

# Radio Communication



The Journal of the Radio Society of Great Britain

April 1992

Volume 68 No 4

THE VOICE OF AMATEUR RADIO FOR 79 YEARS

**Lord Rix of Whitehall  
and  
Hornsea**

**G2DQU**

**RSGB  
Vice-President  
since 1979**

*Exclusive Interview and RSGB Mencap Albania Appeal — page 25*

# KENWOOD

## TS-450S All mode, all band HF Transceiver with General Coverage Receive

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**N.B. for all other RSGB telephone numbers see page four.**

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# Radio Communication



## Help those less fortunate than yourself:

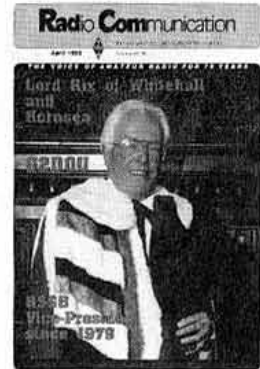
In this month's colour feature, Lord Rix, G2DQU, tells how his personal experience led him to devote his life to helping people with a mental handicap. We also give you the chance to invest in the future of mentally handicapped people in Albania: turn to pages 25 - 27.

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- 54 SOFTWARE REVIEW: Turbolog**  
David Evans, G3OUF, shows how Canberra's new software is a log book that automatically keeps your DXCC count, tells you when and where to find the DX you want, and can even put your rig on the DX station's frequency?



### COVER PICTURE:

In February, actor Brian Rix, G2DQU, was granted a Peerage in the New Year Honours List. RadCom's editors were privileged to spend a hour with him learning about his eventful life and his work helping people with a mental handicap. Page 25.

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# RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded in 1913 incorporated 1926. Limited by guarantee  
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Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the Membership Services Department from which full details of Society services may also be obtained.

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**Morse practice co-ordinator:** Mike Thayne, G3GMS

**Audio visual library co-ordinator:** David Simmonds, G3JKB

Correspondence to honorary officers should be passed directly to them (QTHR), not to RSGB HQ.

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**Corporate Members: UK and Overseas** (*Radio Communication* sent by surface post): **£30.00**

**UK associate member under 18:** £15.00. **Family member:** £12.00

**Corporate (Concessionary):** £25.00 over 65 or full time student under 25. (Applications should provide proof of age at last renewal date and/or include evidence of student status.)

**Affiliated club or society/registered group (UK):** £15.00 (including *Radio Communication*). (Subscriptions include VAT where applicable.)

Special arrangements exist for blind and disabled persons. Details are available from RSGB HQ.

Membership application forms are available from RSGB HQ

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**0707-49855**

## The Radcom Leader

# A DIFFERENT BALL GAME

IT IS SOMETIMES ARGUED that *RadCom* should be available independently of the RSGB, on the bookstalls. Leaving aside what this might do to RSGB membership figures (and hence the Society's negotiating power), *RadCom* is not designed to be bookstall material.

There are several reasons for this. Some of what is in *RadCom* is dull official or reference information which is, nevertheless, appreciated by the highly committed amateurs who make up our membership. For instance, no other magazine publishes the full text of major licence changes, the complete bandplans or monthly propagation forecasts. *RadCom* must also cater for all aspects of amateur radio, not just the most popular. This is the philosophy of a service-provider, not of the market-place.

Then there is the technical level of *RadCom*: because all of our members are already committed to amateur radio, we are the only UK magazine which can publish the whole range of technical articles from simple to very complex, with plenty of experimental ideas thrown in for good measure. Bookstall magazines must concentrate on the more basic articles as their dedicated subscription readership is heavily supplemented by casual readers, often with only a passing knowledge of the hobby.

Of course *RadCom* is seen as expensive by those who fail to see the other benefits of membership such as 15% book discount, QSL Bureau, contribution to national and international negotiations, etc. But even at a perceived £2.50 per edition (post free) it is very good value for money. Compared with the bookstall mags, *RadCom* has more pages (minimum 84), many more words per page, many more circuit diagrams, many more small ads and many more colour photographs (count them all, you'll be surprised). This is not to decry *Practical Wireless* and *Ham Radio Today* (for instance) which provide a valuable service introducing members of the public to amateur radio, and we hope ultimately to the RSGB, in an easy-to-digest style, but *RadCom* is in a different ball-game.

Although I believe that the RSGB's magazine is already very good value, I am not complacent about it. Since becoming Editor, I have improved the paper quality (look up a 1989 edition and compare), introduced colour - we are still the only magazine using colour editorial photos, re-balanced the contents to match the requirements of the readers, increased type-size on most pages, and ensured that publication is on time.

The next area to address is the technical content of *RadCom*. I have already increased the percentage of technical pages over the pre-1991 figure, and improved the throughput of submitted articles (though *RadCom* is still so popular that many more articles are received than can be published). I have also, by popular request, increased the number of basic construction projects published, but without reducing the number of heavyweight articles. This January, Paul Lovell, G3YMP, joined *RadCom*'s small team with a brief to improve still further the quality and balance of the technical side of the magazine. He has long professional experience in analogue and digital hardware design, as well as in the software field, and should be a great asset.

We receive many letters criticising or praising *RadCom*. Many nowadays are of the latter type, which is most gratifying. However, we are always interested in constructive suggestions and are always striving towards the impossible goal of pleasing all of the people all of the time. With your help, we will continue to improve *RadCom*. As the RSGB's house journal it can and will continue to serve the widest range of interests, tastes and experience.

**Mike Dennison, G3XDV**  
Managing Editor

Here's Your Chance to Look Round RSGB's Re-Vamped Headquarters

## An Invitation from the General Manager

● THE Radiocommunications Agency has confirmed that it is continuing to sponsor the Young Amateur of the Year Award which will again be run in conjunction with the RSGB. Full details of this prestigious award and how to nominate someone for it will be sent out with next month's *RadCom*.

● A PACKET of seeds which orbited the earth for three million miles with Helen Sharman, the first Briton to use amateur radio in space, failed to survive a 35-mile trip from Liverpool to Eccles. They were in a brief case which was left on the top of a car.

● LAST JUNE, the Medway ARTS and the Great Bay Radio Association of Rochester, New Hampshire, enabled the Mayors of the UK and US Rochesters to exchange greetings on 14MHz during the centennial celebrations for Rochester NH.

● THE AMATEUR Radio Caravan and Camping Club runs many caravan rallies throughout the year, some of which coincide with radio rallies. Details of the Club and its events can be obtained from Alan Gard, G4LWA, QTJR; telephone 0494 531755.

● RESCUERS equipped with 2m hand-helds saved the lives of 720 swimmers swept off course by freak tidal currents in the 1991 Chesapeake Bay Bridge Swim in Baltimore. The event raises money for diabetes research.

● REPEATER keepers are asked not to contact the RA about licensing progress. This information is available from Repeater Management Group Chairman Geoff Dover, G4AFJ; tel 0455 823344.

● IN THE US, the FCC has rejected an application for certain disabled people to be exempt from the Morse test. The ITU Radio Regs were ruled to take priority over anti-discrimination laws.

● STOLEN FROM Walsall in January: IC-R70 with FM option (S/N 02133) and an IC-551 with VOX, pas-band tuning but no FM (S/N 02477). Any info to G M Pheasant, G4BPY, QTJR.

● THE INTERNATIONAL Listeners Association publishes a quarterly newsletter *Just Listening!*. Details from: ILA, 1 Jersey Street, Hafod, Swansea, SA1 2HF.

● THANKS TO G110NL for supplying some of last month's photographs of the Presidential Installations.

### RSGB Headquarters Open Day

YOU ARE are cordially invited to visit your headquarters on:

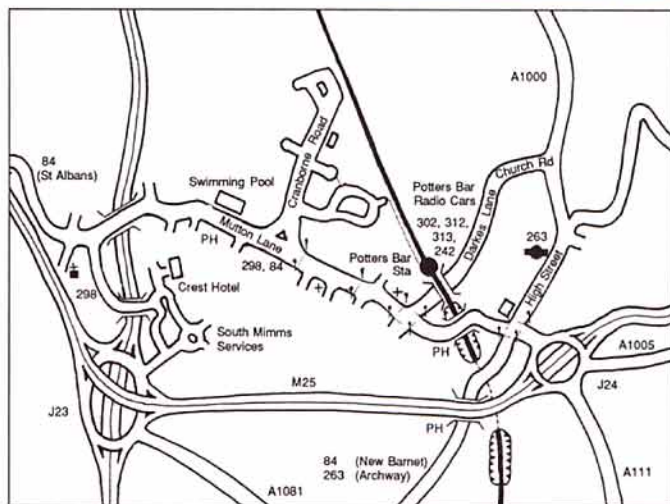
**Saturday, 11 April (9.30 am to 5.00 pm)**

**to view:**

- The members reception and shop (newly refurbished)
- The GB3RS shack
- The museum
- Staff offices
- RadCom production room

**and to meet:**

- Council Members
- RLOs
- HQ staff
- Other VIPs



RSGB HQ is on the right hand side of Cranborne Road, (look for the aerials!). The map is not to scale.

### HOW TO GET THERE

● RSGB BOOKS will be on sale and there will be an opportunity to use the sought-after callsign GB3RS in the well-equipped shack.

● Light refreshments will be provided for all those who have notified the General Manager in advance that they are coming.

## World Administrative Radio Conference Report

DAVID EVANS, G3OUF, was part of the UK delegation to the World Administrative Radio Conference which was held throughout February. A full report will appear next month, but here is his summary of the impact on amateur radio:

There has been no change to the 7MHz amateur band as a result of WARC 92 because the Conference agreed no significant change to the adjacent 40m broadcast band. In fact only 200kHz of additional broadcasting spectrum was agreed below 10MHz. This fell far short of the 700kHz proposed by the UK as one of the CEPT group of coun-

tries. However, a resolution was passed which will permit a proper examination of the 7MHz amateur band at a future WARC. The prospect of an alignment of the 7MHz amateur band on a world-wide basis is good news for the Amateur Service.

The 2.3GHz amateur band is allocated on a world-wide Secondary basis to radio amateurs and it appears that in years to come other services will operate in parts of the band. This naturally raises the question of sharing with these new services. The amateur allocation has not changed.

The 75.5 to 76GHz amateur Primary allocation has a new

Secondary user in the form of space research. However in this case protection to the amateur service must be provided.

Finally, wind profiler radar which required frequencies around 50, 400 and 1000MHz was referred back to the CCIR, the ITU's technical advisory committee for further study. The amateur service must follow the progress of this system in the future.

Since neither the retention of Fixed Services, nor broadcast expansion, caused any changes to the HF amateur bands, the IARU can be well satisfied with the outcome.

**Richard Horton, G3XWH, Head of Physics and Information Technology at Harrogate Ladies' College, explains how British schoolgirls are helping US space research.**

# Harrogate Ladies and American Whistlers

IN MAY 1991 I coordinated the successful contacts between the 'JUNO' schools and Helen Sharman on Mir, providing the only direct link between the Space Station and the UK. Our station at Harrogate Ladies' College was operated by the five girls who held Amateur Radio Licences. This year our complement is four Class B student licensees who are pictured below.

Subsequent sponsorship allowed me to attend an Educational Aerospace Workshop at the NASA Johnson Space Centre, Houston, Texas in July 1991. This was a fascinating experience in which a group of some thirty educators were immersed in the training programme which US Space Shuttle mission pilots and their payload specialists undergo. This involved not only a series of special lectures, but also an opportunity to visit the training departments, under-water tank, hypo/hyperbaric chambers etc. Much of the facility at the Johnson Space Centre, Houston is open to the public and a detour to visit if in Texas is recommended.

The opportunity was taken during the workshop to make contact with Chuck Biggs, KC5RG, a NASA space scientist involved in SAREX (Shuttle Ama-

teur Radio EXperiments) which is a series of projects on the Space Shuttle missions which began in 1983 when Astronaut Owen Garriott, W5LFL, made the first amateur radio contacts from Colombia. The main aims of SAREX are to encourage public participation in the US space programme and to support educational opportunities offered by amateur radio. Because many Shuttle missions fly in orbits whose inclinations are low, we in the UK have so far had little opportunity to contact a Shuttle mission with SAREX on board.

Chuck took time off his busy schedule to outline the planned missions during 1991/92 which would have SAREX on board and informed me that there was a good possibility that we may get a contact with a Space Shuttle in 1992, since two high inclination missions were scheduled for this year.

Applications for a SAREX contact with schools are handled by the ARRL so no time was wasted in sending off the appropriate fax! An application was made on behalf of the nine schools who had participated in the Mir event. Subsequently it was learned that Harrogate, had been accepted for the first mis-

sion in March 1992. This was the first such contact granted to an English school.

## Countdown

AT THE END of January confirmation was received that we had a scheduled contact with STS-45 Atlantis. Lift-off is to be on Monday, 23 March with our first contact on Friday the 27th. The school will be using the special event call sign GB2HC and Atlantis, N5WQC.

STS-45 has a crew particularly rich in Radio Amateurs with Pilot Brian Duffy, N5WQW; Mission specialists Kathy Sullivan (awaiting callsign) and Dave Leestma, N5WQC and Payload specialist Dirk Frimout, ON1AFD. The indications are that many opportunities will be taken for 'non scheduled' SAREX contacts on the 145.55 downlink from Atlantis.

We had also learned of another project flying on STS-45 in which the school could become involved. A section of the primary payload is SEPAC - Space Experiments with Particle Accelerators.

SEPAC plans to inject the earth's magnetosphere with a beam of electrons in order to stimulate the possible production of 'whistlers'. Whistlers have been heard as a series of strange descending tones on low frequency wave bands for many years, by radio amateurs amongst others, but their source - lightning discharges - has only relatively recently been established. The changing notes are due to 'ducting' in the earth's magnetic field and several oscillations between the poles spread out a pulse of broad spectrum noise into its component frequencies which travel at different velocities and hence arrive at the receiver with successive time delays, giving rise to the descending note.

The INSPIRE project, Interactive NASA Space Physics Ionosphere Radio Experiment, is a coordinated series of listening tests which will take place during the mission. Special LF receivers are being built by many US

schools and Colleges in order to keep a documented listening watch for any whistlers during the period. These will be recorded on audio tape and returned to NASA for evaluation.



RSGB Project YEAR Coordinator Hilary Clayton-Smith, G4JKS, seen in front of the magnificent Harrogate Ladies College building.

We are planning to construct such a receiver at Harrogate Ladies' College and participate in the listening tests during the mission. One of the major problems will be to find an 'electrically quiet' location in which to conduct the tests. Although the receiver has a filter to reject mains hum, it is recommended that it is situated several km from the nearest power line so a trip out of town in the school minibus seems on the cards! Injection times may have to be adjusted during the mission so there are plans to use WWV to broadcast details of when they will occur.

Schools' involvement with amateur radio and its associated disciplines can do nothing but good in raising the awareness of future generations in the fields of science and technology. Our future citizens must no longer be able to get away with pride in confessing a complete ignorance of any scientific knowledge!

● Gladstone Junior School is one of only sixteen schools worldwide, and the only school in Wales, chosen to take part in the STS-45 SAREX experiments. They will operate under the supervision of Alan Kingdom, GW1LOR.



Four students from Harrogate Ladies College: (l to r) Jenny Hook, G7KZO; Helena Twigg, G7KZP; Winnie Tse, G7LHY; and Anna-Karin Lilleengen, G7IRR, get ready for a contact with STS-45. The equipment has been kindly loaned by ICOM-UK and the antenna controller was donated by Siskin.

# Planning for the Future of Our Society

THE RSGB needs to respond to the changing needs of its members as well as the advances in technology. A corporate strategy is being drawn up and a major part of the plan will be prepared at the Business Strategy Conference. The process of drawing up a plan using over one-hundred members of the Society, together with the views of many others, ensures that it is the members' strategy and not one set by a small group of Council Members. The involvement of so many members should result in a commitment to the success of the strategy.

The advance planning for the conference is now well in hand. The organising team and syndicate chairmen are hard at work in completing their teams and carrying out pre-conference objectives. There is a large investment of time and effort which should bode well for the future of the Society. The table shows the provisional list of Chairmen and their areas of responsibility.

All Chairmen have attended a briefing meeting and are working towards the July conference. As will be seen from the list, the conference will be covering all areas of interest as well as the organisation of the society itself.

## What is the objective of this conference?

The intention is to produce, agree and publish a business strategy which will guide the Society for the next 3 to 5 years. The strategy will set objectives and targets which we would implement over that period through detailed action plans. The strategy must not be inflexible and will be reviewed from year to year.

## How will the plan be put together?

We will be considering the results of a survey which will be targeted at a randomly selected sample based on the society's computer records. The response from this survey will greatly assist the syndicates in formulating the

business plan. This survey will be mailed in mid-April.

## How can you, our members, help the society?

- 1 If you receive a survey form, complete and return it.
- 2 Write in with your comments and suggestions.
- 3 Apply to take part in the conference.

It is anticipated that between 100 and 150 members will take part in the working conference.

## What is the conference timetable?

The broad outline for the conference is as follows:

- 1 Plenary session to set the scene for the conference and receive results of survey and other contributions.
- 2 Syndicate sessions until the end of the first afternoon. These sessions will be to set the objectives and plans for their own areas.
- 3 Syndicate chairman to meet with organising team, late afternoon to check progress.
- 4 Syndicate groups to meet and summarise their initial proposals.
- 5 Plenary session to be held early evening to update all participants on the first day's progress.

The second morning will follow a similar process dealing with different areas of the syndicate's remit. A Plenary session will be

## Business Strategy Conference

University of Warwick 10/11 July

All Members Are Welcome

COST £60 inc B&B or just come for one of the days (lower cost applies). Application forms and details of cost can be obtained from Justine Coles at RSGB HQ - Please return forms by 31 May

held in the afternoon ending by 4.30pm. The organising team will then have the rest of the day to pull together the first draft of the overall strategy which will be discussed at a Council meeting the following morning.

Once the strategy has been completed, it will be published and made available to all members. The conference will be supported by a secretariat which will deal with all administration and typing support.

## What is the cost of the exercise and can we afford it?

The total cost of the conference, survey and all ancillary work is budgeted not to exceed £10,000, excluding the cost of HQ staff. This should be compared to an overall budget for the society of about £1.5M. This is a valuable planning exercise which will enable the society to make best use of its limited resources. Much of the work of the Society, and at this conference, is and will be carried out by volunteers giving their time and expertise.

## Members Comments

If you would like to write to any of syndicate chairman with comments and suggestions on any aspect of amateur radio or the society's activities please address all letters to Lambda House and mark the envelopes BSC in the top left hand corner.

We welcome all contributions which ideally should be restricted to 5 or 6 key matters on not more than two sides of A4. All letters will be acknowledged but we will not enter into correspondence. Your comments will assist in the formulation of the strategy.

Peter Tucker, GU4DWZ,  
Honorary Treasurer

Chairman		Responsibility
Sir Richard Davies	G2XM	Council & Committee structure
Mr T I Lundegard	G3GJW	HQ & Administrative support
Mr C Trotman	GW4YKL	Membership & Services
Mr P Burden	G3UBX	Information Technology
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Mr E J Case	GW4HWR	Training and Education
Mr R P Horton	G4AOJ	Financial plan
Mr J Bazley	G3HCT	Radio Policy/Interests

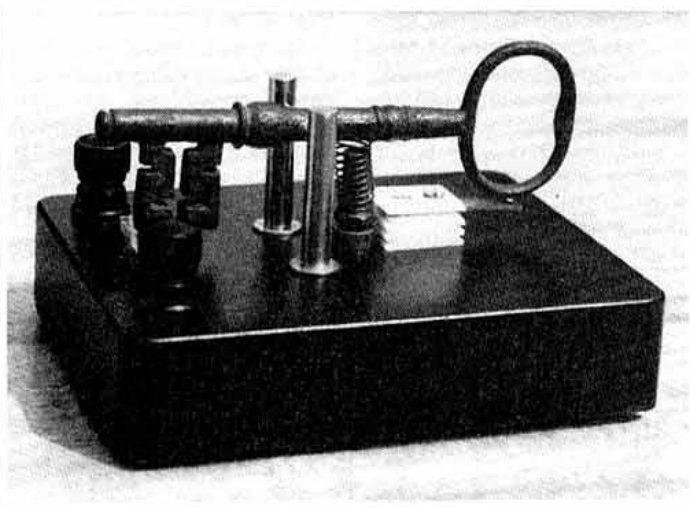
Table 1: The ten syndicate chairmen and their areas of responsibility.

## RNARS/Thames Telethon

THE ROYAL Naval Amateur Radio Society will be holding its annual Activity Week this Easter (18 to 26 April) using the callsign GB2RN.

Operation will be on 1.970, 3.660, 7.090, 14.190, 21.360, 29.933 and 144.300MHz SSB and 145.500 FM plus occasional operation on packet radio (messages via GB7HSN please).

During the last three days, a special station will raise funds for charity in association with Thames Television's Telethon 92. Over a £1000 was raised for charity last year. QSL Manager is G0FEK, and enquiries should go to G1LKJ, QTHR.



This 'Magic Key' built by Stanley Casperd, G3XON, actually works and took first prize in the 1991 Guildford and Dist RS Construction Contest. The door key was bought at a boot sale for a few pence and the brass pillars, terminal, springs and old relay contacts were from the junk box.

## HQ News

THE WINTER blues are passing into the promise of Spring, and the Rally and Exhibition season has started already. The Society has been to Kidderminster and Manchester so far and, as I write, Pickets Lock and Sandown are coming up. It is our intention to attend a wide range of rallies across the country. Hopefully our RLOs and Council Members will be on hand to offer advice and assistance especially to our new members who number about 200 per month at present.

The RSGB's National Exhibition and Convention ('RSGB 92') at the NEC is a month later this year so we have an extra month to promote and organise the show. In the past few years the theme has been Project YEAR and the Novice Licence; this year the RSGB and its various committees will take centre stage.

We have been playing with different layouts to enable a greater interaction between our committee members, Council members and RLOs. I want to improve the opportunities for members to meet their RLOs and members of the various committees and to allow potential members to see the benefits of joining our National Society.

All RLOs are being invited to the Exhibition by the Membership Liaison Committee to meet and exchange views on the best methods of providing members with the support they so clearly asked for in last summer's survey.

The reception area of Lambda House is looking somewhat stark as I write this, bereft of its furniture and main dividing wall. However, it is a much larger room now and, over the next few weeks, shopfitters will assemble the display shelves, console and library.

You will see a general invitation to visit Lambda House in this month's *News and Reports* pages and I hope as many members as possible will visit on Open Day, 11 April. Please bring with you any friends who are not members to encourage them to join. I have extended invitations to all Council and Committee members, together with staff of the Radiocommunications Agency, so I am looking forward to an interesting day.

Most of my staff will be here to show you around and the GB3RS station will be on the air under the guidance of the Chief Operator G3WFM. Light refreshments will be provided for those who let us know they are coming so please drop me a note with your callsign. I hope you enjoy the day.

**Philip Smith,**  
General Manager

## Amateur radio to the rescue

WHILST SEVENTY-year-old RSGB member Edmund Fox (callsign withheld to prevent embarrassment) and his wife Thelma were visiting relatives in Bermuda last year, they found an unusual but vital use for amateur radio. The following is abridged from a front page article in the Bermuda *Royal Gazette*.

Mrs Fox, after having lunch in a park, went into a ladies toilet in order to change her dress. The cubicle proved too small for this so she used the disabled persons toilet instead and Mr Fox went in to assist. When the operation was complete, however, they found themselves locked in.

"There was no way that the door could be opened and there were no windows," Mr Fox re-

called. "We hammered and kicked at the door to attract attention but to no avail. My wife began to get distressed being somewhat claustrophobic."

Mr Fox, who (of course) never travels anywhere without his portable rig, put out an emergency call for assistance. Fortunately, a local radio amateur and locksmith responded and Mr Fox was able to describe the lock to him over the air.

He was able to use the Radio Society of Bermuda's repeater to put in a phone-patch call to his son who called the police. When the police arrived, city engineers had already freed the couple using a master key. Future visitors will be pleased to hear that the defective lock has now been renewed.

## Euro Disney on the air

TO CELEBRATE this month's opening of the much heralded Euro Disney fantasy resort, the Disney Radio Clubs are running five special event stations. The four Disney Clubs, N6MM in Anaheim, California; WA4ABQ in Orlando, Florida; JL1YZB in Tokyo and W6RO in Long Beach, California will be joined by FF6KMX, operated by the Radio Club de St Maur in Paris. Stations will use SSB on 14.250, 21.235 and 28.450MHz from 0000 on 4 April to 2400 on the 5th.



Beloved Disney characters Mickey Mouse and Donald Duck get ready for the Disney Amateur Radio Event commemorating the opening of the Euro Disney Resort near Paris this month.

## Marconi Commemorated

THE MARCONI Amateur Wireless Society of Sydney, Nova Scotia, Canada, ran a special event station with the callsign VA1S during December 1991 to commemorate the 89th anniversary of Marconi's first west to east radio transmission spanning the Atlantic from Glace Bay, Nova Scotia to Poldhu, Cornwall. More than 7,000 contacts were made, many of them with British stations.

International Marconi Day is on 25 April. Details of the special stations active can be found in this month's *SWL News*.



Marconi himself is on the VA1S QSL.

THE ISLE of Wight Wireless Museum at Puckpool Park, Seaview, will be using its permanent special event callsign, GB3WM, on 25 April, commemorating the birthday of Marconi who built the world's first wireless transmitting station at Alum Bay, IOW, in 1897.

There will be a special showing of early Marconi photography and valves, crystal sets with cats-whiskers, and early television receivers. Further details from the museum curator (and RLO) Douglas Byrne, G3KPO, on 0983 67665.

## Reviewers Wanted

THE TECHNICAL & Publications Advisory Committee needs to increase its list of technical reviewers and invites applications from RSGB members.

Please write to Radio Communication, RSGB, Cranborne Road, Potters Bar, Herts EN6 3JE detailing qualifications.

## Raynet goes international again

AFTER LAST year's successful expedition to Romania with the Yorkshire Dales Romanian Relief Team, Raynet has been asked to return to the same area with them. Last time Raynet provided essential communications for the teams of relief workers who were renovating and equipping seven orphanages, a hospital and medical centre in the Mehedinti area.

This year's project is to restore and equip 27 medical centres in the same region during April. Volunteers will fly to Bucharest, then go by train to Turnu Severin where they will disperse among the various projects. Some of the Raynet team will drive across Europe with a communications vehicle.

The experience will be at times exciting, sometimes anxious or emotional, possibly hazardous, but certainly an adventure which will have a lasting effect on the lives of all concerned. For the relief workers it will be an unforgettable experience and for the villagers it will mean a greatly enhanced quality of life.

Any radio amateur who would like to become involved in this kind of effort in the future is asked to contact Don Sunderland, G6FHM, QTHR.

## Solway RC is 20

THE SOLWAY Radio Club which meets in Maryport, West Cumbria, is twenty years old this month. Club station GX4BBX will be very active over the weekend 11/12 April on all bands and most modes. An award is available for working club members during April.

## RSGB Annual Meeting

### Correction

IN OUR HASTE to get the Annual General Meeting minutes published in good time, an extra word crept into the text during re-keying. The word 'no' should be deleted from page 41, col 1, line 55. We apologise to all concerned for this error.

### Open Meeting

THE REPORT on this meeting has been held over until next month owing to lack of space.



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73's — Alan and Jez.

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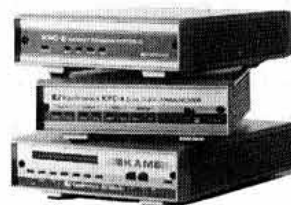


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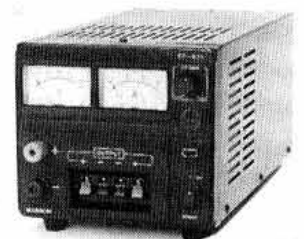
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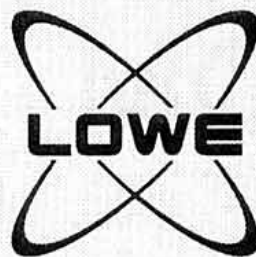
TS-140S	£625	TS-530S	£550
TS-680S	£750	TS-830S	£700
TS-930S	£850	FT-102	£575
FT-901DM	£500	IC2E	£99
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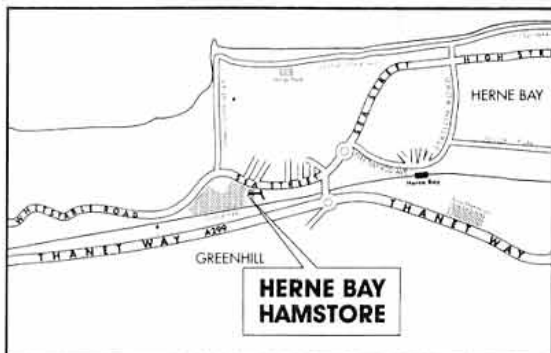
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Watch this space for more news, 73's  
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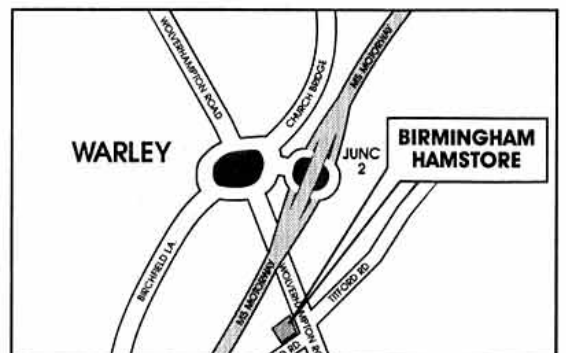


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# HF NEWS

JOHN ALLAWAY G3FKM  
10 Knightlow Road, Birmingham  
B17 8QB

**S**OME GOOD NEWS immediately after WARC 92! With effect from April 1 the 1.830-1.850MHz segment of topband will be released from its previous power limitation, and 26dBW may now be used.

