

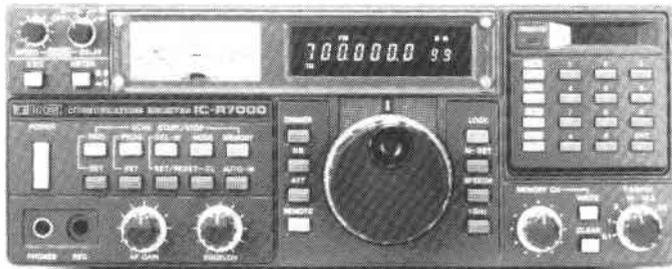
ICOM

Communications

IC-R7000, 25-2000MHz.

Commercial quality scanning receiver

ICOM introduces the IC-R7000, advanced technology, continuous coverage communications receiver. With 99 programmable memories the IC-R7000 covers aircraft, Marine, FM Broadcast, Amateur Radio, television and weather satellite bands. For simplified operation and quick tuning the IC-R7000 features direct keyboard entry. Precise frequencies can be selected by pushing the digit keys in sequence of the frequency or by turning the main tuning knob. FM wide/FM narrow/AM upper and lower SSB modes with six tuning speeds: 0.1, 1.0, 5, 10, 12.5, 25KHz. The IC-R7000 has 99 memories available to store your favourite frequencies including the operating mode. Memory channels can be called up by pressing the memory switch then rotating the memory channel knob, or by direct keyboard entry. A sophisticated scanning system provides instant access to the most used frequencies. By depressing the Auto M switch, the IC-R7000 automatically memorises frequencies that are in use whilst it is in the



scan mode, this allows you to recall frequencies that were in use. The scanning speed is adjustable and the scanning system includes the memory selected frequency ranges or priority channels. All functions including the memory channel readout are clearly shown on a dual-colour fluorescent display. Other features include dial-lock, noise blanker, attenuator, display dimmer and S meter and optional RC-12 infra-red remote controller, voice synthesizer and HP1 headphones.

IC-R71E, General coverage receiver.



The ICOM IC-R71E 100KHz to 30MHz general coverage receiver features keyboard frequency entry and infra-red remote controller (optional) with 32 programmable memory channels, SSB, AM, RTTY, CW and optional FM. Twin VFO's scanning, selectable AGC, noise blanker, pass band tuning and a deep notch filter. With a direct entry keyboard frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency is altered without changing the main tuning control.

Options include FM, voice synthesizer, RC-11 infra-red controller, CK70 DC adaptor for 12 volt operation, mobile mounting bracket, CW filters and a high stability crystal filter.

Telephone us free-of-charge on:
HELPLINE 0800-521145.

— Mon-Fri 09.00-13.00 and 1400-17.30 —

This is strictly a helpline for obtaining information about or ordering ICOM equipment. We regret this service cannot be used by dealers or for repair enquiries and parts orders. Thank you.

You can get what you want just by picking up the telephone. Our mail order department offers you free same day despatch whenever possible, instant credit, interest free H P Barclaycard and Access facility, 24 hour answerphone service

Datapost



ICOM

ICOM (UK) Limited

Dept SW, Sea Street, Herne Bay, Kent CT6 8LD

Tel: (0227) 363859 Telex: 965179 ICOM G



Cover Twenty-five years ago the first television pictures were beamed across the Atlantic Ocean via Telstar. The earth station at the UK end of the link was built at Goonhilly Down on the Lizard, Cornwall and is still going strong a quarter of a century later.

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GOOD LISTENING

FIRST WORD

Whilst talking to a reader at the Scarborough rally recently the conversation swung round to the "good old times". For most people this generally means childhood and teens — the period during which you are discovering and learning about all manner of interesting things.

I remember that when I was young the family radio was a Philips. I have long since forgotten the model number — if I ever bothered with such details. What I do remember very well was the impressive array of red valves, and the distinctive components that in later years I realised identified it as a Philips product. Why I should have been looking inside the set I cannot remember, perhaps it was during the occasional lapses in its normally reliable performance.

However, that is not what we were discussing at Scarborough. The topic was



radio dials. Modern radios with their digital readouts, accurate and simple to use as they are, lack the splendour and interest of the

old-fashioned sets with their impressive illuminated glass dials. I remember wondering where all the exotic places printed on the dial were. This, of course, was truly educational as not only did you manage to listen to such places as Reykjavik, Athens, Helsinki and many, many more, but the atlas was studied to find out whereabouts in the world the signal was coming from. I think that today's youngsters are really missing out on the practical side of geography. Mind you with the present rate at which countries change their names the set makers would need to offer replacement dials every few weeks!

The gremlins struck at last month's issue and the report on the 1987 European DX Council Conference managed to appear with its pages in the wrong order. (15-16-14 is the correct way to read it). Let's hope that we get it right this month. DICK GANDERTON

A WORD IN EDGEWAYS

Sir
It is not clear exactly what we are allowed to listen to, as a letter in Practical Wireless pointed out in 1975. What is an authorised broadcasting station and who is entitled to authorise it? "Are we allowed to listen to Hilversum" as the writer of the 1975 letter asked. If a revolution happens in a country, is the new government automatically allowed to authorise broadcasts from the British State's point of view? What about all those pirate stations which obviously have unofficial authorisation in some countries? Is a relay an authorised broadcaster? If not, what is it? What about calls made only to one individual on CB — are the rest of us allowed to listen?

Matters are far more complicated now than in 1972 when there was a spate of prosecutions in London. What about all those shops with radio-equipped security men; they are not officers of the Crown, are they? What about foreign pilots? If, for example, you were standing by a police officer and a message came over their radio, could they arrest you for illegal listening if you did not cover your ears? Are all "Authorised listeners" really authorised?

What about the "Radio Hams", (the press term for anyone who listens to anything except licensed British entertainment, news stations and CB), who have heard distress calls and saved lives at sea, and the man who stopped a bank raid in 1972?

Could they have used the defence of necessity even though they were presumably just hoping to hear something interesting? Many questions, and I am sure others can think of more.

N. Fitch is no more compelled to listen to Sinn Fein than he was to Nazi broadcasts from occupied countries. We all have on/off switches, as those who dislike pornography always need to be reminded. I am sure I speak for most English (sic) people when I say I do not need a Nanny to tell me what to hear and see. This government talks so much about freedom to choose I wonder where Mr Fitch got his 50/50 division from? If he read more deeply into psychology, like Professor H. J. Eysenck's early books, he would know there is also an authorisation/liberation divide, (amateurs and s.w.l.s. are probably respectively extraverts and introverts). I also wonder why he cancelled his subscription to Wireless World instead of trying to prove the "little Hitler" wrong? I have the greatest respect for that publication, with its healthy contempt for cherished nonsense from those in high places.

A free press and open debate are the best defences against dictators. I only wish I could be as optimistic about the mass media as about SWM and PW.
RODERICK SAUNDERS
BIRMINGHAM

Sir
A regular feature which would appeal to the less technically minded general public might be a "mini" monitoring summary of shortwave broadcasts with environmental, political or social interest.

A focus more on listening to broadcasts with important content might give Short Wave Magazine a more balanced presentation. There is too much emphasis on how many stations, however audible, Mr. X can detect with his particular receiver and antenna, and too little emphasis on the educational use of s.w. broadcasts.
R. NICODEMUS
LONDON NW6

Sir
Regarding my letter that you printed concerning rebel and pirate radio stations (July '87). I have just a few more things to add.

You mention in your reply that the Wireless Telegraphy Act forbids UK listeners from tuning into unauthorised transmissions i.e. pirates and that SWM may even be prosecuted for printing details on such stations. Well the odd snippet of information has been printed in recent months and no doubt you have not been prosecuted. (Just a couple of examples):
(I) SWM July 87 Seen and Heard m.w. section mentions Radio Monique 963kHz, which is an offshore pirate radio station broadcasting from the MV Ross Revenge.
(II) SWM July 87 Seen and Heard Band II DX mentions

Irish private (pirate) stations — Sunshine & Boyneside. Admittedly these two stations broadcast from Ireland, but they are definitely pirates in the eyes of the Irish and British governments.
(III) Practical Wireless May 87 mentions a rebel station in Chad, Radio Bardai on 6009kHz. This is run by the rebel GUNT movement and is opposed to President Habre's one party republic, which incidentally is supported by France and the USA.

The above examples are rather harmless and I bet you don't get into trouble. Anyway I do hope you will print more details on these types of stations in future issues and I look forward to Geoff Arnold's article in SWM or PW.

G. MARSHALL
LIVERPOOL

Sir
Re: the discussion about reporting clandestine and free broadcasters.

When, sometime ago now, I first began to explore the m.w. band, I confused the Dutch language broadcast on 963kHz with Hilversum 1 on 1.008MHz — I was using the household's tranny at the time. Eventually I managed to identify the 963 station as R. Monique International. I therefore think SWM should publish, from time to time, the frequencies used by the clandestines and frees so that they are identified for what they are.
P. TOWNSEND
LONDON E17

A WORD IN EDGEWAYS

Sir

As a subscriber to Short Wave magazine I was very interested in the comments on pirate radio in the letters column. I will start by saying that I am very interested in the aforementioned and I agreed with all the comments, but I feel that there should be some view from the other side.

I have been a regular DXer of pirate radio now for twenty odd years and they will always be there due to the radio network in the UK being so out of date, the pirates forced the BBC to change face and so will again. May I say that I do not agree with the material of some stations but my Trio 5000 does not have to listen to them if I don't want to.

The other point I'd like to make is that Brian Oddy wrote to me last year regarding pirate stations and to quote from his letter, "... illegal now to listen to, or pass on to a third party ...". Then why in

column two on page 46 of the July issue is Radio Monique mentioned when it comes from the Ross Revenge, the same as Radio Caroline. Also on page 41 column four Ron Ham has listed Sunshine Radio and Boyneside radio which are both Irish pirates and surely this is much more than telling a third party. One of the main reasons pirate stations are DXed is because of the interest in never knowing if the output power is the same as before, whether they are still on the air or if they have moved to another frequency.

The most confusing thing as I see it is that I always understood DXing to be the picking up of radio signals. It is a lot more interesting to pick up a pirate signal on 6728kHz lasting for four minutes, than receiving such as Chiltern Radio or Quarayyat from Saudi Arabia which I know for a fact are going to be there the next day. But if your magazine is

going to start mentioning some pirates I could send you a list to fill another Seen and Heard column which would be very interesting as by day some are as hard to receive as some of the American stations at night. Some of the Asian and Greek f.m. stations in London provide a service that the IBA and BBC could never match and that is why things will alter again.

As for interference, the sort produced by pirate stations compares very little to domestic electricity supplies, home computers, televisions, motor vehicles and a host of other types as you will know and more should be done about them. Anyway thank you for letting me have my say and whether we want them or not they will always be there, when such as I pay in the thousands of pounds for equipment, (as do your other correspondents), we use them for what we wish.
K. LANCASTER
ROTHERHAM

Sir

It's 9.26pm here in Northumberland. It's probably 11.26pm give or take an hour in Leningrad and Victor UV1AA could have been sitting beside me, his signal was loud and clear on 20 metres.

I didn't receive this on a fabulous "black box" with antenna to suit. My receiver didn't cost the earth — at a rough guess about £5. It was made on the kitchen table. It has six transistors of very common denomination, a battered pair of earphones, a few bits and pieces and powered by a PP3 battery. My antenna is a length of plastics covered wire in the loft with a bulldog clip on the end. The earth is a piece of wire attached to the radiator.

The circuit is circa 1980, maybe not "state of the art" these days, but there is no excuse for anybody out there not to have a go. The satisfaction is unbelievable.
P. McBEATH
NORTHUMBERLAND

THE GREAT ST JOHN PARTY

Rodney Harrigan G1ACL

GB4SJA took to the air as part of the St John Ambulance Brigade centenary celebrations in Hyde Park, London on June 20. When The Grafton Radio Society was first approached to set up and operate the special event station, there was an immediate and enthusiastic response. The request from St John Ambulance was for a "first class station" and the final result was more than enough to please the most discerning amateur.

The station included two 20m mobile towers, courtesy of Strumech Versatower, with a 5-element log periodic triband beam for h.f. and a pair of phased 19-element beams on 144MHz. Two Drake transceivers

The celebrations for the St John Ambulance Brigade centenary were seen by many on television, but did you know there was an amateur special event station involved? Neither did we until the Grafton RS told us differently.

were used on different bands on h.f., and a Trio 711E on 144MHz.

Around 750 contacts were made, not a high number because the emphasis was put on involving the public and demonstrating

various aspects of amateur radio, there was even a computer receiving station for weather satellites which just about survived all the r.f. noise.

During the course of the day there were a great many visitors, from all over the world, calling in at the Grafton RS radio tent. One such visitor was 9Y4SO, Selwyn from Trinidad. As he is a Drake user himself, Selwyn spent some time in the h.f. tent where the two Drake stations were being operated.

The whole event was a great success and the members of the Grafton RS thoroughly enjoyed setting up and operating GB4SJA as their contribution to The Great St John Party.



BARTG AGM

The AGM will be held on November 7 at 1400 in The Churchill Room, London House, Mecklenburgh Square, London WC1.

They are looking forward to welcoming all members. One of the issues usually discussed is the subscriptions rate for the forthcoming year, so it's important for as many members as possible to go.

At the moment the subs are £7 for UK members, £10 for European members (surface mail) and £16 airmail. For this you get 4 issues of *DATA COM* a year and all the help that a group like BARTG can give. Don't forget the subscriptions might go up next year!

Pat Beedie GW6MOJ
Ffynnonlas
Salem
Llandeilo
Dyfed
SA19 7NP

Loan Videos

The Radio Communications Division of the DTI have three videos available for free loan. They are ideal for a radio club evening.

The subjects are Fixed Links Mobile Service and the Work of the Division. In the last video, D. Gane who is the Director of the RIS is interviewed while sitting in a helicopter.

To obtain the videos, you call the 24 hour order number 01-275 3072 or write.

The Library Room
605 Waterloo Bridge House
Waterloo Road
London

Component Catalogues

Are you in need of a new i.c. for a broken-down oriental piece of electronics?

If you are then try Grandata. I needed an audio i.c. to repair my daughter's cheap personal cassette player and had almost given up hope of ever finding the elusive part when Grandata's price list appeared in the office. A quick phone call to them quoting my "Flexible Friend's" number, and the postman delivered a small package with the chip the next morning. Very impressive!

For a copy of their price list write to or phone

Grandata Ltd
9 The Broadway
Preston Road
Wembley
Middlesex
Tel: 01-904 2093

Also just dropped on my desk is Cricklewood Electronics' latest component catalogue. This is the 10th edition and covers a wide range of components at competitive prices.

Cricklewood Electronics Ltd
40 Cricklewood Broadway
London NW2 3ET
Tel: 01-450 0995

Radio RSA

Radio RSA have sent us their May - December 1987 programme schedule. It is available on request if you write to them.

Of interest to DXers is *DX Corner* 2100-2156UTC on Sundays and targeted to the UK and Ireland. Most of their programmes are obviously targeted to Africa, but they say they may also be heard in other areas. If you send for the programme schedule, it could help you decide which station you are hearing and where the programmes are available.

Radio RSA
English Service
PO Box 4559
Johannesburg 2000
South Africa



VLR and VLH Off The Air

George Hewlett has sent us some more interesting stuff about Telecom Australia.

Australia's VLH and VLR (Melbourne), which operated from transmitters at Lyndhurst (37km SE of Melbourne) in the domestic service of the Australian Broadcasting Corporation have been taken off the air. They used frequencies in the 6, 9, 11 and 15MHz bands, and such modern radio communication methods as satellite have superseded them.

For over 60 years, the Lyndhurst transmitters have carried the ABC's programmes to listeners in the Australian outback, to places not reached by m.w. and even on occasions being heard in the UK.

VNG, Australia's time and frequency station will still operate from Lyndhurst, although George queries, "For how long?".

HCJB QSL Card

HCJB offers attractive QSL cards to DXers. A new card is offered every two months, the 1987 theme is Tourism in Ecuador.

To receive a verified QSL card you need to send:

- 1: Name of the programme
- 2: Time in UTC
- 3: Date
- 4: Frequency
- 5: Programme details

To receive you QSL cards via airmail, you must include one IRC.

If you are interested in making a contribution or contacting a representative in your area, in the UK you should write to:

131 Graton Road
Bradford
W. Yorkshire
BD16 2HS

HCJB broadcasts in 12 major languages for a total of 100 programme hours daily. For a complete listing of all broadcasts by HCJB, write to:

HCJB
English Service
The Voice of the Andes
Casilla 691
Quito
Ecuador



VHF Convention

The RSGB Midlands VHF Convention is being held on October 10. It is at Madeley Court Centre, Telford, Shropshire. The main part of the Convention will start at 1100.

The programme includes:
1200-1330 RSGB RMG Open Forum
Malcolm Appleby G3ZNU
1345-1455 Advanced Long Yagi
Design by Ian White G3SEK
1455-1605 Design of Commercial
Equipment for the Amateur Market
1605-1715 The Ins and Outs of
Microwave Amplifiers by
Barry Chambers G8AGN
1715-1900 VHF Forum

The Forum will be followed by an evening buffet with bar until 2200. There will be lunch-time catering (snacks and bar).

There will be a small trade show, bring and buy and book stand. Admission is £1.20 and evening buffet tickets are available for advance booking priced £5.50. There is ample free parking.

If you aren't sure how to get there, then the organisers will send you a "how-to-get-there" map for an s.a.e.

Alkaline Battery Info

If you are interested in learning more about Alkaline cells then Duracell have just introduced a leaflet which will let you into the secrets of the "copper-topped" cells.

The leaflet covers the advantages of the alkaline system over the more conventional zinc-carbon cells.

For a copy, and further information on Duracell products, contact.

John Bellamy
Duracell Technical Division
Duracell House
Church Road
Lowfield Heath
Crawley
West Sussex RH11 0PQ
Tel: (0293) 517527

DSWCI

We have just received two interesting booklets from the Danish Shortwave Clubs International. They are called *Tropical Bands Survey* and *Homeservice Stations outside the Tropical Bands*.

The first booklet is a survey covering all broadcasting stations in the frequency range 2000-5900kHz and their transmission times and powers, when known. The second is a survey covering home service stations, stations relaying home service programmes, as well as unofficial (clandestine) stations in the 5.900-17,000MHz range.

Both are based on the WRTH and monitoring observations provided by DSWCI members or DXers living in other countries. The last update of one of the booklets is 5 May 1987, so they're really up-to-date.

The DSWCI
Tavleager 31
DK-2670 Greve Strand
Denmark

WHAT'S NEW

FT-767 Dynamic Range Improvement

Ray Withers claims to have produced yet another "world first" with a modification to the Yaesu FT-767.

The FT-767 is a popular and attractive set with a host of features at an economical price compared to its competitors.

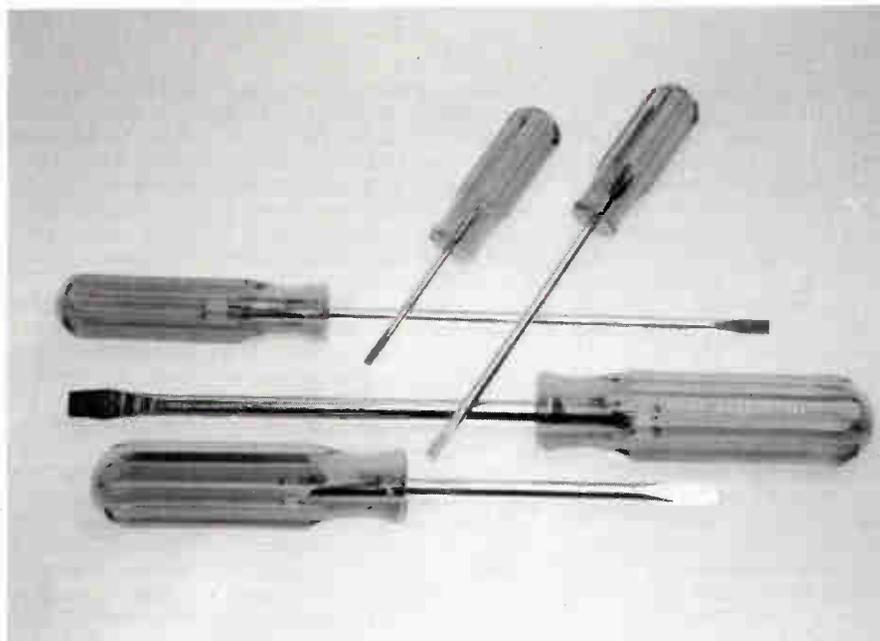
However, Ray reckons that it is let down by a lack of dynamic range due to synthesiser phase noise.

Extensive lab work at RWC has resulted in an add-on p.c.b. modification which improves the dynamic range by up to 20dB. This gives better DX receiving capability with heavy QRM — very important on today's crowded bands.

At present the mod is not available in kit form, but only as a standard fitment in all FT-767s supplied by RWC. If you have a set already and it was supplied by RWC then you can have the mod done for £49.50 inc. return carriage. The normal warranty is not affected by the mod.

The latest surface mount technology is used on the mod board to obtain the required performance and reliability. Further details from:

R. Withers
Communications Ltd.
584 Hagley Road West
Oldbury
West Midlands B68 0BS
Tel: 021-421 8201



Screwdrivers

The new range of Xcelite screwdrivers from Cooper Tools. Prices range from £1.75 + VAT for the smallest blade size (3mm) to £4.83 + VAT for the largest (8mm). A pouched set costs £16.31 + VAT.

Cooper Tools Ltd.
Sedling Road
Wear
Washington
Tyne & Wear NE38 9BZ
Tel: (091) 416 6062

BOOKCASE

WORLD RADIO TV HANDBOOK

Published by Billboard Publications Inc.

Available from Short Wave Magazine Book Service

147 x 228mm, 575 pages. Price £17.95 plus 75p P&P
ISBN 0 902285 12 2



COMPREHENSIVE COUNTRY-BY-COUNTRY LISTINGS OF LONG, MEDIUM, AND SHORT-WAVE BROADCASTERS BY FREQUENCY, TIME AND LANGUAGE.
SPECIAL FEATURES INCLUDING ■ SHORT-WAVE RECEIVER TEST REPORTS
■ WORLDWIDE BROADCASTS IN ENGLISH ■ BROADCASTER ADDRESSES AND PERSONNEL ■ COMPLETE WITH MAPS OF PRINCIPAL TRANSMITTER SITES

Although at first glance, the price often puts people off, this book is very good value for money. Whether you listen to the long wave, medium wave or short wave bands or watch television programmes from foreign countries, this book provides an extremely valuable reference book. It's also full of advertisements from companies and radio stations all around the world.

The introduction to the book is written in four languages — English, French, German and Spanish, so you should be able to find one you can read! Obviously a book of this complexity needs to use many abbreviations, or else it would be twice the size, and there is a list of over 200 abbreviations in this book.

The handbook deals with the radio stations of the world first. It even covers radio stations in International waters, standard frequency and time signal stations, broadcasting in English and Esperanto, to name but a few subjects.

Then the topic of television is dealt with, the different types of television systems used are explained first, which is very helpful when trying to pin point where a signal is emanating from.

When it details each of the countries, the book supplies as much information as it can about

each. Things such as, the transmitting sites, station addresses, signature tunes, announcements, power used and the languages used too. If at all possible it will even detail the musical score of the signature tune!

The end sections of the book are very useful. There are conversion charts from kHz to metres for the long wave, medium wave and short wave bands. Then there are quick reference charts of frequency, country, power in kW and locations of l.w., m.w. and s.w. stations. This really comes into its own when you are trying to decide quickly which station you are tuned to.

The WRTH Receiver Section shouldn't be forgotten. Every year the WRTH survey the current travel portables and test one or two receivers, and they don't hold any punches with their reviews either. This year they have previewed the 1987 new receivers, which all provides useful reference for those thinking of buying a new piece of equipment.

Other useful chapters are the Surplus Receiver Guide, Vintage Radio Review, Dealers List and Current Manufacturers Directory, oh yes and the section on DX Clubs and International Listeners Organisations.

A worthy read.

GRASSROOTS

Lorna Mower

Rumour has it the radio clubs go into hibernation over the summer months, not this year if the post bag is anything to go by. It looks like the club secretaries, programme organisers and the like have been working overtime to get things organised for club members. I hope when AGM time comes around at the club, that members will remember their hard work.

Starting this month with **Yeovil ARC**, who meet every Thursday at 7.30pm in the Recreation Centre, Chilton Grove, Yeovil. September 3 is Negative Resistance Oscillators by G3MYM, the 10th is The 14.1MHz Beacons by G3MYM, the 17th is Don't be Afraid of CW by G3GC and the 24th is a natter night. More details from David Bailey on 0935 78904.

Mr B. Bannister G4GPX has recently been appointed the PRO for the **Worthing & District ARC**. They meet Wednesdays in the Lancing Parish Hall, South Street, Lancing. The only definite advance information is their AGM on October 7, but you can get all details from G4GPX on Lancing 753893.

Fareham & District ARC meet every Wednesday at 7.30pm in the Porchester Community Centre, Westlands Grove, Portchester, Hants. They have Morse classes from 6.30pm. September 9 is a Demonstration by Winchester Communications and the 23rd is 23cm High Power Linear Amplifier by G6XHR. For more details you can contact G3CCB on Fareham 288139.

Ray Marden G3MWF is giving a talk on The History of the SARC and G4SFG on September 10 to the members of the **Southgate ARC**. On the 24th they have an informal evening. They meet at the Holy Trinity Church Hall (Upper), Green Lanes, Winchmore Hill, London N21 at 7.45.

At the next meeting of the **Acton Brentford & Chiswick ARC**, on September 15, there will be a talk called My Trip to Borneo by G4ZJD. They meet at the Chiswick Town Hall, High Road, Chiswick, London W4 at 7.30pm. For more details, contact W. G. Dyer G3GEH on 01-992-3778.

Chichester & District ARC are running a special event station on September 11-13 at the Chalk Pits Museum. This is to celebrate the 60th Anniversary of the first Empire Broadcast by Gerald Marcuse G2NM. The club usually meets on the 1st and 3rd Tuesdays at 7.30pm in the North Lodge Bar, County Hall, Chichester. For more details about the club contact C. Bryan G4EHG on Chichester 789587.

Meetings for the **Atherstone ARC** are usually held in the Physics Laboratory, Atherstone Upper

School, Long Street, Atherstone. They meet on 2nd and 4th Mondays at 7.30pm. September 9 is DF Hunt 4, the 14th is a talk on the Leicestershire Repeater Group GB3CF/GB3LE and the 28th is a Night on the Air. For more details contact John Arrowsmith G4IWA on Atherstone 713670 (weekdays after 6.30pm and weekends).

Coventry ARS usually meet every Friday at 8pm in Baden Powell House, 121 St Nicholas Street, Radford, Coventry. August 28 is a Night On the Air, September 4 is a 144MHz Direction Finding Contest, the 11th is a Morse Tuition & Night On the Air, the 18th is Mini Lectures and the 25th is Morse Tuition & Night On the Air. If you want more details then you should contact Bill Hahn G3UOL on Coventry 414684.

Satellite TV is the lecture schedules for September 16 at the **Hastings ERC** meeting. They usually meet on the 3rd Wednesday of each month at 7.45pm at the West Hill Community Centre, Croft Road, Hastings as well as every Friday at 8pm at Ashdown Farm Community, Downey Close, Hastings. For more details contact Dave Shirley G4NVQ on Hastings 420608.



Preparations for the SSB NFD are the order of the day for September 2, the NFD is at Otley on September 5/6 for those at the **Ipswich RC**. For more details on the meeting place and other details contact Jack Toothill G4IFF on Ipswich 464047.

Rugby ATS have a lecture entitled The Finishing Touches by G4EPA on September 1. They usually meet every Tuesday at 7.30pm in the Cricket Pavillion, outside Rugby Radio Station. Visitors and new members are always welcome. For further information contact Kevin Marriott G8TWH on Rugby 77986.

An Evening Fox Hunt is being organised by Harold G1OQQ for the **Ripon & District ARS** on August 27, but for the venue you will have to contact Liz Bulman. She is at The Lodge, Lister House, Sharlow, Ripon HG4 5BU.

The **Wyre ARS** have Satellites by Tony G1JCW on August 26, September 1 is a Visit to East Lancs ARS Junk Sale, the 9th is a lecture on St. John Ambulance

and a pie and peas supper and the 23rd is the Club's Activities on Video. The club meets at the Breck Sports & Social Club, Breck Road, Poulton on the 2nd and 4th Wednesdays at 8pm. Contact Dave Westby on Thornton Cleveleys 854745 for more details.

A talk by G4MZO is scheduled on September 9 for the **South East Kent (YMCA) ARC**, the 16th is a talk by Rev. George Dobbs G3RJV and the 23rd is a Surplus Equipment Sale. They usually meet at The Dover ARC, Godwynehurst, Leyburne Road, Dover. For more details you will need to contact John Dobson on Dover 211638.

Final preparations are obviously under way for the Lincoln Hamfest at the **Lincoln Short Wave Club**, the programme gives them away, September 9 is Last Minute Hamfest Arrangements, the 12th is Preparations at the Showground for Hamfest and the 13th is the Lincoln Hamfest — Look out for the PW/SWM stand! They do have other things going on this month, such as QRP Communications by Tom Arris G4OSB on the 23rd. They meet at the City Engineers Club, Central Depot, Waterside South, Lincoln, and that's where you can contact Pam Rose G4STO, their hard-working secretary.

The **Bredhurst R&TS** have a packed programme during September. Howes Your Construction on September 3 is when Dave and Chris Howes arrive with their latest in kits, the 10th is a Construction/Natter Night, the 17th is More Thoughts on QRP and Home-Brewing Rigs by Rev. George Dobbs G3RJV and the 24th is another Construction/Natter Night. For more information you should contact the club chairman, Kelvin GOAMZ, on Medway 376991.

The ever popular junk sale is planned at **Winchester ARC** on September 18. They meet every 3rd Friday at Durgate House, Eastgate Street, Winchester. For more details you should contact Dick Murray on Winchester 880605.

