to save a lot of hassle by using their credit card to pay for their subscription on an automatic annual renewal basis. To take advantage of this service complete the special Cardcharge form at the foot of this page and we will take care of the rest.

CREDIT CARD ORDERS TAKEN ON (01202) 659930
between the hours of 8.30 a.m. - 4.30 p.m. Outside these hours your order will be recorded on an answerphone
FAX ORDERS TAKEN ON (01202) 659950
Or please fill in the details ticking the relevant boxes, a photocopy will be acceptable to save you cutting your beloved copy!
To: PW Publishing Ltd., FREEPOST, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

PAYMENT DETAILS

Name.....

Address .....

.....

.....Postcode .....
Telephone No. .....

I enclose cheque/PO (Payable to PW Publishing Ltd.) £
$
Or
Charge to my Access/Visa Card the amount of £
$

Card No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Valid from .....to.....

Signature .....Tel:.....

Orders are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. **Please note:** all payments must be made in Sterling.

CREDIT CARD ORDERS TAKEN ON (01202) 659930
FAX ORDERS TAKEN ON (01202) 659950

Use this part of the Order form **only** if you want to use Cardcharge to pay for your subscription. If you want to take out a subscription, or order other items and want to pay by conventional methods, please use the main part of the Order Form.

CARDCHARGE AUTHORITY (for subscriptions only)

To .....

I authorise you, until further notice in writing, to charge my .....card unspecified amounts in respect of.....(yearly magazine subscription) as and when they become due

Visa/MasterCard account number ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Expiry date ☐☐☐☐

Name (as on credit card).....

Full Address.....

.....

.....

.....Postcode.....

Merchant reference 6940936

Signature .....

Date .....

This authority may be cancelled by writing to PW Publishing Ltd. at any time.

ADVERTISERS INDEX

PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southernprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (01202) 622226. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 081-679 1899, Fax: 0181-679 8907, Telex: 881245. Sole Agents for Australia and New Zealand – Gordon and Gotch (Asia) Ltd.; South Africa – Central News Agency Ltd. Subscriptions INLAND £22, EUROPE £25, OVERSEAS (by ASP) £27, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

Two of the best

IC-7100

IC-R72E

Shown above is ICOM's IC-R72 HF receiver, ideal for monitoring broadcasts, marine vessels, aircraft and emergency services on AM, SSB, CW plus optional FM between 100kHz and 30MHz. The IC-R72 has high sensitivity, an advanced DDS system, 100dB dynamic range and a very interesting range of options, as does the IC-R7100...

ICOM's wide-band IC-R7100 is the visual twin to the R72E, together they look good and work well in any shack.

The IC-R7100 gives continuous coverage in all modes from 25MHz to 2GHz. Working characteristics of both receivers are similar enabling easy operation if used simultaneously or by computer control..

ICOM

ICOM also manufacture a full range of base-stations, mobiles and handheld transceivers to cover all popular Ham frequencies... and beyond.
No matter what your requirements, ICOM have the radio for you.
For details of your local authorised Icom dealer contact:

Icom (UK) Ltd. Sea Street Herne Bay Kent CT6 8LD.
Telephone: 0227 743001(24hr). Fax: 0227 741742.

famous the world over

The Lowe receiver range

- **HF-150**
  Your first 'real' receiver
- **HF-150M**
  Marine version of the HF150
- **SP-150**
  Matching speaker/filter for the HF150
- **PR-150**
  RF preselector for the HF150
- **RK-150**
  Stack and rack system
- **HF-225**
  Higher specification h.f. receiver
- **HF-225E**
  Super high performance model

Manufactured by:
Lowe Electronics,
Chesterfield Road,
Matlock, Derbyshire, DE4 5LE, UK

Distributors and dealers in most countries

Contact Lowe Electronics to find out your nearest dealer

Tel: (01629) 580800
Fax: (01629) 580020