The remainder of the band is still subject to the previous 15dBW and former restrictions. Quick work? Not exactly - this is one of the outcomes of WARC 79 . . . .

I must apologise for the absence of some regular parts of the column this time. This is due to my attendance at WARC-92 in Torremolinos, which meant that I was out of circulation for most of February.

The area around 7MHz was where it seemed that HF users had a hope of gaining something even though the Amateur and Amateur Satellite Services are not on the agenda. As I write this there is a *possibility* that we in ITU Region 1 *may* get an increased allocation as a consequence of realignment following changes to the nearby broadcast bands.

This is really badly needed, as there are over 2,000,000 amateurs now and if the present growth rate continues there will be 4,000,000 of us by the turn of the century! The conference was scheduled to finish on 3 March so by the time you read this all will be known [see page 5 - Ed].

One of my news sources is the DARC newsletter, *DX-NL*. Its editor for some thirty years has been Walter Geyrhalter, DL3RK. Walter has now decided to give up, and I'm sure we would all like to thank him for the work he has done for DXers through the years. Thank you, Walter.

## PACKET CLUSTERS

I CAN'T HELP copying (without comment and with no wish to start a battle) an item written by Ellen White, W1YL4, in her 'How's DX?' column (February, *QST*), quoting Bill Denton, NG6Z: "I'm a casual DX'er with a 245 country count. Some years ago, I

stumbled across a large CW pile-up. Between the high speed CW and the tremendous pile-up, I was unable to read the DX station's callsign with any confidence. Asking for help on the local 2-metre simplex DX-spotting frequency I received this advice; 'Work the DX station correctly, determine the DX station's callsign and successfully complete the proper information exchange'. I accepted that advice then and still try to operate that way most of the time.

Now, with packet, it's a piece of cake to find out the callsign, frequency, and so on. All that's required is to be able to recognise your own callsign when/if transmitted by the DX station and push a button on your computer to make the exchange. Yuck!"

## DXCC GOES TO FULL AUTOMATION

DO YOU expect to endorse your DXCC award in the near future? If so, you may be able to help ARRL by converting their paper records for your awards into computer records.

If your DXCC certificate is dated before 1 June 1990 and you have an IBM PC or compatible computer running DOS version 3.0 or higher write to DXCC Awards, ARRL, 225 Main Street, Newington, Conn, 06111, USA for a copy of the DXCC Record Conversion Programme. In return you will receive, free of charge, the programme on a 3.5 or 5.25in diskette. You then fill in the data from the record that ARRL will supply and return the diskette.

Your DXCC record will then be permanently entered into the computer. When you write please indicate the type(s) of DXCC you will be endorsing (mode, band, etc) as well as saying which size

disk you need. Sounds like an excellent idea.

## CONTESTS

### HELVETIA CONTEST 1992

**1300 25 April - 1300 26 April**  
CW on 1.8MHz and CW and SSB on 3.5 to 28MHz (no WARC bands). Mixed mode only - single operator, multi-operator, and listener sections. Confine operations to the band segments 1.81-1.84, 3.5-3.56, 3.6-3.65, 3.7-3.8, 7-7.03, 7.05-7.1, 14.0-14.06, 14.125-14.3, 21.0-21.125, 21.2-21.350, 28.0-28.15, and 28.3-29.0MHz. Exchange report and serial QSO number from 001. Swiss stations will also send two letters to indicate their canton. Each QSO counts three points and a station may only be worked once per band - either on SSB or CW. The multiplier is one per canton per band. The cantons are AG, AI, AR, BE, BL, BS, FR, GE, GL, GR, JU, LU, NE, NW, OW, SG, SH, SO, SZ, TG, TI, UR, VD, VS, ZG, and ZH. Use separate log sheets for each band and include the usual summary sheet and signed declaration together with your category, name and address. Send logs to reach Walter Schmutz, HB9AGA, Gantrischweg 1, CH-3114 Oberwiltach, Switzerland, by 1 June 1992. In the 1991 contest, G3ESF scored 16,362 points, G3HKO 14,310, G5LP 12,420, and G0HZX 8,118. This contest deserves more support - working all 26 cantons is not easy but can win you a very attractive Helvetia Award if you apply as detailed below.

### THE HOLYLAND DX CONTEST

**1800 18 April - 1800 19 April**  
Objective is to contact as many different Israeli stations as pos-

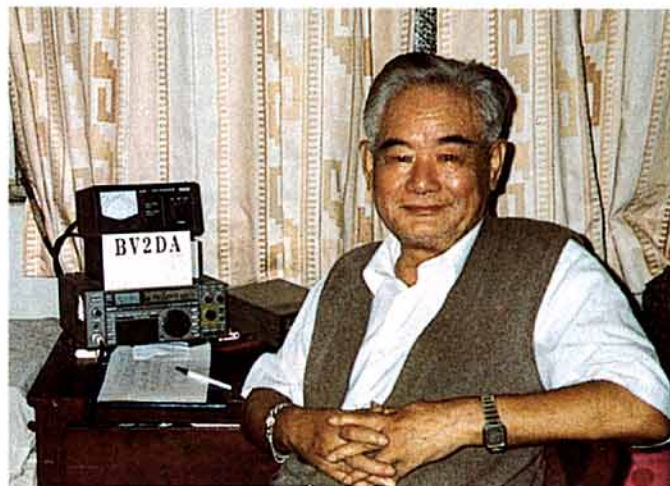
sible on both CW and SSB. 1.8 to 28MHz within IARU Region 1 band plans and following 'contest preferred segments'. Single-operator all-band, multi-operator (single transmitter) all-band, and listener sections. Exchange RS/T and QSO number (from 001). Israeli stations will give RS/T plus their area. Stations may be worked on phone and CW on each band. Two points for QSOs on 1.8, 3.5, and 7MHz and one for those on 14, 21, and 28MHz. Multiplier is the total number of areas worked per band added together. 'Areas' are 10km grid reference squares followed by the region and if you are interested in taking part, I recommend sending me a SASE for a copy of the rules.

### CQ WW WPX CW CONTEST

**0000 30 May to 2400 31 May**  
1.8 to 28MHz - but no WARC bands. Single-operator single or multi-band, and multi-operator all band. There is a QRP section which is single-operator with an output power not exceeding 5W. Single-operator entrants may only operate for a maximum of 36 hours - rest breaks must be clearly marked in the log and each must be of at least one hour. Exchange RST and serial QSO number from 001.

QSOs between stations in different continents count three points on 14, 21, and 28MHz and six on 1.8, 3.5, and 7MHz. Between stations in the same continent they count for one and two respectively. Own country can only be worked for multiplier credit. The final multiplier is the total number of *different prefixes* worked and each counts once only. What constitutes a prefix is difficult to describe and if you are entering I suggest sending an SASE for a copy of the rules. Entries have to be mailed by 10 July to *CQ Magazine*, WPX Contest, 76 N. Broadway, Hicksville, NY 11801, USA. Logs may be submitted on disk and questions about the contest may be made via packet addressed to N8BJQ @ W8BI.OH.USA.NA. or to Steve Bolia, N8BJQ, 4121 Gardenvue Drive, Beaver Creek, OH 45431, USA.

In the 6th IARU HF World Championship (mixed-mode section) G0MFO scored 199,283 points. In the single-operator phone section GM0ECO scored 237,541, GW0AJI 130,518, GW4BLE 12,200, and G3PRI 4693. In the single-operator CW section, G3ESF led British scores with 66,360 points followed by G3SWH-52,948, GW3JI-41,219,



Feng, BV2DA, who has been on 28.010MHz.

G3DFV-38,563, G0IDE-30,258, GM3CFS-28,659, and G3URA-13,797. In the multi-operator single-transmitter category GB4DX led with 627,858 points, followed by GW8GT-268,312, G4DRS-210,425, G00MY-16,830, and G0NKL-12,085. GB5HQ came fifth in the list of society HQ stations with 382,279 points.

**ARI INTERNATIONAL DX CONTEST**

**2000 2 May to 2000 3 May**

1.8 to 28MHz (no WARC). Five classes; single-operator CW, single - operator SSB, single - operator mixed, multi-operator single-transmitter mixed, and listener (mixed).

Italian stations send RS/T plus two letters to identify their province. You send RS/T and serial QSO number from 001. Each of the 95 Italian provinces counts as a multiplier as do DXCC countries (but not I or IS). Multipliers count once only.

The rules say that IBM-compatible software to use in this contest is available for US\$7 or 10 IRCs. It can be used in real-time or after the contest and calculates points, multipliers, and score. It prints logs, summary, dupe sheets and QSL labels.

Free T-shirts will be given to Europeans who work 250 Italian stations. I have photocopies of the rules. Logs have to be mailed within 30 days of the contest and sent to: ARI Contest Manager, I2UIY, PO Box 14, 27043 Broni (PV), Italy.

**AGCW QRP PARTY**

**1300-1900 1 May**

3.510-3.560MHz and 7.010-7.040MHz CW only. I have copies of rules (SASE please).

**ISLANDS ON THE AIR (IOTA)**

The IOTA programme was created by Geoff Watts, a leading British short wave listener (and recipient of the *CQ Magazine* DX Hall of Fame Award) in the mid-1960s. When it was taken over by the RSGB seven years ago it had already become for some a favourite award. Its popularity grows each year and it is highly regarded among amateurs world-wide.

The IOTA programme consists of 17 separate awards which may be claimed by any licensed radio amateur (also available to listeners on a heard basis) who have had contacts with stations located on islands. Many of the islands are DXCC countries in their own right; others are not, but by meet-

ing particular eligibility criteria also count for credit. Part of the fun of IOTA is that it is an evolving programme with new islands being activated for the first time (currently there are over 700 listed with reference numbers).

The basic award is for working stations located on 100 islands. There are higher achievement awards for working 200, 300, 400, 500, and 600 islands. In addition there are seven continental awards (including Antarctica) and three regional awards - Arctic islands, British islands and West Indies - for contacting a specified number of islands in each area. The IOTA Worldwide diploma is available for working a set number of islands in each of the seven continents.

Contacts may be made on the 1.8 to 28MHz bands (including all three WARC bands) on single mode or mixed mode. The rules require that, in order for credit to be given, QSL cards need to be submitted to nominated IOTA checkpoints for checking.

A feature of the IOTA programme is the annual Honour Roll appearing in the RSGB's *DX News Sheet* which encourages continual updating of scores. Starting in 1992, this will appear in the May or June issue of *Radcom*.

If 'island chasing' appeals to you (and it can become compulsive), then write for the 52 page IOTA Directory which gives full information on the awards. Available, price five pounds, US \$10 or 15 IRCs (US \$12 or 18 IRCs outside Europe) from : RSGB IOTA Director, Roger Balister, G3KMA, La Quinta, Mimbbridge, Chobham, Woking, Surrey GU24 8AR. A self-addressed adhesive label would be appreciated.

**PROPAGATION**

A PARTICULARLY interesting summary from G8KG this month which goes as follows :

"From mid-January to mid-February Cycle 22 continued to deliver near-peak conditions on the HF bands. By the end of this period the 27-day average solar flux had been above 200 sfu for more than 200 days and the daily figure reached 303 sfu on 31 January.

"For most of the time geomagnetic activity was generally on the low side and HF conditions were good to very good with MUFs high to very high. The first half of February did, however, see two major magnetic storms, one starting at noon on 2 February and the other in the afternoon of 8 Febru-

<b>QTH CORNER</b>	
<b>AP/WA2WYR</b>	Ken Swanson, KK6TX, 59 Castlewood Dr, Pleasanton, CA 94566, USA.
<b>TL8IM</b>	(see below)
<b>TL8MB</b>	Howard Barbrey, 306 Greenfield Circ, Geneva, IL 60134, USA.
<b>Y11BGD</b>	(Operation by G1WAG only) to G0MMI, 5 Grove Way, Waddesdon, Aylesbury, Bucks, HP18 0LF.
<b>4U1N</b>	J Tullis, W8CZN, 7226 Huntington Dr, Hudson, OH44236, USA.

ary. Both were preceded by periods of abnormally high MUFs and went on to cause major disruption of HF communications but in both cases the bands recovered quite quickly, probably because of the continuing high solar activity.

"Readers with good memories or records will have noted that the highest daily solar flux value of the cycle was observed on 31 January 1991 (*Radcom*, April 1991, p19) and may have wondered whether this apparent annual repeat was significant but, looked at over a longer period of time, there is nothing in the solar data to suggest that it was more than a coincidence.

"The prolonged maximum of Cycle 22 has presented forecasters with some problems. In *Propagation News* in November 1991, I quoted Brussels and Boulder forecasts of a smoothed monthly sunspot number between 120 and 130 for January 1992 - forecasts based on a reasonable expectation of a slow decline during 1991. In fact the smoothed monthly numbers for the most recently available 12-month period which ended in July 1991 have hovered between 140 and 147 with a slight upward trend so that forecasters have had repeatedly to adjust their sights.

"While the smoothed number for January will not be available until later this year it is interesting to note that the provisional *observed* number was 149.3. We are, however, half way through the sixth year and past cycles, which had a prolonged maximum, often also had a sudden and steep decline, so there is a very definite possibility that such a decline will be well under way by the end of the summer."

**DX NEWS**

ACCORDING TO *DX-NL*, ZF8AA appears on Tuesdays and Thursdays from 2200 on 28.585 or 21.368MHz. VP8CGK on **S Georgia** is now able to provide CW contacts on request. VP8CFM, on **S Orkney Is** now has RTTY equipment and has also been worked on 14.165MHz SSB around 1930. VP8CDJ will leave this month.

As this was being written several members of the planned expedition to **Clipperton Is** had withdrawn and the exercise was in danger of being cancelled unless replacements could be found.

W2BJI, who was earlier signing J37XC, was hoping to appear from **St Christopher & Nevis** as V47KJL for most of April.

DH8EAF, DF2JQ, and DL3ECK will be in **Namibia** from 3 April, and have applied for V5 and ZS9 licences.

Another new **Malawi** station is 7Q7XX - operated by JE3LZG. He should be on all bands 1.8 to 28MHz.

FR7ZU is said to be planning a visit to **Tromelin Is** which may end on 10 April. FR5AI/T may be active during May.

According to *RSGB DX News Sheet*, Claudia (F1NYQ/HB9CUY) and Fritz (F6IMS/OE6FOG) were planning to activate **Cocos Keeling Is** from 17 March to 6 April on all bands, including WARC and 50MHz, on CW, SSB and RTTY. Their call-signs will be VK9CL and VK9CK respectively. Preferred frequencies will be 1.891, 3.505, 3.795, 7.005, 7.045, 10.103, 14.005, 14.195, 18.073, 18.145, 21.005, 21.295, 24.895, 24.945, 28.005, 28.495, and 50.110MHz.

The *RSGB DX News Sheet* says that OX3SG is in **Yemen** for three years and trying to obtain operating permission. A letter from G0MMI says that G1WAG has been having some problems in receiving QSLs for his Y11BGD operations because his QTH was not in the *Call Book*. However, QSLs for all contacts have been sent via the bureau. Cliff has the logs for the periods 2.2.90-8.2.90, 1.4.90-12.4.90, and 12.6.90-21.6.90. If you need a card direct please send an SAE and two IRCs, or US\$1.00 to G0MMI (see *QTH Corner*).

WA2WYR is on the air as AP/WA2WYR from **Pakistan** and expects to be there until August.

If you come across the weird call-sign VI150SYD it will be coming from Sydney and celebrates the 150th anniversary of

continued on page 19 ►





**VHF UHF NEWS**

**NORMAN FITCH G3FPK**  
40 Eskdale Gardens, Purley, Surrey  
CR8 1EZ

**A**NYONE WHO complained about poor conditions for the first two months of this year must have a deaf receiver. At times, the 50MHz band has been brilliant, for example a WAC in half an hour, and there were some good tropospheric openings on the higher bands. Some useful auras also helped boost readers' 1992 table totals.

### INTRUDERS

RON RODEN, G4GKO, the IARU Region 1 Monitoring Service Coordinator, sent this packet radio message to all amateurs on 15 Feb: "Threat to 2m: Help! It would appear there is a real threat to the 144MHz amateur band from unauthorized uses..." mentioning the recent allocation by France for such use in the Winter Olympic games, use by hang glider pilots in the UK, hunters in Finland and skiers in the Black Forest area in Germany.

The message concluded: "In order to prepare a formal case for action I would earnestly request that amateurs worldwide spend a little time monitoring the bands reporting directly to me, your national society or monitoring system coordinator." The RSGB's IARUMS coordinator is David Owen, G0OES, who is QTHR.

### METEOR SCATTER

THE NEXT significant meteor stream is the Lyrids which should peak on 22 April. The International Meteor Organization's 1992 calendar gives 32.1° for the solar longitude (LS) at maximum and the Right Ascension and Declination as 271/+34° respectively. Optimum UTC times for reflection efficiencies exceeding 50% are: NE/SW 2300-0400 and 0700-1130; E/W 0230-0600; NW/SE 2100-0100 and 0430-0930 and N/S 2100-0300 and 0530-1100. The radiant is below a mid-UK horizon 1430-1830.

The Eta Aquarids stream's parent body is Comet Halley and its radiant rises/sets at 0200 and 1300UTC respectively. The IMO

calendar suggests the maximum will be on 3 May at LS 43.1°, RA 336°, DEC -2°, with a Zenithal Hourly Rate (ZHR) of 50. Prime times: NE/SW 0330-0830; E/W 0500-1030; NW/SE 0700-1130 and N/S around 0500 and 1100. In past years this stream has produced long bursts which can be confused with Sporadic-E, particularly in the Italian direction in mid-morning.

### THE TABLES

NEXT MONTH the first 1992 Annual Table listings will be published so please send in an entry. With such good conditions in January and February, the keen types have got off to a flying start. The Squares Table, which now includes 70MHz, alternates with the annual one. If no updated figures are received for a year, the entry will be deleted, but you can re-enter any time.

Deadline dates and rules are mentioned in the footnotes. All claims for both tables are for unconfirmed QSOs, ie you do not need to have any QSL cards. Send me an SASE if you want a copy of the rules for either table.

### WAB

TO COMMEMORATE its 25th anniversary in 1994, the Worked All Britain group is hoping to raise at least £12,000 for the RNLI for the purchase of a fully-fitted D-Class inflatable inshore lifeboat. Some details are given in *Newsletter No 72* which included a standing order mandate form for anyone wishing to make a monthly donation. For more details contact Dave Brooks, G4IAR, who is QTHR.

### MOONBOUNCE

JOHN REGNAULT, G4SWX (SFK), reporting on the 144MHz EME scene, wrote "... the Moon has been pasted to an even greater degree from Europe. Each time I switch on... there is somebody new on. CX9BT is on and very loud." In both January and February, he worked ten new initials, mostly on random. In the hour after moonrise on weekday evenings up to 20 stations were audible.

Since 1988 John has completed 453 QSOs out of 573 attempts, a 79% success rate. 170 individual stations, or 'initials' have been contacted, 110 of them truly random. Of 125 attempted schedules, only 66 were completed, a 53% success rate. He has worked two single-Yagi and nine two-Yagi

stations and reckons: "... the 1990s is the decade of everyman's EME." New initials in February were: 8th, IT9OWA/2; 14th, KB5IUA; 15th, UA9XEA and I5JUX; 16th, SM0PYP, IK2DDR and GM4AFF; 17th, W2UHI; 19th, IK1MTZ and 20th, DF8LC. All were CW with a 50/50 sked/random split. VK3AUU was heard from 2126 on the 19th for 30 minutes with a pile-up of about ten stations. 11/12 April is a perigee weekend and at 0000GMT on the Saturday the Moon's declination will be +18.2°.

### MONT BLANC

DANIEL CAUDROY, F6BXC, sent preliminary details of a proposed August DXpedition to the summit of Mont Blanc, Europe's highest mountain (4087m). Using the callsign TV9CEE, this ambitious project - 100 people mentioned - is to be "... a celebration of EEC at its highest level..."

By mid-January operators from Germany, Ireland, Belgium and Holland had agreed to participate and there was still room for more at the base camp in Cordon. VHF, UHF and microwave stations are planned using all modes, including ATV and packet. For an expedition form, write to Daniel at La Croix de Guidon, F-45240 Marcellin en Vilette, France.

### 50MHZ

#### PROPAGATION

The January report from Ray Cracknell, G2AHU (HWR), stated that the periods of high solar activity, 3-11 and 28-31; "... brought both exceptionally good Sporadic-E into Europe and F-layer into the Americas and, during the latter period, into Australia. The modes combined to give exceptional propagation deep into and right across North America.

"On the 4th and 6th... Europeans could be heard - at very great strength - working into America... and later in the openings, as the Es plus F-layer propagation moved westwards to cover Britain, various combinations of the two modes gave access to the whole of the USA. The most remarkable feature of the month was the appearance of winter Es accompanying both periods of high solar activity, lending weight to the theory that it is fuelled during the long nighttime excursion into the zone where charged particles from the solar wind eddy into the upper atmosphere."

On geomagnetic activity, Ray

wrote: "January 1992 was a very quiet month and particularly so during the period 18-26 which was also a period almost devoid of 50MHz DX, although very good on 28MHz. (As we have seen in the past, it seems as though the ionosphere needs to be stirred up somewhat - but not disrupted - for 50MHz conditions to be at their best)." The upturn in solar activity continued into February. Listening intensely amidst the TV QRM from the east at 1010GMT on the 7th, G2AHU believes he heard: "... GE 73 de ZL2..." on 50.104MHz. The signal arose clearly out of the noise and then disappeared completely.

### NEWS

First a reminder that the Trophy Contest is on 5 April, 0900-1700GMT; see page 83 in the March *RadCom* for the rules. From Ted Collins', G4UPS (DVN), *6M Information* comes news that 7Q7RM is now using Alan Hickman, G0IAS, as his QSL manager for all contacts from 1 Jan 1992. Alan also handles 7Q7LA's cards and is QTHR. 7Q7CM's QSLs are dealt with by N2AVR, while KH3RRA does the honours for 7Q7XX.

From the Lebanon, OD5SK made his first 50MHz contact on 31 Jan at 1210GMT on SSB with GI00TC. Next day Samir worked many Europeans including 30 UK stations. His QSL manager is KB5RA. S01A (IL56FI) is QRV from the Saharan Arab Democratic Republic - formerly Spanish Western Sahara - and enjoyed his first European opening on 31 Jan. Naama's QSL manager is EA2JG. Peter Bacon, G3ZSS, is now in Brunei operating as V85PB. His first QSOs were on 15 Feb with Scandinavian stations. His QTH is PO Box 715, Seria, Brunei. The US base club station in Kuwait, 9K2USA, awaits a 50MHz permit and WA8MOA is also waiting for a 9K licence. After a year of rumours, it seems that 5H3RA (KI93) made his first QSOs on 16 Feb. Masa's QSLs are handled by JA3PAU.

### ACTIVITY

Graham Rogers, VK6RO, wrote about the great European opening on 8 Feb which lasted over five hours. At 1154GMT he made the first ever 50MHz FM QSO with England when RS59 reports were exchanged with Neil Carr, G0JHC (LNH). Subsequent FM contacts were with G2ADR, G1NOO, G8BTR, G4XNS, G0FYD, G6DYU and G4ASR.

Darrell Moody, G0HVQ (GLR), reckons 8 Feb was one of the best ever days for 50MHz propa-

gation starting at 0900 with video from the east, KG6UH/DU1 heard at 1045, GWs working VK6 at 1200, a Caribbean opening from 1300, VEs from 1400, then a good aurora shortly afterwards.

On 7 Feb G0JHC worked UL7GCC/P (MH83KB) for his 101st country. Next day Neil contacted 14 VK6s, 1130-1300. On the 11th, VK4s FP and JH reached into IO83 square for the first time. On the 19th, 5B4YX was S9+40dB and ZC4s KS and AB were also loud. There was an average aurora on the 20th and on the 22nd, rare stations were PT7CB and ZD8LI. The best side scatter opening this cycle was on the 23rd when many JAs were copied peaking S5; JAs 4MBM, 3CEQ and 3RQ were worked at QTE 110-120°.

Terry Chaplin, G1UGH (SFK), reported "A tremendous opening to VE; most stations RS59+" on 7 Feb. At 1130 on the 16th he worked VK6PA for a new country. PT7NK (HI06), 4X4IF (KM72), TR8CA (JJ40) and ZS6PJS (KG46) were new countries and/or squares on 20 and 22.

Martyn Jones, G4TIF (WKS), updated his table scores, most of his activity now being on this band. Bill Ingleby, G4TQV (DHM), is a new contributor. He worked six VK6s on 8 Feb using an FT-767GX with 6m module running 10W.

Keith Reid, G7JZF (LEC), is another new contributor and a happy man, having also worked VK6PA on 20 Feb, using 40W. Ela Martyr, G6HKM (ESX), worked VK6PA on 5 Feb, enjoyed the VE opening on the 7th, worked VK6SQ and VK5KK (PF95) on the 8th, followed by auroral QSOs. There was a good US/Canada opening on the afternoon of the 11th, a very good aurora on the 20th with SM7, OZ, EI and DL contacts, plus the usual Gs and near-continentals.

Geoff Brown's, GJ4ICD, results were quite outstanding. Pick of the bunch were VK5BC (QF05) on CW on 8 Feb, and VK6PA on FM at 1140 on the 14th. The 22nd produced some superb DX, such as FR5, UL7, ZS5/6, VK6PA, PY0FF, PT7NK, KP4BZ, 9Y4VU, PJ9EE, HI8A, A22BW, V5 and ZD8. Worth special mention is Geoff's 28 minute Worked All Continents (WAC) on 23 Feb - VK, JA, 5V7, PA0, PY0 and KP4 representing the six continents.

**70MHZ**

DAVID WARR, G4RQI (YSW), has built a transverter based on the PW 'Meon' design, and an 8W PA. Using a fixed 3-ele Yagi

pointing south he has worked 16 stations on SSB, best DX being G3LVP (GLR). He reports activity every evening so hopes to erect a bigger antenna and run more power. He queried the planned beacon frequencies which are: 70.000 GB3BUX (IO93BF); 70.010 GB3REB (JO01GK); 70.020 GB3ANG (IO86MN); 70.025 GB3MCB (IO70OJ); some have yet to move. Other proposals are with the VHF Committee so watch this space.

Shane Hogarth, G7EWL (NHM), is QRV on the band but had only made a few local contacts up till mid-Feb. Rik Royall, G8ESB (YSN), was on in the 23 Feb leg of the Cumulatives contest, the most noteworthy contact being with EI9FK/P. The last session of the Cumulatives was on 15 March so please send in your reports.

**144MHZ**

IT IS VERY unusual for Atlantic high pressure to dominate the British Isles weather pattern for long periods in mid-winter. I discussed this phenomenon with Jim Bacon, G3YLA, who said it is due to the complex interaction of several, global factors, significantly the temperatures of the Atlantic and Pacific oceans.

As anyone who studied the weather maps of the North Atlantic and western Europe sector during January and February would have noticed, the depressions which streamed across the Atlantic did a sharp left turn when they approached Ireland. They then tracked around Scotland causing frequent gales and heavy precipitation in northwest Britain and ended up by producing exceptionally windy weather in Scandinavia.

The high pressure systems were predominantly weak ridges extending northeast from the Azores region, but also with several conventional anticyclones with clockwise flows of moist, mild air over England and Wales. Such conditions are important for creating so-called 'tropo lifts' and there have been several of these so far this year.