September 17 is a Fox Hunt organised by Stuart G4JHV at the **Eden Valley RS**. This meeting is at the Crown Hotel, Eamont Bridge at 7.30pm. For further information ring the secretary, Martin G4FUI, on Penrith 66728. Club nets take place on GB3EV (R4) or if that's busy on S22 on Sundays at 11am and on 3.650MHz ± at 1900 on Thursdays. Interested parties are welcome to listen in or join in as appropriate.

A First Aid Demonstration is planned at the **Welwyn/Hatfield ARC** on September 7, an important subject which we could

all do with knowing something about. They have their main meetings on the 1st Mondays at Lemsford Village Hall, Bocket Road, Lemsford and informal meetings on the 3rd Mondays at the 9th Welwyn Garden Scout HQ, Knightsfield, Welwyn Garden City. More details on the club and its activities then contact Kevin Dunwell G4WLG on Welwyn Garden 335162.

The **Northampton RC** meets at Kingsthorpe Community Centre, Kingsthorpe, Northampton at 8pm on Thursdays. On September 3 they have a Construction Contest Talk and the 17th is G4IIO on Club Repeaters. For more details on the club, contact Peter Saul on Towcester 51716.

The TA Centre, Bythesea Road, Trowbridge is the address for the **Trowbridge & District ARC** meetings. On September 2 it's a talk by the Bristol Met Office and the 16th is a Natter Night. For more details contact Ian Carter GOGRI on Trowbridge 83038.

The **Loughton & District ARS** have a Rainbow & Dove Weekend at Hastingswood Common, Harlow on September 5 and 6. Then on the 11th it's an HF DF Hunt, 7.30pm for 7.45 first call using 1.905MHz±, the 25th is an Informal Night on the Air. They usually meet in Room 20, Loughton Hall at 7.45pm. John Ray G8DZH at 9 Albion Hill, Loughton or Prestel Mbx 015083434 can tell you any other details about the club you may wish to know.

Weather Satellites by Pete Higgs GW4IGF on September 8 and What Leaves the Antenna by Derick G3EON on the 29th, are the planned lectures for the **Chester & District RS**. They meet at the Chester RUF, Hare Lane, Vicars Cross, Chester at 8pm, with Morse classes at 7.15pm. More details from Dave Hicks G6IFA on Chester 336639.

The **Keighley ARS** have a quiz evening with a guest team — Northern Heights — on September 29, and an informal evening on September 8. Their meetings start at 8pm at the Victoria Hotel, Cavendish Street, Keighley. For any further details you can contact Kathy G1IGH on Bradford 496222.

A talk by Dr. D. Bunn and a Natter Night are the events planned in September for the **Todmorden & District ARS**, the dates being the 7th and 21st respectively. They meet at the Queen Hotel, Todmorden at 8pm on the 1st and 3rd Mondays, with more information available from G1GZB on Todmorden 7572.

A Pre-AGM Discussion sounds very important, and that's what the **Farnborough & District RS** have got planned for September 9.

Deadline, October '87 issue, August 18

They have a Construction Contest on the 23rd. I still don't know the details of their meeting place, but I'm sure M.C. Graffius at The Paddock, Diamond Ridge, Camberley, Surrey can tell you.

The second **Reading & District ARC** junk sale is being held on September 1, they say don't miss it! They meet at the White Horse, I know not where, at 8pm. For directions and other details contact Steve Coleman, G4YFB on Reading 867820.

Joan Heathershaw G4CHH, President of the RSGB, is visiting the **Itchen Valley RC** on September 11. They meet at the Scout Hut, Brickfield Lane, Chandlers Ford, Eastleigh at 7.30pm. Their meetings are usually the 2nd and 4th Fridays. For more details you can contact M. E. Cheeseman G1IPQ on Southampton 736784.

The National Amateur Radio Car Boot Sale, organised by the **Dunstable Downs RC** is being held on September 13. On the 18th they have a talk on Op-Amps by G3WLM on the 18th and a DF Hunt on 1.8 and 144MHz on the 20th. Meetings are held every Friday at 8pm in Chews House, High Street South, Dunstable. Details can be obtained from the Secretary, Tony GOCQ, on Luton 508259.



On September 1, the **Stevenage & District ARS** have a talk and discussion on RAYNET. Visitors and new members are always welcome says Peter Daly GOGTE, their secretary. They meet at SITEC Ltd, Ridgemoor Park, Telford Avenue, Stevenage on the 1st and 3rd Tuesdays at 8pm. If you want any more details then contact Peter on Stevenage 724991.

The **Mansfield ARS** meet on the 1st Fridays and 3rd Tuesdays at the Victoria Social Club, Mansfield at 7.30pm. September 4 is a talk and demonstration of Microwaves (not the cooking type) and the 15th is the commencement of a series of talks on the subject of Test Gear and the Radio Amateur, this one is The Multimeter and it's Uses by G4GYU. More details from Keith Lawson G4AAH on Mansfield 642719.

Electricity Metering by N. Nurney from NORWEB is the subject for the September 8 meeting of the **Bury RS**. Meetings are held every Tuesday at 8pm in the Club Room at the Mosses Youth and Community Centre, Cecil Street, Bury. If you want

more details on the club and its activities then contact C. J. Ashworth on 061-764 6736.

A Junk Sale is planned at the **Derby & District ARS** meeting on September 2. The 9th is Funny Noises — an explanation of all those mysterious signals by Fred Tagg and the 16th is a Video Show. All meetings are at 7.30pm at 119 Green Lane, Derby. Further information about the society is available from Jack Anthony G3KQF on Derby 772361.

The **Sheffield ARC** have a Planning Meeting for a Special Event Station on September 7, a trip to Lincoln Hamfest on the 13th and a talk on RAYNET on the 21st. Their Monday meetings start at 8pm in the Firth Park Pavilion, Sheffield. More details are always available from Alan G8ZHG on Sheffield 395287.

There is a really full month ahead for those at the **Mid-Sussex ARS**. September 3 is Preparation for Contest in Club Shack, the 5th/6th is the 144MHz IARU Contest — in the club shack no doubt, the 10th is Air Radio Navigation During War and Peace by Len GOAPZ, the 17th is an Operating Evening and the 24th is The History of Radio... Fact & Fallacy by Louis G5RV. They meet on Thursdays at Marle Place, Leylands Road, Burgess Hill at 7.45pm. If you need more information then contact Mike Munday G0GNV on Burgess Hill 41407.

September 14 is the date for the quiz between **Coulsdon ATS** and the **Wimbledon & District RS**. The venue is St Swithun's Church Hall, Grovelands Road, Purley and the time is 7.45pm. If you want more details about the CATS then contact Alan Bartle on 01-684 0610.

The **Sutton & Cheam RS** have a Natter Night on September 7, then on the 11th they're all off to the Wimbledon Club's Annual Bazaar and finally, for September, on the 18th it's electromagnetic compatibility by John Greenwell G3AEZ. Meetings are held on the 3rd Fridays at 7.30pm in the Downs Lawn Tennis Club, Holland Avenue, Cheam and natter nights are the 1st Mondays in the Downs Bar. More details from John Puttock G0BWV at 53 Alexandra Avenue, Sutton.

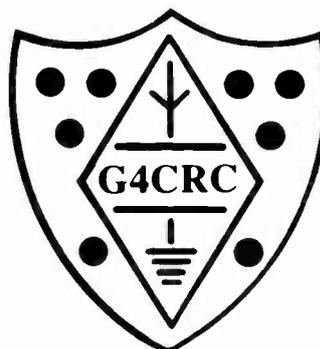
In September the **Cheshunt & District ARC** have three Natter Evenings planned, on the 2nd, 16th and 30th. The 23rd is a lecture on VSWR — The True Story. They meet every Wednesday at 8pm in the Church Room Church Lane, Wormley, near Cheshunt. John Watkins on Dane End 250 can fill you in on any other details.

One club with a family activity planned this month is the **East Kent RS**. They have a Car

Rally/Treasure Hunt organised by G8FEZ and G8PFR on September 13. Other events are Some Antenna Experiments on the 3rd and a Natter Night at Bishopstone Coast Guard Look-Out on the 17th. They usually meet at the Cabin Youth Centre, Kings Road, Herne Bay, Kent on the 1st and 3rd Thursday of each month at 8pm. More details from Brian Didmon G4RIS on Whitstable 262042.

The **Warrington ARC** have a Junk Sale on September 1, then on the 8th they have guest speakers from Lowe Electronics, the 15th is the RSGB Film VU7 DXpedition and the 22nd is an Open Forum. They meet at the Grappenhall Community Centre, Bellhouse Lane, Grappenhall, Warrington. For more information you should contact Paul Forster G0CBN on Warrington 444317.

September 3 is an Activity Evening at the meeting of the **Cornish RAC**. They meet in the Church Hall, Treleigh on the Old Redruth Bypass at 7.30pm. The computer club's next meeting is September 14 and is Practical Computing for the Visually Impaired by Graham and Steve. For any further details on the club, talk to G4CUI on Stithians 860572.



The lecture for those at the **Chelmsford ARS** this month is Crime Prevention by PC Jeff Butler on September 1. This will be at the Marconi College, Arbour Lane, Chelmsford at 7.30pm. For more details on the club you'd best talk to Roy G3PMX or Ela G6HKM on Chelmsford 360545.

The **Edgeware & District RS** have a Quiz Night on September 10 and a lecture entitled Some Modern Developments in Terrestrial Broadcasting Transmission by Nick Davies of the BBC. They meet on the 2nd and 4th Thursdays at 8pm in the Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgeware. If you would like to know more about the club, then contact Ian Cope G4IUZ on Hatfield 65707.

The main September meeting, on the 21st, is Diving by Mike G6JKS at the **Stourbridge & District ARS**. The other meeting in the month, on the 7th, is a Night

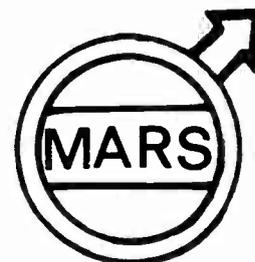
On the Air. I can't tell you where they meet, but the secretary — Derek Pearson — on Kingswinford 288900 no doubt can.

On Tuesday, September 8, the **Verulam ARC** have an Activity Evening and on the 22nd they have Dr. Peter Duffet-Smith G3XJE of the Cavendish Lab, University of Cambridge talking about Radio Astronomy. They meet in the RAF Association HQ, New Kent Road, off Marlborough Road, St. Albans at 7.30pm. For further information contact Hilary G4JKS on St. Albans 59318.

Another club tied up with rally preparations is the **South Bristol ARC**. On September 2 it's the Final Briefing For The Bristol Rally, the 6th is the Bristol Rally and the 9th is Debriefing on the Bristol Rally. Other evenings planned are the 16th which is a Club Video Evening and the 23rd is a Computer Activity Evening. Meetings are held every Wednesday at the Whitchurch Folk House, East Dundry Road, Whitchurch. Len Baker G4RZY on Whitchurch 834282 has any other details.

The **Cheltenham ARA** have a Mini-Project Contest on September 4 at the Stanton Room, Charlton Kings Library, Cheltenham. More details can be obtained from Tim Kirby on Cheltenham 36723.

I've had a really lovely letter from Tom Brady G8GAZ of the **Midland ARS**, just to tell me this column works as they've had visitors get in touch — thanks for letting me know. The club meets Mondays for construction classes, Morse on Wednesdays and Thursdays is Night on the Air. The main meeting for the month starts at 7.30pm on the 3rd Tuesday. This month they have a Surplus Sale on September 15 at 57 Green Lane, Great Barr, Birmingham B43. Tom Brady on 021 357 1924 can tell you more.



The **Wimbledon ARS** have their Annual Bazaar on September 11, a Quiz against CATS on the 14th (away from home) and a talk entitled The Science Museum Radio Station by G3JUL on the 25th. They meet on the 2nd and last Fridays at 7.30pm in St. Andrews Church Hall, Herbert Road, Wimbledon SW19. More from George Cripps G3DWW.

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HS5	KENWOOD de luxe headphones	£37.54	£2.00

WORLD CLOCK

CWTC	CASIO world time clock	£15.95	£1.00
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MB2001	Mobile mount	£11.34	£1.00

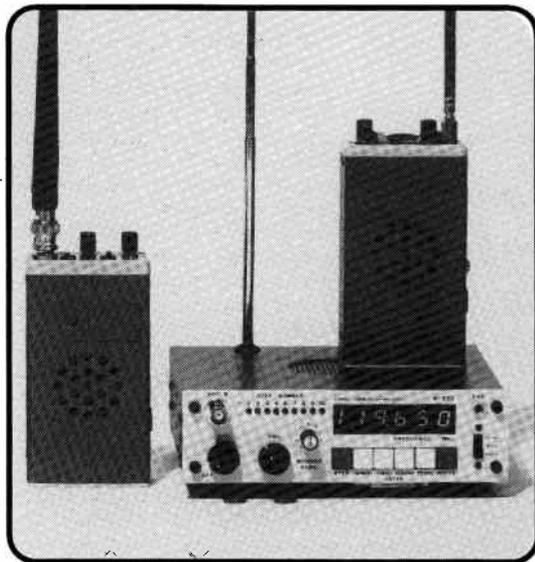
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Options for both RS375 and R528.			
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RS37L	Soft case	£3.68	£0.50
RX22	Rechargeable nicad battery	£6.98	£1.00
CH122	Charger for RX22 Nicad	£8.50	£2.00
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CH532	AC Charger for BP532 battery pack	£8.50	£2.00
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SCC	Base for HG3FA	£6.50	£1.00	PL259	Standard coax plug for UR67	£0.66	£0.50
SCCB	As SCC but with quick release	£7.80	£1.00	REDUCER	Reducing sleeve for PL259 for use with UR43	£0.15	£0.50
2065	5/8 ground plane adjustable 118-180 MHz	£31.50	£7.00				

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CONTEST OPERATING FOR LISTENERS

Janet Stone

Why do we have contests? Lots of people complain that they crowd the amateur bands at weekends when most amateurs are really only interested in a chat.

Well — many amateurs take part and you only need to look at the number of stations that are active in the average RSGB contest to see just how popular contests are. Entering a contest gives you a good opportunity to improve your operating skills and test the effectiveness of your s.w.l. station.

Contests provide a chance to compress a lot of listening into a short time with high activity levels from countries, squares, etc. This is especially useful if you are chasing awards and don't have much time to spend scanning the bands at other times. They will show you if you can **win** as well as provide a good excuse for a beer-up with your pals (and why shouldn't an s.w.l. entry be a multi-op effort if the rules allow it).

All of these are good reasons but the rest of this discussion is based on the assumption that the reader wants to win. This doesn't necessarily mean being placed first in the s.w.l. entries, but could mean competing with another listener in a private Derby, improving on your last effort, etc. There is a technique and an approach to contests that have to be learnt and first timers are unlikely to come top in their premier event because of the organisation and planning that contest operating requires.

The Rules

It may sound silly, but it really does pay to read the rules. Make sure you know how the points and multiplier system works so that you can log stations to the best advantage. The rules will set out parameters against which the entrant must develop a strategy (more of that later). In listener sections it is very important to understand and abide by rules which discourage entrants from just monitoring the "big guns" transmitting stations and logging the high number of QSOs that they usually achieve. An example of this sort of rule will read "*The callsigns of the stations being worked may only repeat once in every three contacts logged . . .*" (RSGB 1.8MHz Town and Country Contest).

Don't assume though that this rule is always the same for every contest, or even that there is necessarily such a rule at all. A surprising example is the RSGB Commonwealth Contest, where there is no rule to say that participants cannot just tune their receiver memories to, say, ZB2EO, and log the high number of QSOs that he will doubtless achieve.

Of particular importance are the provisions with regard to unmarked duplicate loggings. There are inevitably heavy penalties for logging the same stations more than once on a given band — unless the rules say you can log it once on phone and once on c.w.

Most contests are not just for the licensed radio amateur. Short wave listeners can enter as well. In this article Janet Stone, points out some of the things to do and not to do if you hope to get a reasonable result for your efforts.

The home micro is an invaluable asset in weeding out the duplicates that slip through the net, and programs exist to perform this task. Reference 1 contains a good duplicate program listing as well as other useful radio programs for both transmitting amateur and s.w.l. alike. The contest exchange too is important. Make sure that you get it down in the format requested by the contest organisers.

Propagation

To know when and to which band to listen, holds much of the key to success. Remember that the objective is not just to log some good DX stations but to log more and better DX than the other entrants, if winning is to be the name of the game. A good knowledge of the properties of the "Grey Line" (SWM June 1987) helps you to know where and when to look on the h.f. bands, and, if you have one, where to point the beam. It also helps to look at the various magazines to see what propagation is likely, to where and when. 28MHz loggings often attract a bonus because of the low activity, (check the beacons for band openings) so it's useful to know that "ten" will probably be OK to the Middle East around mid-day, most days. However, looking there for USA stations in the ARRL contest events is likely to be an utter waste of time at present.

Location can also make a big difference to the operating schedule. As an example, when G3YDX was located in Essex it was easy to work Japan over the evening short path on 3.5MHz (80 metres). Now that the station has relocated to North Wales the evening path is much harder, but a new morning opening exists over the long path around 0800 in January and December that just wasn't available in Essex. One's listening on a particular band can be guided by propagation forecasts for the whole UK, but do remember to add a local flavour based on your own experience.

This article is not intended to be an authoritative guide to h.f. propagation, and the reader is directed to other works (Ref. 2 and 3) which give a good grounding in the mysteries concerned.

Strategy

Strategy sorts out the sheep from the goats. It is important in all contests but especially so in multi-band events. A careful study needs to be made to determine the times and band changes

that will be most productive of points. Looking at it from a different angle it is also most helpful to determine which period is likely to be the least productive in terms of points.

Most of us will need to sleep at some time during a 48-hour contest and some events have compulsory rest periods as a rules requirement. Obviously the low-point times should be used for rests. If there are no compulsory rest periods, trying to see a 48-hour contest through without a break may not be the best policy in any case. The operating efficiency of even the best operator falls off after 24-hours of so, and a rest can lead to a revitalisation, especially of one's listening faculties. It is all a question of judgement and balance in the end. Rest periods, a look at last year's "multipliers worked" and a knowledge of propagation all contribute to the building of a "Band Change Plan".

The GW3YDX Band Change Plan for the 1987 ARRL DX Contest (CW) is shown in Fig. 1. The reader will note that 28MHz is totally excluded because of the poor h.f. conditions that prevailed at the time. In addition, rest periods are set for those times at which it is difficult to work the USA and Canada on any band. In the event the Band Change Plan proved to be reasonably effective. 21MHz did open at the predicted times with a useful addition to the score. The 7MHz long path was open on the Saturday afternoon which allowed six extra states/provinces to be worked, but was closed on the Sunday. Only ten minutes was spent calling on the band on the Sunday, (no more), so the overall effect on points was beneficial.

However a bad error was made in assuming 14MHz would not open to North America until 1300. The OM was awakened by the baby daughter at 1200 and elected to spend an hour gardening before returning to the contest. At 1300 the band was in full swing, and the next day 120 stations were worked between 1130 and 1300, which rather proves the point.

Most s.w.l.s and licensed amateurs are usually more than happy to provide the novice with advice on aspects of our hobby, and this includes contesting. Most of the contest "big guns" in the UK would be very pleased to answer enquiries about the finer points of contests, given a letter and stamped, self-addressed envelope.

Antennas and Equipment

A 48-hour contest will show you if the headphones make your ears feel as though they are on fire after 12-hours. It will tell you if the height of your receiver tuning knob makes your wrist ache after six hours, and that the dodgy bandswitch you were meaning to fix goes west when you are sure you are well ahead of the other s.w.l.s in the club.

You will find out that you can't read your own writing, especially with a 20 watt

CONTEST OPERATING FOR LISTENERS

Fig. 1

GMT	MHz					
	1.8	3.5	7.0	14	21	28
0000			XXXX			
0030			XXXX			
0100			XXXX			
0130			XXXX			
0200		XXXX				
0230		XXXX				
0300		XXXX				
0330		XXXX				
0400	XXXX					
0430	XXXX					
0500	XXXX					
0530	XXXX					
0600	XXXX					
0630		XXXX				
0700		XXXX				
0730			XXXX			
0800			XXXX			
0830						
0900						
0930						
1000						
1030			SLEEP			
1100						
1130						
1200						
1230						
1300						
1330				XXXX		
1400				XXXX		
1430				XXXX		
1500				XXXX		
1530				XXXX		
1600					XXXX	
1630		XXXX				
1700					XXXX	
1800				XXXX		
1830				XXXX		
1900				XXXX		
1930					XXXX	
2000				XXXX		
2030				XXXX		
2100				XXXX		
2130			XXXX			
2200			XXXX			
2230			XXXX			
2300		XXXX				
2330		XXXX				

The GW3YDX band change plan for Saturday ARRL DX Contest (c.w.) 1987.

Fig. 3

	A	B	C	D	E
A	DL7AA OK1AAR	DL7BA OL8BAT	DL7CA	DL7DA UH6DAT	DL7EA UL7EAG
B	DL7AB UT5AB	W1BB/1 UP2BBC GOBBA	W1BA G3CBE	W1DB HB9DBS	G3EBE
C	DL7AC			G3DCY	VP2EC

Suffix
First letter →
Second letter ↓

Fig. 2

A	B	C	D	E	F	G	H	I
DL7AA N4AR F6ARC OL8ATT	G4BUO G4BOU OK1BAT GOBHM UP2BIC RB5A	G3CRP W1CF	G4DAA G3DOJ	G4EBK K6EID UH8EAA	G3FXB G4FNF LA9FQ RF6FHA	GOGHI UQ2GHY	HB9HB OK1HA	I3IKS G3ILO
J	K	L	M	N	O	P	Q	R
GM3JKV G4JKS	G3KAF OK1KPA	G3LHJ DL3LU	G3MXJ OK1MA	OK1NR G3NKQ F6NBC	G3OLB GM0ORY	G3PLB G3PLF OK1PA W1PB	G3QD	G3RFS G3RPB GD3RFH
S	T	U	V	W	X	Y	Z	
G3SED OK1SI G3SWM	G3TEG OK1TAR	UB5UAT G3UES	G3VVB OK1VA W1VD DL6VU	W1WA	G3XSN G3XFA DL6XX	K1YA	K1ZZ G3ZZR GM3ZTA	

light bulb. In any case, the check log is on the floor because the table is too small, but it doesn't matter anyway because your last Biro has just run out.

It will show you that this contest nonsense is, or isn't just the thing for you.

In short, a good, long contest will test you and your station like nothing else can. Afterwards (or maybe even before if you have a dry run) you can overhaul all of your gear — especially the station layout. In addition to improving the contest effectiveness of your station it will be a lot easier to operate outside of contests if it has been "contest-tested".

It has often been said that the most important step in amateur radio is the purchase of the best receiver you can afford. That still holds good today, but it is a very sound idea to try the gear out before you buy. Surprisingly, in these days of frequency synthesis, there are still some receivers around with a minimum tuning step of 100Hz. This is OK for tuning s.s.b. for 48-hours but would probably drive most operators silly after 48-hours of "piano key" effect on c.w. Anything which adds to operator fatigue — such as microscopic switches and controls — is to be avoided. They may look pretty and be

acceptable for casual listening, but not for winning contests.

Antennas are, of course, the key to success in contests as in other parts of our hobby, but it does not mean that the biggest is best or that average antennas are useless. Somebody with a 3-element beam will hear some stations well, but if the operator has it pointing the wrong way, the guy down the road with a dipole or vertical will score. If you have a choice as to what you can use, remember that a good vertical is likely to be a more effective performer than a dipole for DX, but that for inter-G events, a dipole not too high off the ground would be a good option. Many s.w.l.s who have won contests in recent years have had simple antennas and have won by preparation and dedication. Nevertheless a good operator with good antennas is bound to do well.

It's not the intention here to "go into" antennas except to point out that many antennas that would be inefficient transmitters make excellent receiving antennas. On 1.8MHz (160 metres) the GW3YDX 244m long Beverage on the USA regularly out-performs a dipole at 28m for receiving. Receiving loops also have a lot to offer for the lower bands. References 2 and 4 contain useful sections on antennas, especially for receiving.

Operating Technique

The s.w.l. cannot adopt the technique of the well equipped transmitting station and call CQ. So a different approach is called for, making maximum use of prevailing conditions as well as the rules.

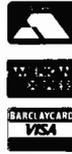
Let us return to the rules for the RSGB 1.8MHz contest, which say, "The callsigns of the stations being worked can only repeat once in every three contacts logged". If your receiver has three memories there is nothing to stop you from setting those memories on three stations calling CQ and alternating



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CONTEST OPERATING FOR LISTENERS

between them. If those stations are the top transmitting stations on the band then logging their contacts may be the best method.

The fun begins of course when they QSY, as they will probably do later in the contest, to look for stations that have been calling CQ! A better and fairer approach is to mix listening to a particular station with listening around the band.

Whatever approach is adopted, it's vital to spend the very minimum time per QSO and then move on to the next one. Don't wait for the stations you have logged to send "73es bcnu". Once you have got the information you need for **your** entry, move on to the next logging quickly.

It's also a question of judgement and experience to decide whether or not to spend time listening to a station that is struggling, especially early on in a contest. If he is making no contacts, you can't benefit from listening to his CQ calls unless logging him would give you a good addition to the multiplier score. If that is so it may be worth waiting for somebody to reply to him so that you can log the exchange in which case the time spent may well be worthwhile. It's very difficult deciding whether to hang on or not, especially on a busy band yielding a good QSO rate. The OM has been in that position many times, and it adds to the suspense and fun of contest operating!

"Pacemakers" are a useful device to drive oneself a bit further. If you haven't logged 30 contacts in the first half hour of an RSGB 160 metre contest then you may be going too slow, and not cranking the dial fast enough! One can plot the loggings per hour in the last contest and aim to try just a little harder this time. Pacemakers are especially good when the going gets slow towards the end of a contest and one begins to think of other things! In addition they are especially valuable to s.w.l.s., who, unlike transmitting amateurs, are not able to judge how competitors are doing by serial number exchanged.

Learn about the operating habits of DX stations by taking a note of their previous operating in contests. In most contests the activity, both c.w. and s.s.b., tends to be crammed into the lower ends of the band allocations, and that is where most of the activity can usually be found. Nevertheless some of the really rare ones can't cope with the mess at the lower end of the bands and go to a higher frequency for a bit more peace. It can be worth while looking h.f. of the activity from time to time.

Remember too that some countries vary in the allocations that are given to amateurs. An obvious example is that USA stations are not permitted to transmit telephony in the "European" 7.0-7.1MHz amateur band. So it's not much use listening for Ws on s.s.b. below 7.1!

Check Logging

Listening to stations you have already logged and only finding out you have logged them twice or more after the contest is a total waste of time. No contest organisers give points for duplicate loggings, and there is always a penalty for logging them and not marking them as duplicates. You need some real-time method of check logging as you go, and the methods that exist are many and various.

For relatively small contests, up to say 300 loggings the author suggests the simple sheet of A3 (432 x 305mm) paper which is best glued to a piece of surplus cardboard for ease of handling. The call signs should be entered using the first letter of the suffix, e.g. G3SWM would be entered under "S". Some operators prefer to list under the last letter of the call to give a more even spread of calls through the alphabet, but of course that method suffers from the major disadvantage of having to wait until the last letter of the call is sent before searching for the call sign, which wastes valuable time.

When more than 300 contacts are being logged the system described above becomes unwieldy and it takes too much time to look up the call signs. Some further sub-division is required, (for example into Europe and non-Europe), or the grid has to be re-designed along the lines of Fig. 3. Computers, as always, have something to offer and the reader is again directed to Reference 1 for some useful listings.

In any case it is a good practice, at the end of the contest, to compare the main log to the duplicate log yet again to weed out the duplicates and to be sure. We always find one or two that would have slipped through with a heavy loss of points if this second check had not been made.

Food and Drink

What on earth can food and drink have to do with contesting? More than meets the eye! The OM remembers the very first serious h.f. contest he did. At lunch time I brought him a steaming hot, grilled chicken leg with two large jacket potatoes. Very appetising, but because such a feast needs both hands to do it justice that leaves none spare for contesting. Ideally contest food should be "fork food" or sandwiches — in short, whatever is easily handled. More exotic fare uses up time and attention that should be devoted to scanning the bands. As far as drink is concerned, an excess of beer causes too many natural breaks and leads to drowsiness. The OM finds fruit juice refreshing and in the middle of the night, when he feels like giving up, a double strength, black coffee and some biscuits go down well. Of course, it's self-service at that time!

The Entry

Your entry will be sent in with many others. It should be easy to read and accompanied by the necessary cover sheets and declarations. Be sure it reaches the adjudicators by the due date and use airmail if necessary. It takes **ages** for some results to come out, and sometimes it's worth sending a self-addressed postcard and an IRC to the adjudicator for him to confirm arrival of the log. Needless to say the adjudicators are likely to look more favourably upon any problems with your loggings if your log is properly presented on the correct stationery, and the rules are usually pretty clear in that respect.

Analysis

Let's move on to the final section, and this is a most important one — Analysis. Where and how did it go right or wrong? It's very useful to write this down in the main log and keep it for reference. That way improvements can be made next time. Do a graph of contacts per hour and points per hour. So that poor strategy can be weeded out.

As an example, the GW3YDX entry in the ARRL DX contest did not go entirely smoothly, and the post contest remarks read as follows:

1. Desirable to have house empty (difficult to sleep in the day with 3-year old daughter QRV).

2. Equipment. Relays on sloper system need cleaning. The Beverage didn't work again. 930 needs wider 2nd i.f. filter to copy all callers and avoid excessive and tiring use of r.i.t. Check-log on 14MHz needs revising or computerising to handle the 1200 QSOs made on that band.

3. Operating. Must sleep between 0900 and 1200 — not at other times. 20m is bottomless. 7MHz Long Path was worth a quick look. Check A and K indices for next year. Change bands when QSOs drop below one per minute averaged over a ten minute period.

To try and remember all the foregoing just before the next contest would not work. Now there is a year to work on the deficiencies and prepare for a better effort next year.