Dave Brown, GD4XTT, wrote: "The good conditions towards Spain, that were around for days on end over Christmas, were repeated in early February making the two months the best tropo conditions at this QTH in some time."

Darrell Mawhinney, GI4KSO (DWN), had a similar experience and worked many northern EAs and southern Fs in IN53, 63, 83 and 93 on 6 Feb. Stations in

**Locator Squares Table  
Starting Date: 1-1-1979**

Callsign	50MHz	70MHz	144MHz	430MHz	1.3GHz	Total
G3IMV	364	-	467	125	52	1008
GJ4ICD	506	-	264	121	59	950
GW4LXO	367	-	258	108	48	781
G4IJE	415	-	338	5	2	760
G6HKM	338	-	232	115	54	739
G4RQK	142	-	314	166	55	677
GM0EWS	404	-	211	18	-	633
G4TIF	280	28	204	112	-	624
G6HCV	355	-	241	-	-	596
G4DEZ	141	-	251	62	56	510
G4MUT	167	25	155	94	34	475
G8LHT	169	?	192	93	17	471
G0EVT	187	-	222	60	-	469
G0CUZ	-	-	366	75	-	441
GW6VZW	279	-	143	6	-	428
G0JHC	397	-	48	-	-	445
G4PIQ	-	-	289	108	-	397
G1LSB	73	-	177	144	-	394
G6YIN	163	-	158	72	-	393
G8PYP	228	1	122	35	-	386
G4RRA	-	-	292	80	-	372
G4SSO	-	-	267	99	-	366
GJ6TMM	162	-	151	52	-	365
GU7DHI	269	-	94	1	-	364
G0FYD	162	-	191	6	-	359
G4DHF	-	-	342	-	-	342
G1SMD	206	-	112	-	-	318
G0HVQ	235	-	71	-	-	306
G0GMB	-	-	202	103	-	305
GW8JLY	-	-	269	36	-	305
G0NFH	136	27	92	28	12	295
G6MXL	87	23	104	55	24	293
G0EHV	-	35	175	81	-	291
GW4VEQ	-	-	263	-	-	263
G8XTJ	130	-	121	-	-	251
G1UGH	131	-	117	-	-	248
G3FFK	-	-	246	-	-	246
GW4FRX	-	-	235	-	-	235
G4DOL	-	-	223	-	-	223
G4XBF	-	-	176	-	-	176
GM1XOG	169	-	-	-	-	169
G7CLY	-	-	149	2	-	151
G3FJI	1	24	80	22	3	130
GM1ZVJ	72	-	48	-	-	120
GM0CLN	-	-	116	-	-	116
G7BXB	18	-	66	5	-	89
G6ODT	-	-	33	49	-	82
G7EWL	3	2	54	-	-	59
GM0GDL	-	-	55	-	-	55
GW0PZT	-	-	54	-	-	54
G7JAF	-	-	40	-	-	40
G6AJE	-	-	25	-	7	32
GW7EVG	-	-	28	-	-	28

No satellite, repeater or packet radio QSOs. If no updates received for a year entries will be deleted. Next deadline is 23 April.

Wales, the Midlands, East Anglia and southern England also enjoyed these conditions, helped by the apparent increased activity from Spain; many new calls were reported, several from the rarer squares. Mike Johnson, G6AJE (LEC), commenting on the 5/6 Feb opening, wrote: "All previous EA tropo openings have produced very weak signals here . . . This time signals from the far end were louder than many locals." Lyn Leach, GW8JLY (GNS), lost count of the number of openings to northern Spain since mid-December. On 5 Feb he heard the EA1s working into DL, ON and PA. Next day they . . . were besieged by scores of UK stations from as far away as IO94." Assorted auroras occurred and Arlen Pardoe, G6OHUO (FFE), reported them on 13, 14 and 16 Jan and 2, 3, 9 and 20 Feb. He missed the good one on the 8th which I discovered at 1540 with strong DLs, etc at 45°. When

I worked SM5MIX (JO78) at 1615, I had to beam at 5° and he was using 290°. Further auroras were noted on Feb 24, 26 and 29.

**430MHZ**

DURING THE lift on 15 Jan G4TIF worked OE5XBL (JN68), which was Martyn's first new square since 1989. On 31 Jan G6HKM had QSOs with OZ1GEH and GJ4ICD. Ela was QRV in the contest on 2 Feb to dispense a few points. On 8 Feb GI4KSO (IO64SK) worked DJ9DL (JO31NC) and on the 20th, Darrell caught G3LQR (SFK), G2CIW (GLR) and G1GEY (TWR). GD4XTT had several rig problems but managed to get on for the 2 Feb contest and work 12 G counties. On the 5th Dave worked EA1TA and on the 7th EA1DKV (IN53), EA1NV (IN73) and DK6AS (JO52).

On 30 Jan, GJ4ICD contacted GOMOK (MCH) using a colinear

# QSL

RSGB QSL Bureau,  
PO Box 1773, Potters Bar,  
Herts, EN6 3EP

● First, a correction to the Sub-Manager information in last month's QSL: Mr Hudspeth, GW0ARK deals with all GW2, 3, 4, 5 and G8+2 cards; Mr Green still deals with the GW0, 1, 6, 7 and 8 cards. Apologies to anyone who was as confused as we were.

● Scottish QSL Sub-Managers are as follows: GM0AAA-LZZ - Karen Hunter, GM0JEH, 160 Tresta Rd, Glasgow G23 5DE; GM0MAA-ZZZ - J E Clough, GM0MDD, 84A Main Rd, Fairlie, Largs KA29 0AD; GM+2, GM2 and 3 - J T A Johnstone, GM3LYY, The Dolphins, Montgomerie Drive, Fairlie, Ayrshire KA29 0DZ; all GM Class B, GM4 and GM Novice - G E Bell, GM4LKJ, 21 St Andrews Crescent, Dumfries G82 3ER, who is also the GM QSL Manager.

● My grateful thanks to all those people who wrote in answer to my query about the use of QSL (QSL, Feb 92). Archie Brown, G2WQ, who has been a member of the Society since 1927 tells me that he seems to remember it being introduced just prior to the war. Its original intention was to indicate that "I will reply to your card, but will not send one first" In other words "If you don't QSL, I will not" This interpretation is confirmed by George Benbow, G3HB. Apparently it had limited success and then declined in use but the original intention was good. It would certainly limit the sending of unwanted cards if used nowadays and tends to show that good ideas never date.

● Currently, the VU bureau is experiencing some difficulty, and card delivery is somewhat erratic. For those amateurs who really do need a particular VU QSL then the best advice we can give is to QSL direct. We will keep you informed about the situation.

● The Bureau receives many letters of thanks from members who value the service it provides. They are much appreciated by the Bureau staff who take this opportunity to say "thank you" to those

customers who have taken the trouble to write. The QSL Bureau supervisor will always try to assist with any query about the service, and the Bureau is a mine of information about unusual call-signs or routes for cards.

● Newly licensed members should appreciate that it will very often be a year before they receive an overseas QSL card for a QSO. Longer times than that are not unusual and the Bureau is currently dealing with many cards from 1989. Only recently the

sorters dealt with some cards acknowledging QSOs from the mid 1960's but that is a bit unusual. However, the maxim to adopt is "never give up hope".

● We have had a number of interesting samples of QSL cards sent in and we thank you for them. Don't worry if you do not see your particular entry in the latest RadCom. The 'lead' times for the magazine mean that it may take months before a spot can be found for a particular item.

John Hall, G3KVA

## GB2CAN/AM



First U.K. Licensed Aeronautical Mobile Operation;  
Commemorating the 40th Anniversary of the Canberra.

On 9 May 1989, Flt Lt Rod Angel, G4ZUP, operated from a Canberra whilst in flight (see RadCom, June 1989).

antenna on 433MHz. Beacons GB3MLY and GB3ANG were S9+ all day but Geoff found no activity. From 2000 the band was well open to Y, DL and OZ. It was still wide open next morning with beacons SK6UHF at S7 and ON4UHF at S9+. At 1200 he had a long QSO with SM6ESG (JO67) and many SMs and OZs were S9+. He wrote that "... over 350 stations were worked on 432MHz, so the band is not dead."

### THE MICROWAVES

ON 1.3GHZ G6AJE uses an LMW transverter and 27-ele quad loop antenna. Mike was building a GaAsFET preamp and 30W PA but with only 400mW managed to work DK1VC and DG6EAE (JO31) on 31 Jan. Later he borrowed a 15W PA and worked 16 stations in the evening, all PAs and DLs in the limited geographic area JO21, 22, 30 and 31. An unusual one was DL/JA3AEC.

G6HKM did well on 1.3GHz on 31 Jan working 23 stations, mostly DLs, but also a couple of PAs, OZ1GEH (JO65) and G6YXT (DVN). There was still some activity on 1 Feb when Ela worked DK5WO (JO30) and PE1MII (JO21) who was running only 100mW to a double-quad antenna. G8ESB's most interesting contact on 1.3GHz was with Al-

ice, 2E1AIZ (YSW), the daughter of Roger Blackwell, G4PMK. On 1.3GHz, using 20W and a 15-over-15 Yagi array, Cyril James, G3VVB (CNL), also worked DL, ON and PA stations in JO11, 21, 30 and 31 on 31 Jan/1 Feb, best DX being DL4EBB at 849km. On 2.3GHz he worked ON7YK (JO21) and DC9YC, DG8EAJ, DG6EAE and DK1VC all in JO31; for most it was their first QSO with IO70 square.

### DEADLINES

QUITE AN eventful month so please send in your reports by letter, by E-mail to 76:MSX021 or telex to 9312111074(CN). The deadline for **June** is **Thursday 23 April** and for **July**, **Thursday 28 May**.



Logo of the proposed Mont Blanc expedition (see page 17).

## HF NEWS

continued from page 16

the city's elevation to city status. DX-NL says that VR6BX on Pitcairn Is uses 24.960MHz at 1500 on Sundays.

### AWARDS

#### HOLYLAND AWARD

This seems to be an appropriate time to remind you of this new award which began on 1 January this year. - the rules are rather complicated but contacts in the Holyland Contest will of course count towards it. Israel is divided into twenty-three administrative regions and 10km grid reference squares.

An 'area' consists of the grid reference plus the region and you need one hundred areas for the basic award. Maps (printed by the Israel Survey Dept) together with a booklet about areas are available on request from:

IARC, P.O.Box 4099, 61040 Tel Aviv, Israel.

#### OK SSB

Confirmed QSOs with different Czechoslovak stations to a total

of 25 points. One is scored for a QSO on 14, 21, or 28MHz, and two for those on 1.8, 3.5, and 7MHz.

The fee for the above award is ten IRCs. Listeners with confirmed reports may apply as well as licensed amateurs. Send QSLs, or a list certified by a national society Awards Manager (the RSGB HF Awards Manager is Bill Ricalton, G4ADD) to:

Czechoslovak Radio Club, Awards Manager, PO Box 69, 113 27 Praha 1, Czechoslovakia.

A good opportunity to qualify for this award comes during the annual OK DX Contest held later in the year. If you make all the necessary contacts during this there will be no need for QSLs provided that the application is sent in together with the log for the contest.

### THANKS

FOR ITEMS copied from DX'press (PA3DZN), DX-NL (DL1HBT), the Ex-G Radio Club Bulletin (WA8GTA), the Long Island DX Bulletin (W2IYX), the RSGB DX News Sheet (G4DYO), and the Lynx DX Group Bulletin (EA2L).

Please send everything for the **June** issue to reach me no later than **16 April**.

# Don't Miss Out – Be a Regular D-i-Y'er!

The latest edition of **D-i-Y Radio**, the RSGB's 16-page full-colour magazine for beginners of all ages, has just been published!

Each issue features a simple construction project, a kit review, ham facts, news features, a pull-out double page poster, readers' letters, a prize competition and special offers.

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\* D-i-Y Radio is published six times a year.

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UK and BFPOs: ..... **£7.65**  
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Send cheques or postal orders, made payable to RSGB, to:



**D-i-Y Radio, (Dept RC4),  
RSGB, Lambda House, Cranborne  
Road, Potters Bar, Herts EN6 3JE**

## Novice NEWS

MRS ESDE TYLER, G0AEC  
43 Nest Est, Mytholmroyd, Hebden  
Bridge, W Yorks, HX7 5BH

**A**LL NOVICES AND students should have a copy of the booklet entitled *A Closer Look at the Novice Licence*. I suggest that you get a copy - and read it carefully.

It is not a replacement for the *Terms, Provisions and Limitations Booklet* which details the conditions of the Novice Licence. Rather it is a summary of the main conditions set out in an easy-to-understand manner. In the margin before each paragraph the relevant licence sub-clause is printed to help you. Study the actual sub-clause after reading about it.

May I draw your attention to paragraph 14: "You may transmit on bands not covered by your licence under the supervision of an amateur who is permitted to transmit on that band." If you are fortunate enough to be able to do this, you *must* use *his/her* callsign, *not yours*, and you *must* sign his logbook. This does not mean that you cannot say you are a Novice. You can, and you can give your callsign during the contact, but you must not for instance call CQ as 'yourself'.

If you need the booklet, write (enclosing an A5 self addressed stamped envelope, please) to RSGB Project YEAR Coordinator, Hilary Clayton-Smith, G4JKS, 115 Marshalswick Lane, St Albans, Herts, AL1 4UU.

This may account for the apparent shortage of Novices on the bands, with full amateur callsigns being used by Novices under supervision sticking to the rules. Listen carefully, they may be there after all!

### A REMINDER

REGISTRATION DATES for the NRAE exam are six weeks before the exam itself, although it is advisable to allow longer if possible. For instance, 1 July is the registration date for the September exam. This means that Novices are probably being entered for the exam before the training course is finished. This is permis-

sible, but in future columns, a timely reminder will be given so that a chance is not missed, as it is possible to make a late entry application but there is an additional fee of £15.

### RSGB NEWS

MANY NOVICES have 6m equipment, but perhaps do not know that the RSGB's GB2RS amateur radio news service is now available on that band. A letter from Roger, G3MEH, prompts me to spread the word.

He and his colleagues (G6NB and G8BQH) read the news at midday each Sunday for the Aylesbury Vale area, using 50 watts with a vertical aerial, and reckon that he should be heard within a 50-mile radius of Tring, Herts. The news is read simultaneously on 145.525 and 51.530MHz (one channel up from the FM calling frequency in both cases) and after the news reading is finished, reports from Novices would be very welcome. The only way that news readers know who they are reaching is for the listeners to tell them.

One of the difficulties, of course, is that you may not hear others calling in. If the news reader does not acknowledge you straight away, do not think that he does not want to talk to you. Another caller may have swamped your signal. Try again the next time reports are invited.

This broadcast of the news service on both frequencies at the same time is being extended. If it is not in your area as yet, be patient - but be ready when it is.

### KIDLINK 92

ON MONDAY and Tuesday, 18 and 19 May, there will be a worldwide link-up between children aged between ten and fifteen using all available means of information technology - fax machines, video phones, compressed video to name a few - plus of course amateur radio. This event took place last year, I think for the first time, and although very successful from all other points of view, amateur radio did not fare so well. Without advance notice we just did not know about it. No such excuse this year.

If any amateurs - or any club - could consider setting up a station in a school, using a special callsign, then you too could be part of the event this year.

The aim is to link children around the world and forge friendships that hopefully will stretch into later life (isn't that the joy of

this hobby) making the world a more caring place for the coming generations.

Anyone knowing of a school with the other facilities mentioned - perhaps through their children - are invited to approach it and suggest that from all educational points of view, this could be very exciting for youngsters.

Mike Burleigh, who sends this information, can be contacted at: Oldfield House School, Oldfield Road, Hampton, Middlesex TW12 2HP, for further details.

I shall be preparing a fact sheet, should anyone require more knowledge and be unable to wait until next month. My address is above, an SAE would be welcome, but should you forget this, I will send the sheet anyway.

More information will appear next month, but this advance notice gives time to plan ahead.

**NEW NOVICES**

I MET ADELE on the way to Lancaster, and she told me that she was waiting to hear if she had passed the December Novice exam. Of course she had, I said confidently, and she promised to let me know.

She did and she has - along with eleven others from that course. Twelve passes out of fourteen students shows almost 86% success. Undeterred, the other two are going to try again. Congratulations to the happy

dozen; commiserations to the disappointed, better luck next time. Good luck too, to the new student, inspired by Adele's success.

Congratulations also to Bill, G0BQC, who led the group through the course. Sounds as if he has Tuesday evenings planned for the next few months.

The chances of working a Novice grow better and better.

**RAYNET NEEDS YOU**

AS WELL AS a letter from Paul, G6FMP, who is Raynet Controller hereabouts, pointing out that membership of Raynet is open to anyone over the age of fourteen, I have had a letter from a Novice who did join.

Janice, 2E1AHM, was a member of the Novice course run by Jennifer, G8WWO, and myself, and as promised she has been in touch.

She has recently joined Raynet, and is enjoying it. She points out that Raynet uses a frequency on 70cm, so that is another branch of the hobby for you to consider.

Raynet fulfils an important role, supporting the Emergency Services if necessary and, in many cases, is used to provide communication cover for events like boundary walks, marathons and carnivals. Their exercises, in preparation for all emergencies

and (Heaven forbid) disasters, are interesting and varied and are only as time-consuming as you can manage. If you have the time and are looking for another interest within the hobby, local amateurs will point you in the direction of your local group.

**EFFORT BRINGS ITS OWN REWARD**

A LETTER from G0IEL in Durham, (whose name begins with 'R', but he forgot to add the rest unfortunately), tells us of the achievements of his Morse pupil, John.

John passed the 12WPM Morse test *before* taking the Novice exam and gained the callsign 2E0AAJ. He has since taken the RAE, and by the time you read this is, no doubt, a fully-fledged class A licencee.

John is also reading plain language at 23WPM in English, Spanish and German - including 18 barred letters used in other languages. At the time of writing he was taking Morse on a typewriter at 16WPM, aiming for 25 very soon.

He intends to build his future career on his achievements and is to be congratulated for his dedication and effort - he deserves to go far and I wish him every success.

During the time he was working for all this, putting in one and a half hours each evening for five nights a week, he was also studying for his 'O' levels. Did I not say? John is fifteen years old!

I quote: "To sum up - a full 'A' licence and 23WPM Morse in less than a year. Not bad for a novice". I reckon that is the understatement of the year, very well done.

**RESIDENTIAL COURSE**

DO YOU know anyone who would like a break with a difference? A residential amateur radio course is being run from Monday to Friday, 13 to 17 April in Bridgewater, Somerset.

The course is in two parts. In the first part, lasting three days, there will be a general introduction to amateur radio, talks, demonstrations, Morse code, construction of a receiver kit and an attempt to contact the other side of the world. This would be suitable, perhaps, for those with an interest but no previous knowledge of amateur radio.

The second part, also three days, starting on the Wednesday before students from the first part

leave, is suggested for anyone who has basic scientific knowledge or some familiarity with the principles of radio communication. It is a continuation course with theory to be examined in more depth.

Anyone of *any* age interested and wanting more information should contact: The Director, Kilve Court Residential Centre, Kilve, Nr Bridgewater, Somerset; tel 0278 74 270.

**SCROOGE'S CORNER**

NOW TO USE those old digital watches I told you to find last month. You will also need that 'dead' battery that has served you well lighting the gas fire or cooker, but is well past its use-by date - the large R20 1.5V 'D' cell.

Take the watch apart, discarding the case and strap (unless you can find a use for those too!). Undo the two small screws holding the PCB. Solder a wire to each terminal on the PCB - positive and negative - (These *should* be marked, but are not always, we found) and solder the other end of the wires to the 'D' cell. The watch should start.

Now to set it. Use a jump lead from the battery +ve to the two side contacts to set time and date. Fasten the watch to the battery using bluetack and you have a clock for free, to keep set permanently at GMT. An asset to any shack, and it will last for years. My thanks to Steve, G4RAW.

Remember that TV set that you dismembered? Just an idea or two on using the bits, having discarded the electrolytic capacitors as they will be old and probably not much use.

There will be plenty of useful value smaller fixed capacitors and resistors that will be of use. Have containers at the ready to sort them out as you go along. Far better that way than to have a heap on the table just as a meal is ready!

In the IF section you may also find some slug tuned coils, possibly with associated screening cans. These can be rewound and used perhaps as double-tuned bandpass input circuits in receivers.

We'll deal with the goodies from that old 'tranny' another time. Meantime, think of the practice *recognising* the components you have salvaged, and maybe identifying their purpose. In their nice neat (labelled) containers they are ready for use and waiting to be joined by others in your ever-growing hoard of free spare parts.



Professor Brian Gilbody, G4WVN, of the Physics Department, Queen's University, Belfast, with Rachel Kirker (10) of the 68th Belfast Brownie Pack, operating GB4SFD in the Ulster Museum last year.



# SWL NEWS

BOB TREACHER BRS 32525  
93 Eilbank Road, Eltham, London  
SE9 1QJ

**P**ERHAPS IF I make my plea for photographs at the beginning of the column, somebody might take some notice! Seriously, the Editor has made it clear that he would like a photograph, diagram, chart, table in the column but in recent months, I have been unable to oblige. Either send me one of the display items mentioned, or you will have to suffer a never ending stream of photographs of my new shack! You have been warned.

Unfortunately, I have been advised of another listener who has passed away. Clifford Tooke, who for a very long time acted as the Awards Manager for the International Short Wave League, died after a massive heart attack at the end of January. He will be sadly missed by members of the ISWL and RSGB.

## MORE CONTEST IDEAS

SEVERAL ESTABLISHED contesters complimented the contest preparation article which appeared in February. Deryck, G3VLX, commented that he prepares his check logs by dividing each one into 26 sections. One for each letter of the alphabet, and then logging each callsign complete but under the suffixes. Using this format, G3VLX would fall on the 'V' column, while 9H3AM would go in the 'A' column.

Either way would be acceptable, but I favour the method I suggested. The alternative method suggested by G3VLX would certainly prove advantageous when taking part in an inter-G contest, where there is definitely something to be said for having all the G3V's together. For DX contests, I prefer dividing the check log in the way suggested. Any more suggestions?

By the way, G3VLX's was one of the several comments about the question of personal comfort during contests. It seems that if you want to win contests, a potty is one of the things which you have to plan on buying as part of your contest preparations!

## ACTIVITIES

### INTERNATIONAL MARCONI DAY

I normally mention the Marconi Day activities. This year, there will be 18 special stations active. As well as the usual ones, (GB2IMD, GB4IMD, GB0IMD, GB4MDI, GB0MDI, EI2IMD, DA0IMD, IY0TCA, IY4TTM, IY4FGM, VO1IMD, VE1IMD and K1VV/IMD), there will be four new stations to log - GB4MID (or GB4GM) from Poldhu in Cornwall, IY0GA from Golfo Arancchi, Sardinia, W6TLK from the Marconi site in Marshall, California and CT1TGM from Coimbra, Portugal.

As usual there is an award available for any SWL logging ten of these special event stations. Applications for the Award should be made via PO Box 100, Truro, Cornwall TR1 1RX. The cost this year has been increased to £2 or 8 IRCs for SWLs (£3 or 12 IRCs for licensed amateurs).

### BARTG SPRING UHF/VHF RTTY CONTEST

Sunday, 12 April sees this contest taking place between 1000 and 1500 GMT on 144, 432 and 1296MHz. The BARTG (British Amateur Radio Teledata Group) is trying to attract SWLs to take an interest in propagation by the RTTY mode, and has requested that I include the details. I am always willing if it encourages listeners to improve their knowledge of some of the lesser known modes of amateur transmission. Anyone seeking more information is invited to write to Mr J Barber, G4SKA, at 32 Wellbrook Street, Tiverton, Devon EX16 5JW.

## CIS NEWS

A NEW ENGLISH language publication, *Soviet Ham Press* has recently begun publication, covering all aspects of Soviet amateur radio. Topics will include amateur life in the CIS, DXpeditions, club details, awards, contests and equipment. It is edited by well known DXer RB5IJ and is published by the Prometheus Amateur Association. For further information contact NA3O (because the postal service in the CIS is currently poor). His address is 13 Glen Meadow Drive, Glen Mills, PA 19342, USA. I am advised that a full subscription will cost US\$12. Still with the CIS, I have details of an award which is available to SWLs for hearing 4J5FV and UF7VWA, or either station on a different band. Sim-

ply send your log details to NA3O with the fee of US\$5. Another award (from quite a big Prometheus award program) which looks interesting is the Prometheus Plaque. To obtain this, again from NA3O, SWLs have to log five Prometheus Amateur Association members and find US\$10. However, it might be worthwhile keeping this list of PAA members handy to see how you fare. The members are DJ9ZB, DK9KD, IN3BGM, K8DHK, KA0O, KO1M, NA3O, NK7Y, RB5FH, RB5IJ, RB5IUL, RD6DM, UB3IWA, UB4IWL, UB4IYU, UB5III, UB5IRZ, UB5KY, UG6GCC, UG6GE, UG7GWH, U8LB, W6HJK and XE1X. Good luck and let me know how you get on. There are no band or mode limitations.

## VHF NEWS

A COUPLE OF years ago, I published details of Sporadic-E openings over a ten year period prepared by Mick Toms BRS31976. This was of assistance to many amateurs in guessing when Es events might occur.

Brian Underdown, BRS93818, has provided details of the peak of all the major meteor showers for 1992, in the hope that it will be of assistance to those of us who chase DX via MS.

The dates and times are:

- April Lyrids 22.04.92 at 2230
- Eta Aquarids 05.05.92 at 1430
- Piscids 05.07.92 at 1430
- Nu Piscids 12.05.92 at 1430
- Arietids 08.06.92 at 1530
- Zeta Perseids 08.06.92 at 1630
- June Perseids 26.06.92 at 1530
- Nu Geminids 12.07.92 at 1530
- The Perseids 12.08.92 at 2330
- Tuarids 01.11.92 at 2330
- Geminids 13.12.92 at 2330

Of course, the details that will interest most people is the Perseids peak at 2330 on 12 Aug. Sounds like good sense to book the 12th and 13th as leave!

Brian reported that he took the Dec 1991 RAE and was successful. He hoped to be on 144MHz by the time you read this. So, if you hear Brian from his QTH in East Malling, Kent, and you too are licensed, why not give him a call. With his location and take-off to the East, and the fact that he has done so well as an SWL on VHF, he will obviously have some worthwhile DX news to pass on.

Tropo conditions on VHF/UHF had been quite phenomenal in the lead up to writing this piece. Unfortunately, most of the good DX appears to have occurred while most of us were at the office. However, 15, 16, 30 and 31

Jan may possibly have produced the best DX which, according to my information, seems to have been a 'Y' station on 432MHz from JO60 - a square that a few of the keener DX chasers would have liked on 144MHz!

On 50MHz, the best of the DX seems to have eluded even the most dedicated ears. Openings on 7 and 8 Feb to VK, W, VE and the Caribbean were missed, but the 11 Jan openings across the pond netted several new squares. However, the countries scores of BRS25429, BRS321976 and myself all are rather static.

It was good to hear again from Michel Monteil (who is now F-10437). His forays on 50MHz were rather infrequent during 1991, but these resulted in ten new country confirmations, including 9L1US, ZS6LW, CU2/G3KOX and 9H5ET. Michel also received an 80/18 sticker for his 144MHz Squares Award. He commented on the status of 7X5ST/3V8. It seems that the station had no official permission, a fact confirmed by the manager, F1NKC. Michel, who is also G6WDK, had applied for a /3V8 callsign in 1985, 1986 and 1990 - but to no avail. It seems that amateur radio in Tunisia has been forbidden for at least 20 years.

## HF NEWS

CONDITIONS ON the HF bands appear to have been rather mixed during the period in question, with the 'A' Index in the 40s on some days in early February. Judging from my reporters lists, little real DX was heard. The best band was possibly 28MHz, which offered, BZ9AAA/5, VE3CRU/C6A, JD1BFI, AA4NC/KP1, TZ6BGE, 8Q7XX and 9M8ZZ. Although the period in question had seen shorter daylight hours and should therefore have been good for LF DX, little of interest was mentioned. As usual, there are always exceptions and 7MHz came good with P29DX and V63OM, while 3.5MHz managed HF0POL and 4S7AVR. On 1.8MHz TI2IDX was the best DX mentioned.

Robert Small, BRS8841, noted a brief visit to his QTH by Martin, G3ZAY, and Don, G3XTT, who, along with his father Ray, G3ALI, had an interesting discussion largely about IOTA. It was also pleasing to hear from Dave, G6LAU, for the first time. For those who use the RSGB voicebank (0426 925240) for their DX tips, Dave provides some of the detail, particularly of DX using RTTY.

The deadline for the June issue is **Wednesday, 8 April**.

# HF F-LAYER PROPAGATION PREDICTIONS FOR APRIL 1992

The time is represented vertically at two-hour intervals 00(00)GMT for each band, ie 00=0000, 02=0200, 04=0400 etc. The probability of signals being heard is given on a 0 (indicated by a dot) to a 9 scale; the higher the number the greater the probability with 1 meaning 10 to 19 per cent of days, and so on. Additionally 50MHz F-layer and 1.8MHz openings are indicated by a plus (+) sign in the 28 and 3.5MHz columns.

Time / GMT	28MHz	24MHz	21MHz	18MHz	14MHz	10MHz	7MHz	3.5MHz
	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802
** EUROPE								
MOSCOW	123332..	1345554..	36777873.	1677788862	435766667897	876433334689	863111.12478	53.....4+
MALTA	233333..	14565551.	377888841	211688888973	755876667898	998643445799	986311112578	++4.....25+
GIBRALTAR	111111..	12333331.	45666731.	267878862	43267777897	987754445799	998532112478	++52.....24+
ICELAND	.....	.....1..	.....122333.	.....1445564.	2..156667885	754554445678	887532222357	5+52.....24
** ASIA								
OSAKA	122.....	13441.....	25443211.	253334331	31.13674.	.....1462	.....13.	.....
HONGKONG	1345542..	2556664..	25555773.	1..133346862	2.....14786	1.....1475	.....252	.....2.
BANGKOK	3456653..	35667751.	1235557841	1..113236873	4.....14787	3.....1477	1.....255	.....22
SINGAPORE	3566663..	45667761.	1245557841	2..23236874	4.....14788	3.....1478	.....255	.....22
NEW DELHI	3566641..	45677621.	2335557841	212113236774	63.....14788	62.....1478	4.....257	.....24
TEHERAN	46677641.	166677862.	1.3544568853	425321336886	864.....14799	852.....1578	73.....257	4.....24
COLOMBO	45777641.	145777872.	1.2235568863	421.12336886	73.....14799	71.....1578	4.....257	.....24
BAHRAIN	56777751.	1666778731	314533558874	545211236887	974.....4799	861.....1588	73.....257	4.....24
CYPRUS	46777761.	1688888841	213877888974	646766778997	987533446899	98521.113689	862.....1368	+3.....35
ADEN	577888631	211666778854	534533458987	866211236899	985.....3799	972.....1488	74.....257	4.....24
** OCEANIA								
SUVA/S	.....1..	.....11221..	.....2333441.	.....23323563.	..1531.1363.	..41...4..	..1...1..	.....
SUVA/L	42.231...75	5414521..286	444773211484	225863212762	..373...264.	..4...41.	..1...1..	.....
WELLINGTON/S	.....111..	.....123311..	.....24444432.	..1453235641	..2631.14651	..13...143.	..1...1..	.....
WELLINGTON/L	32.11...24	54232...46	564641...76	456751...275	12573...562	..241...43.	..1...1..	.....
SYDNEY/S	234541..	4566531..	166555642.	..1653246652	..43...14774	..1...1462	.....23.	.....
SYDNEY/L	2...12	11.41...34	3222631...67	323563111187	1.1541..2474	..21...351	.....12.	.....
PERTH	46773....	1577742...1	1.247555431.	312253335541	51..2...14784	3.....1576	.....254	.....2.
HONOLULU	.....	.....221.	.....211442.	.....2311551.	..2331..34..	..341...1..	..11.....	.....
** AFRICA								
SEYCHELLES	566776532	211666777754	534433557887	865111236899	984.....3799	961.....1488	73.....257	4.....24
MAURITIUS	1..578888742	311667778865	644434558998	975212236899	984.....3799	961.....1479	83.....257	5.....24
NAIROBI	2..577888854	421666678976	854633358999	986411136899	9961...3799	984.....1479	861.....257	54.....24
HARARE	31.577888865	631666788987	874743357999	997611136899	9983...3799	996.....478	873.....157	54.....24
CAPETOWN	2..478889976	4..687778988	72.864557999	95.842236899	99361...3799	8973...478	7751...157	442...24
LAGOS	42.377889975	752586668998	985763337999	997841115899	99861...2799	8974...478	6751...157	452...24
ASCENSION Is	32..77677754	652287667886	985575335899	997762113899	99973...689	89741...378	7751...57	442...24
DAKAR	32..167888874	542287667986	885575334899	997763112799	99973...589	89741...268	7751...47	442...4
LAS PALMAS	...46777741	11.168888873	432488888996	76478777898	998665545799	998642212489	88731...258	++4.....25
** S. AMERICA								
Sth SHETLAND	.....1888974	1....2778986	51...4557998	731.13235889	98633...2678	89741...346	6851...14	352.....
FALKLAND Is	21...3888873	4311.5778886	775425557798	997733235689	99973...2368	89741...37	7752...14	452.....
R DE JANEIRO	11...7866873	431117766885	774445534698	997753211489	99973...169	89741...48	8752...16	542.....4
BUENOS AIRES	11...5887863	33111677785	664435554588	987643232379	99974...58	99741...27	8752...4	552.....
LIMA	...1.666652	11..32776664	432253553357	764463331137	998641...16	79741...3	5752...1	252.....
BOGOTA	.....1555652	1...13665564	4211345433356	654353311137	998641...6	89741...3	5752.....	252.....
** N. AMERICA								
BARBADOS	.....5666652	1...26666674	432146533377	764454311158	998641...27	89741...5	7752...2	452.....
JAMAICA	.....444541	.....2555553	31..23543346	642233321127	887541...5	79741...2	4752.....	.52.....
BERMUDA	.....2444541	.....3555663	31..14543466	642233321257	887541...26	89741...4	5752...1	252.....
NEW YORK	.....223331	.....1344552	2...2443465	531113232247	875431...16	68741...3	4752...42	.....
MEXICO	.....123331	.....244442	2...1.343333	431121232113	675431...1	37741...3	1552...22	.....
MONTREAL	.....12233.	.....233452	2...2343465	421.12222247	775331...26	68741...3	3652...42	.....
DENVER	.....1.	.....1121	1.....12233	31.....23123	55431...1.1	26741.....	352.....	.....2.
LOS ANGELES	.....11.	.....2221	1.....14332	21.....24212	34322...2..	4741.....	252.....	.....2.
VANCOUVER	.....	.....	.....1111	11.....2112	23322...2..	3641.....	141.....	.....
FAIRBANKS	.....	.....	.....1.111..	1...21112211	122331...2211	1341.....	11.....	.....

The provisional mean sunspot number for February 1992 issued by the Sunspot Data Centre, Brussels was 159.6. The maximum daily sunspot number was 238 on 1 February and the minimum was 88 on 18 February. The predicted smoothed sunspot numbers for April, May and June, are respectively: (classical method) 113, 111, 109; (SIDC adjusted values) 137, 135, 134.

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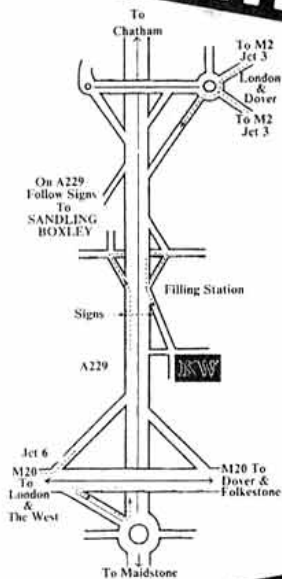
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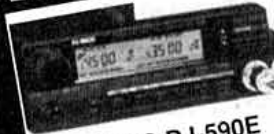
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**Once famous for farces, Brian Rix, G2DQU, is now better known for his work with mentally handicapped people. This year he was made a Life Peer**

# From the boards to the Lords

**L**ORD RIX of Whitehall in Westminster and Hornsea in Yorkshire is, as the advert goes, a very, very nice man and plainly much loved and respected by his colleagues at Mencap. His is an interesting, sometimes sad and ultimately heartwarming story.

As his long title indicates, he hails from Hornsea in Yorkshire - he doesn't approve of 'North Humberside'. Brian's brother Malcolm, 12 years his senior, was G5GX and this kindled a life-long interest in amateur radio.

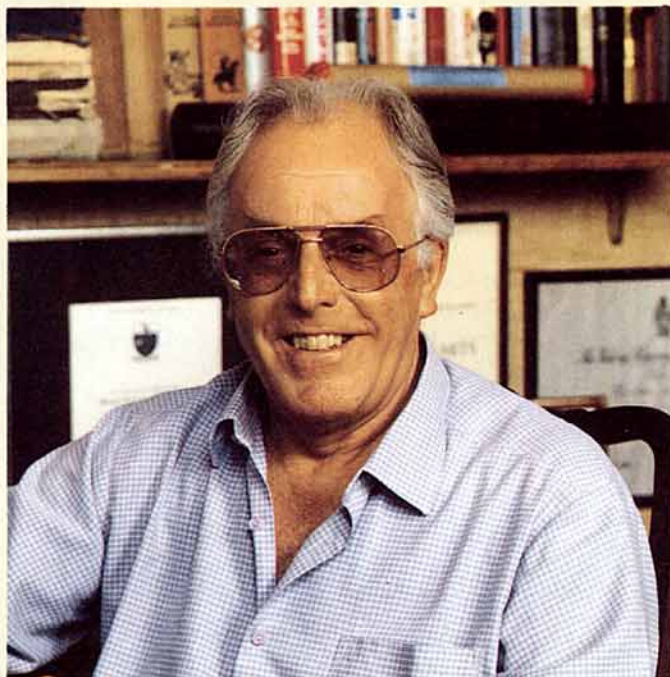
"I was first licensed at 13 - in 1937 - it wasn't a full licence of course; it was an artificial aerial licence." The callsign 2DQU permitted experiments not requiring the use of a radiating aerial.

"I got my full licence after the war when I was still in the Air Force and I got permission to use it from my bunk - my room. My first rig was a ZC 1, some New Zealand so-called portable gear which I converted. It's still in the loft at home. It was called 'portable' but you get a hernia every time you lift it - it's unbelievable how far things have progressed."

Many people will be thankful that Brian did not operate radios during the War: "If you were a wireless operator up in an aircraft you were dead."

Older brother Malcolm Rix's story is as fascinating as Brian's: "Of course I worshipped my brother, being older. The interesting thing is he started amateur radio in Hornsea. He enthused another five people and Hornsea then became quite a strong place after the war, they had quite a good club going and Malcolm was the lynch-pin there."

"Three or four of them all did frightfully well in the war because they were all sent for by the Territorial Army in Beverley three weeks before the war broke out and were sworn to secrecy. They all came back Lance Bombardiers in the TA. When Hitler invaded Poland they went straight into the Royal Artillery and they were made Staff Sergeants almost immediately. They all went



Just prior to his presentation to the House of Lords in February, Brian Rix, G2DQU, had "a working lunch" talking to *RadCom*.

down to Richmond Park where Sir Robert Watson-Watt who invented RADAR taught the courses. They went straight on to become officers within minutes - and that was all through amateur radio. They were the original RADAR officers and they were all radio amateurs. They'd been picked because they were in their twenties and they were asked if they would 'volunteer', all because they had amateur licences. Of course I thought he was very glamorous really. Malcolm is still on the air a lot but he's partially sighted now and of course he finds it a tremendous benefit to him."

Many RSGB members will know Brian Rix best for his hugely successful acting career, specialising in farces at the Whitehall Theatre. Use of the microphone from an early age helped when later he worked in television.

The callsign G2DQU was heard on the air until quite recently, though the FT75 and 2m rig now gather dust. "To me it was so boring saying the same thing - about what your rig was - and all the rest of it. You might just as

well go and clean your teeth. But in the 70s, before I retired, it kept me in touch with people whilst I was on tour; I had some very good local contacts. There were even quite a few with America whilst I was driving to Wolverhampton or Birmingham or wherever. In those days everybody knew who I was. They recognized my voice because it is very distinctive. I made a good friend in Eastbourne, whilst I was playing a Summer season in Eastbourne and when I drove home to Barnes every night he kept me going. I was chattering to him every night for twelve weeks."

## RSGB Vice-President

ALTHOUGH NOT a radio club member, "My lifestyle has been very odd. Don't forget I went to the theatre every night for 40-odd years", Brian has been a lifelong supporter of the RSGB. In 1960 he opened the RSGB Exhibition at the Royal Horticultural Hall in London, and in 1979 he was invited to front a television programme about amateur radio.

This was part of a series called *Open Door* which allowed special interest groups to make their own programme with the help of a BBC TV crew. He also explained the hobby on Joan Bakewell's TV show. Then there was his regular TV series *Let's Go* "I presented all 40 programmes, teaching mentally handicapped people social skills like going to a football match, paying the bill in a cafe or going to a Post Office. And hobbies was one of them. So I've done three programmes on the telly about the hobby - and that's why they made me a Vice-President." Actually, the accolade reads "in recognition of the assistance given in the publicity sphere for amateur radio".

As an actor and radio amateur, how does he view Tony Hancock's famous *Radio Ham* comedy? "Well, it's just nonsense to resent Hancock. I always thought it was rather pompous of people to say it conveyed the wrong image. I don't think the image of amateur radio is all that bad. It seems a good clean hobby and keeps you off the streets. It encourages a lot of young people. I think it's great that they can cut their teeth on it and then probably go into engineering or telecommunications, or whatever, as a career."

"I think it's a fantastic hobby to actually interest a kid. I know that from my own personal experience. You had a bread board and a soldering iron and made up a one-valve this and a two-valve that. It was fantastic. And your Christmas present - just imagine the joy - your parents sent off to Premier Radio, and it would be stuff that you could put together. That was fantastic and I can see why young people go for the Novice Licence. So I don't think people look on it as a joke. I think that the joke area comes when people are infinitely boring about it."

"I still read *RadCom* to try and keep myself vaguely up to date though it gets more and more technical. I'm inclined to read the gossip and the editorial and the adverts. I love the adverts, I still

drool over them. If ever I become bed-ridden, God willing I don't, I think I should take up radio again in a serious way."

## Enter Shelley

ON 3 DECEMBER 1951, an event happened which was to change the lives of Brian and his family for ever. His first daughter, Shelley, was born mentally handicapped. When talking about her, Brian turns away a little, revealing the powerful emotions which this still involves.

"When Shelley was five she moved into Normansfield which had been run since 1868 by the family of the man who gave his name to Down's Syndrome. She lived there until last June. She had a good life there - I mean as good as you can expect. Then we formed the Friends of Normansfield and my wife [actress Elspet Gray - Ed] and I were the principal fund raisers."

"We affiliated to what was then known as the National Society for Mentally Handicapped Children, later to become The Royal Society for Mentally Handicapped Children and Adults and now MENCAP. We were very successful as fund raisers and made a lot of money and were able to do a lot of things. We built a school and kept it going for our kids, when there was nothing else for them. We ran a holiday place down at Selsey Bill, and built a toy library, a club house, a boutique . . ."

## An actor's life for MENCAP

"I WAS THEN approached by MENCAP and became the first Chairman of their fund-raising committee in 1961. I used to chair the meetings in my dressing gown between performances of *One for the Pot* on Thursday afternoons. Our first ever fund raising

event was a Spring Ball (the first of many) at the Savoy Hotel, and we made £4000 - that's worth over £50,000 by today's standards, a lot of money. And then I went on and raised more money. Then in about 1965 I resigned because by then they'd got a proper Appeals Department and were doing it professionally and they just got on with it."

"I then made a speech where I told two-thousand people in Central Hall, Westminster, that I was the father of a mentally handicapped daughter. This was terribly traumatic - it was the first time I'd talked about Shelley. It was very worrying as to whether I'd done the right thing or not, but anyway it seemed right to let the people know that all sorts of people have mentally handicapped children. It made every Sunday paper. The headlines were: 'Brian Rix admits . . .', 'Brian Rix confesses . . .'. That's the way it was then." Over twenty years after the event, the wounds caused by this insensitive Press coverage have not healed.

"I was getting uneasy after 27 years of doing farce as an actor-manager and I felt that I could do something more. I thought that what I had been as an actor and the profile it created for me would stand me in good stead in some public service. I wanted to come to MENCAP and it just so happened that my predecessor was retiring, I put in for the job of Secretary General and at first they didn't believe me; there was this guy who drops his trousers for a living . . . But of course what they didn't realise was that being an actor-manager is probably one of the toughest ways of earning your living because you are responsible entirely, every penny you earn, every play that goes on, every cast - everything. I had no agent, ever - I did every single bit of negotiation throughout my entire theatrical life. So I was



"Yes this is the sort of thing we were doing in our day", said Lord Rix on examining a copy of *The Bright Sparks of Wireless*, presented to him by the RSGB.

quite bright really in business in a funny sort of way. And I've never been afraid or ashamed to ask, so I applied for the job and eventually I got it, serving as Secretary General from 1980-87 when I retired."

## The Lords

"I WAS ELECTED Chairman in 1988 and I'm Chairman still. I presume I'll go on for another two, three, four years, and then hopefully they will then kick me upstairs to be President. When

I'm introduced to the House of Lords next Wednesday my sponsors are Lord Allen of Abbeydale who is the current President and Lord Renton who is the Immediate Past President, so there will be three Chairmen of MENCAP actually in the Chamber together, which must be great."

"I intend doing as much as I can in the House of Lords for mentally handicapped people as well as for the Arts. The great thing about the House of Lords which being a Sir doesn't give you [Brian Rix was knighted in 1986 - Ed] is it gives you a forum. It gives you a right to speak, to ask questions and demand answers, which is frightfully useful."

Would he go back to the stage?: "I don't need an evening's applause all the time. Your priorities change. I'm Chairman of eleven voluntary associations including MENCAP and now I'm going to the House of Lords, so I reckon my time's earmarked."

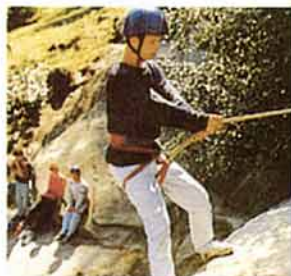
In an extraordinary way, Brian Rix's 30-year success as an actor-manager seems to have been merely the first act of a life now devoted to the needs of people with a mental handicap. Long may he continue his work in his latest role as Lord Rix.



Lord Rix was presented to the House of Lords on 12 February by his sponsors, Lord Renton and Lord Allen of Abbeydale.

# MENCAP

## The Royal Society for Mentally Handicapped Children and Adults



Young people enjoying a MENCAP Holiday Service trip.

MENCAP aims to make sure that the needs and aspirations of people with a mental handicap and their families are properly met.

MENCAP has over 3,000 staff, and 50,000 parent members working through 500 local MENCAP Societies. These support over 150,000 friends with a mental handicap or learning disability. Many volunteers support projects all over the country through:

- Such projects as the Profound Retardation and Multiple Handicap (PRMH) Project which trains family members to care for their severely handicapped relations.
- The Gateway clubs run weekly to provide leisure activities to 150,000 members in the UK.
- The MENCAP Homes Foundation to help those with a learning disability to live relatively independent lives in homes of their own.
- The Pathway Employment Service, training people with a learning disability to take ordinary jobs, in ordinary workplaces, for ordinary wages.

For further information contact:

Mencap National Centre, 123 Golden Lane, London EC1Y 0RT; tel 071 454 0454.

# The Children of 'ZA' Need Our Help

## MENCAP's Work in Albania

MENCAP intends to help mentally handicapped people living in hospitals and institutions in Albania - a country where radio amateurs have only recently resumed contact. A fact-finding tour by members of MENCAP revealed that conditions in Albania were far worse than ever imagined. Many houses in the country were without window panes and had no heating (temperature drops to -20°C in winter). At the first children's home they visited children sat shivering in bed, clothed in rags, and were encouraged to stay in bed for warmth. Staff had no proper cooking facilities or, for that matter, food other than a few cans supplied by Feed the Children, and the toilet consisted of a small hole in the ground in a damp, filthy and stinking room. There were no obvious washing or bathing facilities. One hospital stood out - the Luigi Guvakugi school in Tirana - here staff were making rewarding efforts to help the children learn and develop. Downs Syndrome children had learnt to read and write, and speak English. 80% of former pupils had found employment thanks to the totally unselfish dedication of the director and staff.

MENCAP plan to train staff properly in the care and encouragement needs of the patients; to provide a background of love, attention, self respect and motivation. To ensure that the mentally and physically handicapped people are not just left in their beds all day, trying desperately to keep warm huddled together, but are treated as - most importantly - people with special needs, which must be provided for.

## You Can Help

TO MARK the recent elevation of Brian Rix, G2DQU, to the peerage, the RSGB through *Radio Communication* is launching a major appeal to help MENCAP's work in Albania.

The RSGB aims through its worldwide membership and relatives, friends and colleagues of members, to raise a substantial part of the £50,000 required.

Staff members at RSGB headquarters are aiming to raise in ex-



The Luigi Guvakugi School in Tirana.

cess of £1,000 towards this appeal and invite all members to help in whichever way they can.

**If every member contributed a mere £2, we would be able to raise over £65,000 - and remember every penny raised will be used by MENCAP for people with a mental handicap and their families.** Of course, we are in need of money ourselves, but recognise that in many places in Eastern Europe the need is positively desperate.

No amount is too small but, to encourage members and clubs to raise large amounts, many of our amateur radio traders have been very supportive and have made many prizes available for the most successful fund raisers.

So, go and get your thinking caps on and organise events *now* such as sponsored diets, non-smoking days, special event stations, fun runs, boot sales, raffles, etc. The categories are:

- a) the clubs raising the most money
- b) the clubs that come up with the most unusual way of raising funds

- c) the members raising the most money by his/her own efforts
- d) those under 18 raising the most money
- e) the most unusual individual effort to raise money
- f) the largest donation from outside the British Isles

## Prizes for Major Fund Raisers

Have fun whilst you help Albania - you or your club could win one of these wonderful prizes:

- 2M Handheld
- 70cm Handheld
- 6M Transceiver
- 2M/Marine Scanner
- Packet Software
- Morse Tutor
- Digital Thermometer
- Luxury ATU

... more to come next month!

RSGB's MENCAP Albania Appeal is supported by ICS Electronics, Waters & Stanton, SMC, Bredhurst, Martin Lynch, Nevada, Dewsbury and Siskin Electronics.

## HOW TO MAKE YOUR DONATION

- **Cheques/Postal Orders:** payable to the 'RSGB Albania Appeal', and sent to RSGB Albania Appeal, Radio Society of Great Britain, Lambda House, Cranborne Road, Potters Bar, Herts, EN6 3JE.
- **Credit card:** just call 0707 59260
- **Cash:** over the counter at RSGB Headquarters

A Personal  
Message from  
Brian Rix to All  
RSGB Members

## Albania - Make an Investment in a Nation's Future

FOR FIFTY YEARS, the Royal Society for Mentally Handicapped Children and Adults (MENCAP) has striven to improve the self respect and dignity of people with a mental handicap.

Now we have a chance to alter radically the life and future of each and every mentally handicapped person in an Eastern European country - Albania.

You will have seen TV and press pictures of the deprivation currently being suffered by thousands of children and adults in Albanian institutions. Whilst the basic necessities of life - food, blankets, glass for windows - are urgently needed, our appeal to you is for something different.

The people who work in Albanian institutions are ordinary caring people - often demoralised by their conditions. Our studies have found however, that their greatest need is training.

There currently exists no mechanism for teaching the basics of health, hygiene, diet, play and occupational therapy.

This is where MENCAP comes in. Working with Voluntary Service Overseas' new initiative East European Partnership, we have the support of the Albanian Government in setting up a two-year training course which will touch every single residential worker in the country - and that means it will change the life of every single person in an institution. Now - and in the future.

To design the course, and send out a team of East European Partnership volunteers, to make it work in practice, is a two year programme which urgently needs funding - £50,000 for starters.

We are appealing to you for as large a gift as you can spare. Perhaps gift is the wrong word - investment would be better.

So join with us, please, and make an investment in a nation's future care.

The Lord Rix, CBE, DL, G2DQU





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##### OCEANIC AIRBAND FREQUENCY GUIDE

This little manual will introduce you to the fascinating world of long distance aeronautical monitoring. It covers the range 2 to 30MHz and unlocks all the secrets of monitoring this fascinating service. Now you can ride the oceans of the world alongside the pilot, track the course of flights and experience the excitement. A significant amount of editorial is also included to explain the workings of this historic radio service that still uses plain language and short waves for communications.

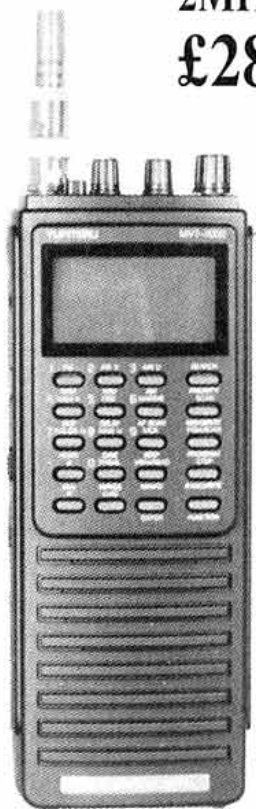
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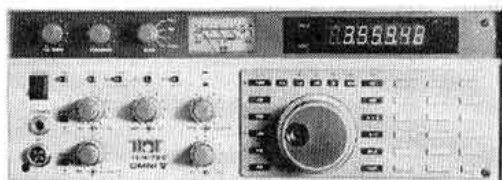
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# More on Short Loop Antennas

**Roberto Craighero, I1ARZ, concludes his discussions of a practical short loop antenna for 14MHz with a description of how to tune it remotely.**

**T**HE LOOP MUST BE remotely tuned; do not try any hand tuning! Apart from the fact that the tuning capacitor is about 2 metres above ground, manual tuning is difficult and not fast enough for normal operation during QSOs.

With a monoband antenna as described, only a small capacitor is needed to resonate the loop, and the capacitor rotation speed is not as critical as for a multiband antenna, due to bandwidth considerations. A VHF capacitor, paralleled with a good quality, fixed, transmission type ceramic capacitor are sufficient to resonate the loop over the whole 20 metre band. In my antenna, I used a split stator (this type of capacitor is essential) VHF variable capacitor. This was a silver plated type, and each section had a value of 10pF. The two sections in series with the loop gave a resultant capacitance of 5pF. I added a ceramic fixed capacitor of 15pF in parallel giving a total capacitance of 20pF. In addition there was the distributed capacitance of the loop, (about 5pF), resulting in a total capacitance of about 25pF. This value was sufficient to resonate the loop over the whole 20 metre band. A suitable split stator capacitor of about 50pF per section will give similar results.

Of course the insulation of the capacitors must be considered, in view of the very high RF voltages existing at this point, especially at higher RF power levels. By calculation, at 100 watts the corresponding RF voltage at the capacitor is about 4kV for a loop of these dimensions. If QRP work is envisaged (most likely for portable operations) the insulation factor is less important, due to the lower RF voltages involved.

The DC tuning motor must not exceed 2RPM. With faster motors an electronic speed control device may be used to reduce the tuning speed, as necessary. [2] Alternatively a mechanical Bulgin type reduction gear should be mounted between motor and tuning capacitor. Each stator section of the variable capacitor should be directly soldered to an SO239 socket or, if this is not possible, a suitable copper bracket should be provided for each socket. Accurate soldering is of paramount importance to reduce the ohmic losses to a minimum. The inner contact of the socket is not used, as the centre conductor of the coax cable is not connected.

The tuning unit is mounted inside a plastic bottle (I used a washing-up liquid bottle!) with a suitable neck diameter, firmly forced inside a PVC joint as shown in Fig.6. The bottom of the plastic bottle is cut away and replaced with a circular plexiglas plate (2.5mm thick). The variable capacitor is fixed to the centre of this plate, with the shaft connected to a circu-

lar ceramic coupler, followed by another connected to the motor spindle (or mechanical reduction gear, if required).

The unit is then fitted inside the bottle which is partially filled with well compressed rubber foam. A small opening for the motor must be cut into the bottle wall and the motor body securely glued in position. Also, the circumference of the plexiglas plate carrying the capacitor must be glued and forced into the base of the bottle. The motor terminals are then connected and by-passed by two 10nF disk capacitors. The motor feed cable must be made with screened twin leads (eg Hi-Fi

type), and the braids connected to the motor body and by-pass capacitors. This cable runs along the vertical arms of the supporting frame in the centre of the loop, and it must be possible to disconnect it for transportation. A small plastic base with a brass nut and bolt is fitted to the joint connecting the bottle neck to the supporting frame. This plastic base has two RCA phono sockets connected to the motor. The motor feed line is terminated with the relevant RCA plugs, and connected to the respective sockets on the electronic control box (or to the reversing polarity switch of the motor supply) [2].