Good luck with your contesting. It will give you lots of fun and many pointers to the improvement of your station.

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- 1: *Computer Programs for the Radio Amateur*. Wayne Overbeck N6NB, and Jim Steffen KC6A. Ham Radio Bookstore, Greenville, NH 03048, USA.
- 2: *80 Metre DXing*. John Devoldere ON4UN. Communications Technology, Inc, Greenville, NH 03048, USA.
- 3: *Amateur Radio Operating Manual*. RSGB. Available from SWM Book Service.
- 4: *ARRL Antenna Book (14th Edn.)*. Available from SWM Book Service. □



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A socket for the optional RS232 interface (RC PACK) is provided on the rear panel. The RC PACK consists of an 8 bit CPU with its own ROM and RAM and with your own computer acting as a dumb terminal many additional operating facilities become available. Of course, if you want to write your own programs using the RC PACK as an interface then "the sky's the limit".



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Please note that the AMTOR section only receives ARQ mode (mode A) but this is the most common mode and covers a lot of commercial TOR stations, also.

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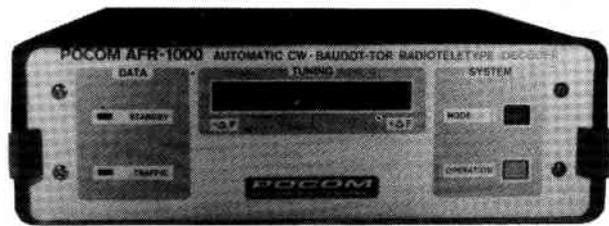
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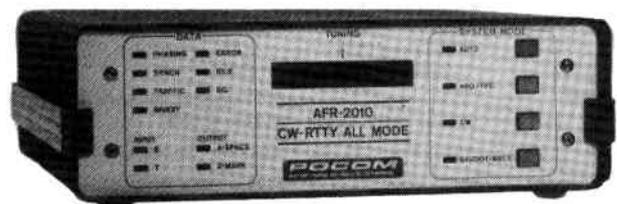
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MATSUI MR4099 RECEIVER

Dick Ganderton

The launch by Currys of the MR4099 short wave receiver under their own brand name of Matsui will put a s.w. set into a high street outlet for the first time in many years. Large retail multiples like Currys do not lightly invest large sums of money in such ventures without some firm indication that it will be profitable and popular with their customers. Hopefully, then, this set will sell in large numbers and introduce the ordinary man in the street to the world of short wave radio.

Facilities

The MR4099 is obviously a clone of the old Sony ICF-2001 which first appeared some six years ago. This should have the advantage that the design is at least well proven if possibly a bit long in the tooth. It does, however, allow Currys to offer a set with a host of features which even a couple of years ago would have made the s.w.l. positively drool.

Like the other sets which we have reviewed in *SWM* this one will also keep the suppliers of black plastics in profit. On the front left of the set is the 100mm loudspeaker with the central section being taken up with the liquid crystal display and the panel of push buttons for selecting frequency, band and memories. On the right are the remaining controls such as the on/off button, slider controls for volume, treble, bass and stereo balance. A pair of small rotary controls vary r.f. gain and b.f.o. pitch, while at the bottom, three slide switches control the filter width on AM and STEREO/MONO on FM, BFO ON/OFF and a lock function to prevent inadvertent operation.

A bank of three push-buttons on the top operate the dial light, and alarm clock/timer functions. Also on the top is the 1.4m long telescopic whip antenna for the s.w. and v.h.f. bands. A 3.5mm jack socket on the back can be used to connect an external antenna instead of the whip, selected by a slide switch alongside the socket. Also on the back panel is the hatch to gain access to the battery compartment.

The left-hand side panel carries sockets for a stereo headset, tape recorder and external 9V d.c. power supply.

The only other control is the rotary tuning knob on the right-hand side of the set. This can also be used to set the clock and timer/alarm.

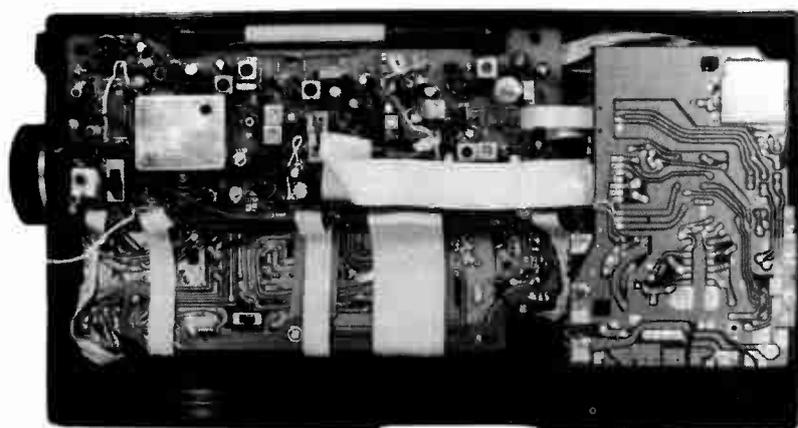
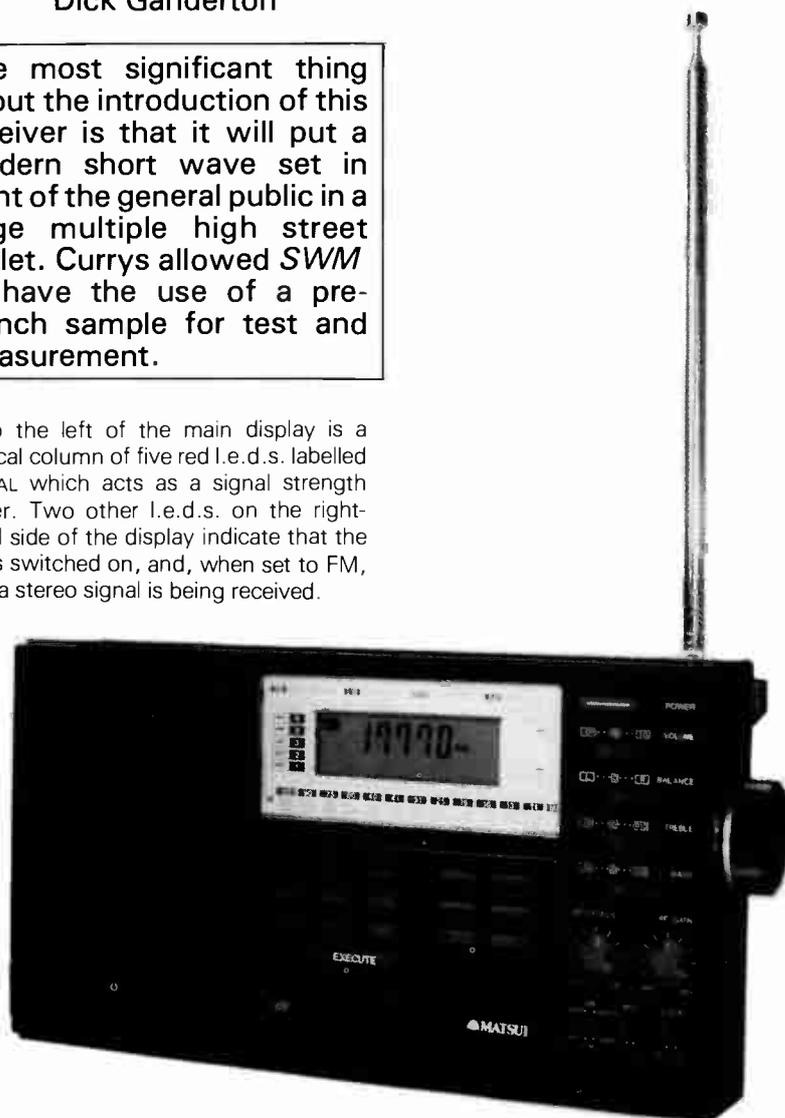
Display

The set is equipped with a liquid crystal display panel which shows the frequency tuned, in kHz to within 1kHz on all bands except v.h.f. when the frequency is given in MHz to within 0.05MHz. The band selected is also indicated on the left-hand side of the display.

The main display also doubles as a clock and timer with comprehensive sleep and alarm functions. The display automatically reverts to the clock mode after some 55 seconds unless the tuning controls are used.

The most significant thing about the introduction of this receiver is that it will put a modern short wave set in front of the general public in a large multiple high street outlet. Currys allowed *SWM* to have the use of a pre-launch sample for test and measurement.

To the left of the main display is a vertical column of five red l.e.d.s. labelled SIGNAL which acts as a signal strength meter. Two other l.e.d.s. on the right-hand side of the display indicate that the set is switched on, and, when set to FM, that a stereo signal is being received.



Tuning

The selection of the bands is carried out by means of one of the five push-buttons at the bottom left of the key-pad. The desired frequency can then be selected by either keying it in using the key-pad, by rotating the main tuning knob on the right of the set or depressing the UP or DOWN buttons on the right of the key-pad. When tuning using the key-pad the frequency is entered in kHz (AM, LW, SW) or MHz (FM) followed by EXECUTE to complete the entry.

With LW, SW or AM selected the set tunes in 1kHz steps. On MW the tuning steps can be set, by an internal switch, to either 9 or 10 kHz. The review set was switched to the 9kHz (European) steps. On FM the tuning is in 50kHz steps.

Frequency coverage of the set is continuous from 150 to 29999kHz in the AM mode and split into twelve s.w. segments containing the 120, 90, 75, 60, 49, 41, 31, 25, 19, 16, 13 and 11m broadcast bands. These bands are selected sequentially by using the push-button

MATSUI MR4099 RECEIVER

marked SW, each successive depression of the button selecting the next higher band. The s.w. band selected is displayed, in metres, in the bottom left-hand corner of the main display.

When the upper or lower limits of each band are reached the readout flashes on and off as the tuning control is rotated to give visual warning. If an out of band frequency is keyed in using the key-pad a flashing ERROR flag is displayed alongside the frequency display.

SSB Operation

To be able to tune single side band (s.s.b.) signals, a beat frequency oscillator (b.f.o.) is provided to inject the carrier frequency. On the MR4099 the b.f.o. can be switched on when needed and the station tuned in by the small knob labelled BFO PITCH. The operation of this control is unusual in that there is no upper/lower sideband selector switch, the b.f.o. control being labelled LSB anticlockwise, and USB clockwise.

Side band operation is used a lot by amateur stations and is due to be introduced for s.w. broadcast stations in the distant future. I found that the b.f.o. control could also be used to tune RTTY stations, although no success was obtained with packet radio.

Two filter widths are provided, selected by a front panel slide switch. The WIDE position gave an acceptable audio response for broadcast stations while the NARROW setting was useful for s.s.b. transmissions. For c.w. signals an even narrower filter could be useful and an audio filter as described in the June 87 issue of *SWM* could be used via the headphone socket.

Memories

The set is provided with nine memories which can be used to store frequencies and mode from any band. Storing and recalling frequencies from the memories are simple operations with just two key-pushes needed for either operation. The memory selected is displayed under the frequency.

Power Requirements

Six IEC R20 (U2) cells provide the main power for the set and are housed in a battery compartment at the rear. The battery compartment is very tight and it is difficult to insert or extract the four of the six cells which are buried inside the compartment. The memories and clock are maintained by two IEC R6 (AA) cells housed behind the main batteries. Without these cells the microprocessor and clock cease to function when the main power is switched off. As the battery compartment fits the cells so snugly it is advisable to use only good quality alkaline cells and remove them when the set is not going to be used for some time. If the main cells swell or leak it could prove to be impossible to get them out of the set.

Obviously the two smaller cells must be kept in place at all times if the clock and memories are to be maintained.

The current drain from the batteries is quite high at around 120mA under normal listening conditions and this should give around 20 hours operation with ordinary dry cells and probably 80 hours with alkaline cells.

If the set is to be used mainly in the home then it would make sense to use a mains adapter. A 9V d.c. supply capable of giving 400mA is recommended and the socket on the side of the set takes a standard concentric power plug with the centre pole negative.

Audio

The audio quality was good for a set of this type. The provision of a stereo capability on v.h.f. f.m. is unusual and requires the use of stereo headphones which are not provided. Separate treble and base controls are provided in the form

of sliders together with a balance control for the stereo output.

In Use

The set was easy to use, particularly if the required frequency was entered via the key-pad rather than the rotary tuning knob. In fact I found the tuning knob extremely frustrating to use. A loud click, together with a temporary loss of audio, was produced from the speaker each time the frequency was stepped and this, together with the very free movement of the knob and apparent random stepping which occurred if the knob was turned too rapidly, made tuning difficult. It proved to be impossible to change frequency up or down the band to search for stations as the tuning rate was too slow and could not keep up with the rate at which the knob could be spun.

If it is desired to move up or down in frequency then it is much better use the UP or DOWN buttons which step at around 3 steps per second — still slow but at least reliable.

The small knobs for BFO PITCH and RF GAIN proved to be awkward to turn in the conventional manner. They are almost flat discs with serrations moulded into the front face rather than round the edge, and I found it easier to move them with my thumb rather than try to grip them.

The display was clear and easy to read but I cannot see the need for it to revert to the clock mode after a fixed time interval. If I want to know the time then I am prepared to push a button to bring up the clock. Frequency is the most important function to be displayed and I feel that it should be displayed all the while.

The signal meter is not a lot of use for gauging signal strength as for a start there are only five l.e.d.s. so trying to use it as an S-meter is a bit of a lost cause. It is also a pity that l.e.d.s. have been used as this increases the current consumption and reduces battery life. (If all seven l.e.d.s. are on this could add at least 70mA.)

A fold-away chrome-plated foot is fitted to the back of the case, and with this out the set can be laid on its back at an angle of about twenty degrees to the horizontal. Like this it is very much easier to use than when it is vertical as the whip antenna can be angled in any direction.

Conclusions

At a price of **£129.99** the Matsui MR4099 portable receiver is certainly competitive, and the fact that it will be on sale in the high street should ensure some degree of popularity. Although the design is not new the set offers a lot of features at a price well below the competition — perhaps we will now see other multiple outlets selling short wave receivers in the high street, and this can only be good for the hobby.

My thanks to **Currys Ltd, 46-50 Uxbridge Road, London, W5 2SU** for the loan of the review set. □

SPECIFICATIONS

Frequency Range:

AM 150kHz —
29.999MHz
FM 87.5MHz — 108MHz

Sensitivity:

(SWM measured for 12dB SINAD
WITH 90% a.m.)

2.4MHz: — 114dBm
3.3MHz: — 113dBm
4.9MHz: — 112dBm
6.0MHz: — 111dBm
11.8MHz: — 109dBm
25.8MHz: — 109dBm
800kHz: — 112dBm
200kHz: — 98dBm

(f.m. 45kHz deviation)

96MHz: — 94dBm

Selectivity:

(SWM measured)

narrow ±2.3kHz at 6dB
±8.0kHz at 60dB

wide ±4.7kHz at 6dB
±10kHz at 60dB

Power Requirements:

(SWM measured. No signal conditions)

FM 96mA LW, MW 68mA
AM 80mA SW 80mA

Intermediate Frequencies:

AM1: 55.845MHz
AM2: 450kHz
FM: 10.7MHz

Audio Output:

1.2W for 10% distortion

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BANDSCAN

Peter Laughton

Polish Warning

Poland recently warned Israel that it would regard the construction of a Voice of America relay station in that country as a hostile act. Polish government spokesman, Jerzy Urban, described VOA as an instrument of propaganda against Poland and other socialist countries. An agreement to construct the relay station was signed in Washington in June. The development is curious though, since VOA has said the purpose of the relay station is mainly to strengthen its signal in Central and Southern parts of the USSR. Programmes from Radio Free Europe will also be broadcast from the new Israeli facility. From a purely propagational point of view, programmes for Poland from VOA and RFE will continue to come mainly from relay facilities in West Germany, Spain, Portugal and Greece.

Time to Continue

We mentioned a few months back that some of the time and frequency stations that broadcast continuous time pips on short wave were in danger of closing down. However, the Indian Government's research organisation is doing the opposite. The National Physical Laboratory in New Dehli has just ordered two 10 kilowatt transmitters from Marconi in Britain. New antennas were also purchased to completely upgrade their time signal station in the nation's capital. Good news for listeners interested in propagation from Southern Asia.

This month Peter Laughton takes another look at the world of broadcasting and tells us what's going on and where!

Summer Programming

The number of stations in Europe that broadcast special foreign language programmes for holidaymakers this past summer is on the increase. In the Soviet capital, the medium wave service of Radio Moscow recently expanded to include more than just a local English language relay. Programmes in a variety of languages now go out, including French and Japanese. In Budapest, Hungary, the German language "Radio Danubius" station has been back on the air, following a successful summer season last year. This time one of the popular boulevard magazines in West Germany, *New Review*, has bought airtime on the commercial Hungarian f.m. station to put out its own 55 minute programme. This project is unique in Eastern Europe, and the authorities say Radio Danubius currently reaches some 4.5 million guests in Hungary and the Eastern part of Austria.

Curious Switch

It is known that the Tamil militants in Sri Lanka who are currently negotiating for an independent state in the north and east of the country, operate their own broad-

casting stations. So far, two such broadcasts have been identified as coming from across the water. Radio listeners in India even visited one of the stations, broadcasting with modified amateur radio equipment on the outskirts of Madras in Tamil Nadu. The equipment was first purchased and tried on the air in West Germany at the start of the 1980s. The visitors were given a cautious welcome at the "Voice of Tamil Eelam" based in Tamil Nadu. On the other side of the conflict, the Sri Lankan government has been busy with its own stations too. During the latter part of May, when the Colombo government organised a major offensive, radio enthusiasts in the north of the island observed the appearance of a new medium wave station. Calling itself "Sri Lanka Broadcasting Corporation Jaffna", signals were heard on 1030kHz with announcements in Tamil and English. The transmissions must have come from within one of the government military compounds, for the programmes included information and orders issued by the security chief to the public, such as the imposition of curfews. Government officials living in the area were summoned to meetings by the SLBC-Jaffna station.

But there's a curious twist to the story. Two years ago a strong station appeared on short wave operating very near to the 7MHz frequency used by the Tamil Nadu based "Voice of Tamil Eelam". It first called for reason, though the broadcasts had no name. After some interruptions, similar strong signals were heard

JAMMED AND UNJAMMED SERVICES TO THE USSR, EASTERN EUROPE, AFGHANISTAN AND IRAN

(February 10, 1987)

■ BROADCAST JAMMED
● UNJAMMED BROADCAST

* Soviet jamming of China's Russian language broadcasts stopped October 1986.

** Soviet jamming of the BBC's Russian language broadcasts stopped January 1987.

Source: VOA Engineering, February 1987.

Major Western International Shortwave Broadcasters	Language	ALBANIAN	ARMENIAN	AZERBAIJANI	BELORUSSIAN	BULGARIAN	CZECH	CZECH-SLOVAK	DARI	ENGLISH	ESTONIAN	FARSI	GEORGIAN	GERMAN	HEBREW	HUNGARIAN	LATVIAN	LITHUANIAN	PASHTO	POLISH	ROMANIAN	RUSSIAN	SERBO-CROAT	SLOVAK	SLOVENE	TARTAR-BAS-KHUR	TURKISTANI	UKRAINIAN	UZBEK	YIDDISH
Argentina (SOR)																														
Austria (ORF)																														
Belgium (BRT)																														
China*																														
Canada (RCI)																														
Ecuador (HCJB)																														
Egypt																														
France (RFI)																														
West Germany (DW)																														
Greece (ERT)																														
Guam ((KTWR)																														
India (AIR)																														
Israel (IBA)																														
Italy (RAI)																														
Japan (NHK)																														
Korea (RK)																														
Monaco (TWR)																														
Netherlands																														
Portugal (RDP)																														
So. Africa (RSA)																														
Sweden (RSI)																														
Switzerland (SRI)																														
Turkey																														
UK (BBC)**																														
USA (RFE/RL)																														
USA (VOA)																														
Vatican																														

identifying as the "Communist Party of Tamil Eelam". This was heard regularly until May of this year. It has taken the line that the liberation groups in Tamil Nadu don't have the best interests of the people at heart, whilst criticising the Sri Lankan government as well. But the same voice that did all the announcing for the Communist Party of Tamil Eelam, appeared on the Sri Lanka Broadcasting Corporation Jaffna station!

Jamming Update

There have been some changes on the deliberate jamming front. The BBC reported that as of 1300UTC on July 16, its programmes in Arabic are no longer being jammed by noise transmitters in Libya. Interference problems were first reported in April. Around the same time, the USSR stopped jamming of Israel Radio's Hebrew language broadcasts to the Soviet Union. Less than 24 hours after the arrival of a Soviet Delegation in Tel Aviv, jamming stopped on Monday July 13. It was back the following evening, and specialists now think the brief halt was due to technical problems. The Voice of America published a booklet about deliberate interference just before the USSR ceased jamming of its transmissions to the Soviet Union. Although, slightly out of date, the background information in the pamphlet is still worth reading. The table shows that despite recent moves, there is still a lot of jamming about. You can get a free copy of the deliberate interference pamphlet by writing to Audience Relations Dept, Voice of America, Washington DC 20547, USA.

French Focus

It seems VOA Europe, beamed into Europe by satellite and re-broadcast locally on f.m. is currently off the air in Paris and Rome. Officials in Washington say that contracts with the stations that were carrying the programmes have not been renewed, in the case of Paris because the coverage of the f.m. transmitter was rather poor. In Italy, VOA Europe now has a working relationship with Radio Milano, no stranger to s.w. listeners. Last year, Radio Milano put out programmes from Radio Earth based in Illinois, until the latter ran out of finances.

Meanwhile in Paris, station operator

KLOV that ran VOA Europe programming, has decided to relay the BBC 648 service taken off medium wave instead. The BBC appear to acknowledge this by announcing the f.m. frequency used in Paris as they sign on their BBC 648kHz channel in the evenings.

Also in the French capital . . . the director of international affairs at Radio France Internationale, Francois Hinfray, has released impressive details as to plans that station has. By 1992 they hope to have recruited 300 extra staff to put out 700 hours of programmes a day in 36 languages. They appear to have switched plans for a short wave relay station from Sri Lanka to more stable Thailand instead. Radio France International is using a comparison between itself and both the BBC and Deutsche Welle to persuade the French government to part with the investment funds . . . some 500 million francs in total. 12 of the current 25 transmitters on the air are over 25 years old and past their prime. As well as upgrades, RFI wants to increase the total number of transmitters to 40 in future. What would be the reaction if the Radio France International asked for f.m. airtime in London for its popular English service?

Peace Problems

The people behind the Radio for Peace project in Costa Rica say the equipment to start their low power short wave station for Central America was severely delayed by customs. The satellite link back to the headquarters in Sweet Home Oregon is working, the transmitter is currently being assembled, though they are running seriously short of funds. Testing should commence though around the time this issue reaches the news-stands. Power is a mere 12kW!

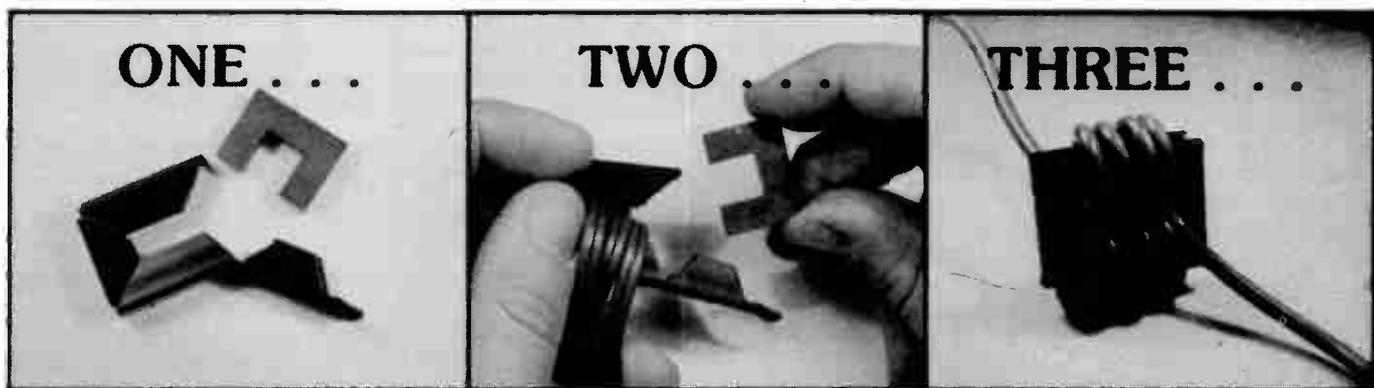
ANARC on the Air

Over 350 short wave enthusiasts met near Toronto, Canada towards the end of July. They came for the annual Association of North American Radio Clubs meeting. By all accounts, it was a great success. On show in Toronto was the new Sony ICF2003 portable shortwave receiver, the successor to the ICF2002 which is known as the ICF7600D in Europe. They've changed the colour to a

gun-metal dark grey, currently in fashion, incorporated all production modifications made to the ICF2002 during its lifetime, such as more stable single-sideband. Otherwise the new ICF2003 has the same performance, size, looks and results to later versions of the ICF2002. You can hardly tell them apart!

The DX news of the convention was announced by Ron Hopkins of the Ontario DX Association. CFRX is the callsign of a small 1000 watt short wave transmitter on the outskirts of Toronto. Normally that sender puts out a relay on 6070kHz of its sister medium wave talk station CFRB on 1010kHz. But the Ontario DX Association got permission to do some special broadcasts on s.w. only on Sunday August 2 at 0900 and 1600UTC, and Monday August 3 at 0100. It's too early to say how well the experiment went, but Ron told *SWM* that if there was enough response, they might consider other special DX tests in the future. CFRX on 6070kHz is certainly a tough one, but not impossible it seems. They do get reports from Europe, especially during the winter months.

The most ingenious device we noted was on a stand from Texprosales of Burlington Ontario. They've designed what they call a "snap-on-choke". It's made of two "U-shaped" pieces of ferrite which will act like a sponge at radio frequencies. These two pieces slide into a plastic clip. The trick is the snap-on-design, allowing installation onto the power cord of a TV or computer without cutting the cable. We purchased two for CAN\$7.95. We put one near where the power cord to the television enters the cabinet, and the other on the multi-strand cable between the computer and the disk drive. The TV no longer radiates noise into the household wiring, and the computer cables are no longer acting as miniature jamming stations. The choke won't solve all types of interference though. Voltage spikes from nearby lightning or ticks from the compressor motor in the refrigerator need other types of mains filtering. The company has sold several thousand for distribution in North America through the Radio Shack chain within a few months time. It's an idea ripe for the European market too. □



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ASL5Kit: £14.90 Assembled PCB: £22.50

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DCS2Kit: £6.30 Meter + Assembled PCB: £9.90

TRF3 Shortwave Broadcast Receiver

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TRF3Kit: £14.50 Assembled PCB: £19.90

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THE LONG ARM LOOP

G. W. Millmore

Most of the cheaper radios on sale are of the "portable" type using ferrite rods and whip antennas. Unfortunately these sets object to having "extras" added to them, and little or no improvement is usually achieved by doing so.

The answer for someone of limited means would seem to be one of the older valve sets. Many of these are still around, and can be found at auctions, car boot sales, etc., for under ten pounds. Most are excellent receivers, and work well with loop antennas.

Look for the "a.c. only" type of receiver with a conventional mains transformer supplying both the heaters and h.t. rectifier, and preferably without a ferrite rod in the front end. **You should not use loop antennas with a.c./d.c. receivers as, under certain operating conditions, the secondary of the loop could become live, resulting in a nasty, if not fatal, shock if touched.**

One disadvantage with valve sets is that they were usually equipped with unscreened coils at the top of the chassis, and the loop needs to be placed about a metre away from the set to avoid interaction between the circuits.

This means that you have to tune the set with one hand, and the loop with the other, while sitting between the two. A rather tedious operation, as it is difficult to see the tuning dial of the receiver properly, particularly if you wear spectacles, and it was with this in mind that the "Long Arm Loop" was developed.

Construction

The construction of the loop is fairly simple, and should be able to be undertaken by anyone with a basic knowledge of d.i.y.

The "frame" for the loop is made from plywood, screwed and glued together as shown in the drawing.

The "coil" is wound from loudspeaker flex, split down the middle to make two lengths of single cable. You will need eight metres of flex. After splitting, join the two pieces together to make one 16 metre length of single core cable, which is ample for both windings. The join can be covered with a short length of sleeving. The turns are wound close spaced, the insulation on the cable giving sufficient spacing. Drill a 1mm hole in the bottom ply former and thread one end of the flex through this. Wind on nine turns, drill the former, and anchor the flex as at the start.

The secondary winding is wound and fixed in the same way, and consists of two turns. Two lengths of coaxial cable are needed, each 340mm long. This length should not be altered for the primary connection as it forms part of the tuned circuit. The inner core is connected to the start of the primary coil, and the other screen to the end nearest to the secondary winding. The secondary winding is connected in the same way with the other length of coaxial cable.

Medium wave local radio station DXing seems to have become a popular pastime with listeners. However, finding a receiver to work with a loop antenna, without spending several hundred pounds on specialised communications equipment, is not quite so simple.

The completed loop is now assembled, and fixed in position.