The length of the upper vertical arm of the supporting frame may be calculated, taking into account the loop circumference, and the position of the capacitor and SO239 sockets.

The tuning unit is attached to the top end of the upper vertical arm, and for transportation may be disconnected and kept in a safe place to avoid damage. To assemble the antenna, first insert the eight arms into the central assembly with the frame lying on the ground. Then the coax line is connected into the sockets on the capacitor, and also clipped to the end of each arm. Also, the motor feed line must be connected into the RCA sockets. It is now possible to raise the frame vertically and insert the 'mast' into the tube of the magnetic mount placed on the transceiver cover. The coupling loop can now be fitted in place, and the hose clamp tightened on the plexiglas bar. The lower side of the coupling loop must be adjacent to the inner side of the main loop. Two plastic clamps should be placed symmetrically on each side of the hose clamp fixing point. See Fig.2. An SWR bridge and short feed line should now be connected to the output socket of the transceiver.

The antenna is now complete and takes less than five minutes to assemble or dismantle.

## CONCLUSIONS

THIS ANTENNA CAN easily be adapted for multiband use. With a larger capacitance value it is possible to resonate it for the 20 and 40 metre bands. However best efficiency is obtained only on the higher frequency band where the loop conductor is about  $\lambda/4$  long. If you wish to work on other bands it is easy to modify the loop dimensions accordingly. Remember that with the BASIC computer program published in my previous article [1], it is possible to quickly calculate all the main parameters of a short loop antenna. For more theory on loop antennas I suggest a rereading of my previous articles [2] and [3].

The results obtained with this portable loop

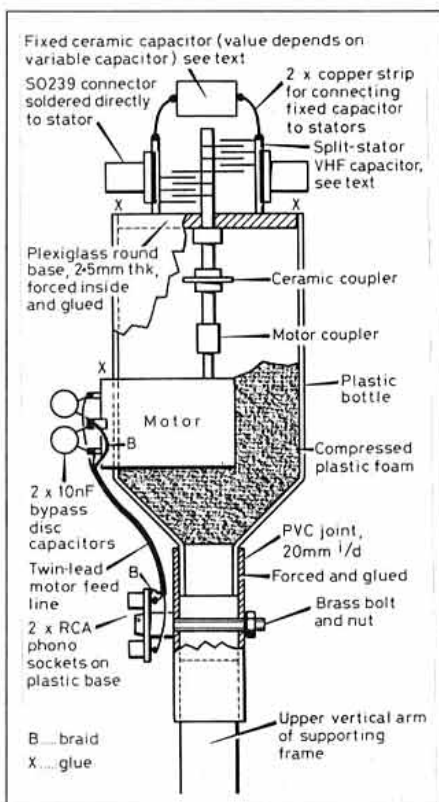
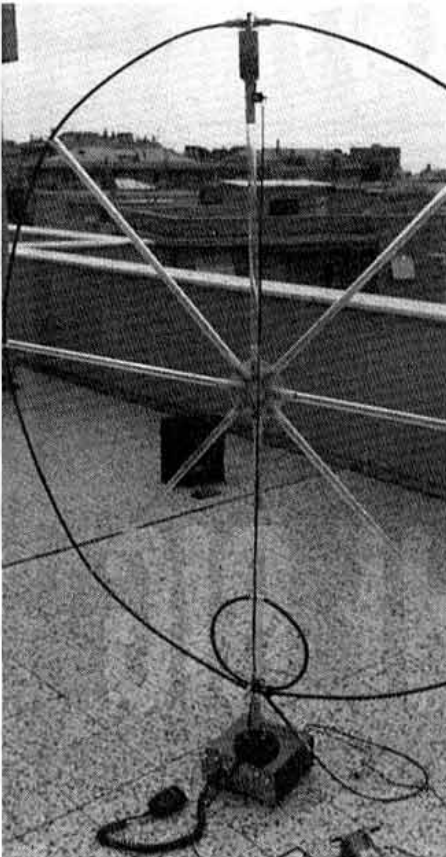


Fig 6: Detail of remote tuning unit.



11ARZ's 20m loop antenna and remote tuner on the roof of his apartment.

were outstanding. With about 1.5 Watts PEP reports from across Europe reached S9 on several occasions with the loop mounted at ground level. This confirms once more the excellent characteristics of the short loop antenna, provided care is exercised during construction and good materials are employed.



This type of antenna is now becoming more and more popular, and represents an efficient solution for those radio amateurs unable the erect beams or large wire aerials.

**REFERENCES**

- [1] Ted Hart, W5QJR, *QST* June 1986
- [2] R Craighero 'Electrically Tuneable HF Loop' *RadCom* February 1989 pp 38-42.
- [3] R Craighero 'A Magnetic Loop Antenna for the Low Bands' *RadCom* February 1991 pp 38-40.
- [4] 'Technical Topics' *RadCom* November 1989 pp 37.

**COMPUTER BASIC PROGRAM FOR LOOP CALCULATIONS**

```

5 CLS
10 PRINT "CALCULATION OF MAIN PARAMETERS
OF A COPPER TUBING"
20 PRINT "CIRCULAR SHAPED SHORT LOOP ANTENNA"
30 PRINT
40 PRINT
50 PRINT "Conductor Length METERS:":INPUT SS
60 S=SS*3.281
70 PRINT
80 PRINT "Conductor Diameter MILLIMETERS:":INPUT DD
90 D=DD*.03937
100 PRINT
110 PRINT "Frequency MHz:":INPUT F
120 PRINT
130 PRINT "Power WATT:":INPUT P
140 PRINT
150 CLS
160 A=7.900001E-02*S^2
170 PRINT "LOOP AREA SQ. METERS:":B=A*.0929:
PRINT B
180 PRINT
190 RR=3.38*10^-8*F^4*A^2
200 PRINT "Radiation Resistance OHMS:":RR
210 RL=9.96*10^-4*SQR(F)*(S/D)
220 PRINT "Conductor Loss OHMS:":RL
230 E=RR/(RR+RL)*100
240 PRINT "Efficiency in percentage %":E
250 DB=LOG(E/100)/LOG(10)*10
260 PRINT "Efficiency in dB dB:":DB
270 L=1.9*10^-8*S*(7.353*LOG(96*S/3.1418/D)/LOG(10)-6.386)
280 PRINT "Loop Inductance HENRY:":L
290 XL=2*3.1418*F*L*10^6
300 PRINT "Inductive Reactance OHMS:":XL
310 Q=XL/(RR+RL)/2
320 PRINT "Quality Factor Q:":Q
330 DF=2*(RR+RL)/XL*F*1000
340 PRINT "Bandwidth KHz:":DF
360 VC=SQR(P*XL*Q)
365 PRINT "Capacitor Voltage VOLTS:":VC
370 CT=1/(2*3.1418*F*XL)*10^6
380 PRINT "Tuning Capacitor Pfd:":CT
    
```

Fig 7: This computer program can be adapted for most versions of BASIC.

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*The  
Peter Hart  
Review*

# FT-990

## Yaesu HF Transceiver

**A** COUPLE OF YEARS AGO, Yaesu launched the FT-1000. This top of the range HF base transceiver has been highly acclaimed; setting new standards for performance, features and ease of use [reviewed *RadCom*, June 91]. Hard on the heels of the FT-1000 has come the FT-990. Costing around £1000 less than its bigger brother, the FT-990 has most of the same features but omits the second receiver and associated functions. However, some new features are introduced and several advances in both the transmitter and receiver circuitry.

### PRINCIPAL FEATURES

THE FT-990 IS AN AC mains powered HF base station transceiver covering LSB, USB, CW, AM, FM, RTTY and packet operation. Extensive support is provided for the digital modes. RTTY can be in either LSB or USB (for inverting the tones) and packet either 300 baud FSK or 1200 baud AFSK. The receiver tunes 100kHz to 30MHz and transmission is limited to the usual segments around the amateur bands. Many of the features of this radio are common with the FT-1000 in the way that they are implemented.

Separate push buttons are provided for each amateur band and these return the last used frequency, mode, IF bandwidth, clarifier setting etc for each band. The tuning knob uses a magnetic rotary encoder to give 1000 steps per revolution of the knob. Tuning is in steps of 10Hz at 10kHz per revolution on CW, SSB, RTTY and FSK packet. On AM, FM and AFSK packet, the tuning is in 100Hz steps at 100kHz per revolution. A FAST button increases all these rates by a factor of ten and UP/DOWN keys give wider steps of 100kHz or 1MHz. The tuning steps can be doubled for any mode by installing internal jumpers. Another method of setting the frequency is to enter directly from the numeric keypad.

Twin VFOs are provided which can be used for split frequency/band/mode operation and a total of ninety memories are available. The VFOs and memories all store frequency, mode, filter bandwidth and clarifier offset and all memories allow a direct VFO



feature. The memories are selected by a click-step rotary control and the contents may be simply previewed whilst continuing to receive on a selected VFO frequency. Switching between VFO and memory, and transferring the contents from VFO to memory or memory to VFO, is simply accomplished by push buttons. Memory scanning is provided with a facility to skip any unwanted memory location during the scan.



The clarifier allows for transmitter and/or receiver offsets up to  $\pm 9.99$ kHz and on FM a  $\pm 100$ kHz repeater offset is selectable. The repeater mode also transmits a continuous 88.5Hz sub-audible access tone.

Four IF filter bandwidths are selectable by separate push buttons. 2.4kHz and 500Hz bandwidth filters are fitted as standard with 2.0kHz and 250Hz available as optional extras. An IF shift control is provided and an IF notch filter. There is no variable-bandwidth IF facility but a comprehensive switched-capacitor audio filter is fitted. This gives independent

control of the lower and upper limits of the AF passband with a very steep roll-off and makes a highly versatile filter for SSB and CW use.

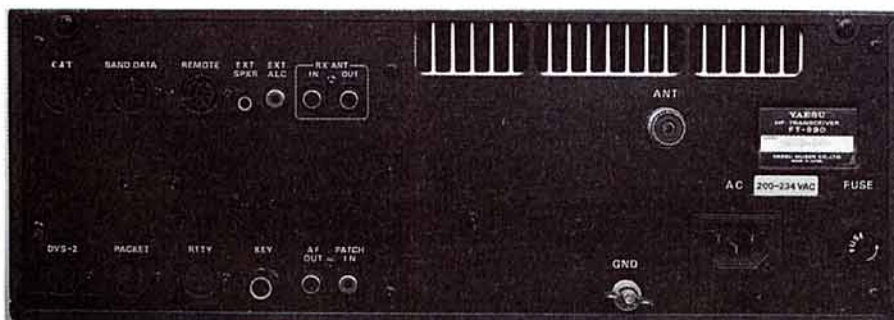
The mode keys also select the last used filter bandwidth and hence it is possible to switch between USB with the 2.4kHz filter and CW with the 500Hz filter by a single key press.

Receive functions include an adjustable noise blanker, switchable 20dB input attenuator, dual speed AGC with automatic speed selection between modes and an all-mode squelch. A front panel push-button allows a separate receive antenna, or a separate receiver, to be selected

The transmitter output power is variable from less than 10W up to 100W and a thermostatic fan is incorporated. On SSB, an RF speech processor is included together with the usual VOX functions. The transmit IF passband may be shifted between -300Hz and +500Hz in much the same way as the receiver IF shift and this enables the transmit passband to be individually tailored to suit the microphone or the operator's voice.

For CW, the pitch is adjustable between 400Hz and 700Hz and a 'SPOT' key allows for accurate netting. Full and semi break-in is provided and a built-in iambic keyer which just requires a keying paddle. The keyer weighting is adjustable via DIP switches buried deep inside the radio to give 16 dot:dash ratios between 1:3 and 1:4.5. A further internal switch allows selection of either iambic mode or 'bug' mode which gives automatic dots with manual dashes. Two parallel keying jacks are provided, one on the front panel and the other on the rear.

A hatch in the top of the case accesses a number of preset modulation and VOX controls together with the RTTY and packet selection options. On RTTY, these options select normal/inverted tones, 170/425/850Hz shift and high tones (2125Hz mark) or low tones (1275Hz mark). For packet, four different tone pairs are selectable to suit different TNCs.



The FT-990 incorporates the same high-speed automatic antenna tuner as used in the FT-1000. This contains 39 memories which automatically store the most recent antenna matching settings for fast recall when the frequency is changed. An analogue meter indicates signal strength on receive and one of six parameters on transmit (ALC, compression, power output, SWR, PA current or voltage). An orange fluorescent display panel indicates the frequency to 10Hz resolution, clarifier offset, memory number and a host of status messages. A 'high SWR' indicator shows when the antenna VSWR is above about 3:1 on transmit.

The rear panel carries six multiway DIN connectors for interfacing to a computer, digital voice recorder, RTTY and packet TNCs and band data for remote switching linear and ATU. The other usual connectors are provided for audio in/out, receive antenna etc, but, as with the FT-1000, no transverter capability. The DVS-2 digital voice system is fully compatible with this transceiver. Although all functions in the radio are powered from 13.8V, only an AC mains input is provided; there is no separate low voltage input.

The computer interface is similar to the FT-1000. Operating at 4800 bit/s, it is very comprehensive and includes digitised meter readout amongst a total of some 25 computer controllable functions and commands.

There is an increasing trend for transceivers to provide more and more personalisation of functions to suit all users. With the FT-990, this is done in two ways. Firstly, there are a number of internal settings which require the case to be removed and in some cases also the PC boards. These settings include mode-specific tuning rates, auto AGC speed, keyer weighting, linear amplifier enable and various output levels for audio, sidetone and beeper. Secondly, a number of functions can be set at power-up or by multiple key presses. These include display options, lock, resetting, beeper pitch etc.

The 45-page operating manual provided with the transceiver is excellent. It is very well written and covers all aspects of use in a very straightforward and highly informative style. Computer programming is fully described, fitting of internal options and user adjustments but no technical or service information other than providing a set of circuit diagrams.

**DESCRIPTION**

THE FT-990 IS MODERATELY large measuring 368mm(W) by 129mm(H) by 370mm(D) and weighs 13kg. The construction is modular with fully shielded units for the RF PA, ATU and power supply. The bulk of the circuitry is contained on five vertically mounted PC boards which plug into a mother board. This makes them easy to remove for fitting extra IF filters, changing the memory back-up battery etc. The back-up battery is the usual lithium cell with a nominal life of five years. The speaker is 9cm diameter and upward facing through the top of the case as normal.

The receiver is triple conversion with IFs of 47.21 MHz, 10.94MHz and 455kHz. The RF amplifier uses a push-pull pair of FETs and the first mixer uses four FETs in a double balanced configuration. The main selectivity uses crystal filters at the 10.94MHz IF with a single ceramic filter at the 455kHz IF. The

**YAESU FT-990 MEASURED PERFORMANCE**

**RECEIVER MEASUREMENTS**

FREQUENCY	SENSITIVITY SSB 10dB s+n:n	INPUT FOR S9
1.8 MHz	0.13µV (-125dBm)	22µV
3.5 MHz	0.13µV (-125dBm)	22µV
7 MHz	0.14µV (-124dBm)	28µV
10 MHz	0.18µV (-122dBm)	32µV
14 MHz	0.18µV (-122dBm)	34µV
18 MHz	0.18µV (-122dBm)	35µV
21 MHz	0.18µV (-122dBm)	35µV
24 MHz	0.18µV (-122dBm)	34µV
28 MHz	0.20µV (-121dBm)	32µV

S-READING (14MHz)	INPUT LEVEL
S1	1.3µV
S3	2.0µV
S5	3.8µV
S7	11µV
S9	34µV
S9+20	420µV
S9+40	4.5mV
S9+60	79mV

AM sensitivity (28MHz): 1.3µV for 10dBs+n:n at 30% mod depth  
 FM sensitivity (28MHz): 0.25µV for 12dB SINAD 3kHz pk deviation  
 AGC threshold: 1.3µV  
 100dB above AGC threshold for +1dB audio output  
 AGC attack time: 2ms (see text)  
 AGC decay time: 0.3-1.0s (fast), 1-2.5s (slow)  
 Max audio before clipping: 8Ω — 1.2W, 4Ω — 1.7W at 2% distortion  
 Inband intermodulation products: -30 to -40dB (see text)

FILTER	BANDWIDTH	
	-6dB	-60dB
SSB 2.4kHz	2480Hz	3770Hz
CW 500Hz	510Hz	1140Hz
AM(W), FM	7530Hz	12690Hz

FREQUENCY	INTERMODULATION (50kHz Tone Spacing)	
	3rd ORDER INTERCEPT	2 TONE DYNAMIC RANGE
1.8 MHz	+5dBm	94dB
3.5 MHz	+8dBm	96dB
7 MHz	+11dBm	97dB
14 MHz	+14dBm	98dB
21 MHz	+14dBm	98dB
28 MHz	0dBm	88dB

TONE SPACING (7MHz BAND)	3rd ORDER INTERCEPT	
	3rd ORDER INTERCEPT	2 TONE DYNAMIC RANGE
3 kHz	-29dBm	70dB
5 kHz	-17dBm	78dB
10 kHz	-2dBm	88dB
15 kHz	+4dBm	92dB
20 kHz	+7dBm	94dB
30 kHz	+10dBm	96dB

FREQUENCY OFFSET	RECIPROCAL MIXING FOR 3dB NOISE	BLOCKING	TX NOISE IN 2.5kHz BANDWIDTH
3 kHz	83dB	-23dBm	-74dBC
5 kHz	87dB	-23dBm	-79dBC
10 kHz	93dB	-5dBm	-84dBC
15 kHz	97dB	+3dBm	-86dBC
20 kHz	100dB	+3dBm	-87dBC
30 kHz	105dB	+3dBm	-88dBC
50 kHz	112dB	+3dBm	-89dBC
100 kHz	121dB	+3dBm	-90dBC
200 kHz	128dB	+3dBm	-92dBC

**TRANSMITTER MEASUREMENTS**

FREQUENCY	CW POWER OUTPUT	SSB(PEP) POWER OUTPUT	HARMONICS	INTERMODULATION PRODUCTS	
				3rd ORDER	5th ORDER
1.8 MHz	113W	115W	-62dB	-40dB	-45dB
3.5 MHz	110W	112W	-62dB	-35dB	-44dB
7 MHz	108W	112W	-64dB	-32dB	-38dB
10 MHz	109W	111W	-60dB	-31dB	-38dB
14 MHz	110W	111W	-62dB	-31dB	-38dB
18 MHz	111W	111W	-62dB	-24dB	-36dB
21 MHz	111W	112W	<-70dB	-18dB	-40dB
24 MHz	111W	113W	<-70dB	-16dB	-33dB
28 MHz	113W	116W	-68dB	-18dB	-40dB

Carrier suppression: 55dB. Sideband suppression: 60dB at 1kHz. Transmitter noise: see table above. Transmitter AF response at -6dB: 283-2930Hz. Transmitter AF distortion: <1% at low mic levels. Microphone input sensitivity: 2mV for full output. T/R switching speed (SSB): mute-TX 12ms, TX-mute 4ms, mute-RX 20ms, RX-mute <1ms.

**NOTE:** All signal input voltages given as PD across antenna terminal. Unless stated otherwise, all measurements made on SSB. All two-tone transmitter intermodulation products quoted with respect to either originating tone.

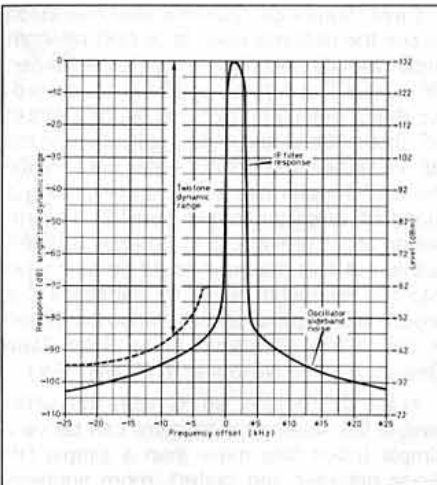


Fig 1: Effective selectivity curve on USB.

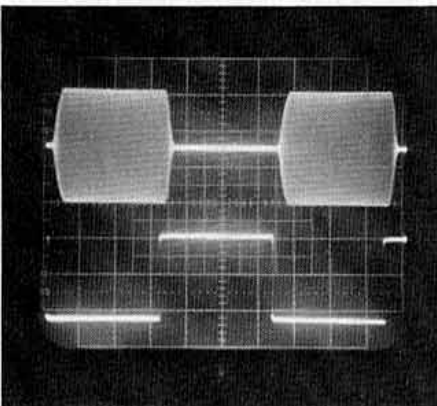


Fig 2: CW keying waveform at 40WPM. Horiz scale 10ms/div.

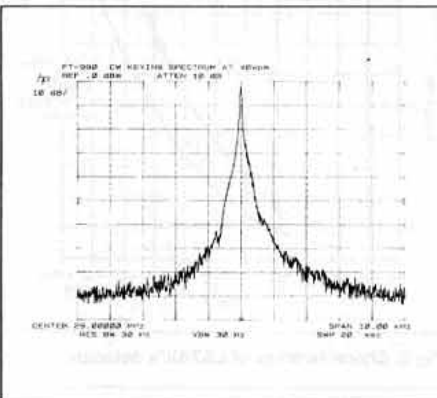
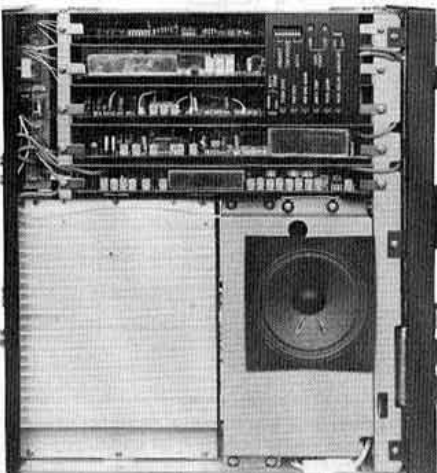


Fig 3: 40WPM keying spectrum. Horiz scale 1kHz/div; vert scale 10dB/div.



optional 250Hz CW filter is a 455kHz crystal filter. On transmit, SSB is generated at 455kHz and mixed through the other IFs to final frequency.

A 10-bit direct digital synthesiser (DDS) generates the VFO in conjunction with phase locked loops to provide the local oscillator source for the first mixers. A second DDS generates the 455kHz carrier oscillator and a total of six microprocessors are used for various control tasks within the radio. The power supply is a switched mode design with no bulky mains transformer and this partly explains why the weight is only half that of the FT-1000.

**MEASUREMENTS**

THE MEASURED PERFORMANCE of the radio is summarised in the table with additional comments as follows:

**RECEIVER MEASUREMENTS**

**S-METER CALIBRATION**

The range and linearity were reasonable and the calibration was the same on all modes.

**SPURIOUS REJECTION**

The rejection of the first mixer image was in excess of 87dB and rejection of all IFs well in excess of 100dB. There were very few other spurious responses and generally this is an excellent result.

**AGC**

In the fast position only, the attack time suffered considerable overshoot. This characteristic was also observed with the FT-1000.

**STRONG SIGNAL PERFORMANCE**

Very good figures were measured for the third order intercept, close-in dynamic range and reciprocal mixing performance. Indeed, all these figures measured a few dB better than the FT-1000 sample reviewed last June. In particular, the close-in dynamic range was noticeably better.

The inband intermodulation performance improved markedly with the RF gain control reduced.

**SELECTIVITY**

The optional filters were not fitted to the review transceiver. The receiver gain, as indicated by the S-meter reading, dropped about 5dB when the 500Hz filter was selected. Although the 'digital' audio filter was not measured, its performance seemed very good.

Fig1 shows the effective selectivity curve on USB.

**TRANSMITTER MEASUREMENTS**

**POWER OUTPUT**

The figures given in the table are measured at maximum output but the power was variable down to about 8W. With the ATU in circuit, power levels were about 15% less. Into a mismatched load, 80-100W was produced into a 2:1 VSWR and 40-50W into a 3:1 VSWR. Into these mismatches, the ATU restored the power to about 80-90W output. The power output reading on the front panel meter was generally about 5-10% low.

**SPURIOUS OUTPUTS**

The second harmonic was around 10dB worse

than the third harmonic which is given in the table. Non-harmonic spurious outputs were generally -70 to -80dB although somewhat worse on some bands (-52dB on 24MHz)

**SSB PERFORMANCE**

The distortion figures on the higher bands could be improved substantially by reducing power to 80W output. The speech processor degraded the 3rd order products but not the wideband products.

**CW KEYING PERFORMANCE**

Fig 2 shows the keying waveform on semi break-in and Fig 3 the equivalent keying spectrum, both at 40WPM. There was a slight shortening of the characters on full break-in.

**ON-THE-AIR PERFORMANCE**

I WAS VERY PLEASED with the performance of this radio during on-air tests. This included the 80m AFS contest when some 215 QSOs were made during the four hour event running 'barefoot' to a dipole at 12-15ft(4-5m) height. The receiver functioned faultlessly in all situations with good sensitivity and no observed strong signal problems.

Switched mode power supplies can be notorious for generating spurious signals but there was no trace of noise or spuri on any frequency, even at LF. There was, however, a very slight buzz on the speaker or headphones, audible only at minimum volume and unnoticeable during normal operation. The 'digital' audio filter was excellent with a very steep roll-off and, having full control over the upper and lower passband limits, is usable for both SSB and CW. It is one of the most useful audio filters I have used on any radio.

Good quality transmit reports were received on both SSB with the MH-1B8 hand microphone and on CW. QSK was effective to quite high speeds and the internal keyer has a speed range from about 12WPM up to in excess of 50WPM.

The ergonomics were superb and I cannot find fault with the way that any of the functions have been implemented. Every function was quick and easy to select, well positioned on the front panel, and the tuning drive was 'silky smooth'. There were no audible clicks on the synthesiser and the fast tuning characteristic was excellent. The fan is rather noisier than most but only comes on rather infrequently except during prolonged transmit periods.

**CONCLUSIONS**

THE FT-990 CAN BE thoroughly recommended. It has an excellent electrical performance and ergonomically every function is very easy to use. It is basically the FT-1000 but without the second receiver and without the extra transmit power. The current list price is £1895 inc VAT with the additional IF filters costing £42 for the 2kHz narrow SSB filter and £76 for the 250Hz narrow CW filter. Perhaps this is my only criticism: the price is rather high for a rig without a dual receiver.

**ACKNOWLEDGEMENTS**

I WOULD LIKE TO THANK South Midlands Communications Ltd of Eastleigh, Hants for the loan of the equipment.

*Peter Hart, G3SJX*

# Pat Hawker's Technical Topics

## LOW-LEVEL DETECTORS

TWO DIFFERENT ARRANGEMENTS that can provide low-level detection down to 40mV have come to my attention. The first is a low-level AGC detector suitable for use between 200kHz and 20MHz from Jan-Martin Noeding, LA8AK. He writes:

"After discussions with OK2ZZ and DJ8ES about suitable AGC detectors, I have made some experiments based on an idea published by PA0KDF in *Electron* (Oct and Nov 1986). Whereas he used the MC1495 as an audio CW synchronous-demodulator, I first tried his circuit using the MC1496P. However, the SO42P has similar functions to the MC1496P but with the advantage that it simplifies the design since there are several biasing components integrated on the chip and I subsequently adopted this device: Fig 1.

"With an increasing input signal, DC voltage on pin 3 rises while pin 2 falls. IC2A converts only the voltage difference between these two points into a voltage referred to ground. When the difference is zero, the actual DC level at the SO42P outputs is unimportant. IC2B is an amplifier with a gain of 4 and has fast attack and slow decay characteristics. The output may be buffered with a unity-gain 741 op-amp. The output voltage swing is suitable for Plessey 1600-series ICs, as well as MC1349/1350 and PIN-diode regulators. With a PIN-diode regulator,

a voltage swing varying less than +4 to +8V, some 80dB gain variation may be achieved at 9MHz. The IF-voltage varies about 4dB, leaving about 4-5dB audio variation over the AGC threshold level.

"This characteristic (Fig 2) is reasonably continuous so that the problems previously discussed in *TT* in respect of the abrupt characteristics found in some modern receivers may be avoided. The resistor RA controls the gain of the detector with 0Ω giving about 4dB higher gain than 100Ω. The detector input impedance is 1KΩ with RA equal to 0Ω at 10.7MHz. Mean IF level is 40mV RMS but if a lower level is desired, a simple amplifier using a BFR90 or BF199 (similar to BF224) will increase sensitivity by up to 20-26dB. The bandwidth for the circuit shown in Fig 1 is better than 0.2 to 20MHz with RA equals to 100Ω, and 0.4 to 20MHz with RA equal to 1000Ω, referred to less than 5% change in detected DC output level."

Dave Plumridge, G3KMG, was interested to see the detector used in 'A field-strength meter with decibel display' by Ralph Fowler, N6YC (*QST*, Jan 1992, pp33-37). He considers that a detector which can linearly detect RF above 40mV has useful applications in the RF voltmeter and power meter field. While the N6YC meter has an input comprising a tuned RF amplifier covering switched wavebands of 3-11MHz and 11-30MHz, G3KMG points out that readings could be extended into the microvolt range by substituting a broadband amplifier such as those described in the *ARRL Handbook* or in *Solid State Design*. [Both available from RSGB - Ed.]

In the *QST* article, N6YC notes that while usable field-strength indicators can be very simple (often little more than a simple RF diode detector and meter), more sophisticated measurements call for instruments with at least a 20dB range, adequate resolution, enough sensitivity to allow measurements well outside an antenna's induction field and the capability for relative quantitative measurements.

Most simple field-strength meters have detectors that operate at least partly outside their linear regions, lack dynamic range, and have insufficient detector sensitivity. The more complex meter he describes uses a diode-compensated RF detector of the type illustrated by J Grebenkemper in 'Calibrating diode detectors' (*QEX*, Aug 1990).

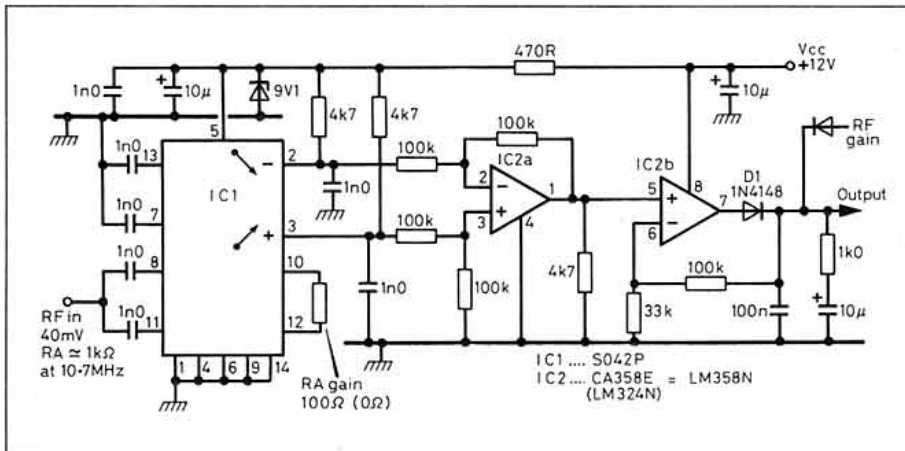


Fig 1: LA7AK's low-level AGC detector, 0.2 to 20MHz.

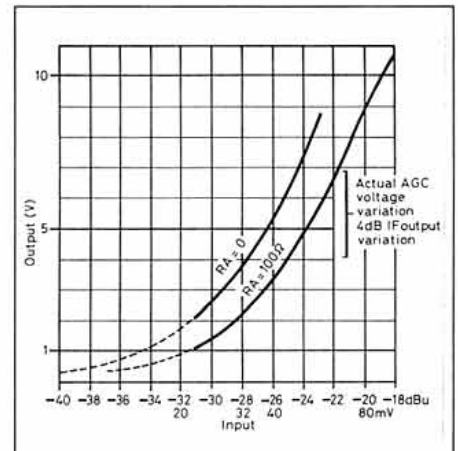


Fig 2: Characteristics of LA7AK's detector.

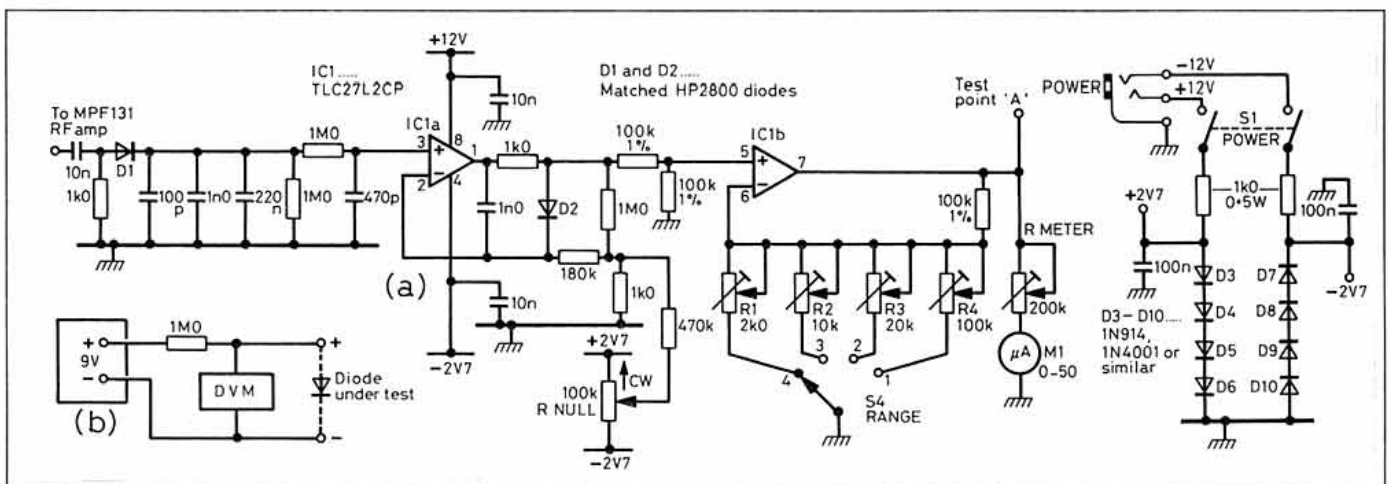


Fig 3: (a) Detector and DC amplifier section of N6YC's field-strength meter with a detector that linearly detects RF above 40mV and is thus suitable for use with an output meter providing a decibel display. It uses matched HP2800 or 1N5711 hot-carrier diodes, D1 and D2. (b) test set-up for matching D1 and D2 to within a few millivolts of each other.

NGYC writes: "The beauty of this circuit (Fig 3(a)) is that with low-barrier-voltage diodes, it can linearly detect RF inputs between about 0.04V peak and the saturation limits of the DC amplifiers IC1A and IC1B - a range of at least 45dB. Although Grebenkemper suggests using diodes with 200mV barrier potentials (1N5711s) I find that HP2800s (barrier potential of 500mV) work quite well in this application and I expect them to be only slightly less sensitive. As Grebenkemper points out, matching the diodes (to within a few millivolts of barrier potential) is important. Generally, hot-carrier diodes are already pretty well matched, but I suggest selecting diodes with similar forward drops for optimum performance. You can match diodes using the circuit shown in Fig 3(b). A two-stage TLC27L2CP op-amp DC amplifier, gain-switched in four 10dB ranges, amplifies the detector output."

G3KMG was also glad to note in the construction section of the article more reinforcement for his prejudice that for amateur one-off projects 'ugly construction' is the best! (See G3KMG's *TT* item 'Home construction and the PCB' July 1991, pp26-27). He writes: "The copper clad board provides an unbroken ground plane for better stability and performance - plus it is so much quicker and easier to knock up circuits. In addition, the inevitable improvement or modification causes so little hassle compared with PCB construction."

NGYC built his first prototype using point-to-point (dead bug) construction. His next model, built on a PCB, never worked - "it seemed to lock-up with no offset control. For the third (current) version, I went back to 'ugly' construction and again achieved success. In retrospect I believe that stray pin-to-pin currents plagued my PCB version . . . . So, proceed carefully if you choose to fabricate a PC-board."

## HRODDITIES

ALTHOUGH IT IS NOW some 45 years since I last used an HRO receiver built by the National Company of Malden, Mass, this set remains in my mind as the classic valve communications receiver designed for the amateur radio market. Perhaps this is just a nostalgic prejudice that stems from the five busy years (1941-1946) spent spinning the unique PW dial of HROs (up to three at a time) for Special Communications, but the sound design of these sets is reflected in the number that are still in good working order, even if the electrical performance can no longer match some aspects of the latest solid-state transceivers/receivers.

There also seems to be always something new to learn about them. For example, it was not until I read Hugh Skillen's *Spies of the Airways* (the story of the Army's tactical Y-Service) that I discovered that the HRO was widely used by the Special Wireless Group units of the pukka British Army, designated by the Army as the R106. This book also sheds new light on the German 'copy' of the HRO - their KST receiver. Hugh Skillen writes: "According to Fritz Trenkle, the HRO (R106) was well-known in Germany before the war and it was manufactured under licence by the German radio manufacturer Koerting, proba-

bly from 1938, with the original dial, (four-gang) tuning capacitor and plug-in coil assemblies (imported from the USA until 1941 via Portugal) but with German steel valves and known as the KST receiver. The main users were the diplomatic services and Admiral Canaris's Abwehr within the Wehrmacht".

An interesting account of the development of the HRO and other National receivers appears in *Communications Receivers: the vacuum tube era: 50 glorious years, 1932 - 1981* by Raymond S Moore (ex-K1DBR). He considers that the excellent mechanical design of the National receivers can be attributed to James Millen, trained as a mechanical engineer, who was with the company from 1928 to 1939 when he left to set up his own component-manufacturing company. His leaving, unfortunately, led to the decline of National as a leading innovator in communications receivers, although they continued manufacturing HRO designs until the 1960s.

To quote the book: "Late in 1933 work began on a communications receiver which was destined to become the most famous in history, a receiver which remained in production in recognisable form for 30 years. The electrical design was farmed out to Herbert Hoover Jr, W6ZH (W6ZH was the son of the President of the United States whose term of office unfortunately included the Wall Street crash of October 1929 - G3VA). The mechanical design was done at National's plant in Malden, MA. The receiver was the HRO and was first mentioned in print in Jim Millen's column in *QST* in August 1934. The first advertisement in *QST* October 1934 had a picture of a prototype which was quite different from the final version which started deliveries in December . . . . Changes were apparently made late in the design . . . . The PW dial and gear drive, the ganged capacitors and the ganged coils and (plug-in) coil compartments are classics of mechanical design."

Ray Moore's book (112 pages large format with soft covers and many illustrations) was first published several years ago but Ray kindly sent me a copy in April 1990. I wrote an appreciative review for *RadCom* but unfortunately this somehow disappeared down a black hole somewhere along the line from Dulwich to Potters Bar. For those interested in the history, collection or use of the valve receivers that did so much to raise the performance of our hobby this is a book to savour. It contains potted details (valve complement, IF, date, original prices etc but no circuit diagrams) of some 700 receivers and kits marketed for radio amateurs from 1932 to the final 'hybrid' Drake R-4c which was finally phased out in 1980-81. Over 50 American manufacturers are represented, including those well-known to UK amateurs such as Collins, Drake, Hallicrafters, Hammarlund, Heath, National, RCA, RME etc and others whose products seldom appeared in the UK. It does not include receivers made specifically for the US services such as the BC312, BC342, BC348 etc. The book also contains brief but interesting notes on the major companies and their designers. Sadly, as far as I am aware, not one of these major companies is still producing receivers for the amateur market - even Heath of kit fame has recently announced its withdrawal.

The book is published by Ray Moore (RSM Communications), PO Box 218, Norwood, MA 02062, USA. Price UK and West Europe surface mail \$17.29, air mail \$22.

## REUSABLE ALKALINE MANGANESE (RAM) BATTERIES

*TT* (JUNE 1990, p33) DREW ATTENTION, not for the first time, to the use of 'dirty DC charging' for both zinc-carbon and manganese-alkaline cells normally regarded as 'disposable' after being used once. As explained then, suitably dirty DC can be produced simply by connecting a resistor (example 200-300Ω) across a single-diode rectifier. This technique for recharging dry Leclanché (zinc-carbon) cells, although rarely used, dates back to the mid-1950s and possibly earlier. It is particularly effective with larger zinc-carbon cells provided they are put on charge before being completely exhausted and one must always emphasise that due care must be taken (eg limiting the maximum charging current according to the type of cell) to avoid the risk of explosion due to 'gassing'. This applies to any form of sealed cell. When attempting to recharge cells intended by their makers to be used once only, there are a number of rules that should be followed (see for example the June 1990 *TT* item).

But if it is possible to recharge alkaline manganese cells why not market them as such? Interestingly, Frank Harris, G4IEY, has sent along an article from *Batteries International* (Jan 1992) stating that a number of battery firms around the world are shortly expected to begin marketing alkaline-manganese cells specifically designed as high-energy rechargeable units. These should show a relative cost of energy factor which provides a significant advantage over nicad cells, and even some cost advantage over lead-acid cells. One of the firms licensed to manufacture these RAM cells is Ray-o-Vac, covering manufacture in the USA, Mexico and the UK.

To quote from *Batteries International*: "The public conception of cylindrical 'dry' cells is that they cannot be recharged. But to a limited extent, they can, particularly the alkaline-manganese variety. Back in the 1960s, Dr Karl Kordes, who invented alkaline manganese cells, persuaded Eveready (US) to market a rechargeable version. At that time, Eveready made and sold them for portable TVs and lanterns. No-one needs telling that the single-use alkaline manganese quickly became an outstanding commercial success. But the rechargeable version was withdrawn after a few years due to limited market growth and concerns about adequate protection against end-user abuse. Either they short-circuited internally and died, or they gassed on recharge and presented an explosion hazard.

"But recent advances in separators, gassing suppressants and gas recombination technology have made the technology come alive again. Karl Kordes has been working with a Canadian company, BTI, to perfect the technology, supported by research at the Technical University of Graz in Austria."

The article emphasises the advantages of RAM cells over nicads (cylindrical spiral type)

and flat-plate lead-acid cells as used in car batteries: see Table 1.

Some of the points made are that an AA-size RAM cell made as a bobbin can now produce 2000mAh of energy, compared with 500-600mAh for industry-standard nicads, 800-1000mAh for high-performance nicads and 1100mAh for Ni-MH cells. RAM cells (Fig 4) cost little more than single-use alkaline-manganese cells to manufacture; it should therefore be possible to market them at about half the price of nicad cells, size for size. RAM cells are claimed to be ideal at 2-3 hour discharge rates (ie relatively high current loads) and are thus well suited for Walkman, portable computer and presumably hand-held transceivers. Using cells in series-parallel, or spiral-wound, the high-rate performance is good enough for power tools and electric vehicles.

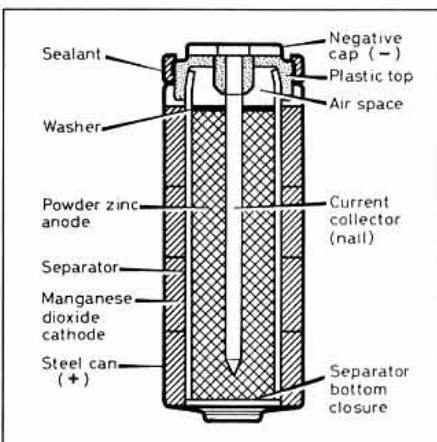


Fig 4: A bobbin form of reusable alkaline manganese (RAM) cell as proposed for AAA, AA, C and D sizes. It is uncertain when such cells will be marketed in the UK, but manufacturing licences have been issued.

G4IEY also draws attention to the Yuasa NP range of 'maintenance-free' sealed lead-acid batteries which are manufactured in Wales. This includes 4, 6 and 12V rechargeable batteries offering a choice of 25 models covering 0.8Ah to 65.0Ah.

**BROADBAND RADIALS**

THE AVAILABILITY OF FIVE amateur HF bands between 14.0 and 29.7MHz, including bands without any harmonic relationship, provides an incentive to develop broadband antennas capable of efficient operation over at least an octave of spectrum. A well established method of increasing the effective bandwidth of any antenna element is to increase the diameter/length ratio, as for example in the once popular caged dipole.

One practical form of broadband antenna exploiting this technique is the vertical biconical monopole, despite its rather complex structure. Way back in the *RSGB Bulletin* (now *Radio Communication*) of May 1966, pp305-306, an amateur example of a biconical antenna, originally described by W5WEU/4 in *CQ*, January 1966, was presented in *TT* together with details of a professional antenna of this type as used at a number of Royal Navy HF coast stations (described by H P Mason of the Admiralty Surface Weapon Establishment (now Admiralty Research Establishment) at a 1963 IEEE HF Conven-

Property	Ni-Cd (spiral)	RAM (bobbin)	RAM (flat plate)	Lead-acid (flat plate)[a]
Energy density, Wh/kg	27	47	32-52[b]	35
Power density, W/kg	72	30	215-430[b]	150
Cycles, shallow	500	300	100	300-400
Cycles, deep	100-200	100	40	20
Relative cost	2.5	1	1	1.2
Relative weight	1	1	1	2.3
Operating voltage	1.2	1.2	1.2	2.0
Charge retention (20°C)	3-6months	2-3years	2-3years	3-6months
'Memory' effect	yes	no	no	no
Toxicity of components	toxic	non-toxic[c]	non-toxic[c]	toxic

[a] typical SLI vehicle battery  
 [b] lower figure has been achieved, upper figure appears readily achievable  
 [c] mercury-free version  
 (Condensed from *Batteries International*)

Table 1: Characteristics of rechargeable cells.

tion) and implemented in three forms: for 2-5MHz, 4-11MHz and 10-26MHz. The W5WEU and ASWE designs are shown in the 7th editon of *Amateur Radio Techniques*, p277.

It was then emphasised that, as for any monopole antenna, it is necessary to use the best possible ground plane. For the ASWE designs, 36 buried radials about one quarter-wave long at the lowest frequency were used. Interestingly, I find that I then added the comment: "What I have never yet found is any detailed comparison between the effectiveness of a ground radial system and that of the three or four-wire up-in-the-air technique which we associate with 'ground-plane' antennas - and how much the ground conductivity below such sloping ground-plane systems affects low angle radiation". That was in 1966 and since then both these topics have been well aired (and answered) with some assurance!

It is now widely accepted (and in increasing evidence for amateur 1.8MHz practice) that a few elevated radials can be every bit as

effective as a massive buried earth system (although the very low angle radiation will be much attenuated in either case in areas of poor ground conductivity extending out to some 50 wavelengths). But when used with a broadband radiating element it is clearly desirable that elevated radials should also be broadband in order to achieve equal efficiency and a similar radiation pattern over the full frequency range.

What appears to be an effective means of implementing such an approach appears in the Russian *Radio* No 12, 1991, page 19, in a short article by UT5YB in conjunction with a biconical monopole antenna originally described by UW4HW in *Radio* No 9, 1981: see Fig 5.

If my guesses at the Russian text are correct, then UT5YB claims that fed with 75Ω coax feeder, the antenna shows an SWR of only about 1.05 to 1.2 throughout the band 14 to 30MHz. Each of the radials is similar to the vertical element, 5.1m (5100mm) long.

**MORE ON 1.8MHZ 'SWEET SPOT' PROPAGATION**

IN *TT*, MARCH 1992, pp36-37, a letter from Roger Crofts, VK4YB, commented on the remarkably reliable 1.8MHz 'openings' between Australia and North America. These have been observed by the SEANCE net between May and August in recent years. One of the North American participants, Bob Eldridge, VE7BS of Pemberton, BC confirms the curious fact that horizontally-polarized antennas having relatively high-angle radiation usually considered almost as a sine qua non for 1.8/3.5MHz DX.

But first a correction. VE7BS points out that the two 'tropical bands' broadcast DX enthusiasts who have been unravelling this apparently chordal-hop form of 1.8MHz transequatorial propagation are not, as I wrongly assumed, Australians. John Bryant is in Oklahoma and is publisher of *Fine Tuning's Proceedings* and Davis Clark is in Ontario and writes for *DX Ontario*.

A personal observation: VK4YB suggested that the UK is too far north to experience a 'sweet-spot' of the tropical Spread-F enhancement that appears to form one of the two ionospheric tilts, and thus would be unlikely to benefit directly. But I note that Pemberton BC is around latitude 50° North, roughly the same latitude as say Plymouth or Torquay in south-

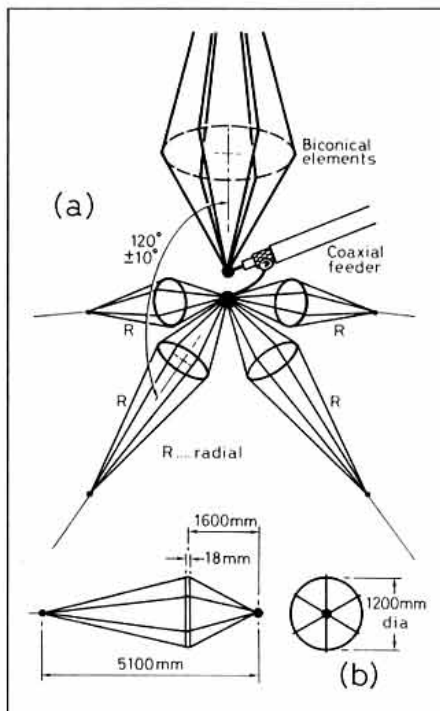


Fig 5: UT5YB's use of broadband radials in conjunction with a biconical vertical antenna covering 14-30MHz continuously with low SWR on the coax feedline.

## LOW-COST SOLAR CHARGER

THE POSSIBILITY THAT WE may yet see cheap solar power stemming from work at the Swiss Federal Institute of Technology was noted in the Jan 1992 *TT* p39. But currently, solar arrays are still relatively high-cost items, even if required only to provide a few watts for keeping a small nicad of lead-acid battery, used intermittently, up to scratch.

*Electronics Australia* (Feb 1992, pp 72-75) however, publishes a constructional project for a solar charger suitable for use with batteries of up to 12V and claimed as "probably the cheapest solar charger project ever published". This is based on amorphous-type solar panels rated at 6V, 1W output (more in brightest sunshine) costing \$A14.00 (roughly £6), or using enough photovoltaic solar cell 'offcuts' to make a

6V, 1.5W panel at about half the price. A DC-DC converter (Fig 6) is then used to push the charging voltage up to that required for batteries of between about 7.5 to 14V, making it possible to construct the charger for about £8. A complete kit, including PCB, is marketed in Australia for this project by Oatley Electronics but the components are probably available in the UK.

The charge to a 12V battery varies between 400mW and 1W, representing a charge current ranging from 30mA to over 80mA depending on sunlight conditions. This is sufficient to maintain the charge of a vehicle battery etc, if this is to be left unattended for long periods and then used only intermittently. The unit can also be used to charge nicad cells. Six cells should charge at between 50 to 100mA, sufficient to fully

charge a set of AA cells in some 12-14 hours: see Fig 7.

The DC-DC converter is based around a 400Hz oscillator (IC1a) which after amplification switches the complimentary germanium output transistors (AD161, AD162) with two 'charge pump' voltage doublers which together give an output of up to four times the input voltage. Batteries of less than 12V are best connected between B+ and B- while 12V lead-acid batteries between B+ and earth.

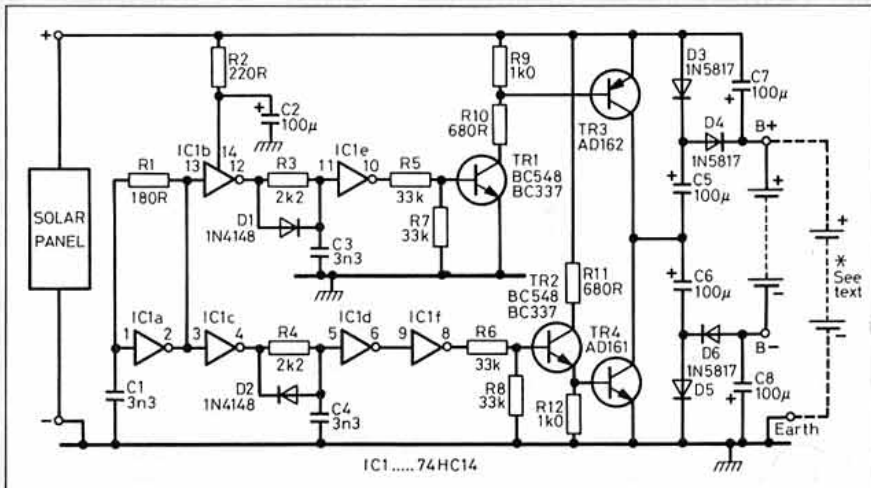


Fig 6: The *Electronics Australia* low cost solar battery charger with 400Hz DC-DC converter. A 12V battery is best connected as shown by dotted connection.

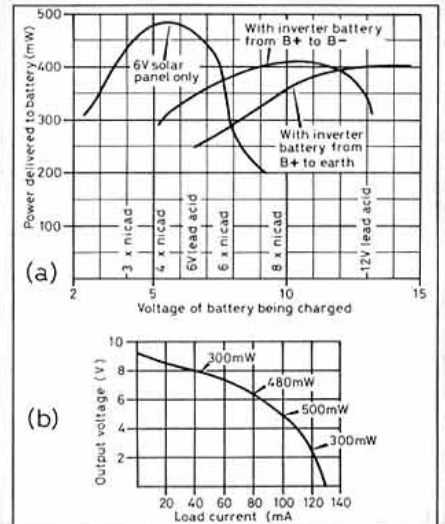


Fig 7: (a) Power transferred by the solar charger with a solar panel rated at 6V 1W measured in Australian winter conditions. Power transfers of over 1W expected under Australian summer conditions. (b) Power transfer directly from a 6V 1W solar array under different load conditions. Optimum power transfer with load currents of about 100mA. Possibly twice the power under Australian summer conditions.

west England while, say, Rio de Janeiro is near the Tropic of Capricorn which runs through Queensland, Australia, where VK4YB has been located. There would thus be dawn and dusk tilts available to UK amateurs with the possibility of South American amateurs taking advantage of tropical Spread F. So what are the chances of a similarly reliable summer path on 1.8MHz between PY and the UK?

But back to the question on vertical radia-

tion patterns. VE7BS queries the accepted wisdom that high-angle DX signals must always imply multi-hop propagation with its associated ground (or sea) reflection losses and thus less likely to get through the low-angle signals. He writes: "On 1.8MHz I use a delta loop antenna much the same as the one shown in Fig 8(b) of *TT*, November 1989. The apex is about 115ft above the physical ground and the base wire about  $0.4\lambda$ . It is fed near one bottom corner about  $0.25\lambda$  from the apex

using  $75\Omega$  coax direct feed. The resonant frequency can be raised by lifting the centre of the base wire. I also use a full wave horizontal loop (highest point about 80ft, lowest about 40ft) for response to higher angle signals and for changing from vertical to horizontal polarization, switching from one to another for reception as needed and usually transmitting on both in parallel and sometimes receiving similarly on both, disconnecting one or the other if the signals fade.

"For several years I have operated through our summer on 1.8MHz around our sunrise and have data on the reliability of the path to VK - the 1991 chart is shown as Fig 8. VK4YB MCs the VK end and from mid-May to mid-August had propagation to North America on 95% of the days. Many of the Australians use dipoles relatively close to the ground and many stations on both ends of the path find that as sunrise approaches dipoles perform better than efficient monopoles. VK4YB is the most consistently strong signal (often perfect S9+ copy on SSB) and his phased dipoles at about 100ft are almost better than his 100ft vertical plus radials".

VE7BS, however, feels that the 1.8MHz path between Pemberton and Australia is very different from 50MHz TEP. He can find

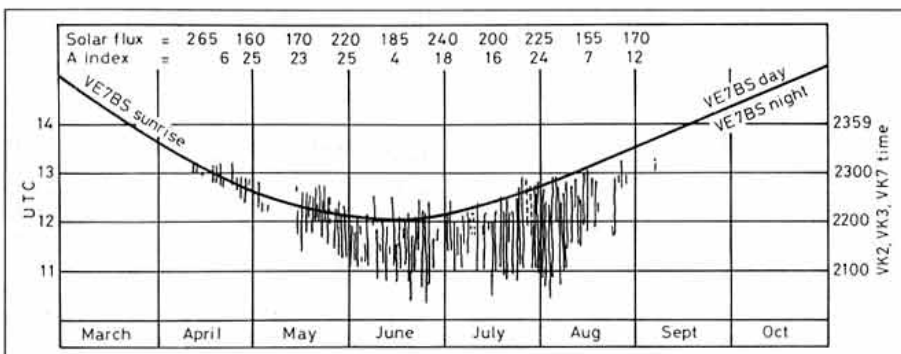


Fig 8: VE7BS's record of the 1.8MHz openings from Australia to British Columbia during the 1991 'summer season'. Propagation to VE7 on 114 days; no propagation on 18 days; uncertain 10 days. Start times are influenced by the fact that VK4YB called CQ each day at 1100z.

very little correlation between propagation on 1.8MHz even with that on 1620kHz and 2325kHz.