RF Amplifier

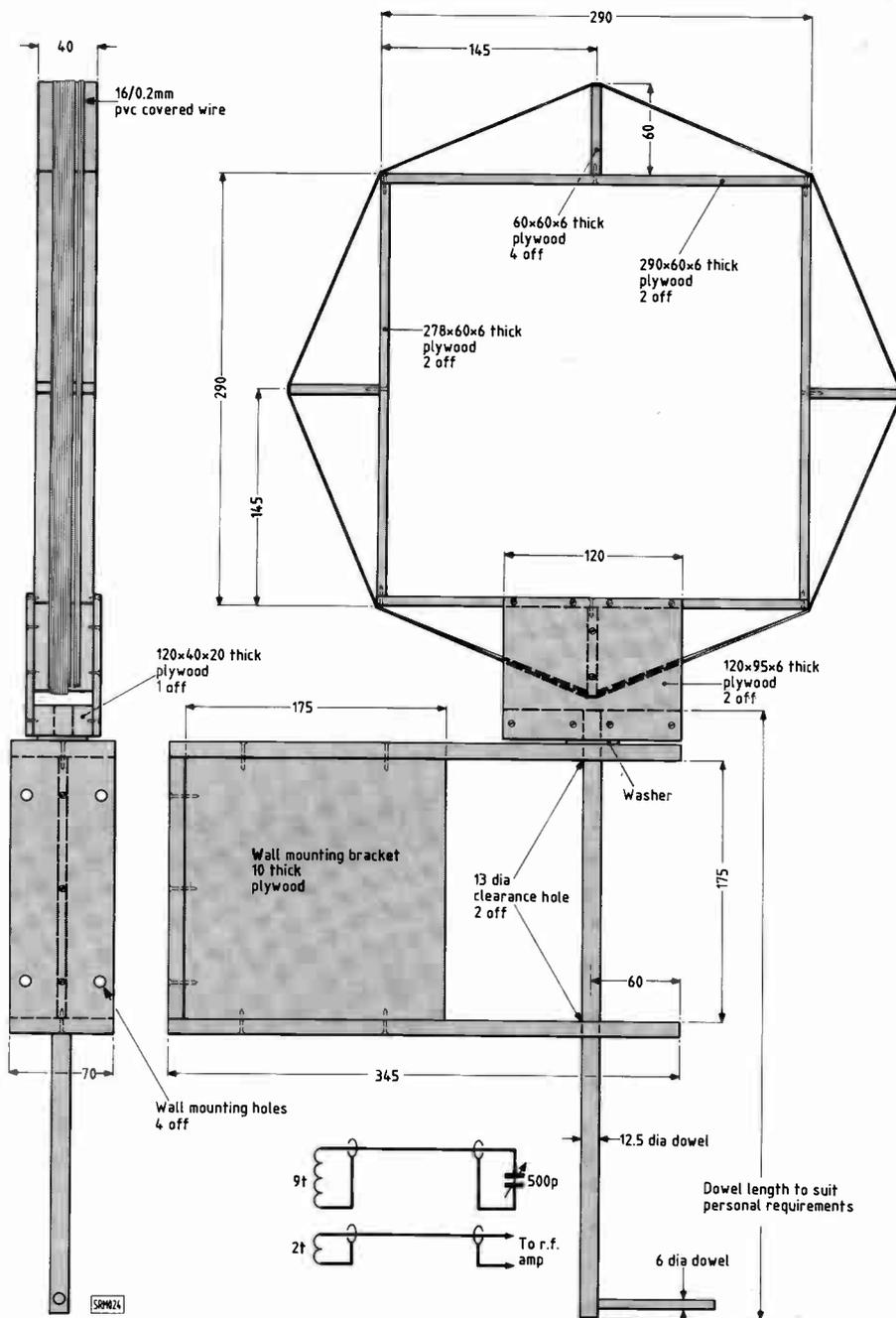
With most of the older valved receivers it will be found that there is ample room inside the cabinet to house the 500pF tuning capacitor and r.f. amplifier needed

for the loop. The tuning capacitor must be isolated from all other components. The choice of r.f. amplifier can be left to the constructor, and could use either transistors or valves, depending on what you can find in the junk box.

It only remains for the two coaxial cables to be connected. The inner core of the cable from the primary winding on the loop is connected to the fixed vanes, and the screen to the moving vanes. The inner core of the cable from the secondary winding is connected to the input of the r.f. amplifier, and the screen to earth.

The tuning of this loop is fairly critical, and it helps to have either a large knob, or some form of slow motion drive fitted to the tuning capacitor.

The materials can be obtained from your local d.i.y. shop and can be varied to suit whatever is available as long as the loop dimensions are not changed. □



Godfrey Manning

First of all a bit of "sack cloth and ashes". I hope that you weren't too confused by my "finger trouble" that gave the wrong frequencies for Decca in part 3 of *Aeronautical Radio* in the July issue. They should, of course, be 70 and 127MHz, i.e. 1000 times bigger than printed! Did anyone spot the "deliberate" mistake in Part 1? The h.f. antennas on a 747 "Jumbo" actually point backwards from the wing-tips. Do I hear you say that you've never noticed? These aircraft are common in the UK skies and the antennas can be seen clearly through binoculars, particularly if you can catch one climbing or descending.

Talking of binoculars, don't forget that this column needs **you**. It's **your** observations, comments and questions that will make this a regular monthly feature! I need your feed-back, in the form of information or questions, about aeronautical radio matters to be able to compile this column. You don't need an airport; especially with binoculars it's the strength and angle of the sun that seem to contribute to a clear image, so you should be able to get good views of even comparatively distant aircraft. But please, always remember the safety rule; before looking through binoculars (or a telescope) whilst at any particular place, first check the position of the sun. Catching the sun directly in the field of the binoculars can permanently damage your eyes (in fact it is usually the light-sensitive retina at the back of the eye that is literally burned). Try to reconcile the flight paths of the aircraft near you with the known airways and approaches, departures and circuits around your local airfields. Can you follow the routes of the aircraft that you see and hear; and why do they vary, especially in relation to weather conditions? Write and ask me — or, tell me — what goes on near you.

Virgin Balloon

Richard Branson's transatlantic balloon attempt used the usual high frequency oceanic air-traffic control services according to **Peter Beardo** who worked on the team that monitored the balloon's progress. Peter is a G1 + 3 letters (although I didn't get the full callsign) and is also active on, amongst other things, packet radio. One unusual means of communication was the sending of data between balloon and ground via the INMARSAT satellite.

While on this subject, **Dominic Scott**, who worked on TVS's coverage of the attempted crossing, wants to know if the VOLMET broadcasts would be of any use during such a balloon flight. These VOLume METeorological broadcasts give actual weather at selected airports, and are transmitted on both h.f. and v.h.f. This means that unless the balloon is likely to fly at low level close by one of the reported airfields, the information provided by



VOLMET would not be of very much use. The problem with ballooning is that you can never be certain where you will land, until you get there! The much-publicised fuel on board the Virgin Atlantic attempt was used solely to heat the air in the envelope causing it to expand and thus reducing its density compared to the colder atmosphere surrounding the balloon. This makes the aircraft "lighter than air" (this description lacks scientific precision!) and so it derives sufficient lift to raise its weight from the ground. As for movement over the ground, this is determined entirely by the wind to which the balloon finds itself subjected and is hence a matter of luck with the pre-flight weather forecast.

The VOLMET is actually a computer-synthesised voice which, having announced the station to which the listener is tuned, proceeds to recite the weather reports at each of the named airports. When it's finished, it starts all over again. Computers never lose their voice! A typical report gives the airport name and the time of the weather observations (24-hour clock). The wind is quoted as direction from which it is coming (in degrees, all three digits being spoken including any leading zero) and its average speed in knots. Then the runway visual range is stated (metres or kilometres) along with the presence of anything that might affect it such as haze, rain or smoke. Cloud is next: the number of oktas at each height (feet) above the surface is given; cumulo-nimbus means those big fluffy clouds that are often associated with thunderstorms (especially in the summer) and it's raining! One okta means that one-eighth of the visible sky is covered by cloud at that height. Of course if it's foggy then the message "Sky obscured" might be transmitted instead; or, CAVOK might be used which means "Cloud And Visibility are OK" The temperature is quoted in °C and so is the dew point. This latter is the temperature to which the air may fall and still be (just) able

**Send your letters to:
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to hold on to its present load of water vapour. The QNH is the barometric pressure which, when set on an altimeter, would cause it to read height above sea level. A change indicator might round up the report, such as TEMPO meaning brief and temporary changes might occur or NOSIG if no significant changes are expected.

Wind shear

A question on wind shear comes from **Clare Strong** (St. Leonards, near Tring, Hertfordshire). Wind shear is less severe in this country than over the larger land masses of, say, the United States. It is a sudden change in wind strength and direction that, being near to the ground, throws an aircraft off course at the critical moments of take-off and, worse, landing. A Tristar aircraft crashed at Dallas Fort Worth whilst on final approach due to this formidable meteorological phenomenon. It happens under the tall, lumpy cumulus clouds especially in relation to thunderstorm weather. It's like an upside-down fountain of air. The air descends vertically from the cloud until it reaches the ground at which point it spreads sideways in all directions. As you approach this lower area you can imagine that the air is coming towards you at speed. Then you fly through the middle of the windshear microburst, where it's relatively calm, only to emerge out the other side with a sudden tail-wind. All these changes happen in quick succession with no warning. Weather reports (such as on the Automatic Terminal Information Service, a.t.i.s) will forecast windshear if the mean surface wind exceeds 20 knots or the difference between the surface and 2000 foot wind vectors exceeds 40 knots or there are heavy showers/thunderstorms within 5 nautical miles (information sourced from *Aeronautical Information Circular 37/1987*, published by the Civil Aviation Authority). Pilots should take such a forecast seriously.

Visitors are welcome to my own collection of aircraft bits and pieces. And if you have any such things to spare, please let me know; the collection is always expanding! But don't attack your holiday aircraft with a screwdriver whilst looking for souvenirs. You won't be invited back. To arrange a visit you can write care of the Editor, or ring me (01-958 5113). Where am I? Pilots approaching either of the 28 runways at Heathrow from the north know me well. I'm the house that they overfly when leaving the Bovingdon beacon on a heading of about 130° and once they have about 12 nautical miles from the beacon showing on the distance measuring equipment (d.m.e.). The beacon is on 112.3MHz (d.m.e. channel 70) and has the identity BNN (dah-di-dit, dah-dit, dah-dit). Drop in some time, but if arriving by parachute, please note the small size of the garden! □

INTRODUCTION TO DX-TV

Keith Hamer and Garry Smith

Part 2

Identifying Sporadic-E DX Reception

In order to identify the source of long-distance television reception it is an advantage to know something about TV channels and the various systems in use. In the presence of test cards or captions, definite identification of the signal is normally possible, simply by examining what appears on the screen. Unfortunately, in recent years, many broadcasters have extended the number of transmission hours devoted to programme material and this has meant that even the most experienced DXers must collect as many clues as possible to help pin-point the origin of the transmission. To add to the problem, during a Sporadic-E opening, the signal may be of short duration, so it pays dividends to acquaint oneself with the many different ways of identifying the signal.

Channels and Systems

The first important clue will be the channel on which the signal is received. In Band I, where Sporadic-E DX will be encountered, the different transmission systems in use have been assigned their

In the last article we discussed the theory behind Sporadic-E propagation and the simple means by which a newcomer to DX-TV could resolve signals from all over Europe. This time we take a look at the various TV transmission systems in use and ways of using their differences to establish the likely origin of the received signals.

own channel allocations. There are at least four, if not five, different TV systems the DXer may encounter in Europe, which suggests that quite a few channels are operative throughout Band I. In practice, some channels are shared, which actually helps with identification. The ability to recognise the channel or transmission standard is the first step in a process of elimination.

Differences

As one might expect, the differences in TV systems have largely been brought

about by political decisions, mainly in the early days of television. As a consequence, most Eastern-block countries favour the same system as Russia which, not surprisingly, differs from the one adopted by most Western European countries. Generally, all countries in Europe currently use 625-lines with negative vision modulation and intercarrier sound. These are similar in many respects to the British u.h.f. system. The main exception is France where 625-lines, positive vision modulation and a.m. sound is the order of the day. A small number of services using the American 525-line system can be found in some countries serving American Forces personnel stationed at the various bases.

Until comparatively recently, quite a hotch-potch of transmission systems existed within Europe. The United Kingdom employed a 405-line system for broadcasts in Bands I and III, while our French friends wrestled with an 819-line system. The latter system has an extremely wide video bandwidth of 10MHz and an overall channel bandwidth of 14MHz. In theory, the number of channels that could occupy a band was small compared with, say, our 405-line system which has an overall channel



Fig. 1: Map showing transmission standards, colour systems and channels adopted by countries which may be received in the UK. Note that the Austrian channel E2a has the same vision frequency as R1. Also, the Irish channel B shares the same frequency as the Italian channel IA.

INTRODUCTION TO DX-TV

bandwidth of 5MHz. In the UK, Band I was comprised of five channels and Band III had eight. In practice, France managed to cram nine into Band III by arranging for the sound carrier to be higher than the vision on some channels and lower on others. Careful interleaving ensured that co-channel interference from other stations was reduced to a minimum. The complexity of the i.f. strips found in some of those early receivers must have proved a nightmare for French TV service engineers. Other countries, influenced by the French, employed the 819-line standard but with a much reduced channel bandwidth to enable a more orthodox channel arrangement to exist.

TV Systems

Despite great efforts to standardise terrestrial television systems where possible, technical and political considerations mean the co-existence of several different standards for many years to come.

The most important variable parameters which make up a television system are as follows:

- a: Number of scanning lines: 625 or 525
- b: Field frequency: 50 or 60Hz (depending upon the electricity supply frequency)
- c: Video modulation sense: negative or positive going
- d: Method of sound modulation: intercarrier f.m. or a.m.
- e: Spacing of the sound carrier from the vision frequency: 4.5, 5.5, 6.0, or 6.5MHz.

Each combination of parameters has been designated a code letter and these are recognised throughout the world. The introduction of colour TV has not affected the coding. Any of the three colour systems, namely PAL, SECAM or NTSC, can be used with any of the parameter combinations. Most European countries using system B (or G at u.h.f.) broadcast in PAL colour, but in N. Africa and the Middle East, SECAM is favoured. Most countries having a 525-line system have opted for NTSC, but in recent years the introduction of colour television to S. America has resulted in a few surprises. For instance, Brazil chose PAL for their system M broadcasts, but a sub-carrier frequency lower than the familiar 4.43MHz was necessary due to the limited bandwidth available.

Channel Prefixes

For DX purposes it is customary to include a prefix with the channel number, depending upon the system in use. Traditionally, system D channels have an "R" prefix, while B channels have an "E". An exception being Italy where channel variations occur. These are lettered rather than numbered and have an "I" prefix. To

confuse matters, the Irish channels are also lettered and are referred to as "I" channels. Most DX enthusiasts have now adopted the prefix "L" for the present French channels although during the reign of the 819-line system the prefix was "F". System M channels, as used in America and associated countries, carry the prefix "A".

Band I Channel Allocations

The best way of appreciating channel relationships is to pretend that you are looking at a tuning scale of a radio receiver. By studying the Band I channel distribution layout in Fig. 2, it should become fairly obvious that the relative positions of the channels should help narrow down the number of likely possible countries from where the signal has originated. Consulting the map in Fig. 1 will reveal whether the particular channel your reception occurs on is operated by the country which you suspect the reception had originated from. The table of channels and countries in Ron Ham's column a few issues ago is also a great help. If your receiver is equipped for the various sound and colour systems, the presence of these should greatly help the process of elimination. For example, if a programme was received in PAL colour on channel R2, it could be only be from Rumania. Similarly, if a broadcast in PAL colour appeared on channel R1, it could not be Rumania since this channel is no longer used by them. The only other alternative would be a system B country sharing the R1 vision frequency. Checking the channel chart that it must be Austria on channel E2a. Unfortunately, Sporadic-E propagation does not always support the chroma and sound information of a signal, especially on the lower frequencies of Band I.

A French signal will show as a negative looking picture with unstable frame and line lock on a normal receiver. This is due to the vision modulation used for their

transmissions having opposite polarity. Whether it is worthwhile modifying the vision detector circuitry of the receiver to cater for this type of modulation depends on the technical skill and enthusiasm of the individual.

A 525-line signal will exhibit rapid field roll due to the differences in frequency, i.e. 60Hz instead of 50Hz. Adjustment of the field hold control should correct matters although the picture geometry will also require attention, especially the height setting. Contrary to what one would expect, the line frequencies encountered with both the 525-line and 625-line systems are virtually the same.

Other Means of Identification

The general direction from where the signal comes from is perhaps an obvious clue, and this is one advantage of using a rotatable antenna system. Very often several neighbouring countries will be present during openings. For example, Swiss, Yugoslavian and Hungarian broadcasts may appear at the same time as Italian ones. The type of programme may also yield clues, especially those portraying national past-times, national dress and sport. It goes without saying that bullfights normally come from Spain, rather than Finland! News programmes can be tricky to base decisions on because maps and place-names often refer to the news item. Weather maps are a fairly safe bet especially if you make a note of where all the attention is focussed. It is a good idea to dig out the old atlas from the attic and brush up on ones geography since some weather maps show only the outline of the country.

Sometimes a clock is seen without any form of logo or other identification present. Time differences can be useful but a certain amount of caution is needed. Only a few years ago, enthusiasts noted the Russian clock at three hours ahead of BST, instead of the normal two hour

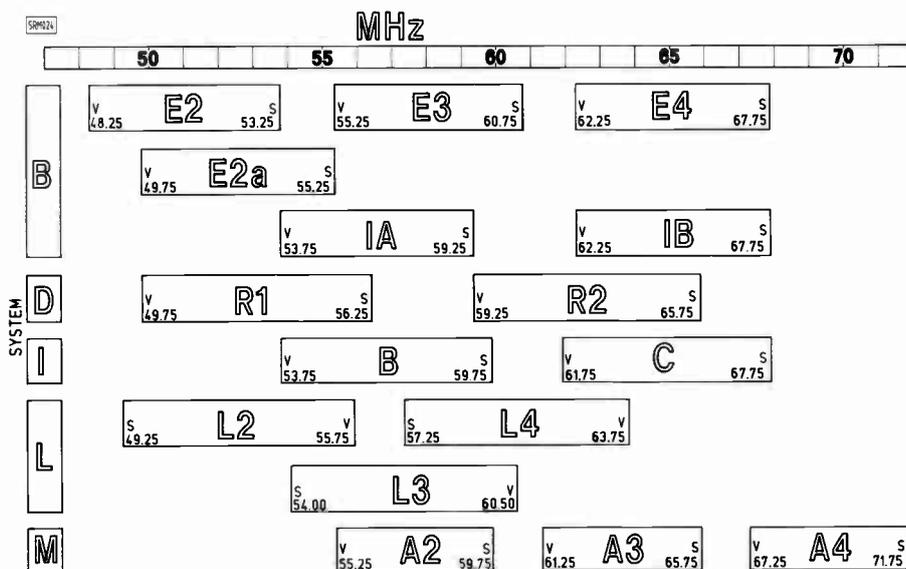


Fig. 2: TV System chart for Band I transmissions.

INTRODUCTION TO DX-TV

difference. It was assumed that the signal had come from a transmitter located in another time zone, further east than normal. The outcome was simply that Russia had decided to advance their clocks by an extra hour during the summer! Having said that, an Iranian signal on channel E2 was positively identified a few years ago by a large digital clock incorporated in the test pattern showing a time difference of 3½ hours.

The more dedicated DX enthusiast tends to make use of the v.i.t.s. (vertical interval test signals) as a means of establishing the origin of the transmission. The v.i.t.s. are located within the frame blanking pulse at the top of the picture and

if the frame hold is adjusted to produce a black bar, the v.i.t.s. will be revealed. They take the form of a series of small white dots and dashes which tend to differ in appearance depending on the broadcaster. Of course, initial identification is necessary and changes do occur periodically.

First Signals

If you are using a receiver with frequency synthesised tuning in which European channels can readily be accessed, or a specially calibrated converter such as the D-100 mentioned in Part 1, you should have no problem in identifying which channel your first signal

appears on. Other types of tuning arrangements, such as the small preset buttons or thumbwheels found on many portables and video recorders, are crudely calibrated and the only markings are the letters "H" or "L" which signify the higher or lower ends of the tuning range. With this type of tuning you will not have the foggiest idea on which channel your first DX encounter takes place unless you are lucky enough to receive the same signal in three places in Band I. These would correspond to channels E2, E3 and E4. By noting their locations on the scale, the relative positions of channels R1 and R2 could be roughly assessed until actually confirmed.

Key:

- 1 - System
- 2 - Areas in use
- 3 - Number of lines
- 4 - Field frequency (Hz)
- 5 - Vision modulation
- 6 - Sound modulation
- 7 - Sound carrier spacing from vision (MHz)

1	2	3	4	5	6	7
B	W. Europe including Yugoslavia and East Germany	625	50	-	FM	+5.5
D	Eastern-bloc countries and Russia	625	50	-	FM	+6.5
I	Eire	625	50	-	FM	+6.0
L	France	625	50	+	AM	-6.5
M	America, also AFN-TV Crete	525	60	-	FM	+4.5

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GOONHILLY EARTH STATION

Elaine Richards G4LFM

The choice of Goonhilly Downs, on the Lizard Peninsula in Cornwall, as the site of the UK's first satellite earth station was made for exactly the same reasons that Guglielmo Marconi chose the Lizard for his pioneering work in maritime and international wireless telegraphy. The Lizard offers an uninterrupted view across the Atlantic with little electrical interference.

The first transatlantic wireless message was sent from the Lizard on 12 December 1901. Sixty years later, the advance of technology had made satellite communications a realistic possibility. The UK, USA and France announced in 1961 that they would co-operate in a programme for the transatlantic testing of communications satellites.

Land Search

The search for a suitable site in the UK for the station that would receive the signals from the satellites ended in the Lizard, on the flat expanse of Goonhilly Downs. The Lizard offered an unimpaired view of the Atlantic horizon, giving the longest possible contact with the low-orbiting satellites then being used. It suffered from little electrical and radio interference; was well placed to connect with inland communications, power supplies and transport links; and had a climate with moderate rainfall, little seasonal variation in temperature and only occasional snow.

Equally important was the geology of the area. The serpentine bedrock, over

July 1987 saw the 25th anniversary of the Goonhilly Earth Station, and we thought that this would be an ideal time to look back to the beginning of a very famous landmark.

300m deep, would give vital support to the massive weight of the antennas.

First Tests

Within a year of obtaining possession of the site, the first antenna, the control room and its associated equipment were installed and ready for the first tests which would use the *Telstar* satellite. Those tests confirmed that satellites could have a commercial future in international communications.

Telstar was launched on 10 July 1962 by the US National Aeronautics and Space Administration (NASA) at 0835GMT. During a period of 16 days, several world-firsts went into the record books — the first live television transmission between Europe and the USA and the first telephone calls, facsimile transmission and transmission of colour television by satellite.

The Receiving Dish

Because of the low orbit of *Telstar* (between 830 and 5700km) the satellite was only usable for three or four 30 to 40 minute periods each 24 hours. As the

satellite raced across the sky from horizon to horizon, the antenna had to be nimble enough to follow the satellite to one-fifth of a degree accuracy during each of these brief visits.

Aerial 1 at Goonhilly was an 870 tonne "dish" antenna, measuring 25.9m. Some initial problems during the first usable orbits of *Telstar* caused experts to blame the unusual design of the British antenna. It turned out to be a faulty component that took twenty minutes to fix, and so the antenna went on to establish its world-firsts. It was equipped with 100 horse power of electric motor, yet in normal weather conditions it only took two horse power to provide good balance and smooth movement.

Goonhilly Station cost around £800 000 to complete, about a quarter of the cost of the American and French stations. Yet it was the British dish antenna design that became the norm for satellite communications as opposed to the French or US horn designs. The Goonhilly dish antenna design is now in use by nearly 700 satellite stations in more than 150 countries, and that first Goonhilly antenna is still in use today.

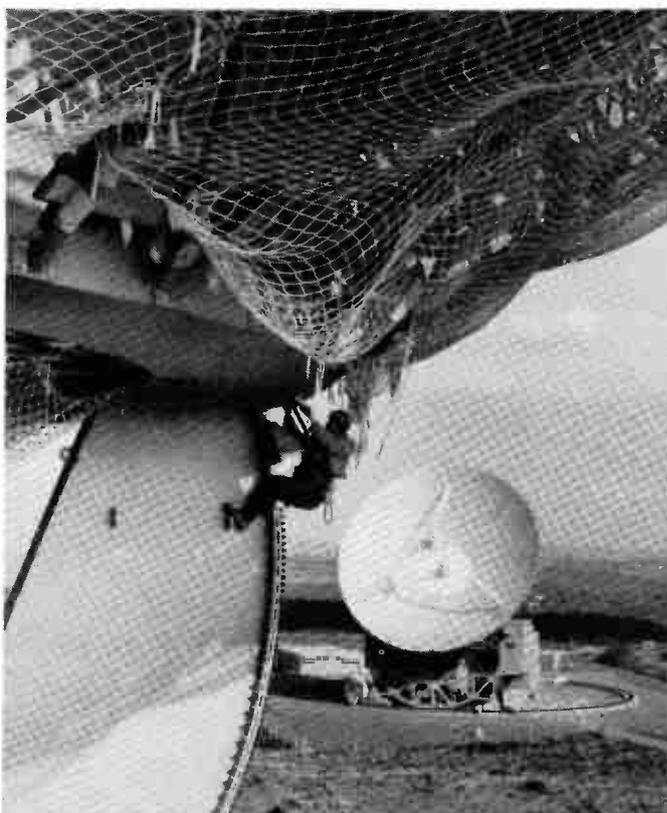
The primary purpose of the *Telstar* satellite tests was to acquire data on which to base the future design of satellite systems for commercial operation. However, during the period from July 10 to 27, a number of demonstrations were carried out which illustrated the potential of satellite systems.

World satellite communications all

John Apperley, manager, shows a model of Intelsat V.



Aerial 6 under maintenance



GOONHILLY EARTH STATION

began with a live television transmission from America, and in the evening of July 11, the first live television transmission from Goonhilly to the USA. Two days later the world's first telephone call by satellite was made from London to New York. Six days after *Telstar* was launched, Goonhilly transmitted the first colour television pictures via satellite, long before colour television was commonplace in the UK or even the USA.

Other Satellites and Dishes

Following the successful test with *Telstar*, an international satellite organisation was set up in August 1964 – *Intelsat*. They launched their first satellite in April 1965. The satellite, *Intelsat I*, was known as "Early Bird" and was a high-orbiting satellite in a geostationary orbit more than 35 000km above the equator, following its successful launch to this height, commercial services opened in June 1965.

A second satellite, *Intelsat II*, was launched in October 1966, also into high-orbit. Now *Aerial 7* at Goonhilly, no longer needed to track low-orbiting satellites across the sky it had an extra reflecting surface added (pushing its weight up to 1100 tonnes).

Satellite communications had now truly entered commercial operation. As the demand for transatlantic TV and telephone transmission grew, so did Goonhilly with the addition of *Aerial 2* in 1968. By 1969, three geostationary satellites were in orbit giving global communications. *Intelsat III* was positioned above the Indian Ocean and to meet the demand for satellite communications. *Intelsat III* was brought into service in 1972.

All this was probably no surprise to Arthur C. Clarke who in *Wireless World* in October 1945 had predicted all this happening.

Aerial 4 was added in 1978 to meet the ever-increasing demand for communications across the Atlantic. This was also one of the first antennas in the world to use the 11/14GHz frequency as soon as it became available for business satellite communications. The demand for satellite communications grew by 20 per cent a year during the 1970s and early 80s. More satellites were put into orbit and in October 1978 a second earth station was brought into service by BT at Madley in Herefordshire, on the England/Wales border.

The demand for specialist services also grew during this time and in 1983 *Aerial 5* at Goonhilly was brought into service to provide satellite services to ships at sea. At the same time *Aerial 6* was being built to provide further capacity on the busy transatlantic route. This was Goonhilly's largest dish with a diameter of 32m. It was also the first "dual-frequency" antenna – able to both receive and transmit on two frequencies simultaneously. This

entered service in September 1985. Now this antennas has been equipped with the latest development in satellite communications – time division multiple access/digital speech interpolation (TDMA/DSI). This means that signals from the station are grouped and sent by time rather than frequency, and on the principle that during the average telephone conversation either party is only speaking for one third of the time of the call, other groups of signals can be sent along the same channels during the lapses of conversation.

Continuing Growth

With continuing growth in demand for satellite communications, British Telecom announced plans in August 1983 to build a third earth station in London's Docklands. This was to be primarily for satellite TV distribution and specialised business services. The London Teleport, in North Woolwich, opened for operation in February the next year – less than six months after site clearance began.

Aerial 7 at Goonhilly, initially used for TV circuits, is now being used for the trial of "Skyphone" – a telephone service to aircraft in flight – which is due to start in the autumn. Mean while *Aerials 8, 9* and *10* have been built, these are all small-dish antennas, below 14m in diameter and are used for research and development as well as provide monitoring and control facilities on the more than 130 satellites currently in use.

Natural Beauty

The Lizard Peninsula is designated as an Area of Outstanding Natural Beauty and Goonhilly Downs was Cornwall's first National Nature Reserve. In developing the earth station, BT spent £200 000 landscaping the scheme to form natural-looking mounds inside and outside the station's boundaries. Local heathers, gorse and willow were planted in the station, in keeping with the natural

character of the Downs.

With little intrusion from the public, amidst the silent giants of Goonhilly's antennas, the local flora and fauna have been able to flourish, making Goonhilly not only a pioneer in high-technology but also a botanist's paradise.

The Visitor Centre

Just after starting this article, we were in Cornwall and decided to go and have a look at Goonhilly. The Visitor Centre is a good place for a day out with the family. They have put a great deal of thought into all the exhibitions, so there is something to interest everyone.

The entry cost includes a guided bus tour, audio visual displays, working and static exhibits. There is even a reasonably priced café/restaurant (we tested it!). One thing about the centre is that you should make sure you know whereabouts in Cornwall Goonhilly is situated. The signposts don't start until you are quite close.

The guided tour took us about an hour or so, and we were first taken to the old control room, which had been turned into an observation/information room. From here you can see each of the antennas as they are described, as well as read interesting facts about the site. The next stop is the control room, you stand behind what I assume is one-way vision glass as I wouldn't like to work with dozens of visitors staring at me all the time. Here a pre-recorded tape is played explaining the various pieces of equipment on view. The route back to the Visitor Centre is via three of the antennas, you don't get out of the bus, it drives around each antenna.

Unfortunately we didn't have time to have a look at much else as we were due back in Poole early evening, but there are plans to go back for a longer visit . . . □

(Information and photographs courtesy of BT.)

Aerial 3



ANOTHER MYSTERY MARCONI RECEIVER

Chas. E. Miller

The receiver was obviously of Marconi manufacture from the method of construction, and hardly needed the confirmation of a maker's plate on the rear of the chassis. The model number would have been useful, but that had been removed, and I was left with only the Admiralty Pattern number (AP103733) as a possible identification.

Rack Mounting

The set is a standard rack-mounting type which gives a strong impression of being an updated version of the 1017 in the layout of its valves and other components. This was described in *SWM* Nov. 84. The front panel has a rather small dial towards its centre, reminiscent of the type used in radios of the early 30s. The circular scale rotates behind it, with a horizontal cursor giving frequency calibration. Illumination is provided externally by a small festoon bulb in a hood above the dial aperture.

Controls

To the right of the dial is a large tuning knob, beautifully light and precise in operation and the reason for this will be seen shortly. To the left of the dial is a knob giving a choice of first local oscillator — either by preset crystal control or ordinary variable tuning. Along the bottom of the panel is a row of five knobs, from the left these are PASS BAND (mod/c.w./cal); H/F GAIN (switched in six steps from max to -75dB); BAND CHANGE; VALVE FEEDS; FEEDS SELECTOR. These last two are presumably used in conjunction with a valve monitoring system.

Motors

Significantly, all but those just mentioned are motor-driven using Selsyns, indicating that the RX was intended to form a unit in a diversity system with centralised control. The motors operating the switches are small — about the size of an electric clock unit, but the one driving the tuning unit is quite large, being comparable to a small vacuum cleaner motor. It drives via a set of beautifully-made gears enclosed in a dust-free Perspex housing. The manual knob is attached to an extension of the motor shaft and therefore shares the same precision gearing. The free-running armature of the motor gives a flywheel effect to the tuning, enabling rapid changes of frequency to be made as well as allowing careful searching.

The Valve Line-up

Fourteen miniature valves are employed. The line-up is as follows: r.f. amp. (CV454); r.f. amp. (CV454); 1st mixer (CV453); 2nd mixer (CV453); 1st i.f. amp. (CV454); 2nd i.f. amp. (CV454); demodulator/a.g.c. (CV140); a.g.c. amp. (CV454); b.f.o. (CV454); 1st local osc. (CV454); crystal l.o. (CV454); calibration

Regular readers will know that Chas Miller makes a habit of collecting vintage valved radio sets with a view to trying to restore them to working order. This is the story of the third mystery Marconi to come his way and it arrived from an auction sale via a third party who bought it because it looked interesting. One glance was enough to confirm this opinion and Chas took possession with considerable pleasure.

osc. (CV850); 2nd l.o. (CV454/CV455). The second mixer and its local oscillator valves are locked away in a substantial screening box with very comprehensive choke/capacity decoupling of all input voltages. All the valves were present and correct, but the calibration crystal and the five preset frequency crystals were missing, but this proved to be no great loss in the end.

Diversity Reception

Unusually for an item in an auction, the vendor's name and address were on the label stuck to the front panel, and since it was fairly local I sought out the gentleman and asked for any information that might be available on the RX. Unfortunately, although he was extremely co-operative, he was unable to enlighten me beyond confirming that the set had been used for diversity reception and that, along with five fellows, it shared a common rack-mounted a.f. output and power unit. He stated that the set had been working when removed from the equipment, but had no idea of the input/output connections. This promised to be a serious snag, since there are a great number of the latter.

At the rear of the chassis are two Jones plugs, one having twelve and the other six pins, plus three small-pin plugs, with a

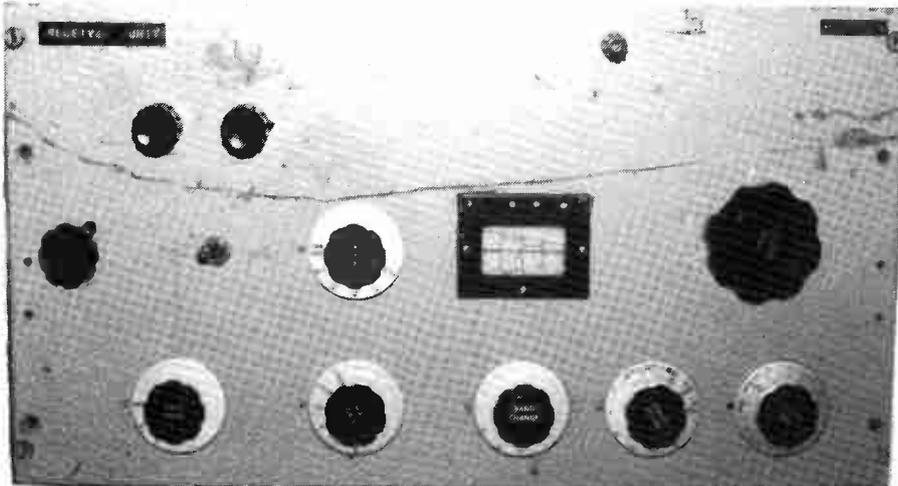
total of 36 pins between them. These connectors are all wired via thick cable-forms with little hope of their being individually traced. I was thus faced with some detective work and that gave every indication of being extremely protracted and puzzling.

Sorting Out the Wiring

Clearly, the problem could not be approached on the basis of discovering exactly what each pin of every connector did. This would have taken the proverbial "Month of Sundays"! The only sensible method appeared to be the singling out of the essential — viz h.t. and l.t. inputs and a.f. output. I tackled the heater wiring first, soon finding that all the valves are wired in parallel with twisted yellow pairs. However, somewhere along the line the colours change to white, and it took some little time for me to identify two pairs of twisted white cables on the smaller Jones plug as being the 6.3V a.c. input. Neither side of the heaters is earthed, but I found that for the sake of convenience I could strap one side to chassis without any ill effect. The VALVE FEEDS and FEEDS SELECTOR knobs gave me a clear indication of what h.t. was required, since they bear the figures 290V and 225V on their backing plates. It therefore seemed that the two h.t. voltages were provided by the common p.s.u. and not in conjunction with dropping resistors in the RX itself. By checking back with an ohm meter between the various valve anodes and the connectors I eventually established three h.t. input pins, one of which seemed likely to need the 290V feed and the other two the 225V one. A very old p.s.u./a.f. amplifier was pressed into service to power the receiver and handle its output — if any!

It Worked

Much to my delight signals were received at once and very soon it became apparent that I had a very sensitive set on my hands. The coverage, in four bands, is from 3 to 25MHz (nominally 3 to 5, 5 to 9, 9 to 16 and 16 to 25MHz with very generous



ANOTHER MYSTERY MARCONI RECEIVER

overlaps), and the performance appears to be maintained well throughout the range. However two drawbacks became immediately apparent. First the switches with motors had ratchets which allowed them to turn in one direction only — not very handy for quick changes of h.f. gain or pass-band — and the b.f.o. seemed determined not to work. The pass-band switch, being marked as it is, suggested that the b.f.o. ought to come into operation automatically when the c.w. position was selected, but this was not, in fact, the case.

In the absence of concrete information it could only be assumed that it was switched in and out at the common control panel, by the application or otherwise of its h.t. voltage. A temporary hook-up proved that the b.f.o. would indeed function when h.t. was provided from the 225V line.

A Quandary

I was now faced with a quandary. I am always loath to modify the front panels of vintage receivers, but in this particular case it seemed unavoidable. The alternative was to strip out the VALVE FEEDS and FEEDS SELECTOR switches, which did nothing as far as could be ascertained, and to use the holes thus left for a BFO ON/OFF switch and possibly a BFO TUNING control. However this appealed to me even less — wanton stripping is anathema — and I settled for the lesser of two evils. The front panel was drilled to receive two controls on the same level as the 1st oscillator selector and equally spaced. The resulting centre position was occupied by a simple h.t. switch for BFO ON/OFF, and that on the far left by a small variable capacitor. This latter had at first, as mentioned, been envisaged as a b.f.o. tuner, but upon mature consideration was employed to vary slightly the 2nd i.o. frequency. This method of obtaining "band-spread" is used very successfully in the Marconi CR-150 and turned out to be just as effective in this instance. Once the b.f.o. has been set by its iron-dust core the band-

spread control provides smooth and positive resolution of the s.s.b. signals. I was at first rather apprehensive about extending the wiring from that very impressive screening box, but in practice no problems have arisen.

Audio Amplifier

Having gone thus far with modifications, I considered that the scope might be extended to provide the RX with its own a.f. output stage and gain control in order to make it operable with any type of p.s.u. offering 6.3V and *circa* 250V with a considerable reduction in the complication of interconnecting leads. There is no need of a large amount of a.f. output with a set such as this. In fact economy of h.t. and l.t. requirements is of more importance. To this end I decided upon as simple an output stage as possible. Here another dilemma occurred. Should I use some of the now redundant valve-holders already in the set — i.e. for the crystal 1st oscillator and the crystals themselves — or make up a new sub-chassis. The first alternative had its attractions, but to employ it would have entailed a great deal of disturbance to the original wiring simply to gain access to holders. I therefore abandoned it and turned to the other scheme.

Luck

As luck would have it, I immediately found a small amplifier that had been removed from an old record player, which proved to be ideal for the job both in size and shape. It consists of a small chassis, about 125mm long by 38mm wide with an extension at one end set at right-angles to carry volume and tone controls. It proved possible to mount this unit on the RX front panel by means of the nuts on the control shafts, just above the new b.f.o. switch and the band-spread capacitor. The valve originally used in the amplifier was a UL84, presenting me with a ready fitted B9A holder. This suggested the use of an

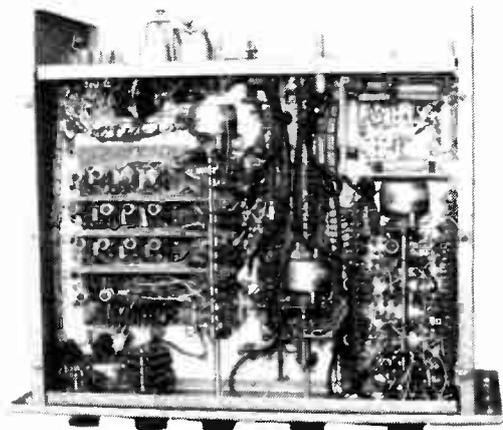
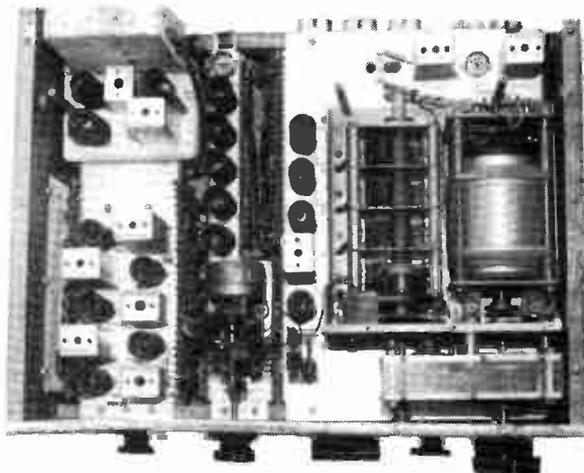
ECL80 as a combined a.f. amplifier and output — an arrangement popular in the TV receivers of the early 50s. The output is about 1.4W — quite adequate — whilst the h.t. demand for both triode and pentode sections is less than 25mA and the heater consumes only 0.3A. Wiring-up the simple circuit took only a few minutes and the unit was soon ready for test. It proved to be well up to its job and gives ample output at reasonable quality. The tone (top cut) control is valuable for certain listening conditions when "side-splash" is prevalent and the narrow i.f. bandwidth is unable to provide relief.

New Antenna Socket

Only one more internal modification proved to be necessary. It transpired that the band-switch also transferred the antenna input from one socket to the other on the changeover from bands 1 and 2 to bands 3 and 4. This handicap was removed by simply taking a new lead from the appropriate switch wiper to a fresh antenna socket common to all bands and mounted more accessibly on the front panel.

The ratchet action on the switches was disabled without dismantling by soldering the small "click" plates out of reach of the motor drive mechanism. This permits the switches to operate as any normal type, but will permit easy return to motor drive should the need arise in the future.

Restoring and modifying this receiver had been both absorbing and rewarding. It is always pleasant to rescue any well-made piece of equipment from probable scrapping, especially when the end result is so satisfactory as this has proved to be. The rather small dial and the absence of any logging/vernier scale act against the use of the set on pre-determined frequencies, but its high sensitivity and the splendid tuning mechanism make it ideal for browsing through the bands. It has proved to be a very worthy addition to my collection of Marconi sets and has amply repaid the work put into it. □



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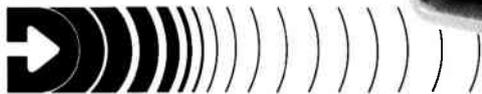
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STARTING OUT

Brian Oddy G3FEX

One of the most important aspects of short wave listening is to be able to identify the signals received and then to keep accurate records about them for future use. Such records are traditionally kept in a log book, although many listeners now make use of a card index system or a computer data base.

Identification

While broadcast schedules and stations guides are of assistance, identification is not always a simple matter. The identity of a station is usually announced at the start of a transmission, but this may well be in a foreign language; furthermore the language may not relate to the country of origin but to the chosen target area!

A good way to tackle the language problem is to record broadcasts from known foreign countries so that the sound pattern of an unrecognised language can be compared with them later. To that end it is good idea always to have a cassette recorder attached to your receiver when tuning around the bands. Many s.w. stations make use of interval signals as an aid to identity, and by making recordings of these sounds when they are radiated just prior to the start of a programme in your language, a library can be built up which can be used to identify a station when it is broadcasting in another language.

Line-Up Tones

Signal strength cannot be used as a clue to identity since it does not follow that a nearby s.w. station will be stronger than a distant one; that will depend on conditions prevailing at the time. However, some knowledge of the existing skip conditions may give a clue to the continent in which the transmitter is located. In order to set up a s.w. transmitter before a broadcast an audio "line-up" tone is often radiated and this may give a clue to identity; for example the BBC uses a 1kHz tone, whereas some other countries use 900 or 440Hz tones.

Tropical band broadcasts are often much more difficult to identify since they often consist of a balanced, continuous programme of speech, music, drama and news. By carefully listening for clock chimes preceding speech, both the time of day and the type of chime may narrow the field considerably — although such clock time may well contain local summer or daylight-saving time.

Having identified a station it is necessary to note in the log its position within the s.w. band so that it may be either found again or referred to in the future; this is done by noting the frequency in megahertz. The broadcast

frequency is usually announced by the station at hourly intervals. (Note: some stations give their frequencies in kilohertz, but it is a simple matter to convert them to megahertz — see Starting Out, *SWM* April '87. It is of course possible to look up a station's exact operating frequency for a chosen time in its schedule, or in a station or frequency guide book, but these must be up to date! As a tuning/logging aid it may be helpful to remember that s.w. stations are generally spaced 5kHz apart.

Many receivers do not have an accurate frequency display and so tuning to the frequency given in a broadcast (BC) schedule, or finding a particular station again later, can present a problem. Although the wave-change switch in some receivers may only have one s.w. position, several s.w. bands may be covered by this setting. Such receivers are often fitted with a simple pointer and a single scale which is clearly marked in megahertz, but usually lack any serious attempt at calibration except for a few meaningless dots or coloured blocks; the stations appear to be very close together when tuning across a scale of this nature.

Some of the better receiver designs incorporate several s.w. ranges, each being selected by the wave-change switch and each s.w. band then being electrically spread out across the dial. The calibration of these **bandspread scales** is usually more detailed but is nevertheless often still inaccurate, leading to confusion! In addition to these scales, a **logging scale** is often provided which usually has a linear scale of 0 to 100. Although it may be used to simply log the position of the pointer, it may also be employed to prepare a set of graphs which will provide a reasonably accurate frequency calibration for the receiver, especially when bandspread scales are utilised in the design — see appendix.

Time Zones

It is also necessary to note the time of a particular broadcast. When tuning around the s.w. bands remember that time differences are not just restricted to the time of day — it may be summer in one country and winter in another! Remember, too, that some countries are so vast that they have introduced **time zones** to take account of time differences between their eastern and western boundaries; for example, the USA has four such zones.

Civil time in the UK is, of course, **Greenwich Mean Time (GMT)**, which is derived from observations of the sun's transit over the Greenwich Meridian located at longitude 0 degrees; **British Summer Time (BST)** is one hour ahead of

GMT. Some idea of the time of day in other countries in relation to GMT is given in Fig. 1.

Universal Time

Looking at the time problem from the broadcasters' point of view, it is important that they can quote a time in their schedules which is universally understood. Because of the difficulty in converting from one time to another the ITU established a universal time standard called **Universal Time Co-ordinated (UTC)**. For most practical purposes it is similar to GMT except that it is a 24hr clock system, and once a clock is set to UTC it is never altered. To avoid confusion with one's local time it is a good idea to have a 24hr clock showing UTC permanently near the s.w. receiver. This clock may be set anywhere in the world to UTC by making use of one of the special

UTC	(eastwards from the UK)
0001	UK
0100	C. Europe (Berlin, Geneva); Stockholm
0200	E. Europe; Cape Town; Cairo; Moscow
0300	Arabia; Ethiopia; Madagascar
0400	Mauritius; Iran; Reunion Island
0500	Central Russia; Bombay
0600	Calcutta; Tibet
0700	Sumatra; Thailand; Laos
0800	Philippines; Perth
0900	Japan
1000	E. Australia (Melbourne, Sydney)
1100	New Caledonia; New Zealand
1200	International Date Line; Fiji
UTC	(westwards from the UK)
2359	UK
2300	Iceland; Canary Islands
2200	Azores
2100	Greenland; Rio de Janeiro; Brazil
2000	Argentina; Nova Scotia
1900	Montreal; New York; Peru
1800	Chicago; Costa Rica
1700	Calgary; Denver; Phoenix
1600	Los Angeles; Seattle; Juneau
1500	Eastern Alaska; Dawson
1400	Hawauu; Midway Island
1300	Nome; Alaska; Samoa
1200	International Date Line; Fiji

Fig. 1

STARTING OUT

time/frequency standard transmissions detailed in Fig. 2, or by listening to one of the s.w. BC stations (the BBC World Service frequently announces the time in UTC during the day). When writing to a s.w. station be sure to give all times in UTC — and that applies to your reports for Seen & Heard too!

Appendix

The known frequencies of some of the BC stations and the logging scale on a receiver (RX) may be used to prepare a set of reasonably accurate calibration graphs. If a logging scale is not provided, but a strip of paper to exactly the length of the receiver scale, stick it on the dial and mark it with a linear scale from 0 to 100. Using a sheet of metric graph paper (5mm squares) enter along the horizontal axis a scale incorporating 50 such squares to provide, effectively a linear scale 0 to 100

which then becomes the receiver logging scale. If the RX has only one s.w. range, mark on the vertical axis of the graph 1MHz steps at each line forming every other square; if the RX has bandspread scales prepare a separate sheet for each band and mark the vertical axis in steps of 100kHz or 50kHz at every fifth square.

Using these axes plot a number of known station frequencies against logging scale readings by marking in crosses and then joining them up with a line; this line may not be straight, but curved depending upon the characteristics of the receiver's tuned circuits. If these graphs have been drawn with care it will be possible to read off the frequency of an unknown station simply by checking its logging scale reading against the graph; conversely, it will be possible to set the RX to a particular frequency by looking up the logging scale setting on the graph.

Frequency	Standard Time Station
60kHz 2.500MHz 5.000MHz 10.000MHz	MSF Rugby, England
2.500MHz 5.000MHz 10.000MHz 15.000MHz 20.000MHz	WWV Fort Collins, USA
3.330MHz 7.335MHz 14.670MHz	CHU Ottawa, Canada
4.500MHz 7.500MHz 12.000MHz	VNG Lyndhurst, Australia

Fig. 2

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SEEN & HEARD

AMATEUR BANDS ROUND-UP

Justin Cooper

c/o Short Wave Magazine, Enefco House,
The Quay, Poole, Dorset BH15 1PP

Perhaps it would be a good thing this time to look at callsigns, and their make-up, with of course particular reference to amateur radio. In fact, if we consider such a call as for instance GB3SWM/M, we can divide it up into its various parts. The "SWM" is the actual callsign, while the GB3 is the prefix, indicating nationality; the numeral may also indicate location within the national boundary, as for instance occurs in Australia, where the states have different numerals. Thus the difference between VK2AA and VK3AA would be that they are in different parts of Australia. The American system is somewhat similar, save that in the simplifications of recent years, the numeral indicates where a station was first licensed. Should a station first licensed in California (i.e. a W6) now move, say to New England, he will retain his W6 call, whereas years ago he would have acquired a new call as a W1. This can be confusing, so often such a station will sign with a call like W6AA/1, implying that he is a W6 operating from W1 call area.

Suffix

Now we must look at the suffix. This can indicate the type of operation: /M for mobile operation, generally in a car, /MM from a ship at sea, /MA from the same ship when anchored, /AM when mobile from an aircraft in flight, /P for operation from a location away from home and easily moveable and /A for the temporary alternative address. The latter covers the case where you set up a station for longer periods, up to three months. In general, /P covers the field operations while /A covers operation on a semi-permanent basis. So much for the "classic" suffix.

Reciprocals

Other uses of the suffix arose with the increase in "reciprocal licensing" whereby various administrations accept possession of a licence issued by country X as proof that the holder can reasonably be allowed a licence in country Y. When this occurs, some countries allocate a normal callsign (e.g. UK) while others tack on a suffix, e.g. G3SWM/W1. However, it must be said that this latter arrangement, while very popular, is a mite illogical since one has to wait until the end of the complete callsign to know whence it comes. Thus the latest method, proposed for the EEC countries common licence of a

All-Time Post War HPX Ladder		
Name	Last Mth	Prefixes This Mth
Phone Only		
B. Hughes (Harvington)	3284	3269
E. M. Gauci (Malta)	3116	3188
E. W. Robinson (Felixstowe)	2583	2592
H. M. Graham (Chesham)	1932	1932
M. Rodgers (Bolton)	1802	1809
M. Ribton (Gillingham)	1837	1867
P. Oliver (Paisley)	1730	1730
F. Dunn (Chester)	1566	1566
N. Henbrey (Northiam)	1552	1561
P. Davies (Market Drayton)	1427	1427
B. Patchett (Sheffield)	1103	1129
Mrs. A. Sitton (Stevenage)	929	929
A. P. Lincoln (Aldershot)	888	888
J. J. Sales (Lancaster)	400	874
G. Caselton (Orpington)	775	775
R. G. Williams (Borehamwood)	768	857
S. Field (Barningham)	735	735
L. Marcquardt (Hereford)	588	609
A. Vest (Durham)	605	605
N. Fox (Wakefield)	595	595
A. Woodcock (Denmark)	New	603
D. R. J. Hughes (Alderley Edge)	New	545
CW Only		
F. Dunn (Chester)	2035	2035
H. Scott (Rievaulx)	1396	1396
N. Melville (Edmonton)	1119	1147
C. R. Eve (Jersey, C.I.)	220	247
M. Rodgers (Bolton)	202	202
RTTY Only		
A. P. Lincoln (Aldershot)	547	547
W. J. Prior (Lochcarron)	501	501
C. R. Eve (Jersey, C.I.)	418	430
N. Henbrey (Northiam)	334	334
M. Rodgers (Bolton)	New	229

Starting score, 500 for Phone, 200 for CW or RTTY. Entries in accordance with HPX Rules.

Annual HPX Ladder Starting date January 1, 1987

Name	Last Mth	Prefixes This Mth
R. G. Williams (Borehamwood)	449	449
J. J. Sales (Lancaster)	440	450
Mrs. A. Sitton (Stevenage)	378	378
C. R. Eve (Jersey, C.I.)	300	538
L. Griffiths (Sheffield 6)	315	315
M. Probert (Basingstoke)	260	260

200 Prefixes to have been heard for an entry to be made in accordance with HPX Rules. At score 500, transfer to the All-Time list is automatic. Note, the Annual Table is a Phone only listing.

Most in 1987

E. M. Gauci (Malta)	617	681
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Rules as for the Annual Listing. An entry for this listing must be in addition to any claim for the All Time Post War listing.

tacking this information on the front, e.g. DL/G3SWM.

Now, to return to the prefix part of the call. This is taken by the National Authority from the group allocated to them by the ITU. Originally the prefix always took the form familiar in this country, a letter (or two letters) followed by a number, like G3 or VK2. The next step along the road was the arrival of what we used to call "valve-type" prefixes, like 4X4, where the arrangement is always of a

number followed by a letter and another number. More recently still there have been prefixes comprising a letter followed by one or more numerals, for example S79 or Y23.

Since the advent of the WPX activity in *CQ Magazine* and the CQ WW WPX Contest as a major international contest, it has been the case that most administrations have granted "special" prefixes to stations coming on for commemorations and similar

events. Such "specials" are normally derived from the gamut of possibles allocated to that country by ITU, but there have been, very rarely, exceptions to the rule.

Thus, by reference to the Geoff Watts DX list, which also shows such things as ITU and CQ Zones and DXCC status, one should be able to establish without much doubt just where a new and "odd" prefix emanates, even before that station tells you.

Finally, and this is the point, it means that entrants to the HPX Ladder have to apply sense and initiative to classifying their results — if I tried to make the rules totally "watertight" I'd fill all our space without the letters!

Letters

From the table this month you can see those who have made huge changes to their scores and those staying the same.

Two letters this time from E. M. Gauci (Malta) since with his first he just missed the "bus" last time. Eddie is still using his FRG-7700 and long-wire antenna and, as his score shows, using it to some effect.

Turning to R. G. Williams (Borehamwood), he notes that he "strayed" on to the 28MHz band and was startled to hear continentals. In fact there is always the possibility of a "lift", just like the ones on, say 144MHz, due to what are in essence v.h.f. propagation modes, whatever the state of the sunspot cycle. It is also true that in summer there is ALWAYS a possibility of the odd opening as far as the East Coast Ws, albeit these are often quite brief. Robert was more active on 14MHz, and here his highlight was the hearing of all stations in a three-way between VK7AZ, G4NEX and XE3AAF. On a different line, Robert says he hopes to have a Spectrum + 2 128K computer operational on the h.f. bands for c.w. and RTTY soon.

Actually, on the rare occasions when your old and grey-bearded scribe listens to other than c.w. or s.s.b., he uses a Spectrum himself on RTTY and in particular on SSTV, not to mention such exercises as duplicated contest contacts and circuit design. To revert to Robert, his big problem nowadays is getting enough sleep — sleep hours are being cut into by his listening!

M. Ribton (Gillingham) sent a typewritten list this time, and asks how much this is an improvement

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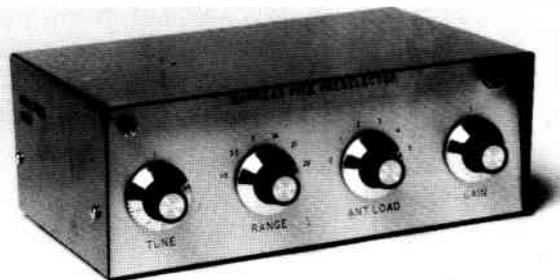
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SEEN & HEARD

... I didn't have difficulty with his previous letters, 'cos I've been practising on deciphering odd scripts for years in the course of writing this and elsewhere! That, I may add is not a challenge to send in a letter in Runic, Greek or even Ogham ...!

R. Watters (St. Stephen) notes quite a lot of QRN on his set-up of FRG-7700plus a.t.u. plus inverted-L at 6m high. Robert tends to listen either for a while after normal working hours, or occasionally somewhat later, and it shows in the log, which includes A4XJR, CE6EJZ, JA1NKV, JY5EC, OD5VD, PY5VV, TF6PS, TZ6MG, VP2EZ, VU2RX, VU2XX, YV3VN, 4X1KT, 5L1J, 5V7SA, 6T2MG, 9H4M, 9K2DZ, 291ITS, and ZS3HL.

Now to **Luciano Marcquardt** (Hereford) who seems to have stuck to 14 and 28MHz for his update of 20 prefixes; the pick of the crop included VE8RCS, VU2XO, OE8HFL/P/YK and Y1BGD.

C. R. Eve (St. Helier) seems to have got into a bit of a twist over the HPX Rules. To deal with a couple of points, the reference to MARS stations covers the US stations who have special calls outside the normal US prefixes, and which operate solely to carry third-party messages from personnel at US bases overseas to relations and friends back home. Such stations can work amateurs and are run by amateurs; but they are not amateur stations and cannot operate freely and generally in the amateur bands. In fact, I have not heard a MARS station for some considerable time. His other question covers the difference between VE1AED/P/SU and VE1AED/SU as in Rule 3. The former is regarded as being a "portable" and the latter as a fixed, in accordance with the

form of their call signs. It must be realised that much of the HPX Rules are quite arbitrary, of necessity; suffice to say, the columnar blue pencil covers all eventualities!

A. Woodcock is in Denmark, and has been an s.w.l. for some 20 years; he has an R71E and Datong FL3 audio filter, an SEM Transmatch a.t.u. to either a full-size G5RV used as an inverted-V with the apex some 1.2m high, or a Dressler ARA30 active antenna. The latter is used for general band checking, while the G5RV and a.t.u. are used for serious listening — the idea is to save the need for the retuning of the a.t.u. that would otherwise occur if one does a QSY and finds that band is dead. Tony offers some 603 prefixes, and notes he has heard 210 countries so far this year.

B. Patchett (Sheffield) is concentrating his attentions on the countries at the moment, and notes the rumpus created by an "ET3JEB" — until a couple of beam-users checked and realised he was a phoney, somewhere in Europe. Had that been a good 'un, just about all the world would have been on the frequency, I would have thought!

C. Harrison (Cleveland) was one who followed Richard Branson's balloon flight on his Sony ICF2001D. Which is a reminder that GB4SAD will be on the air to commemorate the 50th anniversary of the first air flight to the Isles of Scilly. Look out for the station over weekend September 19-20.

Now to **N. Henbrey** (Northiam) who continues to spend a little

time on the bands as he has done for so many years; this time the s.s.b. score goes up to 1561, but the RTTY is a "nil" entry to hold a place.