He writes: "Playing with some ray-tracing programs written by NM7M, I think I can see that at the critical time one ray goes right through, one comes right back down, and the 1.8MHz ray refracts and glances at whatever. I believe that the unstable-E condition that Raymond Fricker considers unreliable is the one that allows me to get over the hill and along to VK . . . VK4YB will be in VK6 for about 18 months, and we do not yet know whether anyone else will take on regular supervision of SEANCE. But we have worked VKs consistently through our summer on 1.8MHz for several years, so I guess the experiment will go on".

**"PARFICK" MORSE?**

AS A DEDICATED USER OF old fashioned up-and-down manual Morse keys, I was interested to read in *Morse Magnificat* (No 22, Spring 1922) a letter from Gordon Brown, VK1AD, claiming that 'perfect' Morse is not necessarily the most readable Morse, particularly at higher speeds. He claims: "Hand-sent Morse is superior to machine generated Morse . . . . When [we] old pros were taught Morse . . . . it was impressed on us most emphatically that in letters such as 'y', 'q' or 'w', or anything that finished with a dash, the final dash must be held on just a little bit longer than normal. Only a couple of milliseconds, but definitely longer than a dash in the middle of a letter . . . . With machine-generated 'perfect' Morse you are not quite sure at high-speed whether you hear a 'y' or a 'c', a 'q' or a 'z', and so on. This was first noticed about the time Mr Wheatstone invented his Morse tapes and high-speed transmitter . . . ."

This is an interesting concept and I suppose that with fully microprocessor-controlled electronic transmission it would be possible to generate such accented Morse. But the human flexibility that is possible with manual sending on a straight key, with variations in speed to emphasise words or symbols, or in the formation of letters, is all par for the course! Similarly speed can be adjusted to suit band conditions.

Incidentally, Tony Smith, G4FAI (1 Tash Place, London N11 1PA, Tel 081 368 4588), the consultant editor of *MM* is compiling detailed information on the many varieties of the popular 'wartime' Services Morse key, known generally as type 'WT8 Amp' but manufactured by a number of firms in different countries and under different Mark numbers etc. He has already identified over 40 different versions made in six countries (Australia, Canada, England, New Zealand, South Africa and the USA) in different years.

He is seeking further identification legends (eg KEY WT8AMP No 2 - N.E. Co 1941) and then has a form helping the owner of the key to list the various characteristics of the particular model (eg number of bridges, shape of base corners, type of tensioner, etc, etc). An article in *MM22* by Jim Lycett, G0MSZ, describes and illustrates eight of the basic variations as well as the original W B Morse key introduced in 1938 by Whiteley Electrical Radio Ltd that appears to have been the first of this large family of WT8AMP keys.

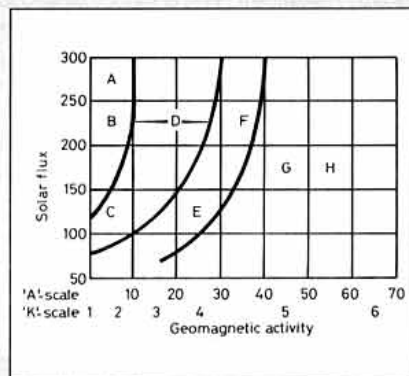
**FORECASTING BAND CONDITIONS**

A RECENT ITEM IN THE monthly newsletter of the Thames Valley Amateur Radio Transmitters Society by John Pegler, G3ENI/G3TVS, provides a handy means of translating basic propagation forecasts into likely band conditions - although one should remember that weekly or monthly forecasts may not always be reflected in the real-time state of the ionosphere.

G3ENI writes: "Amateurs who have been active for many years over several sunspot cycles may develop an instinct for judging band conditions. Routine checking of DX broadcasting stations on adjacent bands is often helpful, as are the 28MHz worldwide and 14MHz sequential beacons. However, it is possible to carry out basic forecasting oneself to supplement and update the propagation information given during the *GB2RS* Sunday news bulletins. Ignoring the multiplicity of solar events which cause variations in the ionosphere, we need to consider main items. First, the 'solar flux' which is noise measured on 2800MHz each day and which ranges from a minimum of about 66 units to a maximum of about 300 units. Good conditions on the higher HF bands require a high flux. Second, 'geomagnetic activity' which acts against the benefits of high flux and may be presented as either 'A' or 'K' units.

"The latest flux, geomagnetic level and other information can be obtained from the US National Bureau of Standards station WWV which provides these at 18 minutes past each hour simultaneously on 2.5, 5, 10, 15 and 20MHz. If these are all inaudible, the information can be obtained at the cost of an international telephone call to 0101 303 497 3235. The pre-recorded information is passed in under

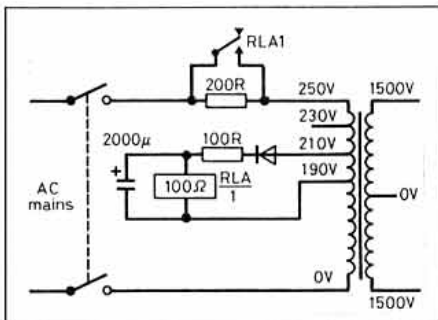
one minute. Fig 10 shows, in approximate terms, the relationship between solar flux and geomagnetic activity to determine expected propagation conditions. On the chart, solar flux is plotted vertically. The geomagnetic index is shown horizontally with the two scales: the K scale is based on readings taken eight times a day, each covering the previous three hours. The A scale is based on the eight K values for the previous day. The intersection of the flux and geomagnetic activity values determines the expected conditions, divided into eight zones as given in the caption".



**Fig 10: Chart relating solar flux and geomagnetic activity to likely band conditions as published by G3ENI in the *TVARTS Newsletter*.**  
 Zone A: Above normal, 50MHz open, 21 to 28MHz open up to 24 hours  
 Zone B: Above normal, 21 to 28MHz open up to 24 hours  
 Zone C: 21 to 28MHz alive  
 Zone D: Normal conditions  
 Zone E: Below normal, unsettled  
 Zone F: Below normal, disturbed  
 Zone F: Disturbed, sub-storm level, aurora may form  
 Zone H: Storm level, auroras

**SOFT START FOR HIGH VOLTAGE PSU**

JEREMY CARROLL, G3NFW, writes: "The February *TT* (Fig 6) showed further ways of soft-starting high-voltage power supplies. An alternative is shown in Fig 9. This circuit provides a slight delay before the soft-start 200Ω series resistor is shorted out by the relay contact. A feature of this arrangement is that the relay will only operate reliably if the secondary is lightly loaded at the moment of switch-on. Otherwise the voltage drop across



**Fig 9: G3NFW's soft-start circuit used for many years with a 2kV PSU for a linear amplifier.**

the 200Ω resistor may be such that insufficient voltage develops across the primary winding for the relay to operate.

"With a short-circuit on the secondary side, only minimal voltage will develop across the transformer primary and hence the relay will not operate. Whilst this provides some protection for components on the secondary side of the transformer, it introduces a problem on the primary side where the series resistor, with almost full mains voltage across it, attempts to dissipate around 250W (for the value shown). Suitable precautions need to be taken to avoid problems; nevertheless the circuit has operated uneventfully in my linear amplifier for almost 20 years."

**HERE AND THERE**

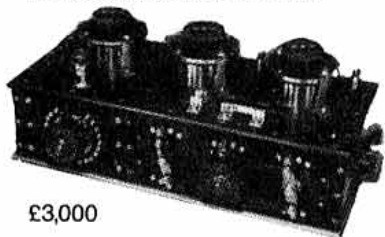
BOB CONNELL, G4JQY, draws attention to the Swedish TWC battery charger marketed in the UK by Aqua Marine for boat batteries. The charger cycles the charging voltage between 14 and 14.6V and it is claimed that this "creates a stirring effect in the electrolyte, preventing the charge being held close to the battery plates. Helping to distribute the charge in this way enables a 100% charge to be achieved." It's a new idea to me. **G3VA**



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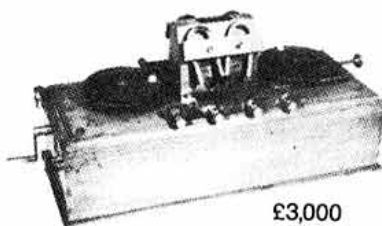
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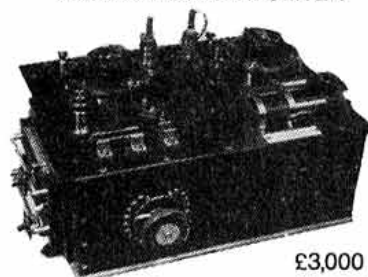
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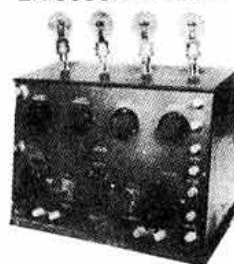
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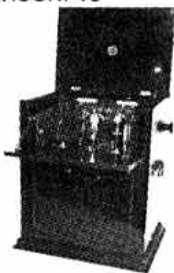
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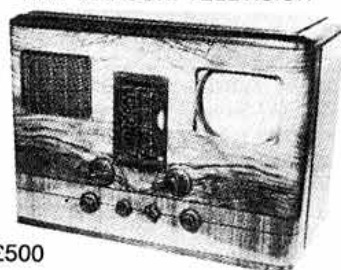
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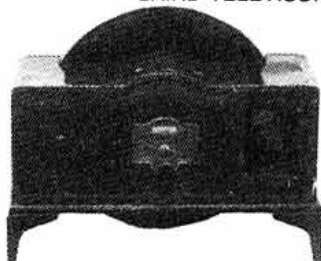
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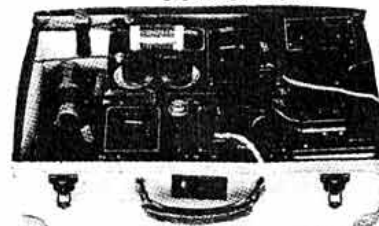
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The FT890 is an exciting new all band multimode HF mobile/base transceiver from Yaesu. Designed to replace the very popular FT757GX and FT757GXII, the FT890 is a worthy successor.

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Supplied with an FNB28 and NC28C charger the FT415 produces 2.5W RF output, this can be increased to 5W by using the optional FNB27 12V ni-cad pack or the EDC5 DC adaptor.

Others options include: CTCSS unit, desk charger, mobile bracket, external speaker, microphones, vinyl cases and headsets to operate with the internal VOX circuit.

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Probably the most useful feature is the ability to programme the memory channels with an alpha-numeric code up to 4 characters long to easily identify certain memories ie. S20, R1 or repeater call signs, 3SN etc. etc.

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G-800SDX	Bell type 450 dog var. speed	£332.07	C
G-1000SDX	Bell type 450 dog var. speed	£376.00	C
G-2000RC	Bell type round controller	£454.68	C
G-2700SDX	Bell type 450 dog var. speed	£949.00	C
G-502A	Elevation meter controller	£203.32	C
G-54008	Azimuth/elev. dual control	£383.16	D
G-56008	Azimuth/elev. dual control	£444.00	D
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RC5A-3	Bell type var. speed & preset	£434.24	C
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36ft versions of above  
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All towers except mobiles are available from stock 13M20 and 16M20 series all supplied with auto brake winches. All are supplied with H2R head unit drilled to take GS-065 bearing. Holding down bolts for BP and FB towers are available at \$29.38 per set extra.

Alternative winches and head units are available at extra cost

Delivery is by quotation, dependent upon distance

Mobile towers also available to order

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HC100	A.T.U. 80-10m 5 band 200W P.E.P.	£109.00	B
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HL110V	2m 2/10W in 100W output	£220.00	C
HL180V	2m3/10/25W in 170W output	£299.00	C
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HX240	2m to HF80 40, 20, 15 & 10m	£254.50	B
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# A Novice ATU

by K Ruiz, G4SGF/ZB2MD

**D**ESCRIBED HERE IS A piece of equipment which could still turn in good performance many years after one obtains a full licence. Some purists would argue that an aerial tuning unit (ATU) is unnecessary, and they are right. However we do not live in a perfect world! In the UK, the G5RV is a very popular aerial, and rightly so.

It is a multiband dipole with no traps, capable of use on all the amateur bands from 10 to 160m. In order to use this and other multiband aerials, an ATU is essential. The one described here is very heavily based on that described by Doug DeMaw, W1FB [1], reproduced in *QRP Classics* and featured in *RadCom* [2].

The components used are readily available from various mail order companies, and the unit will handle powers up to about 5W. It matches 10 to 160m with no difficulty, and can be built in a small box for around £10 including hardware.

## CIRCUIT

THE BASIC CIRCUIT is shown in Fig 1. On transmit, the signal presented at L1 is coupled into L2, which makes a resonant circuit with C1. The wanted signal appears at the top of L2/C1, and is passed to C2 which couples it to the aerial. Unwanted signals, by virtue of C1 and L2 not being resonant, are rejected.

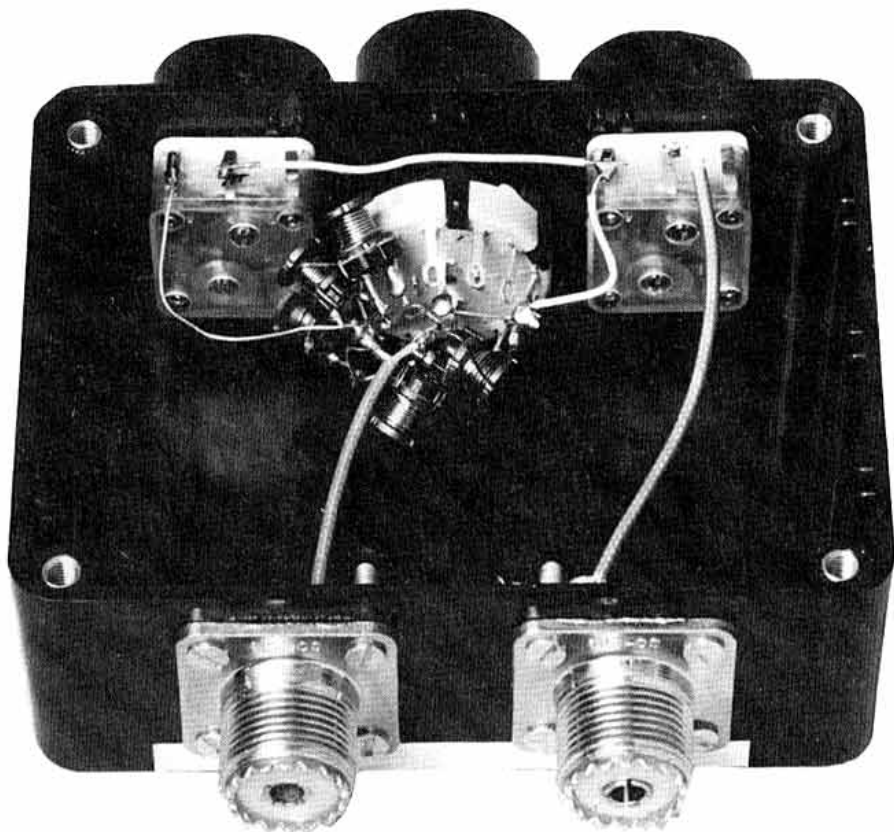
This is, therefore, a resonant ATU, unlike some other designs. On transmit it offers some attenuation of harmonics, which is always a very desirable feature. On receive it provides rejection of out-of-band signals.

C1 and L2 are initially chosen to be resonant in the 80m band. In order to make the ATU operate on other bands as well we need to change the value of either L2 or C1.

It is easy to change the value of L2, as shown in Fig 2. S1 in position 1 leaves the circuit as in Fig 1. In positions 2, 3 and 4 it brings L3, 4 or 5 into circuit in turn. The new coils are, in effect, placed in parallel with L2 changing the inductance of the tuned circuit so that C1 now tunes other frequencies. By choosing appropriate values continuous coverage from 10 to 80m is obtained. Inductances in parallel behave as resistors in parallel:

$$[1/L_{tot} = 1/L_a + 1/L_b]$$

In order to tune 160m we need an extra coil as in Fig 3. When S2 is in position 1 the circuit is exactly as in Fig 2. With S2 in position 2, L6 is placed in series with L2, and the total inductance is the sum of L2 and L6. C1 can



Internal view of the Aerial Tuning Unit. A small plastic or metal box makes a suitable housing.

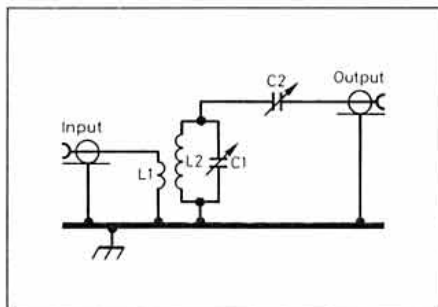


Fig 1: Basic circuit of the ATU.

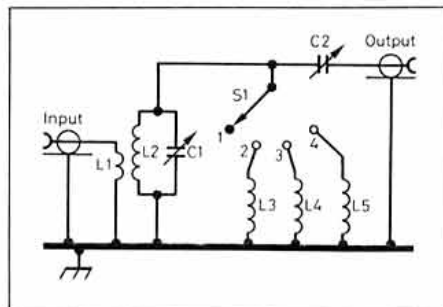


Fig 2: Coils added for other bands.

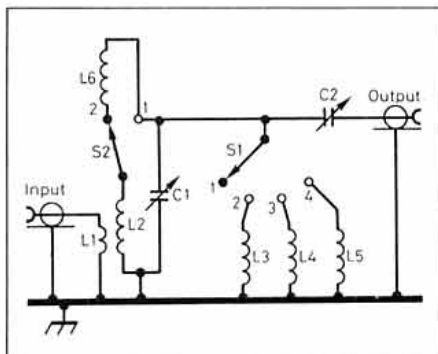


Fig 3: L6 added for 160m.

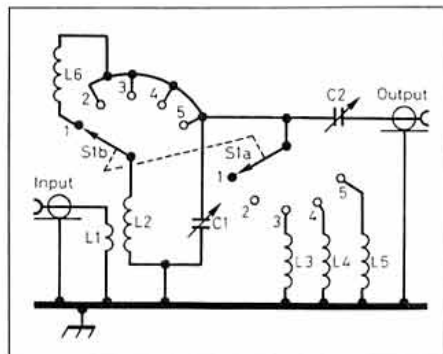


Fig 4: Two-pole switch for all bands.

now tune 160m. The functions of S1 and S2 can be combined in a single switch, as in Fig 4.

**CONSTRUCTION**

ALL COMPONENTS EXCEPT the capacitors are assembled on the switch! See Fig 6.

Note from the circuit diagram that the rotor of C1 is earthed, whereas no part of C2 is at earth potential. In order to avoid severely detuning the ATU when making adjustments to C2, its knob should be plastic. If a metal box is used, ensure that no part of the shaft comes into contact with the box.

The capacitors are mounted using M2.5 screws. Take care that these do not foul the vanes of the capacitors, which is easily done. Washers between the box and the capacitors will avoid this happening.

Ensure that the trimmer capacitors built into the case of the variable capacitors are set to minimum value.

**IN-USE**

THE ATU SHOULD BE used to minimise the reflected power from the aerial to the transmitter in conjunction with a SWR bridge. Adjust C1 and C2 repeatedly to achieve this, with preferably as large a capacitance as possible on C2.

S1 in position 1 permits tuning of 160m, in 2 of 80m, in 3 of 30 and 40m, in 4 of 17 and 20m and in 5 of 10-17m.

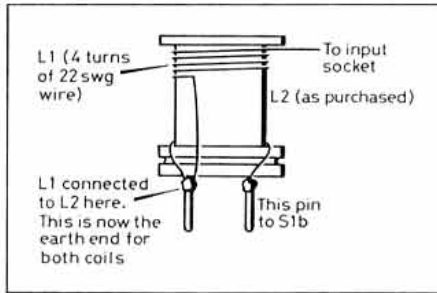


Fig 5: L1 is wound over L2 as shown.

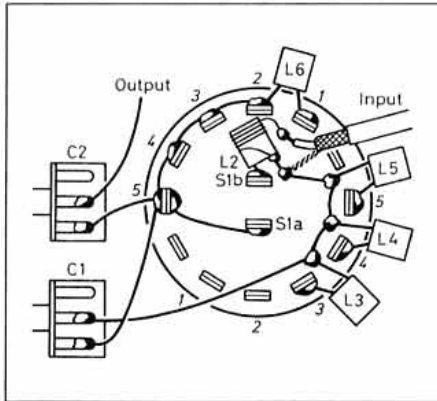


Fig 6: Coils are mounted on the switch assembly.

As described this is a low power piece of equipment. While not tested to destruction, it has handled a power level of 10W RF adequately.

**COMPONENTS LIST**

No. reqd.	Description	Source	Cat. No.
2	Variable capacitors C1+2	Maplin	FT78K
1	27µH coil L2	Cirkit	34.62085
1	10µH coil L3	Cirkit	34.62080
1	2.2µH coil L4	Cirkit	34.62076
1	1µH coil L5	Cirkit	34.62074
1	100µH coil L6	Cirkit	34.62090
2	S0239 sockets (in and out)	Maplin	BW 85G
1	2P6W switch S1	Cirkit	53.21025
1	Box - Any small plastic or metal box can be used.		
2	Plastic knobs for capacitors		
4	Stick on feet		

L1 is formed by winding four turns of 22SWG enamelled copper wire over L2, as in Fig 5. One end of L1 is connected to the end of L2, and where these are joined is a common earth connection. The transceiver input is connected to the other end of L1.

Mounting screws for the capacitors specified are M2.5.

Screws, nuts and washers are also required to mount the input and output sockets.

**REFERENCES**

- [1] QST, Sept 88, p26-28
- [2] TT, RadCom, Feb 89 p34

**PCB AND KIT SERVICES FOR RADCOM PROJECTS**

**PCBs**

**G3BIK BATTERY OPERATED AF OSCILLATOR AND WAVEFORM GENERATOR (September 1990)**

PCB Layout	93990	£4.70
Full Kit (including box)		£25.85

**G4WIM 50/70MHz TRANSCEIVER (May/June/July 1990)**

Complete set of boards	567WIM90	£67.56
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**G4PMK SIMPLE SPECTRUM ANALYSER (November 1989)**

RF Board	118946	} Prices on request
Video/sweep board	118947a	
Marker generator/PSU	118947b	
Complete set of 3 boards	1189SSA	

**G3TXQ TRANSCEIVER (February/March 1989)**

Main IF/Audio	028945	£11.75
VFO	028946	£5.55
Driver/Preamp	028947	£6.75
Low pass filter	028948a	£7.65
Band-pass filter	028948b	£4.70
Control board	038942a	£5.30
Regulator board	038942b	£2.35
Complete set of 7 boards	0289TXQ	£27.61

**BRS54049 DUAL CONVERSION MULTIMODE RECEIVE IF/AF STRIP (May/June 1985)**

PCB LAYOUT	643585	£12.75
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All prices include VAT, postage and packing

These PCBs are not available from RSGB HQ, but direct from Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield, B74 4JF. Tel: 021 353-9326.

**KITS**

**THE FOLLOWING KITS ARE AVAILABLE AS ELECTRONIC PARTS ONLY.**

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G3TSO	Frequency Display	£27.50
G3TSO	80m SSB Transceiver	£87.00
G4WIM	Dual Band Project	£457.35
G4PMK	Spectrum Analyser	£53.00
G3RVM	Ultimate Keyer	£18.00
G3TDZ	White Rose Rx (Main Board)	£29.95
G3TDZ	White Rose Converters	POA
Technical Topics	144MHz Doppler	£4.00
First Steps.	John Case PSU	£32.80

Prices shown are inclusive of P&P.

The above prices are for full component kits. The bigger kits are produced in module form if the constructor wishes to spread the cost. Please telephone for a full list.

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## R7

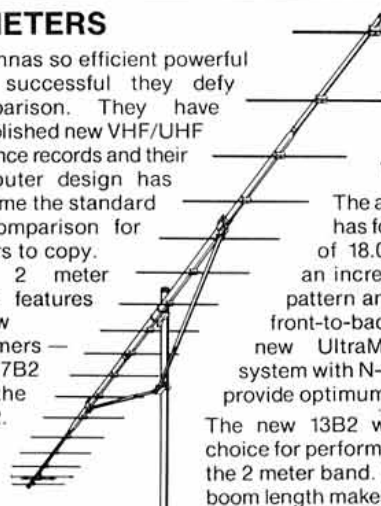
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### 2 METERS

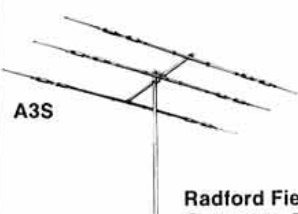
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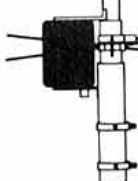
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# 2m Interference Reduction System

by Trevor S Day, G3ZYY

**T**HIS CIRCUIT WILL substantially reduce or completely eliminate interference from almost any local source whilst leaving the wanted signal relatively unaffected, even though it may be on the same frequency! Once the unit is adjusted for a particular source of interference, the user is free to operate anywhere in the band without further adjustment.

The design of the circuit limits operation to a small band of frequencies, however it is sufficient to cover the entire two metre band. The principle can also be used at 50 and 70MHz and indeed this unit was first constructed to work at 50MHz in order to remove computer hash. (See issue 28 of the *UK Six Metre Group Newsletter*).

## PRINCIPLE OF OPERATION

THE BLOCK DIAGRAM (Fig 1) shows the method of operation. Both the wanted and interfering signals arrive at pre-amplifier 1 from the main antenna via the antenna switch. The sense antenna, by virtue of its inefficiency at the wanted frequency, picks up predominantly the interfering signal and passes this to pre-amplifier 2. Both pre-amplifier outputs eventually add in the signal combiner. However, the interfering signal is first changed in phase by 180°. The resultant output of the combiner is the same as the input to pre-amplifier 1 from the main antenna less the interfering signal.

## CIRCUIT DESCRIPTION

BOTH PRE-AMPLIFIERS are standard dual gate MOSFET designs, using the 3SK81

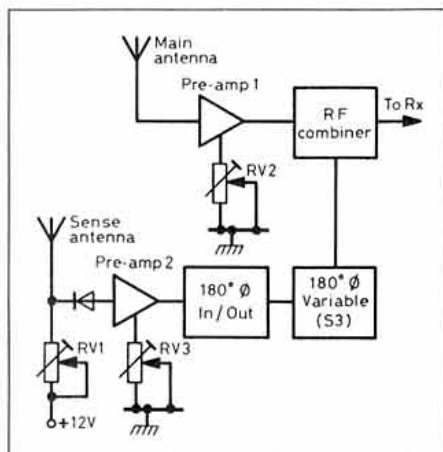


Fig 1: The two signal paths are combined via a phase-shift network.

device as these were to hand (Fig 2). Almost any common dual gate MOSFET will work in this configuration, eg the 40673. RV3 controls the gain of pre-amplifier 2 and is adjustable from the front panel. Its purpose is to match the level of the interfering signal from pre-amplifier 2 to the interfering signal from pre-amplifier 1 at the signal combiner, thus ensuring complete cancellation. RV2 is a preset potentiometer controlling the gain of pre-amplifier 1 in the wanted signal path from the main antenna.

Pre-amplifier 2 feeds its output to a fixed 180° phase inverter (DL1) formed by an electrical half-wavelength of RG174U miniature 50Ω co-axial cable which may be switched in or out of circuit by the diode switch comprising D6, D7, D8 and S2. A further variable 180° phase shift is achieved by S3. This is a half-wavelength of RG174U cable in eleven sections, switched in approximately 16° phase change steps.

The connecting cables from the switch to the PCB should be as short as practically possible (six inches max) as these will introduce additional phase changes. However, these are compensated for by the fine phase control. Fine phase control is achieved by a 1N914 diode acting as a varactor across the input circuit to pre-amplifier 2. The additional capacitance of the diode, controlled by RV1,

alters the input tuning of pre-amplifier 2 but more importantly slightly shifts the phase of the signal arriving at the pre-amplifier. The output of the phase switch and of pre-amplifier 1 are both fed to a signal combiner comprising R8, C14, C15, L5 and L6. This is a 50Ω signal splitter operating in reverse. Its purpose is to add both signals and, as the interfering signal in one path is 180° out of phase with its complement in the other path, the interfering signal is drastically reduced or eliminated completely.

## CONSTRUCTION

THE MAIN PCB IS constructed from double-sided glass fibre board; the underside layout is shown in Fig 3. The top side is blank copper. Track widths are not especially critical and the board can easily be marked with a Dalo type pen on the track side and some nail varnish on the reverse. The gate 2 voltage to each pre-amplifier has been derived separately to allow the two 'halves' of the circuit to be separated by screens in order to reduce cross-talk. The screens are constructed from the same double-sided PCB, about 20mm wide and soldered into place prior to mounting the components.