B. F. Hughes (Worcester) is back in Worcester (65 Flag Meadow Walk) and getting things into some sort of order, a bit difficult after having had a space of some 66 x 9m in which to spread out antennas. The solution proposed is to use a Sony Active Antenna, but it was proving difficult to lay hands on one at the time when Bernard wrote his letter.

Tony Bernascone of 30 Westbourne Grove, North Ormesby, Middlesbrough, TS3 6EF was interested in the reference in June's piece to the building of a decoder for the time-and-frequency station on 4525kHz. Tony uses MSF, OLB5, Liblice, Nauen on 4525kHz, and the RWM outlets on 4996, 9996, and 14996kHz from Moscow for this purpose. He would like to learn how others carry out the decode task. Letters to Tony direct, please.

N. Melville (London N.18) rises by 28 to 1147 including a new country in the shape of A71BK.

The arrival, at last, of the summer is noted by **E. W. Robinson** (Felixstowe) as the cause of reduced listening time — what a pity I missed summer this year — I was in the bathroom at the time. Ted found nine new ones among the static, mostly islands — and it is maybe of interest to those at the bottom of the Table that Ted's new ones this time

include a couple of normal UK prefixes!

Simplicity

Backalong thirty-five years ago, when I made the step from s.w.l. to licensed amateur (and continued to be an s.w.l.) most of us used war-surplus receivers, particularly the AR88D, SX28 and HRO types. Further back yet, to the last pre-WW2 years when I first started listening-in, most of us used home-brew receivers, and the general opinion was that one valve was better than several in the final analysis, although the first superhets were beginning to make an impact. One wonders whether there are any s.w.l.s out there who still use t.r.f., or direct-conversion, or early superhets of that era? If you are one of these, let us know just how your receiver copes with modern conditions, and maybe prove your point with an HPX entry! To put this into perspective, most Gs had t.r.f. receivers, as direct conversion receivers were really not competitive in valve circuitry. The original HRO appeared around 1937, as did the Hallicrafters receivers; up to the beginning of WW2, they had got to the SX28. The AR88 did not appear until 1940. The majority of s.w.l.s and licensed amateurs though still had home-brew t.r.f. receivers with which to hear and work the world. Our interest is in hearing from s.w.l.s who are still using such receivers, or their solid-state modern counterparts, for comparison purposes.

Deadlines

Please keep an eye on the dates; if you miss it, then you end up in the following month's pile and your news is less fresh! Meantime, good DX.

To ensure your reports get mentioned, make a note in your diaries of the next three months deadlines: September 15, October 20 and November 17.

DECODE

Mike Richards G4WNC

200 Christchurch Road, Ringwood, Hants BH24 3AS

Trouble in the Shack!

I suppose it had to happen sometime, but two disasters in one month is a bit much!

First to go was my main power supply, it decided to go into "melt-down" mode after a prolonged period of operation. I suppose I should be grateful that nothing else was damaged, but the p.s.u. was a write-off. The situation was thankfully soon resolved after a visit to a rally revealed a smart, second-hand 20 amp p.s.u. at an affordable price.

The next disaster was rather more serious and hence more expensive. My over worked VIC-20 passed away quietly whilst receiving a RTTY signal! The VIC

had served me well for many years and had spent most of its life hard wired to the shack, resolving RTTY and AMTOR signals. I had originally chosen the VIC because of its small size and good QRM performance, but the time had come for a change. We held a two-minute silence, in its memory!

My initial thoughts were to look for a Commodore C-64, as I had seen them around for between £80 and £100 and there appears to be plenty of radio software available.

Having spent several days phoning around the final solution chosen was a BBC-B, mainly due to the fact that one appeared on the market at the right time and price. I am now busily engaged

sorting out the interfacing and software to get me back on the air.

All this chat is really just an elaborate excuse for having very few RTTY or AMTOR reports this month!

Packet

The logs received this month show that h.f. packet is still spreading throughout the world, the latest addition being Mexico with XE3JA being logged recently.

Readers who have been monitoring packet will probably have noticed that a lot of h.f. contacts fail shortly after connection. One of the prime causes of this early disconnection is failure to adjust the TNC (terminal node controller) settings

to cater for the band conditions. The two most common errors are: 1: Attempting to send long packets.

2: Allowing several frames to be outstanding.

The actual disconnection is caused by the TNC exceeding the retry count limit, which automatically forces a disconnection. The cure is to reduce PACLEN to 40 or less and set MAXFRAME to 1. This will reduce the packet length to 40 characters maximum and force the TNC to complete the transmission of one packet before attempting the next. One other command that can be used under poor conditions is to set CONPERM ON which disables the re-timer counter completely.

RTTY and AMTOR

The amateur scene has seen several openings on both 14 and 21MHz but the bands are still rather unpredictable.

Reports received for commercial stations show that there are several interesting DX signals appearing between 16MHz and 18MHz, so this could be worth watching.

FAX

Doug Middleton (Poole) has written with details of his success on this mode. Doug has recently parted with his hard earned cash and bought a FAX-1 from ICS Electronics. With the exception of the manual, he is very pleased with the performance and reports good copy from the following stations:

Offenbach DCF37 117.4kHz: IOC 576: 120 RPM.

Offenbach DCF54 134.2kHz: IOC 576: 120 RPM.

Rome RMC 8.1466MHz: IOC 576: 120 RPM.

Doug's FAX station comprises a Kenwood TS-430S h.f. receiver, *Practical Wireless* v.l.f. converter, ICS FAX-1 and Citizen 120D printer. The antenna is a 50m long wire hidden in the trees! Thanks for the report Doug.

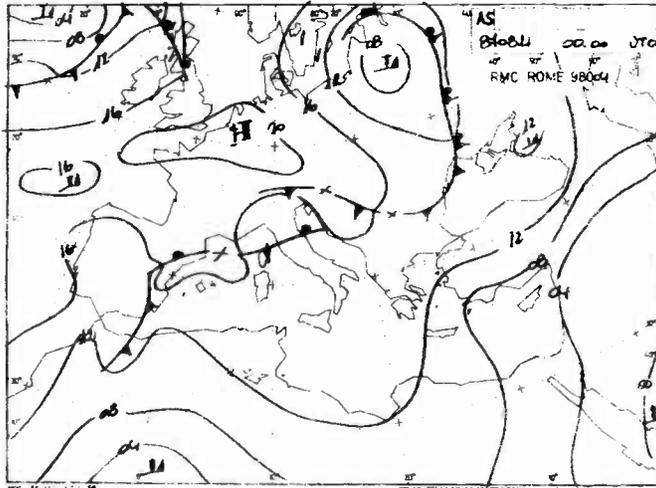
This month has also seen the discovery of an unidentified weather FAX signal. The signal is on 12.777MHz and transmits using i.o.c. 576 and 120 r.p.m. The signal strength, according to several sources, is generally very strong. The information sent usually covers the northern Pacific, with a variety of pressure charts. The origin appears to be Guam and it's most likely a U.S. Oceanographic station, as all text is in English. The signal has a few unusual characteristics in that the signal strength will occasionally drop to almost inaudible and then reappear a few minutes later, also stop tones are sometimes sent in the middle of a picture whilst the picture continues to be sent! Any information would be gratefully received.

Paul Hayden contacted me requesting details of FAX reception programs for the BBC-B computer. At present I am only aware of the one distributed by BARTG, but if anyone knows of any others then please write with details.

Finally on the FAX front watch out for next month's edition of *SWM* which will be covering the theory and reception of FAX in detail along with equipment reviews.

Frequency List

Regular readers will probably recall Chris Kirby's frequency list offer in the June *Decode*. Well, in response to popular demand Chris had now included a short tutorial which covers the type of codes



Rome Meteo IMB56 13.600MHz 0600UTC 11-8-87 IOC: 567 RPM: 120

you may encounter whilst tuning around the bands. He gives examples of the sort of print-out you will get if you tune into signals using Moore code, 2 and 3 shift Cyrillic and Arabic alphabets. Also included is information on where to find the various transmissions and a ICAO (International Civil Aviation Organisation) callsign list, which will enable country identification. The final section gives further information concerning the decoding of RTTY weather information.

The complete list is available from Chris Kirby⁽¹⁾ for the nominal sum of £2.00 to cover the cost of copying. Also please include an s.a.e. (A4), with at least 40p postage. Remember this offer is non-profit making, so be patient as Chris is a busy man. Thanks for all the information Chris.

User Groups

To try and help readers decide which user group to join, I am contacting the main clubs and offering to let them explain their club's background and aims in this column. The first club to feature is BARTG and their Chairman, Alan Hobbs, has sent in this report:

BARTG

The British Amateur Radio Teleprinter Group is the national organisation for all forms of data communications, and is affiliated to the Radio Society of Great Britain, and through the RSGB to the IARU (International Amateur Radio Union). By means of representation on a number of the RSGB committees, and by the presentation of papers at the

regular IARU conferences, the voice of BARTG is heard at all levels in amateur radio. Currently, BARTG is represented on the following RSGB committees: h.f., v.h.f., RAYNET, Repeater Management Group, and the Packet Radio Working Group.

BARTG was founded in 1959 by a small, dedicated, group of amateurs, to explore the new world of Radio Teleprinter Telegraphy, (RTTY), using ex-Post Office tape teleprinters. In the intervening 28 years, the operating modes covered, and the membership of the group, has changed dramatically, with the current membership standing at a little under 3000. These days, as well as the original mechanical RTTY using the International Telegraph Alphabet Number 2, (ITA2), members now operate RTTY using home micro-computers which has the benefit of; silence; simple data transmission using ASCII or ITA5; AMTOR, an error correcting system developed by G3PLX from the international CCIR 476 standard; Packet Radio using the AX-25 standard, which was developed from the international CCITT X25 standard; and all forms of FAX which use a variety of incompatible standards.

BARTG publishes a quarterly journal entitled "*Datacom*", which is sent free of charge to all members in March, June, September and December each year. The magazine contains around 100 pages of technical, constructional and theoretical features, together with news and items of general interest. All group affairs are notified in *Datacom*,

together with news of RTTY and associated mode events, contest rules and results, small ads of sales and wants from members and general gossip.

Contests

In the Spring of each year, the BARTG h.f. bands RTTY contest attracts a large number of operators from all over the world. For those restricted to v.h.f./u.h.f. operation, there are separate contests in the Spring and Autumn. The major BARTG award is the Quarter Century Award, (QCA), the basic requirement for this is to provide evidence of 2-way RTTY contacts with a minimum of 25 countries. Endorsement stickers are available for each additional 25 countries. For v.h.f./u.h.f. operators, there is the Century Award, where it is required to work or hear, 100 RTTY stations on 144MHz, or 50 stations on 432MHz, or 10 stations on 1296MHz. For BARTG members, there is now the Members Award, where it is required to provide evidence of having worked or heard, 25 members of the Group.

BARTG operates an RTTY news bulletin service, which transmits on the first and third Sundays of each month. Transmissions take place, at various times throughout the day, on 3.59MHz and 144.600MHz for coverage of the UK, and on 14.090MHz for international coverage. Most transmissions use frequency shift keying, mode F1B, but some of the v.h.f. transmissions use audio frequency shift keying, mode F2B, which can be resolved on a simple f.m. receiver.

Rallies

BARTG takes part in many of the amateur radio rallies held throughout the country, and also organises its own rally, which is currently held at Sandown Park racecourse, Esher, Surrey, on August Bank Holiday Sunday each year. These events provide opportunities to meet committee members in person, purchase specialist kits, ready built units and components from the Group, and generally discuss your problems with other enthusiastic amateurs.

The current annual subscription is £7.00 and full details of membership may be obtained from: Mrs Pat Beedie GW6MOJ, Ffynnonlas, Salem, Llandeilo, Dyfed, Wales, SA19 7NP, or by telephone: 0558-822286.

That's it for this month, but with my shack restored to full working order I should have a fuller RTTY report next month.

Don't forget I need your reports and letters so please keep writing.

(1) Chris Kirby, "Van Dyke", Robin Lane, Huby, York, YO6 1HH.

All reports are welcome, and to make sure you don't send them in too late, make a note of the deadlines: September 18, October 23 and November 20.

INFO IN ORBIT

Pat Gowen G3IOR

17 Heath Crescent, Hellesdon, Norwich, Norfolk NR6 6XD

A number of readers have asked for the nominal (doppler shift free) frequencies and the catalogue numbers of the currently active polar orbiting weather satellites so that they may distinguish them within the satellite listings supplied by the NASA catalogue for tracking and identification. The latest list follows, and also includes the satellite international designation, i.e. the number giving the year of launch, the serial number of the launch that year, and the object placed in orbit, where "A" is the first, and "B" would be the second from the same payload, etc.

Satellite Status

Meteor 3/01 and Meteor 2/14 have been very quiet recently, and little activity was evidenced up to the third week of July 1987. Meteor 2/15 is up and running, and is giving excellent pictures. Cosmos 1602 is in use again, whilst Cosmos 1766 is commanded on when required by ground control command, sending narrow pictures at times. NOAA-6 is now in standby mode, for activation if needed later. Meteor 1/30 comes on occasionally, producing very "white" pictures.

Telemetry Decoding

The latest USSR RS-10/11 amateur radio satellite is not merely intended for use as a transponder for licensed amateur radio stations. It is also for active investigation and space research for listeners to the telemetry, the format of which is sent on international Morse code at writing speed. If it is a little too fast for the newcomer, then a recording may be taken and slowed down on replay to the desired speed. Alternatively, one of the many home computer programs that translate Morse code may be utilised for direct screen copy.

The telemetry comes down from RS-10 on 29.357MHz or 29.403MHz, and on 145.857 or 145.903MHz. RS-11 uses 29.407 or 29.453MHz and 145.907 or 145.953MHz. Both systems are identical in translation, only differing in the call sign "RS10" or "RS11" which is sent both before and after each telemetry run of sixteen lines.

The telemetry values are slightly more complex than the earlier "RS-1" to "RS-8" series of spacecraft, which used the two letters preceding the two figures only as a means to indicate the channel. RS-10 and 11 have common telemetry, and use the letters as an "on" or "off" status indicator. The figures following

Satellite	Frequency	Object No.	Internat. designation
Meteor 1/30	137.020MHz	11848	80-51A
Meteor 2/14	137.850MHz	16735	86-39A
Meteor 2/15	137.850MHz	17290	87-01A
Meteor 3/01	137.400MHz	16191	85-100A
NOAA-9	137.620MHz	15427	84-123A
NOAA-10	137.500MHz	16969	86-73A
Cosmos 1602	137.400MHz	15331	84-105A
Cosmos 1766	137.400MHz	16881	86-55A

The latest list of active polar orbiting satellites

provide a numerical value. Thus, the sixteen channels observed are actually sixteen analogue channels plus sixteen descriptive channels, one of each in each line, to give thirty-two status indicators in all.

The run of the series of lines, called the block, commences with the call of the transponder, i.e. "RS10" or "RS11" followed by a pause, and then follows the run, terminating with a pause, and the call sign sent again.

The prefix first letter that indicates the status will have an extra "dit" or "dah" in the Morse code added at the beginning of the letter when the spacecraft is under command from the ground control station, e.g. RS3A. Thus, the first line of the frame, normally "IS" (di-dit, di-di-dit) or "NS" (dah-dit, di-di-dit) now becomes "SS" (di-di-dit, di-di-dit) or "RS" (di-dah-dit, di-di-dit) with the prefix single "dit" added when the 21MHz command is in action. With the "dah" added, the indicator for the 145MHz command access, "IS" becomes "DS" (dah-di-dit, di-di-dit) and "NS" goes to "GS" (dah-dah-dit, di-di-dit). Furthermore, computer "sounds" will often be heard when the command station is activating the high speed encoded ASCII a.m. telemetry, this sound sometimes replacing the usual c.w. telemetry for short bursts, if you are in mutual satellite ground range of Moscow.

A telemetry run can be copied such as "RS11 . . . NS80 NR08 ND11 NG45 IU45 IW00 IK00 IO00 AS34 AR32 AD42 AG32 MU00 AW45 AK00 AO88 . . . RS11" We can take this example, recorded in late July, as our block for translation.

The first line prefix is either "IS" or "NS" (or "SS" or "RS" when under command instruction and loading) and shows the smoothed mean value of later readings. If "IS" (or "SS") is the prefix, then the telemetry is fixed on a 90 minute period, if "NS" (or "RS") is the prefix, then it is fixed in a 10 minute sampling period. Our example "NS" shows the ten minute period. The following figure gives the power supply

voltage, nominally 20V. The formula is "n" the number, divided by four, or power supply $V = N/4$, giving 80/4 in our example, thus a nominal 20 volts from the battery.

In Line 2 "IR" or "NR" (don't forget the possible extra "dit" that might make it sound as "SR" or alternatively "RR") gives the sensitivity of either transponder receiver. If the prefix is "IR" (or "SR") then the -20dB attenuator pad is in the receiver input, if "NR" (or "RR") then it is nominal, with no attenuation. The figure gives the 145MHz power output, formula $N/10 = 145\text{MHz}$ power output in watts. Our "NR08" thus indicates zero attenuation added, and 800mW of power output is emanating on 145MHz.

Line 3: "ID" indicates the transponder receiver sensitivity as -10dB, "ND" shows nominal, i.e. 0dB attenuation. The following figure shows the 29MHz power output, formula $N/10 = 29\text{MHz}$ power output of transponder in watts. Thus "ND11" shows no transponder receiver input attenuation, and 1.1 watts of transmit power on 29MHz.

Line 4: "IG" indicates that the 21MHz uplink to the transponder is off, whilst "NG" shows it to be on. The following figures give the 21MHz RX i.f. voltage as $N/5 = \text{volts}$. Our "NG45" means the 21MHz uplink RX is on, and 9 volts are applied to the i.f.

Line 5: "IU" indicates the 145MHz receiver of the transponder is off, "NU" on, and the following number gives the 145MHz receiver i.f. voltage, as $V = N/5$. Our example shows the 145MHz RX to be off, and the same band RX i.f. is supplied with 9V nominal.

Line 6: The special channel indications for inter-command station communications called the "service channel" is given by "IW" when off, "NW" when on. The RX i.f. voltage follows by the formula $N/5 = V$ i.f. Our "IW00" shows the channel is off, and no volts are applied to the RX i.f.

Line 7: The beacon power level of the lower frequency beacon in use is given by "IK" when maximised to 1 watt, and by "NK"

when at 300mW power. The figure following is a command station indicator loading not of general interest to passive observers. Thus, "IK00" shows 1 watt of power on the lower beacon, and no command station loading indication.

Line 8: The upper beacon as "IO" when running at the 1 watt maximum, "NO" when QRP to 0.3 watts. The figures are again command values. Our reading of "IO00" confirms that the h.f. beacon also is running 1 watt output, and again no command loading is evident.

Line 9: The status of the first memory board as "AS" when off, "MS" when on, with the 29MHz transmitter temperature then given as $N-10 = \text{degrees centigrade}$. Our example shows the 1st memory to be off, and gives the thermal value of the 29MHz transponder output TX as 24°C.

Line 10: The status of the second memory board. "AR" when off, "MR" when on. The temperature of the 145MHz transmitter is given by the number, as $N-10 = \text{degrees centigrade}$ 145MHz TX. Our reading shows the second memory also to be off, and the 145MHz TX to be at 22°C.

Line 11: The special channel allocation to the memory, and when the command transmitter is loading "AD" is indicated when open. When closed, "MD" is given, indicating the memory is accepted. The figure following in the temperature of the 20 volt power supply, where $N-10 = \text{temperature in } ^\circ\text{C}$. Thus our example of "AD42" indicates the memory is open to command, and that the power supply is running at 32°C.

Line 12: As line 11, except that it is now for the second memory board "AG" means open, "MG" means closed. The temperature of the nine volt power supply follows, as T in degrees C = $N-10$. Our second memory is thus seen to be open also, whilst our 9V power supply is at 22°C.

Line 13: The channel opening for the memory board beacon No. 2 if "AU", and "MU" if beacon No. 1. The 9 volt supply for the other (alternate) transponder uplink receiver (RS-10 if read on RS-11, or RS-11 if read from RS-10) is shown by the number, when $V = N/5$. In our "MU00" example, the indication is that the No. 1 beacon is open to the memory, and that the 9V supply for RS-10 is off.

Line 14: The sensitivity of the 21MHz ROBOT receiver, with

"AW" given if -10dB pad is in circuit, "MW" if zero attenuation. The reading on the nine volt 21MHz ROBOT uplink receiver power supply follows, as $V = N/5$. Our figure received shows that the 21MHz ROBOT has -10dB of attenuation in the receiver front end, and that the ROBOT answering device power supply is true at the 9V nominal level.

Line 15: The sensitivity of the 145MHz ROBOT uplink, with "AK" indicating -10dB of attenuation pad, "MK" no attenuation. The power supply voltage of the 145MHz ROBOT receiver follows as $N/5 = V$. Our example shows that the 145MHz ROBOT receiver also has -10dB of attenuation applied, but that it is inoperative as no supply voltage is shown.

Line 16: Indicates the r.f. power of the inter-command special service channel transmitter. "AO" shows 1 watt, "MO" indicates 0.3 watts. The figures

following give the storage level of the ROBOT memory. Up to 32 QSOs stored it will indicate a value of 00. From 32 to the 128 maximum capacity it will give a figure between 80 and 99, thus alerting the command station to dump and empty the memory ready for the next batch of ROBOT QSOs. Our recorded "AO88" indicates that the 1 watt level is operative on the special channel, and that the ROBOT memory is approaching its maximum capacity.

From the information supplied by the telemetry, an enormous amount of information on the condition and environment of the spacecraft can be discovered. The temperature variation according to its passage through the cold blackness of space or raw sunlight can be shown, as well as thermodynamics of spacecraft regulation and insulation. As the powers of the various beacons, the transponders, and the uplink sensitivities are all indicated and known, calculations of path losses

can be evaluated for various dark and light signal passages, ionised or transparent circuits, "E"-layer interposition, etc., according to the signal strengths measured under differing conditions. This, added to the appearance of sub-horizon signals, and the location of signals in the downlink passband that are not in evidence to the same observer on the equivalent uplink frequency, will give valuable guidance to the state and re-angulation capabilities of the ionosphere over the many paths and times that the satellite travels.

A host of interesting scientific experiments can be carried out that will aid our knowledge of propagation and lead to a greater understanding of the complexities of signals passed through the ionised layers, all by a study of the levels of signals to and from the satellites and by decoding the telemetry. A transmitting licence is NOT necessary to participate in this fascinating study.

**Don't forget to send your reports to Pat Gowen for inclusion in the forthcoming issues, your deadlines are:
September 18, October 23 and November 20.**

BAND II DX

Ron Ham

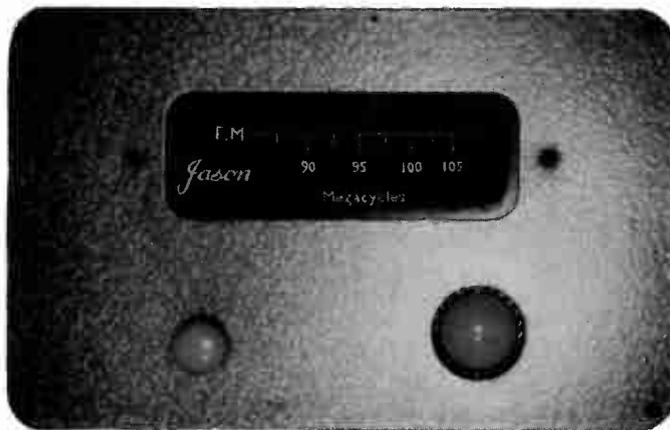
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

Sporadic-E

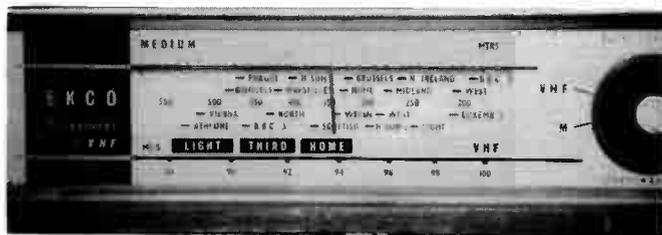
During a major Sporadic-E disturbance at 1737 on June 18, I counted 49 signals from eastern-European broadcast stations whose domestic band is between 66 and 73MHz. The majority of these signals were fantastically strong and often suffered from the sharp and deep fading which is a typical symptom of Sporadic-E. Another event, when 48 such stations were logged, took place early on July 3 and similar disturbances, producing about 15 stations, occurred early on July 11 and 22 and around 1800 on June 24, July 19 and 20. One station, at approximately 69MHz, was broadcasting a travel type programme in English and at one time a contributor referred to "near Sofia", so I assume it was coming from a v.h.f. transmitter in that area of Bulgaria.

Simon Hamer (New Radnor) received signals from the USSR on Ch. R3, on June 18, 20 and 28. Do remember that while an extensive Sporadic-E is in progress picture pulses from the television channels R3, 4 and 5 may be found on 77.25, 85.25 and 93.25 MHz and their corresponding sound signals on 83.75, 91.75 and 99.75MHz, respectively.

In Caerphilly, Noel Smythe logged Russian signals on Ch. R3 around 1550 on June 18 and for most of the morning on July 3. I tuned my R216 to 83.75MHz at 0920 on the 3rd and; like Noel, heard an orchestral concert in progress.



The Jason Band II Converter made for a.m. radiograms and audio amplifiers



An 88-100MHz dial

Tropospheric

I heard French stations on several spots between 88 and 104 MHz while using my Plustron TVR5D, with its own rod antenna, in East Sussex, at 1745 on July 3 and from home, on July 3, 5, 8, 11 and 21. On each occasion there were several inter-station "warbles" caused by the tropo-

enhanced range of distant stations using similar frequencies. The atmospheric pressure on those days was 30.3 steady, 30.2 falling, 30.2 steady, 30.1 steady and 30.0 steady, respectively.

Currently, the f.m. broadcast band for most of Europe extends from 88 to 108MHz. Users expect to find it well occupied by their national and local stations and to

see it fitted as standard to good quality entertainment packages, ranging from pocket portables to sophisticated music systems.

Briefly, in the 1960s, various valve-type v.h.f. converters, Fig. 1, were made in the UK for a.m. radiograms and audio amplifiers which were already in use and far too expensive to replace. Furthermore, in those days the upper limit of the band was 100MHz and to assist people who were tuning a v.h.f. receiver for the first time, most manufacturers clearly indicated where the BBC's Light, Third and Home services could be found, Fig. 2. These later became Radios 2, 3 and 4.

It was common at that time to install an outside antenna for Band II reception because, in many cases, the transmitter was a good distance from the receiver and such obstacles as high buildings, hills and trees could ruin reception. Apart from the technical aspect, DX enthusiasts were attracted to the band once it became known that signals transmitted within this frequency-range could be influenced by the more intense Sporadic-E disturbances and by quite mild tropospheric openings. The latter often occur when the atmospheric pressure is high and the weather is fine and clear.

In Upper Norwood, Monty Crocker has an Armstrong 625 f.m. receiver and a loft mounted 4-element Yagi for domestic use. During the evening of June 28, he disconnected the coaxial feeder from the Yagi and coupled it to his home-brew dipole and directed it,

SEEN & HEARD

broadside on, towards Wrotham. "I tuned right through the band and to my amazement I picked up 28 good signals," said Monty.

The atmospheric pressure was high (30.2in) that evening and one would have expected to find an increased number of stations, but, Monty is right and what ever band conditions are like, a well positioned horizontal dipole,

rotatable if possible, with a good quality low loss coaxial feeder, can really help with DXing. By all

means use a large antenna to obtain the best possible signals for domestic listening and for DX

hunting when conditions are below normal, but in my view, it is well worth adding a simple dipole to your mast so that is ready to use when the band is open and signals are extra strong. Under these conditions, the added signal strength, gained by a large antenna, can overload your receiver and prevent you from hearing the weaker stations.

Your deadlines for the next three issues are: September 18, October 23 and November 20.

TELEVISION

Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

"Last year, for the first time, I received Italian, Russian, Spanish and Swiss TV stations on my set and since then I have wanted to get more powerful antenna for it," wrote **Micheal Banbrook** (London). This year, Micheal, using his faithful JVC3050 receiver and a home-brew dipole, logged pictures from Italy on July 2, 3, 4, 8 and 12 and Spain on June 25, July 4, 8 and 11. All good stuff Micheal and I know from the tone of your letter that you, like most of us, are hooked on the subject.

However, to avoid disappointment, do keep in mind that DX signals only appear in Band I when Sporadic-E is present and in Bands III, IV and V when tropospheric conditions are favourable. Therefore, unlike the short wave bands, you will not find interesting signals every day, so you must decide how much time and money you are prepared to spend on developing the television aspect of your station. Obviously individual and rotatable beams for all bands are ideal. A dedicated antenna system, such as the one used by **Edwina and Tony Mancini** in Belper, Fig. 1, is good and will increase your chances of receiving signals when band conditions are just plain unsettled.

Band I

"It's the easy season and that's for sure. It's very nice to have so much to watch," remarked **John Raleigh** (Bedford) after logging "excellent and high quality" pictures from Italy, Spain and the USSR, during the month prior to July 16.

Bob Treacher (Eltham), s.w.l. columnist for *Radio Communication*, recently added a Yoko television receiver and a loft dipole, cut to 55MHz, to his receiving station. He reports that pictures from Italy (RAI) and Spain (TVE) are fairly common during Sporadic-E openings. Bob also logged test cards from Iceland (RUV Island) on June 18, Yugoslavia (TV Ljubljana RTV1) on the 28th and Hungary (MTV1),

Poland (TVP) and Switzerland (+PTT-SRG1) on July 11.

In Coventry, **Alan Taylor** received test cards from Italy, Norway (Melhus & Steigen), Portugal (RTP LISB 1) and Spain on June 14, Spain and Sweden (TV1 Sverige) on the 15th, Italy, Norway (Gamlem) and Portugal (RTP-Porto) on the 16th. Then there was Czechoslovakia (RS-KH), Denmark (DR Danmark), Iceland, Italy, Norway, Portugal, Rumania (TVR Bucuresti), Spain, Sweden, USSR and Yugoslavia (JRT ZGBD-1) on the 18th and Norway, Portugal, Rumania, Spain and the USSR on the 24th and 25th. During the first 16 days of July, Alan added test cards from Czechoslovakia (DDK-2), E. Germany (DDR), Iceland, Norway (Hadsel) and Poland to his score.

Between May 18 and July 15, **Owen Jones** (Blurton), using a Benkinson receiver and home-brew antenna, logged 14 countries, ranging from Iceland and Scandinavia to Italy and Yugoslavia. He saw clock captions from Italy, Spain, Sweden and Switzerland, the Spanish regional idents, Aitana, Andelucia, Cadiz, Cataluna, Madrid and Valencia and the news captions BPEMR and HOBCTN from the USSR, "I never knew that so many stations could be received from Spain," said Owen. He remarked, "Spain and Portugal seem to favour my antenna this year".

During the Sporadic-E season most of your letters contain similar information so to cover a wider area of the month's happenings, without being too repetitive, I have looked for something special in each one.

For instance the extensive logs from **Simon Hamer** (New Radnor), the Mancinis and **Noel Smythe** (Caerphilly) contain details of signals from around 19 countries. I noted that Simon's list included

Albania (RTSH), the Marcinis added Bagn, Bremanger, Gamlem, Gulen, Hemnes and Kongsberg to the list of Norwegian regionals. Noel had received a test card from Greece (EPT) between 0700 and 0800 on June 15 and 20 and an Arabian station, for a short time, around 1940 on the 20th.

Simon also reported seeing *Upstairs Downstairs* on RTP with Portuguese sub-titles and saw the news captions from W. Germany (Tagesschau), Italy (Telegionale), Norway (Dagsrevy), Poland (dt), Rumania (Telejurnal), Sweden (Akullet) and the USSR (BPEMR).

Around 1015 on June 19, the Machinis logged an unidentified picture of a man, with Chinese type writing down the right hand side of the screen, which changed to a circle made up of different shaded squares with a No. 1 in the centre. This was mixing with a Russian test card on Ch. R1. On the same channel they saw the 50th anniversary of the Polish Navy from TVP-1 on the 28th and watched Latvijas TV open up, in colour, with the TB CCCP logo and the clock and HOBCTN news captions at 1300 on July 7. Among the signals they found on Ch. R2 were a man in military uniform reading the news from TSS Georgia with the RO CCCP caption on June 18, the Eestie TV (Tallin) test card on July 2 and they saw the Czechoslovakian test card SR-ITV-Bratlaslava change to CST-Bratlaslava and then to DDK-2 between 0630 and 0915 on July 10.

"Have been receiving all the same countries as before, with Portugal and Spain, Figs. 2 and 3, coming often in the early mornings and the USSR now in on most mornings," wrote **Len Eastman G8UUE** (Bristol) on July 13.

During the openings on June 4, 6, 14 and July 5, Noel Smythe received strong pictures from

Czechoslovakia (DDK-2) Fig. 4, Italy (RAI-1) Fig. 5, Norway (NRK) Fig. 6 and Hungary Fig. 7.

"From 1523 to 1530 on June 11, I saw the RTT-'sqjiggle, squiggle, squiggle' test card from Tunisia which I positively identified from my test card book," wrote **Dave Newman G4GLT** from Leicestershire. Dave has a Band I dipole, 8m a.g.l., feeding a Hugh Cocks converter which can easily receive pictures above 200MHz. After reference to the *World Radio TV Handbook* Dave found that their lowest vision frequency is Ch. E5 which is 175.25MHz and rather high, but not impossible, for Sporadic-E. However there was little doubt left when the RSGB news service reported an extensive 144MHz opening to the Mediterranean on June 11. Congratulations Dave on your observation during this super event.

Tropospheric

My thanks to Len Eastman for a picture from the British Amateur Television Club's North Bristol ATV Repeater GB3ZZ, Fig. 8, now active on 23cm. "This can be well received on the other side of the Severn Bridge in Chepstow," said Len.

Noel Smythe received pictures from the French Canal + network, in Band III, on June 27, 28, 29, 30, July 2, 3, 5, 8 and 13 and Canal + and TDF, in the u.h.f. band, on July 3 and 5 respectively.

I noted co-channel interference in the u.h.f. band during the evenings of June 29 and July 4 and 11. At 0030 on the 4th I saw the late news and close down announcer and clock from Radio Telefis Eireann (RTE-1) and while using my Plustron TVR5D near Telegraph Hill on the Sussex Downs at 1440 on the 8th, I logged a very strong negative picture around Ch. E10.

John Raleigh received pictures from Belgium (RTBF-1 and BRT) almost daily from June 22 to 29 and July 2 to 14 and from France (Canal +) on June 26, July 6, 7 and 11.

Your deadlines for the next three issues are: September 18, October 23 and November 20.

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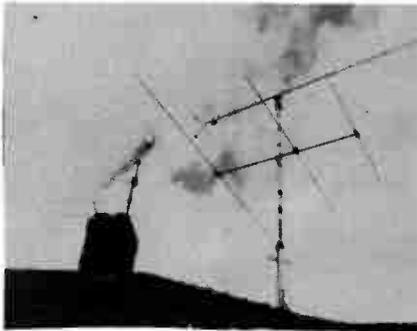


Fig. 1: TV DX Antennas



Fig. 2: Spanish



Fig. 3: Spanish

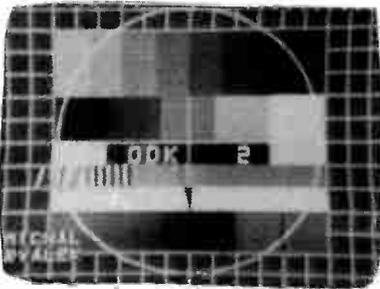


Fig. 4: Czechoslovakia

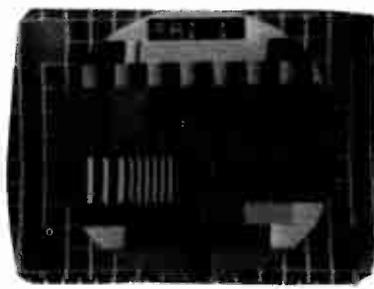


Fig. 5: Italy



Fig. 6: Norway



Fig. 7: Hungary

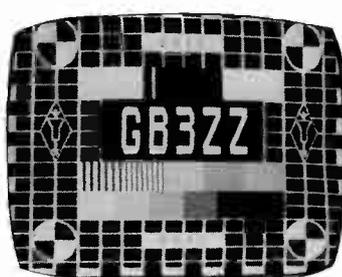


Fig. 8: North Bristol 23cm ATV repeater



Fig. 9: Jullundur



Fig. 10: Pakistan



Fig. 11: Rawalpindi

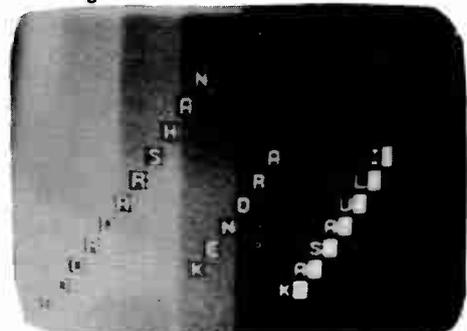


Fig. 12: Kasauli

News from India

During the first four months of 1987 the main DXing for Major Rana Roy (India) came via the tropospheric disturbances which periodically opened up Band III. He logged commercials from India's Jullundur TV on Ch. 9 on January 19 (Fig. 9), cricket from Pakistan TV on Ch. 10 on February 11 and Ch. 8 on March 29, Figs 10 and 11. He writes, "We had excellent tropo signals from 0700 to 0815 on April 11 (Breakfast TV) from Kanpur TV on Ch. 5, Agra low power transmitter on Ch. 9 and the Kasauli i.p.t., located near

Shimla, on Ch. 6, Fig. 12". Signals from India's transmitter at Mussoorie, Ch. 10, were overlapping pictures from Pakistan on January 9 and Rana received fading pictures from Jullundur, Ch. 9 and Pakistan TV, Ch. 10 throughout the evening of the 29th. "Doordarshan TV started its Breakfast TV on February 23. The programme starts at 0730 and is presented in Hindi and English with two compares," said Rana. He added, "We had very good tropo signals from 0700 on April 10 when we were getting Jullundur TV, on Ch. 9, with interference from the Agra

i.p.t. Breakfast TV was on the air from Delhi and being relayed by all stations. Jullundur has a microwave link with Delhi while Agra gets its programmes from Delhi via INSAT I B. Hence we were getting double sound on Ch. 9 and interference on the pictures".

SSTV

Richard Bealey (Exeter) received slow scan television pictures in early July from stations in Germany and Italy on 14.230MHz.

Any SSTV reports are always welcome, let's have a few more stations and their activities mentioned.



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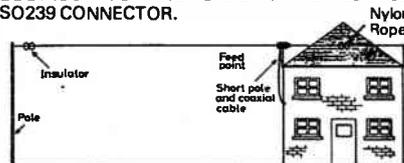
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There are many listeners both here and on the continent who enjoy some of the programmes and music broadcast by other countries on the long and medium wave bands. However one of the problems which they frequently encounter is a general lack of station announcements which give details of both the name of the station and frequency of transmission. Positive identification of a particular station would be so much easier if they could be made often and in several languages!

Since the beginning of July the BBC External Services has followed up its BBC 648 face lift with announcements on their Droitwich 200kHz transmission (2345UTC) especially for the long wave listener. It is to be hoped that this very welcome move on the part of the BBC will be followed up by more frequent announcements, perhaps in several languages, on other BBC transmissions. No doubt other broadcasting organisations in Europe will soon realise the importance of them too!

DX Report

(Note: l.w. and m.w. frequencies in kHz, s.w. in MHz: Time UTC.)

Long Wave DX

A number of listeners have been busy checking the l.w. band and their results are detailed in the chart. While listening in Grimsby, **Robert Ives-Keeler** was surprised to hear the BBC Droitwich 200k transmission being over-ridden at times by Leningrad, USSR — he compiled his log at 0315. Writing from Macclesfield, **Philip Rambaut** says, "I can usually hear Minsk on 281kHz, but no luck this time. Quite interesting is the fairly good reception of Caltanissetta".

George Millmore added a new one to his growing list of l.w. DX in Wootton, IOW, namely Azilal, Morocco, logged at 0330 on 209 while using his Vega Selena receiver. In his report from London, **Philip Townsend** says, "Reception of an afternoon and evening is very consistent at my listening post, but recently thunderstorms over Europe, noted in the weather forecasts, have caused a lot of crackling on the band".

"I am hoping in the near future to build a long wave loop", writes **David Edwardson** of Wallsend. A good loop antenna may well prove to be the key to success when DXing on this band and several readers are known to be contemplating building one just now. No doubt the news that

Dave Mayhew has been experimenting in Yapton with a long wave version of his "Sooper-Loop" will be of considerable interest to them!

The "Sooper Loop" appeared in July '86 *Practical Wireless*. The basic amplifier circuit is unchanged in the l.w. version. The new l.w. main loop winding consists of 36 turns of 24 s.w.g. enamelled wire close wound around an "X" shaped frame so as to produce a square loop with sides approximately 450mm long. The frame is made from two lengths of wood approximately 630mm long by 35mm wide by 10mm thick — these are slotted edgewise at their centres and then glued together to form an "X". This form of construction helps to ensure low losses. Polystyrene cement is used to anchor the corners of the winding to the "X" frame.

The coupling winding to the amplifier consists of a single turn wound over the centre of the main winding. If the receiver is not fitted with external antenna and earth sockets the special "ferrite injector" described in the original PW article may be used. However very close coupling will be needed.

Rab Freeman used a borrowed loop with his Trio R2000 receiver in Port Glasgow to compile his interesting list of DX. Apparently **John Greenwood** has been having such success with his "padded out" m.w. loop antenna on the long wave band in Evesham.

MW Transatlantic DX

The hours of darkness are now gradually extending and that has to be good news for transatlantic DXers! Despite the relatively short nights just now, some interesting stations have been received.

Using a Trio R2000 receiver, **George Morley** checked the band on one night only in Redhill, but he managed to log five transatlantic signals between 0255 and 0345. These were CJYQ in St. John's, NF 930; CKLM Lavel, PQ 1570; New York's WHN 1010 and WNEW 1130 as well as Radio Globo in Rio de Janeiro, Brazil 1220. George has now changed his receiver to a Trio R5000 and says, "I have not had much time to spare, so I don't really know the 'ins' and 'outs' of the new one yet. It seems pretty good so far".

Tim Shirley has been using a home-made loop antenna with his Trio R600 while DXing in Bristol. He logged WCBS in New York, on 880 at 0130 and WMAQ in Chicago, IL at 0215. Tim has received a QSL letter from WWKB in Buffalo, NY — he recently

Freq kHz	Station	Country	Power (kW)	DXer
153	Brasov	Romania	1200	H*,I,J*,L*
153	DLF Donebach	W. Grmany	500	C,D,F,G,H,J,K
153	Ufa	USSR	100	I*
162	Allouis	France	2000	A,B,C,D,E*,F,G,H,I,K,L*
171	Kaliningrad	USSR	1000	B*,C,D,F,H,I*,J*,K*
171	Medi 1 Nador	Morocco	1200	H*,L*
177	Oranienburg	E. Germany	750	B,C,D,G,H,I,K
182	Polati	Turkey	1200	L*
183	Saarlouis	W. Germany	2000	C,D,F,G,H,I,J*,K,L*
189	Caltanissetta	Italy	10	H*
189	Motala	Sweden	300	F,H,L*
189	Tbilisi	USSR	500	D*
200	BBC Droitwich	UK	400	A,B,C,D,E*,F,G,H,I,J*,K
200	Leningrad	USSR	150	E*
200	Warsaw 3	Poland	200	D*
209	DLF Munchen	W. Germany	500	B,H,I,J*
209	Azilal	Morocco	800	C,D*,F*,H*
209	Kiev	Ukraine	500	B*,D*
218	Roumoules	Monaco	1400	C,D,F,G,H,I,J,K,L*
218	Oslo	Norway	200	B*,J*
227	Konstantynow	Poland	2000	B*,C,D,E*,F,H,I,K*,L*
236	Junglinster	Luxembourg	2000	A,B,C,D,E*,F,G,H,I,K
236	Kishinev	USSR	1000	J*,L*
245	Kalundborg	Denmark	300	A,B,C,D,F,G,H,I,K,L*
245	Erzurum	Turkey	200	L*
254	Tipaza	Algeria	1500	A,B*,C*,F,H,K,L*
263	Burg	E. Germany	200	B,H,K*
272	Topolna	Czechoslovakia	1500	C,D,E*,H,K
281	Minsk	USSR	500	I*

Note: Entries marked * were logged during darkness.

All other entries were logged during daylight.

A: John Berridge, Cardiff.
B: David Edwardson, Wallsend.
C: Rab Freeman, Port Glasgow.
D: John Greenwood, Evesham.
E: Robert Ives-Keeler, Grimsby.
F: George Millmore, Wootton, IOW.
G: Paul O'Connor, Birmingham.
H: Philip Rambaut, Macclesfield.
I: John Sheridan, Mapperley.
J: Tim Shirley, Bristol.
K: Philip Townsend, London.
L: Jim Willett, Grimsby.

logged their signal on 1520 at 0130.

WMAQ was also noted in the log from **Jim Willett**, who picked up their signal in Grimsby at 0110. Jim has been making good use of his RCA AR77 receiver, logging three stations in Newfoundland around 0015 namely VOXM 590 in St. John's; CKYQ in Grand Bank 610 and CJYQ 930. A further eight signals from the USA were noted between 0035 and 0220 — New York's WINS 1010, WHN 1050 and WNEW 1130; WBZ in Boston, MA 1030; WBAL in Baltimore 1090; WWKB (Ex WKBW) 1520; WCKY Cincinnati, OH 1530 and WPTR Albany, NY 1540. At 0225 the Caribbean Beacon, Anguilla was heard on 1610. Three S. American stations were also logged — Radio Vision in Caracas, Venezuela 950 at 0250; Radio Globo Rio, Brazil 1220 at 0150 and Radio Vibracion, Venezuela 1470 at 0320.

From time to time I receive letters asking if the m.w. signals from the UK and Europe are audible in Canada and the USA, so no doubt the following note by **Robert Chandler** in Toronto, Canada will be of interest to DXers. Referring to the reports in *Seen & Heard* he says, "It's quite interesting reading about local m.w. stations making their way across the Atlantic. Transatlantic m.w. is a little more difficult here, although during the winter I was

hearing Spain on 774kHz and occasionally Portugal on 1035. Of course it's much easier for us to hear stations in the Caribbean (especially Cuba) Mexico, Central America, Columbia and Venezuela".

Robert also mentioned that he would like to exchange cassette tape recordings of N. American stations for some of European m.w. stations. If you are interested in this idea, please send your name and address with an IRC to me initially.

Other MW DX

Seldom mentioned by DXers, Radio Monique was logged by **Paul O'Connor** in Birmingham on 963 at 1906. He also picked up Radio Algiers, Algeria on 981 at 1915 (SINPO 24343). Two stations in Italy were noted in the log from **Darran Taplin** in Tunbridge Wells — Radio 2 via Rome on 846 at 2302 (SINPO 54444) and Radio

1 via Milan on 900 at 2303 (44444). Darran also picked up RTE-2 via Athlone, S. Ireland 612 at 2248 (43433) and Radio Prague, Czechoslovakia 1287 at 2318 (45544). During daylight he logged Radio Luxembourg via Marnach 1440 at 1639 (23433).

Using a Blaupunkt Turin car radio with an a.t.u. and 10m wire antenna, Philip Townsend has been checking on some of the French stations and logged FIP Paris (10kW) on 585; France-Inter, Lille (40kW) on 1071 and Radio France, Lille (300kW) on 1377. He says that the reception of BRT International via Wolvertem, Belgium on 1512 has been rendered unusable due to frequent deep fades. However **Stewart Russell** seems to have been hearing them quite well in Forfar at 2030. During the evening Stewart has also been listening to RSI via Solvesborg, Sweden on 1179 and Stargard, Poland on 1503.

While staying in Great Yarmouth, **Michael Banbrook** found Manx Radio, Isle of Man 1368 to be a very strong signal at night. Some of the interesting stations logged by Tim Shirley at night include Oulu, Finland 540 at 2215; Vigna, Norway 630 at 2030; Nicosia, Cyprus 693 at 0230; Sottens, Switzerland 765 at 0100; Ponta Delgada, Azores 837 at 0015 and Paphos, Cyprus 918 at 0215.

David Edwardson has been busy building a new m.w. loop antenna, his latest design is much larger than used hitherto and consists of nine turns of 22 s.w.g. wire wound around a frame measuring 0.85m by 1.005m, tuned by a 365pF variable capacitor. The new loop covers 530 to 1630kHz and provides both an increase in signal pick up and an improvement in unwanted signal rejection.

David has also been experimenting with a converter ahead of his Trio R600 receiver as the performance of the set falls off below 1000kHz. Using the combination of the new loop, the converter and the R600 between 0800 and 0900UTC he logged BRT2 via Wavre, Belgium on 540 (SINPO 35553); RTE-1 via Tullamore, S. Ireland 567 (45554); RTBF-1 via Wavre, Belgium 621 (45444) and Radio Bremen, W. Germany 936 (24442). The broadcasts from RTE-1 via Tullamore have also been reaching **Robert Taylor** in Edinburgh — he logged them as SIO 433 at 1800.

The BBC WS/648 broadcasts via Orfordness on 648 have been attracting the attention of many listeners. Using Vega B212 and 206 receivers in Morden, **Sheila Hughes** found reception SINPO 55555 during daylight, but noted some hetrodyne interference after dark. Some of their programmes

proved to be so interesting that Sheila has now added BBC 648 to her list of favourite stations!

Monitoring the BBC 648 broadcasts on the Isle of Wight, George Millmore found reception excellent during daylight, but after dark some interference from Saudi Arabia was noted. In Cardiff **Alan Jarvis** found reception fairly consistent from 0600 until 0100. However in Stoke-on-Trent **Daniel Masterson** could hear no trace of the signal during the day. Listening in Macclesfield, Philip Rambaut noted S2 at 0750, S1 at 1455 and S5 at 2109 in his log. Robert Ives-Keeler checked their signal in Grimsby at all hours of the day and night and found reception to be good and remarkably consistent.

MW Local Radio DX

Michael Banbrook compiled his impressive list during an overnight stay in Great Yarmouth — Radio Humberdale proved to be the strongest signal!

Tim Shirley would like to know if the ILR West Wiltshire — GWR 180 watt transmitter on 936kHz can be heard in other areas of the UK, so please send a report on this for inclusion in the local radio chart.

Short Wave DX

Due to our present position in the solar sunspot cycle there are no broadcasts scheduled on the **25MHz (11m)** band at present.

The reception conditions prevailing on the **21MHz (13m)** band tend to be rather unstable just now, however a number of interesting broadcasts are usually audible during the day. Although many of them are direct transmissions to a particular target area of the world, some of them reach listeners via relay stations. Many of the programmes are in the

language of the originating country, but other languages more appropriate to the target area are also employed.

Some of the foreign language broadcasts noted by Philip Rambaut around 0800 include Radio Nederlands via Talata, Madagascar 21.485 (Dutch to S.E. Asia); Radio Liberty via Gloria, Spain 21.455 and 21.655 (Russian to Middle East and E. Europe); Riyadh, Saudi Arabia 21.495 (Arabic to S.E. Asia); RBI via Nauen, GDR 21.540 (German to E. Asia); Radio DW via Julich, W. Germany 21.650 (German to Australia) also 21.650 and 21.680 (Pushto and Dari to Middle East); UAE Radio Dubai 21.605 (Arabic to N. Africa); RFI via Allouis, France 21.620 (French to E. Africa); Radio Prague, Czechoslovakia 21.705 (Czech to S.E. Asia); Radio Free Europe via Gloria, Portugal 21.720 21.720 (Czech to Central Europe).

Some of the broadcasts which may be audible during the morning were logged by Neil Dove in Lockerbie, namely RBI via Leipzig, GDR 21.465 (English to S. Asia at 1115), Vatican Radio, Rome 21.485 (English for Africa at 1125) and REE via Noblejas, Spain 21.575 (Spanish to Middle East at 1135). Listening in Trelewis **Leighton Smart** picked up RBI Berlin via Nauen, GDR beaming to SE Asia on 21.540 — broadcasting in English at 1239, they were answering letters from listeners.

Writing from Johannesburg, **Simon Ilingworth** says that there is quite a lot of jamming taking place on the 13m band. Some idea of reception there during the morning can be ascertained from the SINPO rating in his log — BBC WS via Daventry, UK 21.470 (33433), Radio Prague, Czechoslovakia 21.505 (44444); RSI (using s.s.b.) via Varberg, Sweden

21.555 (55544); REE Noblejas, Spain 21.575 (44444); Radio DW via Julich, W. Germany 21.600 (44444); UAE Radio Dubai 21.605 (33433); RFI via Allouis, France 21.620 (44545) and BBC WS via Rampisham, UK 21.710 (45444).

During the afternoon, Radio RSA in Johannesburg, S. Africa broadcasts to listeners in Europe on 21.590. Their transmission commences at 1300 and ends at 1556. Although daily variations in the reception of their signal may be evident, the SINPO 33333 noted by **Alan Curry** in Stockton-on-Tees is a typical rating just now. Their programmes in English are popular and cover a wide range of subjects. They welcome comments about them and discuss some of the points raised by listeners in a special *Mail Bag* programme. They also welcome reception reports and confirm them with a variety of attractive QSL cards.

Another popular broadcast during the afternoon originates in Tokyo, Japan and reaches listeners in Europe via a relay station in Moyabi, Gabon on 21.700. Their programmes in English and Japanese from 1500 until 1700 cover a wide variety of topics. **John Nash** logged their signal in Brighton as SIO 444 and says it is a pity they have their *Mail Bag* programme at the same time as Radio RSA!

The reception conditions on the **17MHz (16m)** band are also unstable, but signals from several continents may usually be heard in the UK during daylight. When the early morning conditions are suitable, the most distant signals to reach the UK arrive via the "long path" across the Pacific from Radio Australia. They broadcast to listeners in S.E. Asia via their transmitter in Carnarvon, Western Australia on 17.715 from 0100 until 0850.

According to **George Hewlett**, who officially monitors most of Radio Australia's broadcasts in Torquay, this transmission is usually audible by 0400. However, it is often poor initially, but gradually improves and often remains audible until 0850. During some mornings a partial fade-out has been experienced, which may last for about an hour before reception returns to normal.

A gradual deterioration in their signal is usually evident from about 0600 and the ratings quoted by **Colin Shaddick** in his report from Barnstaple are pretty typical, namely SIO 443 at 0615 and SIO 433 by 0730. If conditions permit, it is interesting to listen at 0850, because the transmission via Carnarvon then ends and a transmitter in Darwin, N. Australia takes over the frequency for a broadcast in Chinese to E. Asia at 0900. The reception of that signal is generally



The m.w./s.w. crystal set belonging to Ron Pearce

SEEN & HEARD

Freq kHz	Station	ILR or BBC	DXer
603	Invicta Sound	I	D,J
630	R. Bedfordshire	B	D,H,I,J
657	R. Clwyd	B	K
666	Devonair R.	I	G*,J
666	R. York	B	B,J
729	BBC Essex	B	I,J
756	R. Cumbria	B	B,K
756	R. Shropshire	B	J
765	BBC Essex	B	B,F,I,J
774	R. Kent	B	J
774	R. Leeds	B	B
774	Severn Sound	I	D,J
792	Chiltern R.	I	A,I,J
801	R. Devon	B	J
828	R. WM	B	D,J
828	R. Aire	I	B
828	Chiltern R.	I	A,I
837	R. Leicester	B	D,J
855	R. Norfolk	B	A,B,I,J
855	R. Lancashire	B	B,J
873	R. Norfolk	B	B,I,J
936	GWR	I	H,J
945	R. Trent	I	D,I*,J
954	R. Wyvern	I	D,J
990	Beacon R.	I	D,J
999	R. Solent	B	I
999	Red Rose R.	I	B,G*
999	R. Trent	I	J
1026	R. Cambridgeshire	B	A,J
1035	R. Kent	B	J
1035	North Sound R.	I	B,G
1035	West Sound	I	K
1107	Moray Firth R	I	G
1107	R. Northampton	B	J
1116	R. Derby	B	J

Freq kHz	Station	ILR or BBC	DXer
1152	R. Clyde	I	G*
1152	BRMB	I	D,J
1152	R. Broadland	I	A,G*
1161	R. Tay	I	G
1161	R. Bedfordshire	B	J
1170	R. Orwell	I	A
1170	Signal R.	I	J
1242	Invicta Sound	I	A,J
1251	Saxon R.	I	A,J
1260	Leicester Sound	I	J
1305	R. Hallam	I	J
1323	Southern Sound	I	J
1332	Hereward R.	I	A,G*,J
1359	Essex R.	I	A
1359	Mercia Sound	I	D,J
1431	Essex R.	I	A,J
1449	R. Cambridgeshire	B	J
1458	R. London	B	G*
1458	R. WM	B	D,J
1458	R. Manchester	B	G*
1476	County Sound	I	C,I,J
1485	R. Merseyside	B	G*,J
1485	R. Humberside	B	A,J
1503	R. Stoke-on-Trent	B	J
1521	R. Mercury	I	G*,J
1521	R. Nottingham	B	J
1530	Pennine R.	I	G*
1530	BBC Essex	B	I
1530	R. Wyvern	I	E,J
1548	Capital R.	I	A,G*,J
1548	R. Forth	I	G
1557	Hereward R.	I	G*,J
1584	R. Nottingham	B	J
1584	R. Shropshire	B	D,J
1584	R. Tay	I	G
1602	R. Kent	B	J

weaker here, but it can often be heard until just before 1000 when Radio DW commences a broadcast to the Middle East on the frequency.

Listening around 0600, Jim Willett logged two more DX signals which may be heard in the early morning — FEBA Radio, Seychelles 17.855 and KYOI Saipan, N. Mariana Islands on 17.775, which is now a Christian Science Monitor station. Tim Shirley has been listening to an interesting DX programme from FEBA Seychelles on 17.785 at 0730 on Sunday mornings.

There are a number of 16m broadcasts to listeners in Europe during the day — although some of them are in English, a number of other languages are also used. The programmes from UAE Radio Dubai on 17.865 are in Arabic and English from 0615 until 1500 — George Morley logged their signal as SIO 343 at 1048. Radio Pakistan 17.660 may also be heard during the morning with programmes in Urdu and English from 0715 until 1115 — Roy Spencer rated their signal in Nuneaton as SIO 344 at 1100.

From 1300 until 1800 RCI Montreal, Canada occupy 17.820, beaming their popular programmes to Europe in Ukrainian, French, English, Polish, Russian, Hungarian and Czech — reception is usually good and the SIO 444 rating noted by Robert Taylor at 1445 is typical. The

programmes in Dutch and English from Radio Surinam International reach listeners in Europe via an RNB transmitter in Brazil on 17.755 at 1700 — Ian Fordyce has been using a Dressler ARA 30 active antenna with his National Panasonic DRB 600 receiver to hear them in Fraserburgh.

Some of the other broadcasts to Europe noted by DXers during the evening were WYFR via Okeechobee, Florida 17.750 in English and Spanish from 2000 to 2300 — logged by Philip Rambaut at 2145; RCI Montreal, Canada 17.875, with items in Polish, French, English and Russian from 1800 until 2100 — noted as SIO 444 by John Parry in Northwich at 2030; Radio HCJB Quito, Ecuador 17.790 with many interesting and varied items in English from 1900 until 2000 — logged by Alan Curry as SINPO 43333.

Apart from the broadcasts intended for European listeners, many more are directed to other target areas during the day and are mainly in foreign languages. Some of them were logged by Philip Rambaut around 0830 — Radio Baghdad, Iraq 17.630 (broadcasting in Arabic to N. Africa); Radio Afghanistan via Moscow 17.655 (Pushto and Dari to S. Asia); VOA via Monrovia, Liberia 17.715 (English, French and Hausa to C. Africa); Radio Algiers, Algeria 17.745 (French, Spanish and English to E. Africa) and Radio Prague, Czechoslovakia 17.840

(English and Czech to S. Asia).

Roy Spencer uses four switched indoor antennas with his DX-400 receiver when checking the band. He logged SRI Berne, Switzerland on 17.830 at 1104 (SIO 433) — their programmes in English, French, German and Italian are intended for listeners in S.E. Asia from 1045 until 1300. Around 1450 he heard RFI via Allouis, France on 17.720 (SIO 433), beaming programmes in French to N. America, also Radio Prague, Czechoslovakia on 17.730 (SIO 333) with a transmission to W. Africa in English and Czech.

A broadcast in English, French and German to listeners in N. Africa from WCSN in Boston, USA on 17.640 was received at SINPO 54444 by John Nash at 1000. A wild life programme about rhinos from Radio RSA Johannesburg, S. Africa on 17.780 was enjoyed by Sheila Hughes at 1505. Although this broadcast in French and English was beamed to listeners in W. Africa from 1200 until 1556, Sheila logged it as SIO 444 using just the whip antenna with her Vega 206 portable receiver. At 0001 Roy Spencer picked up Radio Australia broadcasting in English to E. Asia on 17.750 — their signal was SIO 253.

The reception conditions prevailing on the 15MHz (19m) band are generally more reliable than on the higher frequencies and many interesting stations in all continents may be heard at some

Note:-

Entries marked * were logged during darkness.

All other entries were logged during daylight.

DXers

A: Michael Banbrook, Great Yarmouth.
B: David Edwardson, Wallsend.
C: Eileen Mainwaring, Cowes IOW
D: Paul O'Connor, Birmingham.
E: Ronald Proudfoot, N. J. upon-Tyne.
F: Philip Rambaut, Macclesfield.
G: Stewart Russell, Forfar.
H: Tim Shirley, Bristol.
I: Darran Taplin, Tunbridge Wells.
J: A. Taylor, Coventry.
K: Robert Taylor, Edinburgh

time during the day.

The programmes in English from Radio Australia are beamed to S.E. Asia via Carnarvon, W. Australia on 15.140 from 0000 until 0100 and to the S. Pacific area via Shepparton, S.E. Australia on 15.240 from 2100 until 0730. Roy Spencer has been hearing both of these transmissions in Nuneaton around 0003, noting 15.140 as SIO 243 and 15.240 as SIO 443.

Their 15.240 broadcasts also becomes audible in the UK via the long path across the Pacific around 0400 — there are daily variations in reception, but the report from George Hewlett quoted SIO 322 at that time. Their signal usually deteriorates to SIO 220 by 0445, when reception becomes impossible due to a transmission from RBl Berlin on the frequency.

The Carnarvon transmitting station in W. Australia, operating

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on 15.415, is used to reach listeners in S. Asia from 0900 until 1100, but the reception of these signals in the UK is generally poor just now, with severe adjacent channel interference.

During the morning, Radio Pakistan, Islamabad broadcast to listeners in Europe on 15.605. This transmission runs in parallel with their 16m one from 0715 until 1120 and the choice of the best band to use is left to the listener. Neil Dove noticed some jamming on this frequency around 1110 and rated their signal as SINPO 33542. UAE Radio Dubai beam their programmes in Arabic and English to listeners in Europe from 1000 until 1500 on 15.435, Neil found their *Mail Bag* programme interesting at 1040 and noted their signal as SINPO 45444.

The broadcasts from Radio Norway, Oslo on 15.310 are not often mentioned by DXers, but Sheila Hughes found their talk entitled "Norseman's Federation" very interesting. Their transmission at 1400 was really intended for listeners in N. America but was received at SINPO 33333. The information about Vietnam and the broadcasts of Vietnamese music from the Voice of Vietnam on 15.010 have been attracting the attention of Leslie Lyon in Scarborough from 1800 until 1830.

Writing from Grantham, Leslie Hollis says that Radio Korea, Seoul on 15.575 is one of his favourite stations. They beam programmes in Korean, English, Italian, Spanish and German towards Europe from 1600 until 2200. Using a new Philips D2935 receiver, Leslie picked up WYFR Oakland, California via Taipei, Taiwan 15.055 at 1455 (SINPO 44533); Radio Damascus, Syria 15.020 at 2005 (45544) and WCSN Boston, USA 15.390 at 2045 (44533).

In Corsham, Colin Diffell has been listening to RCI Montreal, Canada on 15.325 at 1900. They occupy this frequency from 1330 until 2200 and bring programmes in eight languages to listeners in Europe. Colin has also been hearing two broadcasts to Europe from N. and S. America, WHRI South Bend, USA 15.105 with programmes in English from 1700 until 2100 and RNB Brasilia, Brazil 15.265 at 1800, with items in English and German until 1950.

Using a Yaesu FRG-7700 receiver in Stockton-on-Tees, Ian Curry listened to a bulletin of world news from the Voice of America via their Monrovia, Liberia relay to Central Africa on 15.445 at 2000. He also picked up a broadcast to Africa from SRI in Berne, Switzerland on 15.570 at 2117. Their programme about skiing proved to be very interesting. Listening in Cardiff, John Berridge has been hearing



Radio Australia QSL card received by Peter Vlietinck

the Voice of Free China (VOFC) relayed to listeners in Europe via Okeechobee, Florida on 15.440 at 2200. They offer a wide variety of programmes including a series on learning the Chinese language.

Despite a high level of static interference, Michael Osborne managed to hear the station ident of AWR-Latin America, Costa Rica on 15.460 just before they signed off at 2200, thus adding a new one to his growing list of DX in Chelmsford. This station may well be one to add to your DX list too.

The reception conditions on the 11MHz (25m) band have been a good deal more reliable than on the higher frequencies and signals from all continents can be heard at some time during the day.

The programmes from Radio Australia are beamed to listeners in the S. Pacific area by their Shepparton transmitting station in S.E. Australia on 11.910 from 0400 until 0630 and they can usually be heard in the UK. Peter Vlietinck has been listening to them in London and has received their attractive QSL shown in Fig. 1. The Shepparton station also beams their African service to listeners in S. Africa on 11.945 from 0300 until 0700, but George Hewlett can only hear this broadcast at SIO 433 between 0600 and 0630 due to a BBC

transmission on 11.945 from Limassol, Cyprus.

The *Chariots of Fire* tuning signal, a station ident and frequency announcements were picked up by Michael Osborn at 1000 from KNLS Anchor Point, Alaska on 11.930. They beam programmes in English to S.E. Asia from 1000 until 1100. Although their signal was only SINPO 14433, it is certainly one to interest DXers!

Some of the 25m broadcasts during the day are intended for listeners in Europe. Sheila Hughes uses her Vega B212 portable to receive the programmes from Radio Finland, Helsinki on 11.715 at 0830 (SINPO 43443). Their weekly *Airmail* listeners letters programme and *Northern Report* are among her regular favourites. The programmes from Radio Bucharest, Romania may be heard on 11.940 at 1300 — Darran Taplin logged their signal as SINPO 54444. An interesting DX programme was mentioned by John Nash, this is broadcast by Radio Austria Int, Vienna on Sundays at 1430 on 12.015.

All India Radio is just one of the many interesting stations to be found on this band during the evening. Their broadcast to Europe on 11.620 may be heard from 1845 until 2230. Leighton



Radio RSA QSL card

Smart has been listening to their *Radio Newsreel* at 1938. Their transmission to E. Australia on 11.715 was logged by John Sadler in Bishops Stortford at 2300.

A variety of topics are covered in the broadcast from Radio Beijing, China on 11.500. Their programmes for European listeners commence in German at 1800, followed by alternating segments of English and German until 2155. Leslie Hollis says he finds them interesting and rates their signal as SINPO 45444. They welcome reports and confirm them with attractive QSL cards. One depicting the Temple of Heaven was received recently by Richard Bealey in Exeter. Tim Shirley also enjoys their programmes, he has been listening to their broadcast in English to W. Africa on 11.515 at 2030 (SIO 444).

A broadcast from Radio Japan reaches listeners in Europe via a relay station in Moabi, Gabon on 11.800 at 2200. Their popular programmes in English and Japanese end at 0000. Neil Dove rated their signal as SINPO 44543 at 2205. A station seldom mentioned by DXers was logged by Ian Fordyce at 2200, namely Radio Clarin, Dominica on 11.700, their transmission from 1130 until 0400 is intended for listeners in C. America and is in Spanish.

The reception conditions prevailing on the 9MHz (31m) band have been fairly consistent and many interesting stations may be heard at all hours of the day and night by DXers.

Radio Australia chose 9.655 as being the most suitable frequency to reach listeners in Europe and their transmitting station in Shepparton, S.E. Australia beams this way from 0700 until 1000. George Hewlett reports that their signal is usually SIO 434 around 0700, but from 0800 it deteriorates and reception has been disappointing. Due to a BBC transmission at 0900 from Limassol, Cyprus on 9.660, reception is often marred by moderate or severe adjacent channel interference. Their Shepparton station also beams towards the W. Pacific area on 9.760 between 0800 and 1100 and to N. America on 9.580 from 0800 until 1500, but both of these transmissions are very weak here.

There are several broadcasts to Europe from N. and S. America in the early morning. George Morley has been hearing WCSN in Boston, USA on 9.465 at 0700. Leslie Hollis logged Radio HCJB Quito, Ecuador on 9.845 as SINPO 44543 at 0700.

Sheila Hughes has been listening quite a lot to the short programmes broadcast at 7045, 0845, 0945 and 1045 by Radio

Seen & Heard

Freq MHz	Station	Country	UTC	DXer
3.210	R. Mozambique	Mozambique	2010	C
3.220	R. HCJB Quito	Ecuador	0320	N
3.220	R. Togo, Lome	Togo	0150	N
3.225	R. Occidente	Venezuela	0220	N
3.230	ELWA Monrovia	Liberia	0110	N
3.285	R. Belize	Belize	0325	H
3.300	R. Cultural	Guatemala	0245	J,N
3.330	R. Comoro	Comoros Is	1800	J
3.365	GBC Radio 2	Ghana	2103	A,D
3.915	BBC, Kranji	Singapore	2047	E
3.925	Capital R.	Transkei	2227	F
3.930	R. Nac. de Cabo Verde	Cape Verde	2000	J
3.955	R. Orion	S. Africa	2237	F,N
3.965	RFI Paris	France	1918	E
4.025	R. Frecuencia, Rioja	Peru	0500	J
4.220	PBS Xinjiang	China	2300	N
4.450	R. Afghanistan	via USSR	1330	J
4.470	R. Movima	Bolivia	0215	H
4.500	PBS Xinjiang	China	2205	D,N
4.648	R. Santa Ana	Bolivia	0150	H,J
4.710	R. Abaroa	Bolivia	0100	N
4.735	Xinjiang	China	2215	D
4.737	R. Mozambique, Maputo	Mozambique	2300	N
4.740	R. Afghanistan	via USSR	1900	N
4.750	R. Bertoua	Cameroon	2000	N
4.760	ELWA Monrovia	Liberia	2000	F,G,N
4.770	FRCN Kaduna	Nigeria	2100	C,F,G,I,N
4.770	R. Mundial, Bolivar	Venezuela	0230	N
4.780	RTD	Djibouti	2150	J,N
4.785	RTM Bamako	Mali	2050	G,N
4.790	R. Atlantida	Peru	0230	N
4.795	R. Douala	Cameroon	2106	F,G
4.800	LNBS Lesotho	Maseru	2140	D,M
4.805	R. Nac Amazonas	Brazil	2222	C
4.815	R. DIFF TV Burkina	Ouagadougou	2103	C,D,G,J,N
4.820	R. Botswana	Botswana	1908	C,G
4.820	La Voz Evangelica	Honduras	0410	N
4.825	R. Sicuani, Cusco	Peru	0500	J
4.830	Africa No. 1	Gabon	1900	A,E,F,G,I,M,N
4.830	R. Reloj	Costa Rica	0415	B,D
4.830	R. Tachira	Venezuela	0300	M

Freq MHz	Station	Country	UTC	DXer
4.835	RTM Bamako	Mali	1938	D,E,G
4.845	R. Bucaramanga	Columbia	0335	M
4.845	ORTM Nouakchott	Mauritania	2050	B,F,G
4.850	R. Clarin Int.	Domin. Rep	0400	M
4.850	R. Tashkent	USSR	2300	D
4.850	R. Yaounde	Cameroon	2105	B,D,G,I
4.850	R. Capital, Caracas	Venezuela	0400	D,N
4.865	PBS Gansu, Lanzhou	China	2130	G
4.870	R. Cotonou	Benin	2050	G
4.875	R. Jornal, Rio	Brazil	0320	N
4.880	SABC Radio 5	S. Africa	2107	D,E,G,K
4.890	R. Port Moresby	New Guinea	0415	J
4.895	R. Chanchamayo	Peru	0330	K
4.900	R. diff Nat. Conakry	Guinea	2105	G
4.905	N'djamena	Chad	2100	B,G,J
4.915	R. Ghana, Accra	Ghana	2120	D,G
4.920	R. Quito	Ecuador	0432	D
4.930	4VEH	Haiti	0150	N
4.935	R. Tropical	Peru	0245	J
4.940	R. Kiev	USSR	1925	E
4.945	R. Nat. Porto Velho	Brazil	0120	N
4.970	R. Rumbos	Venezuela	0130	N
4.970	R. Tarqui, Quito	Ecuador	2359	J
4.975	R. Uganda	Uganda	2035	G
4.980	Ecos del Torbes	Venezuela	0110	B
4.990	AIR New Delhi	India	0010	L
4.990	FRCN Lagos	Nigeria	2201	L
5.005	R. Nacioal, Bata	Eq. Guinea	2110	B,G
5.010	R. Garoua	Cameroon	2055	G
5.025	R. Rebelde, Habana	Cuba	0055	B,N
5.025	R. Uganda, Kampala	Uganda	2040	G
5.035	R. Bangui	C. Africa	2128	E,G,N
5.045	R. Cultura do Para	Brazil	0030	N
5.045	R. Togo, Lome	Togo	2100	B,G,N
5.055	Faro del Caribe	Costa Rica	0345	H
5.057	Gjirokaster	Albania	2110	G
5.095	R. Sutatenza, Bogata	Colombia	0040	B,M,N
5.190	R. Nav. Cont. Caja	Peru	0330	N
5.191	Em. Reg Moxico	Angola	0250	N
5.220	R. Beijing	China	0200	N
5.240	VOS 1, Fuzhou	China	0115	N

Prague, Czechoslovakia on 9.505. She enjoys *DX News*, broadcast by AWR Forli, Italy on 9.670 at 0800, their talk about different types of fading proved to be interesting. *Short Wave Merry-Go-Round* with the two Bobs, broadcast by SRI in Berne, Switzerland on 9.885 at 1530 is another one of her favourites. Tim Shirley enjoys the DX programme from RSI Stockholm, Sweden 9.630 on Wednesdays at 1100.

Some of the broadcasts to Europe logged during the evening include REE Madrid, Spain 9.765 at 1830 and Radio Baghdad, Iraq 9.875 at 2128, noted by Colin Shaddick. Radio Tirana, Albania 9.480 at 2030; Vatican Radio, Rome 9.625 at 2045; Radio Damascus, Syria 9.950 at 2130; Radio Sophia, Bulgaria 9.700 at 2130; Radio Vilnius, Lithuania 9.640 at 2200 and RHC Habana, Cuba via Moscow 9.590 at 2200 were all received by John Sadler. Radio Cairo, Egypt 9.670, was heard by Ian Fordyce at 2015. The Voice of Vietnam, Hanoi 9.840 at 2030 and the Voice of Turkey, Ankara 9.560 at 2200 were logged by Darran Taplin. The Voice of Free China (VOFC) Taipei, Taiwan 9.955 was heard by Roy Spencer at 2211.

There are many broadcasts to other areas during the evening,

some of them are audible in the UK. Listening in Buckie, Julian Wood picked up one intended for listeners in N. America from Radio Netherlands, Hilversum on 9.895 at 2150. A bulletin of news and a programme entitled *Thank goodness its Friday*, broadcast to N. America on 9.855 by the Voice of Israel, Jerusalem was received by Sheila Hughes at 2300. Roy Spencer logged Radio Kiev, Ukraine 9.640 with a broadcast to N. America at 2330.

Some of the broadcasts to Europe on the 7MHz (41m) include WHRI South Bend, USA 7.355 (English 0800-1100), logged by George Morley; Radio Australia 7.205 (English 1530-2040), received by Stewart Russell; Radio Pakistan 7.100 (Urdu, English and French 1645-2015), regularly monitored by Julian Wood; Radio Prague, Czechoslovakia 7.345 (Arabic, French, English, Spanish, Polish and Czech 1630-2257), logged

by Sheila Hughes; Radio Keiv, Ukraine 7.330 (English 1800-1830), heard by Michael Osborn; Radio Bangladesh, Dhaka 7.505 (English and Bengali 1815-2000, received by Hiron Khan in Manchester; All India Radio, New Delhi 7.410 (English 1845-2230), logged by Alan Curry.

There are many 6MHz (49m) broadcasts during the day to European listeners, including RCI Montreal, Canada 6.140 (French & English 0500-0600), noted by George Morley; Voice of America via Woofferton, UK on 6.040, logged at 0615 by Daniel Masterson; Radio Austria Int, Vienna 6.155 (English 1400-1425); BRT Brussels, Belgium 5.910 (Dutch, English, French and Spanish 1700-2125), heard by Tim Shirley; Radio Sophia, Bulgaria 6.070 (English 2030-2100) noted by Colin Shaddick; Radio Mediterranean, Malta 6.110 (English

- A: Alan Curry, Stockton-on-Tees.
- B: Neil Dove, Lockerbie.
- C: Ian Fordyce, Fraserburgh.
- D: George Morley, Redhill.
- E: John Nash, Brighton.
- F: Michael Osborn, Chelmsford.
- G: Fred Pallant, Storrington.
- H: Ronald Proudfoot, NI-on-Tyne.
- I: John Sadler, Bishops Stortford.
- J: Tim Shirley, Bristol.
- K: Leighton Smart, Trelewis.
- L: Darren Taplin, Tunbridge Wells.
- M: Keith Wakelin, Hull.
- N: Jim Willett, Grimsby.

2045-2115), received by Sheila Hughes; RBl Berlin, GDR 5.965 (English 2200-2230), logged by Paul O'Connor.

Station Addresses

BBC Radio Ulster, Broadcasting House, 25-27 Ormeau Avenue, Belfast BT2 8HQ.

ILR Downtown Radio, P.O. Box 96, Kiltonga Industrial Estate, Newtownards, Co. Down BT23 4ES.

Radio Clarin, Apartado 205, Zona 2, Santo Domingo, Dominican Republic.

KNLS World Christian Broadcasting Corp., Box 473, Anchor Point, AK.99556, USA.

Radio Baku, Foreign Service, U1.M.Guzeina 1, Baku 370011, Azerbaijanian SSR, USSR.

Radio Djibouti, Boite Postale 97, Djibouti, Rep. Djibouti.

Your deadlines for the next three issues are: September 18, October 23 and November 20.

LISTEN OUT FOR

GB0UWC: To celebrate the 25th anniversary of the United World College of the Atlantic, they are running a special event station over the August Bank Holiday period. They will be operating from St. Donat's Castle in South Wales. The main mode will be s.s.b. on the h.f. bands between 3.5 and 28MHz.

Dr. J. Devonshire GW4LFF
St. Donat's Castle
Llantwit Major
S. Glamorgan

GB2MQS: The second Commemorative station will be operating on September 5 and 6 from Stirling Castle.

GM3MTH
QTHR

GB8EAR: This station will be on the air on October 24 from Brighton. It's to celebrate the El Alamein Reunion at the Great Hove Town Hall, Hove. They will be using 144MHz.

G2DHV
QTHR

**Have you Got a
Special Event Station
we should know about?
If so, write and tell us**

GBOWEM: This special event station will be on the air on September 5 to commemorate the 1987 Carnival in the North Shropshire market town of Wem. The station will be active throughout the day, with both phone and RTTY transmissions on h.f. 144MHz and possibly 430MHz.

Some equipment has been loaned for the occasion by the Salop ARS. A special QSL card will be available.

Eric GOHRU
0939 33638

GB4EMC: This station is being run by the Southgate ARC. It will be at the Enfield Town Show in Enfield Town Park. They will be using all h.f. bands as well as 144MHz. The dates to look out for are September 19/20.

GB6HF: The Houghton-le-Spring Amateur Radio Club are holding a special event station to celebrate Houghton Feast. It marks the dedication of the Church to St. Michael. It dates from very early days. Present day events include: a carnival, fairground, cycle racing, roasting of an ox, special church services and the special event station.

Operation will be on 3.5 and 144MHz from October 2 to 11. RAYNET will also be covering the charity cycle race as part of the week long event.

GB8EAR: This will be run from the Winter Gardens Blackpool on October 31, using 144MHz. It's on behalf the Royal Signals Amateur Radio Society and they would like to work other RSARS/RAFARS and RNARS members.

G2DHV
QTHR

GB1RLD: Four members of Radio Link — Derby Hospital Broadcasting — will be operating from the Outside broadcast caravan at the City Hospital on September 19 and 20. They will be using 144MHz. Radio Link was formed in April 1974 and now broadcasts for over 40 hours a week.

RALLIES

★ SWM will be in attendance.

August 30: The annual rally of the British Amateur Radio Teleprinter Group is being held at Sandown Park Racecourse. This year the exhibitors hall has been modernised and enlarged so more trade stands, the catering and bar facilities are in an annex off the main hall for visitors comfort, there will be a car boot sale, ample free car parking. Doors open between 10.30am and 5pm.

Peter Nicol G8VXY
021-453 2627

August 30: The Galashiels & District ARS are holding an open day at the Focus Centre, Livingstone Place, Galashiels. There will be trade stands, bring & buy as well as all the usual activities. They also hope to have Morse testing.

John G. Campbell GMOAMB
Tel: 0896 55569

August 31: The Doncaster & District RAYNET Group are holding their rally at Bircotes Sports Centre, Bircotes. Doors open 11am (10.30 for the disabled). Admission 50p.

September 6: The South Bristol ARC are holding the 1987 Bristol Rally at Hareclive Youth and Hartcliffe Community Centres, Hareclive Road, Hartcliffe. Doors are open between 10am and 5pm. There will be the usual bring and buy and general traders in the Community Centre and radio dealers in the Youth Centre. Admission 50p.

Len Baker G4RZY
0272 834282

September 6: The West Kent AR Rally is being held in the Angel Centre, Tonbridge, Kent. Doors open between 10.30am and 4pm. There will be talk-in on S22, SU8 and 29.5MHz f.m. using the callsign GBOWKS. There is free parking, a bring and buy, club stands, many trade stands and a stamp fair.

Nigel Peacock G4KIU
0892 515678

September 6: The Preston ARS 20th Annual Rally will be held at Lancaster University. The rally opens at 11am, with early entry for the disabled. The University entrance is in the A6 trunk road (leave M6 at junction 33). Talk-in on S22. The usual trade stands, bring and buy, RSGB bookstall, licensed bar as well as snacks will be there. Morse tests available (pre-booked with RSGB).

Godfrey Lancefield G3DWQ
0772 53810

September 13: Dunstable Downs Radio Club are holding The National Amateur Radio Car Boot Sale at the Shuttleworth Collection, Old Warden Aerodrome. Open from 10am to 5pm. Admission 50p.

Phill Morris G6EES
0582 607623

★ **September 13:** The Lincoln Hamfest Mobile Rally will be held at the Lincolnshire Showground on the A15. The rally usually opens at 10.30am. This year's attractions include helicopter rides, model car racing, model aircraft displays, the police, fire brigade and much more.

Pam Rose G4STO
Gainsborough 788356

September 20: Once again the Vange ARS will be holding their rally at Nicholas School, Nicholas Lane, Basildon. There will be the usual assortment of traders and (weather permitting) a car boot sale. There will also be a bring and buy, raffle, refreshments and the RSGB book stand. Doors will be open from 10am to 4.30pm. Talk-in will be on S22 using the call GB4VMR. Admission is 50p and free for the disabled and children under 14.

Doris Thompson
0268 552606

September 20: The Trafford Rally is being held at Old Trafford Cricket Ground, Talbot Road, Stretford. Doors open from 10.30am to 5pm (10am for the disabled). There is free car parking, a bar and refreshments available. Talk-in will be on S22.

★ **September 27:** The Harlow & District ARS are holding their rally at Harlow Sports Centre. Doors open at 10am.
0279 27788

★ **October 4:** The Welsh Amateur Radio Convention will be held at Oakdale Community Centre, Blackwood, Gwent.

Brian GW3KYA
0495 225825

★ **October 4:** The Great Lumley ARES are holding their rally at The Community Centre, Great Lumley, Co. Durham. Doors open 11am. Talk-in on S22, RBO and GB3NT.

Keith Watt
7 Turfside
Leam Lane Est, Gateshead
Tyne & Wear

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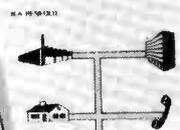
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NATIONAL PANASONIC RF-B40 PREVIEWED

Peter Shore

In SWM, May '87, there was a test report on the Panasonic RF-B60 short wave receiver. A down-market version of this set is already available in the Far East, marketed under the National brand name, and in the autumn, the new set will be on sale in the UK and Europe, known as the Panasonic RF-B40.

I was able to obtain the RF-B40 before it's launch for long enough to have a preview. Made by the Matsushita Company, the RF-B40 is very similar in appearance to the big-brother RF-B60, with the now familiar layout of digital portable receivers: loudspeaker to the left and display and controls to the right of the front face. The receiver covers:

FM — 87.5 to 108MHz
LW — 146 to 288kHz
MW — 522 to 1611kHz
SW — 1.615 to 29.995MHz

(continuous)*

Tuning on v.h.f. is in 100kHz steps, on medium wave it's either 9 or 10kHz to suit local conditions and on short wave it's 5kHz steps.

Frequencies may be entered directly by means of the twelve button keypad, or metre bands may be selected using the same keys, which are marked with both single digits and each of the twelve broadcast bands.** If a metre band is selected in this way, the set tunes to a frequency at the lower end of the lower end of the band (e.g. 13.6MHz on 21m and 5.95MHz on 49m).

There is an absence of a conventional rotary tuning wheel on the RF-B40, with two arrow keys provided in its place. Depression of one of these keys will tune the set up or down in frequency. A scanning device is also incorporated to enable the set to search for strong signals — to activate this, it is necessary to hold down one of the arrow keys for a couple of seconds whereupon the set scans until a signal of reasonable strength is discovered on which the set will rest. If this facility is used within one of the designated broadcast bands, upon reaching the upper or lower limit of the band the set will automatically revert to the opposite end and recommence scanning.

Twenty-seven memory channels are provided: nine on each of l.w./m.w., s.w. and v.h.f. f.m. Programming a memory is elementary, call up the required

*except for countries where regulations insist that coverage should stop at 26.1MHz

**11m is excluded from this direct entry



frequency, depress the M key on the pad, followed by the memory number to be assigned to that channel. Recall is simply a matter of depressing the appropriate number key on the pad.

The frequency readout is clear in a large l.c.d., frequencies on short wave are displayed in MHz, with the metre band shown (where appropriate) to the right of the frequency. On long wave and medium wave, the display shows kHz and on v.h.f. f.m. in MHz. When a memory channel is selected, the number is shown in the display at the extreme right of the display.

The RF-B40 does not have variable bandwidth, nor is a b.f.o. provided and thus the manufacturer aims this receiver towards the international broadcast station listener and not the dedicated DXer, nor at listeners wishing to tune into s.s.b. and c.w. transmissions. The lack of fine tuning, combined with the unalterable 5kHz tuning steps on short wave does not allow for precise reception of stations using off-channel frequencies — Tehran on 15.084 and 9.022MHz, for example. There is also no clock or timing device on

although there is provision for the connection of an external antenna. A DX/local attenuator switch is a useful feature for dealing with strong signals when using an external antenna.

Power supply is 6V d.c., using four AA cells which power both the receiver and the micro-processor. A 6V d.c. adaptor may also be used, and it is understood that this will be provided with the set when it is marketed in the UK later this year.

Tone control is the conventional two-position high/low switch, with a slide control for volume. A lock switch is available to hold the set on a frequency, but this does not act as a main power cut-off as in the case of the RF-B60.

Performance

Tests on the RF-B40 were carried out by injecting the test signal via the external antenna connection, measuring the a.f. output through the earphone socket.

Sensitivity

This was good for a set of this type on short wave, average for long and medium wave and better h.f. results than the RF-B60.

r.f. level (dB μ V) — 81dB μ V at 1.6MHz
— 97dB μ V at 3MHz
— 88dB μ V at 21MHz

Selectivity

This was also good for this type of set, and about equal to the RF-B60.

6dB points at \pm 3MHz
60dB points at \pm 7MHz
Attenuation at \pm 5kHz = 31dB
Attenuation at \pm 10kHz = 70dB

Image rejection was assessed to be much better than the RF-B60 (better than 95dB on h.f.), and thus excellent for this type of set, and i.f. rejection was found to be good, and about equal to the RF-B60.

Battery consumption is heavy, with a life of around two hours on carbon cells, 11 hours with alkaline cells.

Conclusions

The RF-B40 is a good all-round performer, with test results equal to, or better than the RF-B60 big-brother. It is a competitor for the ICF-7600DA from Sony, as well as the larger version!

Many thanks to **Panasonic UK Ltd., 300-316 Bath Road, Slough, Berkshire SL1 6JB** for the loan of the set.

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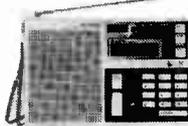
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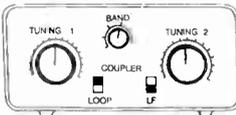
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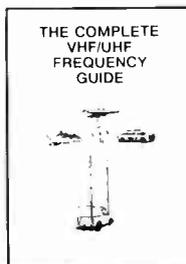
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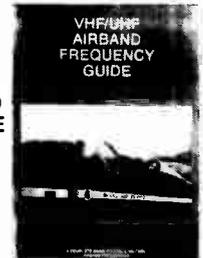
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