The phase switch is a twelve way rotary switch soldered to a PCB carrier which holds

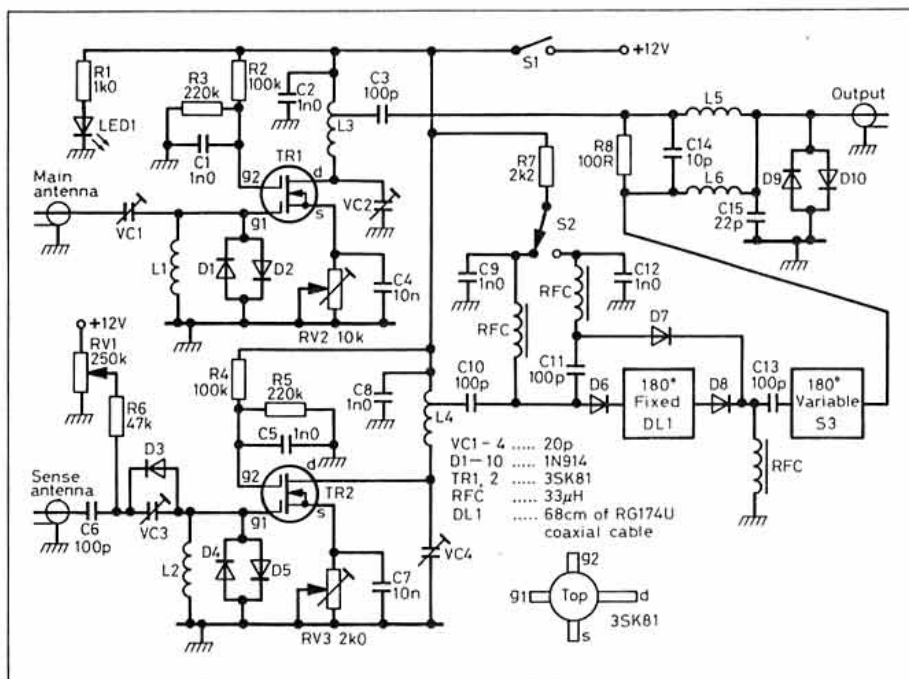


Fig 2: Circuit diagram shows how signals from the two antennas are amplified in a variable gain MOSFET configuration.



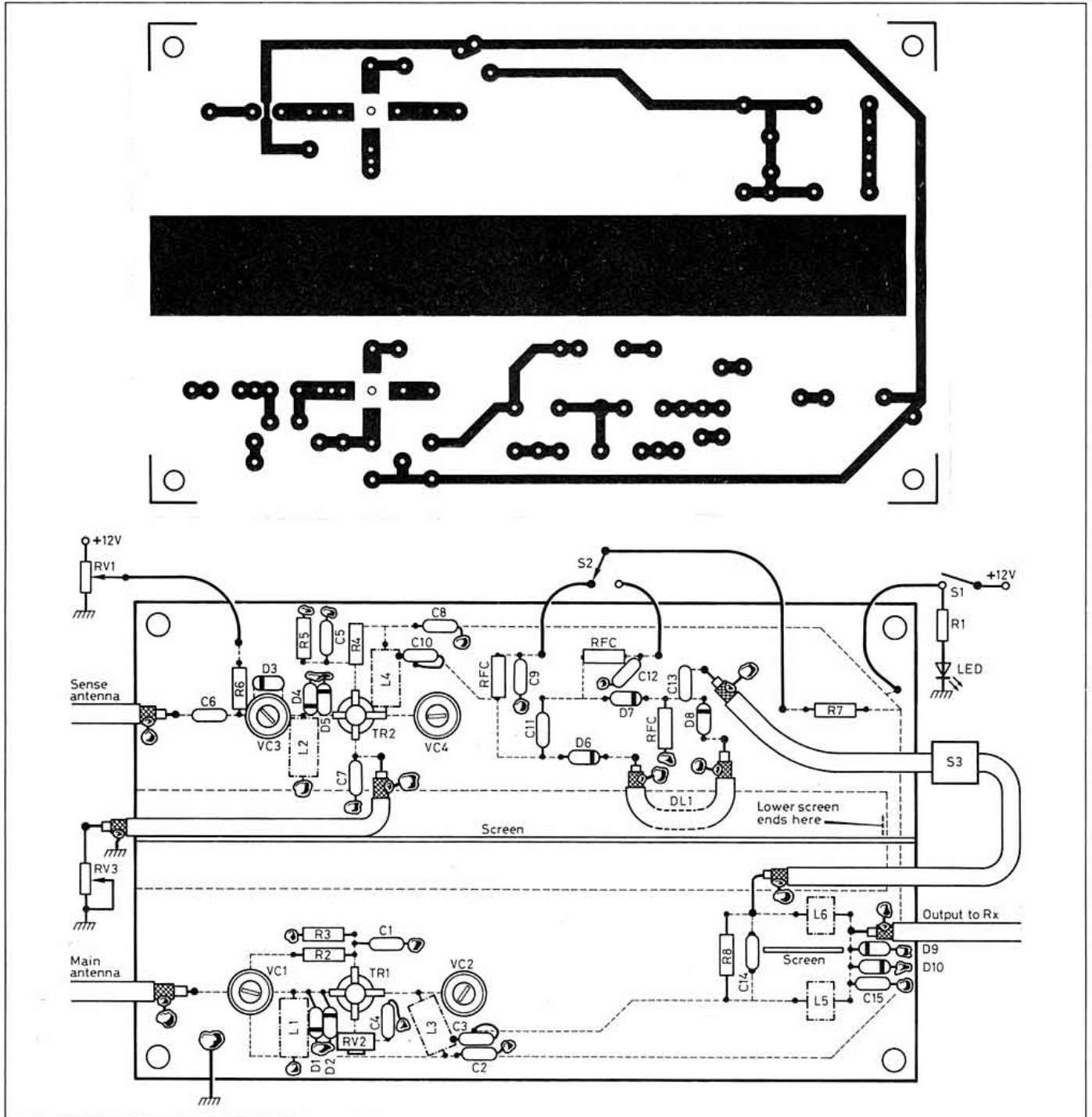


Fig 3: Underside and component layout of the PCB, shown actual size. Track widths are not especially critical.

the eleven loops of RG174U co-ax (Fig 4). The PCB carrier should be fashioned to suit the size of switch used along the lines shown in the diagram. Losses through the switch are not particularly significant as only the amplified interfering signal passes through it. The carrier is made from the same double-sided PCB stock as the main board. When complete, the co-ax loops lie in the same plane as the switch shaft. (See photograph). The fine phase control will compensate for the extra path length through varying sizes of switch; however, a smaller switch is preferred for compactness. Whichever box is used to hold the device, it should be RF tight. A die-cast aluminium box is ideal and will need to be

approximately 203x114x64mm. Component values are not especially critical, although the coil dimensions should be adhered to and the components forming the combiner should be as close to those specified as possible. Note that a small screen is also required to separate L5 and L6 in the signal combiner. The fixed 180° phasing line DL1 may be coiled and taped up for compactness.

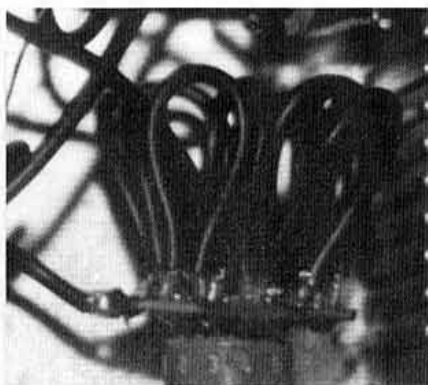
### SETTING UP

ADJUSTMENT PRIOR TO use is quite straightforward and requires no test equipment:

a) Power up the unit and connect it between

the receiver and main antenna, leaving the sense antenna disconnected.

- b) Tune to a weak signal on FM or a carrier on SSB/CW and with the fine phase control at mid position, adjust VC1 and VC2 at pre-amplifier 1 for best signal to noise. Adjust RV2 for optimum signal level at the receiver.
  - c) Disconnect the main antenna and connect the sense antenna. With RV3 adjusted for a low 'S' meter reading, adjust VC3 and VC4 in pre-amplifier 2 for maximum signal.
  - d) Re-connect the main antenna.
- This completes the setting up adjustments.



Details of switched coax loops.

**OPERATION**

AS WITH MOST electronic devices, operation is simpler to carry out than to describe.

- a) Tune to the interfering signal; if it is broadband then attempt to find a peak.
- b) Adjust the balance control (RV3) to find a dip in the level of the interfering signal, switching the fixed 180° phasing line in or out as required. It may be a shallow dip, but a dip must be found. If no dip is apparent, then the sense antenna must be adjusted or changed.
- c) Rotate the phase switch (S3) to find a deep dip in the interfering signal, adjusting

**COMPONENTS LIST**

- L1 8t 18SWG 3/16" (4.5mm) id 1/2" (13mm) long
- L2 8t 18SWG 3/16" (4.5mm) id 1/2" (13mm) long
- L3 8t 18SWG 3/16" (4.5mm) id 1/2" (13mm) long, tap at 1 turn
- L4 8t 18SWG 3/16" (4.5mm) id 1/2" (13mm) long, tap at 1 turn
- L5 8t 18SWG 1/4" (6.5mm) id 3/4" (19mm) long
- L6 8t 18SWG 1/4" (6.5mm) id 3/4" (19mm) long

- C1 1nF
- C2 1nF
- C3 100pF
- C4 10nF
- C5 1nF
- C6 100pF
- C7 10nF
- C8 1nF
- C9 1nF
- C10 100pF
- C11 100pF
- C12 1nF
- C13 100pF
- C14 10pF
- C15 22pF
- VC1, VC2, VC3, VC4 20pF

RFC 33µH x 3

- R1 1k
- R2 100k
- R3 220k
- R4 100k
- RV1 250k lin.
- RV2 10k lin. pre-set.
- RV3 2k lin.
- R5 220k
- R6 47k
- R7 2k2
- R8 100R

- DL1 68cm RG174U co-ax braiding to earth plane.
- TR1, TR2 3SK81
- D1-10 1N914
- LED Red or Green

the balance control to maintain the dip. If no deep dip is found, then switch in (or out) the fixed 180° phasing line and try again.

- d) Finally adjust the fine phase control (RV1) for best null, further adjusting the balance if required.

A measure of the effectiveness of the unit can be achieved by switching in and out the fixed 180° phasing line and observing the change in signal level; the effect is quite startling! To achieve optimum results the sense antenna should be remote from the shack as movement of the antenna, or people in the shack, can affect the arrival phase of the interfering signal and make the null unstable. Even if a random short length of wire or whip antenna is used, it should either be outdoors or in the loft and fed to the shack via co-axial cable.

**LIMITATIONS**

THE OPERATION OF this device relies upon the interfering signal arriving at both antennas in a fixed phase relationship; ie it does not matter what the relative phase difference is as long as it does not change. Additionally, the amplitude of the unwanted signal at each pre-amplifier input must be relatively constant. In other words, if you change your beam heading then the balance of the circuit will be upset and RV3 will need re-adjustment. The other controls should remain unaltered.

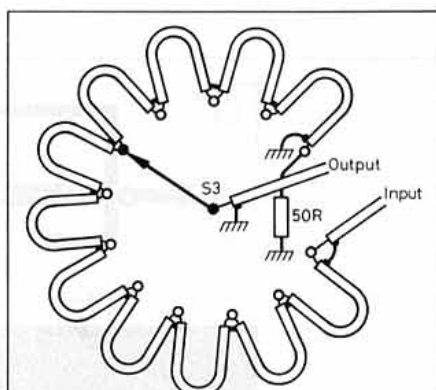
Any active device will add noise to the received signal and this one is no exception. The wanted signal to noise ratio may be degraded slightly but the benefits of reducing interference far outweigh this disadvantage. The system will not remove 'DX' interference as the sense antenna will be ineffective at low signal levels. Remember also that the sense antenna may introduce unwanted signals that are not audible on the main antenna (mains wiring noise etc.). If this proves to be the case, then the sense antenna should be moved to a less noisy location.

To achieve useful results, the difference in strength of the interfering signal at both pre-amplifiers *must* be able to be compensated for by RV3. The sense antenna must be chosen so that this condition can be met. In essence, understanding the principle of operation will enable best results to be achieved.

**USES**

THE ORIGINAL REASON for devising this circuit was to remove computer hash at 50MHz for which it has proved highly successful. The two metre circuit described here was built as an experimental novelty. However it has proved to be most versatile, and the unit will deal effectively with the following situations:

- a) A local packet node or a local amateur desensing your receiver across the 2m band.
- b) A local amateur with a 'wide' signal (for whatever reason); unlike a notch filter not only is the 'fundamental' signal removed, but also all in-band spuri. This holds true even if the 'wide' signal is caused by your receiver's front-end overload; eg from a contest station on a nearby hilltop.
- c) Your own, or a neighbour's, computer



11 coaxial cable loops each 6cm long

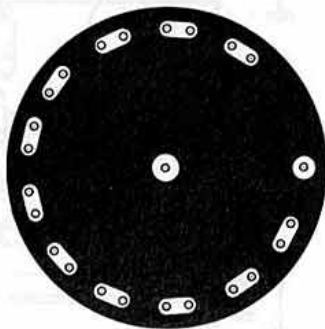
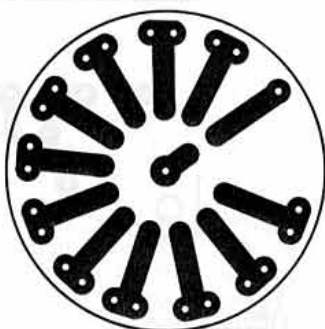


Fig 4: Coarse adjustment of phase uses a 12-way switch, fitted on a double-sided PCB carrier.

generated interference. (Bear in mind that a computer may radiate signals from several sources but only one source can be dealt with at a time).

- d) Next door's persistent central heating system noise.

The most impressive demonstration to date has been a local amateur on FM, many dB over 'S9', transmitting at the same time and on the same frequency as another station at 'S5'. Using two receivers in the shack, one with this unit and one without, both transmissions were heard simultaneously without a trace of interference on either.

**CONCLUSION**

THE UNIT IS RELATIVELY easy to construct and is simple in concept. For anyone who has ever said "It's that ZYY again; what I need is a ZYY filter", then this is it!

**ACKNOWLEDGMENTS**

VHF/UHF Manual, G R Jessop, G6JP, (RSGB)  
ARRL Handbook, (ARRL)



# RSGB'92

## National Convention and Amateur Radio Exhibition

**Saturday 30 May - Sunday 31 May**

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**Sunday 31 May, 10 until 5**

(Access for disabled at  
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Talk-in on 2 metres, S22

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*The screen presentation is very versatile with adjustable*

*windows which are easy to change using pull down menus. Although the software can manage 52 streams, Kantronics sensibly suggest 5 on VHF and 5 on HF, so this allows up to 10 simultaneous connects. This is virtually impossible normally unless the software separates the streams into distinct windows. The KAM holds PMS and node facilities in firmware which is a real benefit - a computer need not be left permanently connected to the TNC."*

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TRANSLATED AND EDITED  
BY ERWIN DAVID, G4LQI

**T**HE CUSTOM-BUILT circuitry for the prototype speech mailbox was assembled on a plug-in board for an IBM-PC. A CVSD Delta modulation process was chosen as it is particularly suitable for digitizing speech. A data rate of 32kbit/s was used.

DTMF (Dual-Tone Multi-Frequency) tones from the user's transceiver control the mailbox, which responds in voice. For example, a new user keys 999 to log on and is then issued a three-digit user number for subsequent log-on and is requested to give his call sign in voice.

**COMMAND MENU**

- 999 Log-on for a new user and, in reply, issue of a user number
- 1xx Log-on with previously assigned user number
- 01 List of all available commands
- 02 reads off a group of ten user numbers with associated calls. Repeating 02 identifies the next ten user numbers etc.
- 021 Renewed entering of own call sign (if not secured by prior 023)
- 022 Listen to own call sign
- 023 Secures own call sign against unauthorized tampering. Can be overridden only by SysOp (System Operator)
- 03 Speaking clock
- 04 List of own messages
- 041-049 Read own messages (041 first message, 042 second etc.) After each message the user number of its sender is given
- 051-059 Erases own messages (051 first message, etc.)
- 06 News/info bulletin
- 07xxx Sending a message; xxx is the addressee's user number. Key the five digits without pause, then release PTT and wait for prompt before entering a message; do not release PTT while sending a message
- 09 Exit from mail box
- \* Abort partly-keyed DTMF sequence
- # and words spoken immediately thereafter: those words will be read back upon release of PTT

**SYSTOP'S VIEW**

ALL FUNCTIONS MENTIONED above can be controlled from the SysOp's key board as

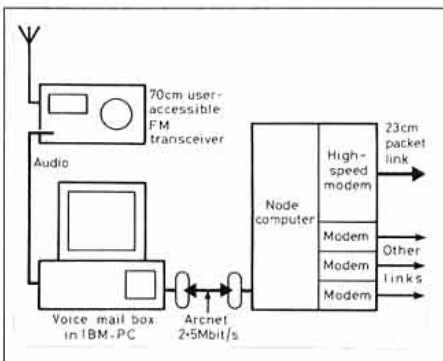


Fig 1: German amateurs with 70cm hand-held transceivers will work DX phone via high-speed packet radio once all equipment shown here has been developed; the voice mailbox, lower left, is ready now.

German amateurs Johannes Kneip, DG3RBU and Florian Radlherr, DL8MBT, have designed, built and convincingly demonstrated a **voice mailbox**. The user only needs a hand-held 70cm FM transceiver with DTMF touch-tone pad to enter and read voice messages, receive spoken prompts, and control the box which digitally processes and stores the messages. In the future, voice mailboxes may be interconnected by high-speed packet radio links. **Thomas Kamp, DF5JL** wrote the article in *cq-DL* 11/91.

well as by radio. The voice mailbox presents a SysOp-friendly screen. There is a modulation level display and indicators for the different data rates and filter characteristics, which can be selected in software. Editing of user mailboxes, ie deleting files, deleting individual boxes and entering calls to go with box numbers, are also done from the key board. Sending individual files, making entries to a library of speech modules and the phonetic spelling of certain sequences are possible as well. There are facilities, by multi-digit DTMF sequences via radio or from the key board, to choose a 'verbose' mode of instructions, prompts and error messages or an 'expert' mode in which these are greatly abbreviated. Another sequence disables the transmitter.

**SPECIAL HARDWARE AND SOFTWARE**

THE MAILBOX CONSISTS OF a standard IBM-PC computer plus a specially designed plug-in card with the analog-to-digital converter (ADC) for speech input and the digital-to-analog converter (DAC) for speech output. A description follows in next month's *Eurotek*.

**ON-THE-AIR TESTS**

IN OUR FIRST TESTS IT BECAME obvious that simplex operation is not practical. The 'hidden station effect', the collision of signals from two users who cannot hear each other, was as common as it is in packet radio. Split-frequency operation as used in voice repeaters seems indicated. That does require provi-

sions to prevent the abuse of the mailbox as a substitute voice repeater.

Eugen Weiler, DC9EL, DARC's repeater coordinator, suggests that the thus far unused duplex frequencies R94-96 (439.250-439.300MHz) be used. As, on the air, a voice mailbox meets all the requirements of the usual voice repeater, Eugen does not expect any licensing problems in Germany.

To permit operation in conjunction with a voice repeater, a 'waffle barrier' was installed. It prevents DTMF access to the mail box until the frequency has been unoccupied for at least 20s after a carrier has been present for over 20s, or for proportionally shorter periods of silence following carriers of shorter duration. This gives normal voice repeater QSOs priority over the mail box.

**THE FUTURE**

THE DIGITAL SPEECH MAILBOX is but a first, albeit important, step in a much bigger project. Until now, digital amateur radio in Germany has been dominated by the transmission of computer and text files. As more powerful computers and faster data links become available, this can be expanded to include speech and eventually even pictures. Development of a complete digital speech system requires the following:

- a) Encoding of analog signals in an efficient manner, ie one requiring a minimum of memory. This was prototyped in the voice mailbox.
- b) Data reduction procedures.
- c) Development of computer concepts which enable the resulting data rate to be transmitted via point-to-point packet links now existing in Germany.
- d) Augmentation of these links by the use of high-performance modems and microwave transmitters and receivers to permit real-time transmission of digitized speech.

**WORK IN PROGRESS**

DG3RBU AND DL8MBT ARE WORKING on the following experiment: at the existing digipeaters DB0RGB (Regensburg) and DB0AAB (Munich) voice input/output units are to be installed which represent interfaces for the users of the digital speech transmission. The existing packet link between these digipeaters is to be upgraded so it can handle the data rate required to transmit digitized speech in real time: **Fig 1**.

An outline of this ambitious development programme follows in next month's *Eurotek*.

Packet Radio Primer

by Dave Coomber, G8UYZ and Martyn Croft, G8NZU

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A user report by David Evans, G3OUF, on a new piece of British station-management PC software which is much more than a computerised logbook.

# TurboLog

**U**SE THE TURBOLOG program for a week and you may never wish to operate without it again! TurboLog (TL) combines logging contacts with a powerful report generator, DXCC records, keeping track of and printing QSL cards, a CW keyer, external database integration, a multi-connect packet terminal and a unique packet DX cluster interface.

## THE LOGBOOK

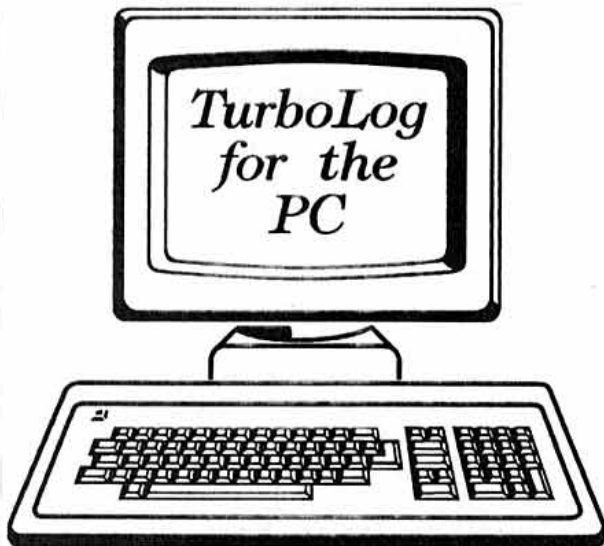
THE ADVANTAGES OF entering contact details into a computerised log (a facility recently permitted by the UK Licence) are numerous. TurboLog lets you page back rapidly to check on every detail previously entered; for example you can check to see if a station or country has been contacted before. A powerful internal report generator enables you to output a host of information to the screen, a file or to paper, and you can set up permanent reports and run these as often as you wish.

Most of us are used to entering QSO details into a paper logbook using one line per contact. TL preserves this familiar process which makes entry easy. Like its paper counterpart, the TL screen also shows previous contacts and enables station diary notes to be written into the log. Since the computer knows the date, time, your normal power output and has been told the band and mode of operation, actual QSO entry can be no more than entering the callsign and station details, and changing the default reports if necessary.

On the more modern rigs with a computer interface, TL can exchange data through the serial port on a PC. If you type in a frequency instead of a callsign the rig will immediately QSY to that frequency. TL can also read frequencies from your transceiver as we will see later when packet DX cluster operation is reviewed.

Another TL facility is to enter contacts after the event, for example to transfer your old contacts when you first set up the log. Facilities exist to import QSO data from a wide range of other logging programs. There is a contest feature which will send serial numbers on CW or provide them for a phone contest, as well as having logging fields for contest exchanges.

If you use Morse in any way your keyboard can become either a memory keyer or just a keyboard for rag chewing. You can pre-define up to eight customised messages and automatically include callsigns and reports



that you have just typed into the log. This is ideal for pile ups, basic QSOs or contests. Sets of messages can be stored and used as required. The speed range is 12-60WPM with the mark-space ratio, letter and word spacing and side tone pitch, if switched on, all set by the user.

Associated with TL are three major databases: Firstly, the log itself which you build up as you enter contacts; 5,000 contacts require some 1.3Mb of disk space. You can set up a separate log if you wish, for example for portable operation. TL automatically maintains index files which operate with the software enabling you to locate data very quickly.

Secondly, a DXCC database keeps track of your countries worked and confirmed by band and mode. You can produce a full set of DXCC reports, or a summary, on the screen in a matter of seconds. TL will also look after other awards of your choice such as WAB, IOTA, WAS, WAZ, etc. The DXCC database works in conjunction with an extensive prefixes database, supplied free with the software. As soon as you have entered a callsign in the log a 'pop-up' window shows on what bands and modes you have worked that country previously, as well as showing that country's local time, its distance and beam heading.

Personal directories of stations can be set up so that details such as name, QTH and club number are available as soon as you enter a callsign in the log. Up to ten user-defined external databases, such as a full IOTA list or a QSL database (eg W6GO), can also be immediately accessed from the logging window.

TL allows you to design your own QSL labels using a number of standard sized la-

bels. You can then automatically produce labels for direct mailing or for the bureau. In the latter case, labels can be printed in alpha-numeric order to make sorting at the bureau that much easier. You can record incoming cards in the log which maintains your DXCC confirmed records. You can also keep records of cards accepted by the DXCC awards desk.

## THE PACKET CONNECTION

THE TURBOLOG SOFTWARE allows you to connect a packet radio TNC to your PC via its serial port. This immediately opens up the fascinating world of packet QSOs, bulletin boards and DX Clusters.

For DX operators, access to the nearest DX Cluster station will suddenly transform your operating. It will link you to like-minded enthusiasts, provide details of contests and expeditions and on-air activity actually as it happens. It can also provide QSL addresses and propagation predictions calculated using the very latest available sun data.

For the VHF operator Clusters provide propagation alerts and details of openings immediately; no more telephone calls about the latest aurora! Recently microwave enthusiasts have started to use the Cluster to arrange skeds and tests.

Some one-thousand UK Amateurs have already used the UK Cluster network and the number is growing daily as the camaraderie and usefulness is appreciated by more and more stations.

When a DX station is 'spotted' by a Cluster user, the information sent to the Cluster node is circulated to all the other connected users. TurboLog provides different sounding alerts depending on how important the 'spot' is to you. Furthermore, you can display, for example, only HF CW spots or spots for bands above 30MHz.

One of the most marvellous features of the software is that as each of your filtered spots arrive, a window on the screen instantly shows you on which bands and modes you have worked the country.

A single function key can 'grab' any selected station and QSY your transceiver to the desired frequency and mode; assuming you have the interface. Another function key will swap you to the log page with the selected station already entered in the log. Function keys activate pop-up windows to allow spots to be sent to the Cluster, messages to be sent

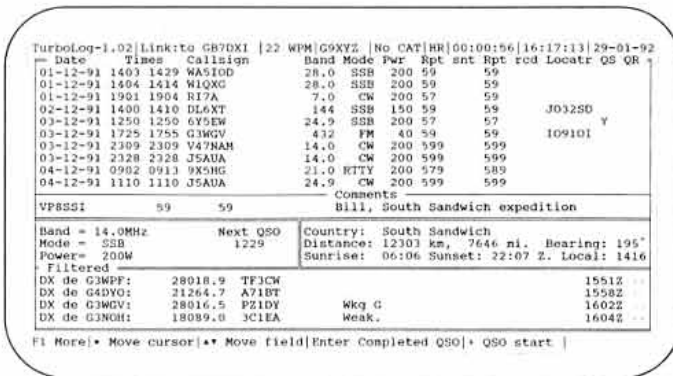


Fig 1: The TurboLog screen showing the log page. The main section at the top shows previous log entries. In the middle of the screen is the power, mode and band and country information. At the bottom of the screen is a window showing the last four packet cluster 'spots'.

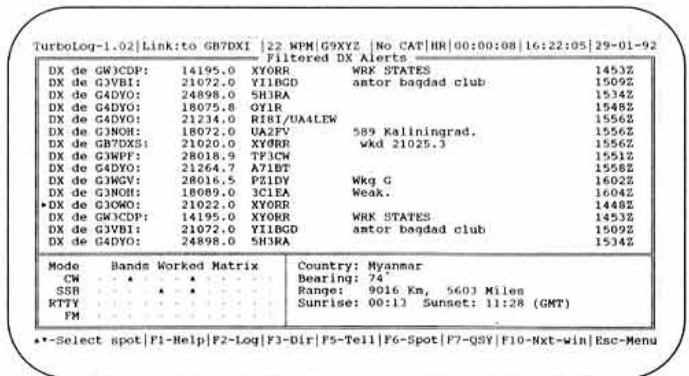


Fig 2: TurboLog's packet Cluster screen. You can select any spot in the top part of the screen and immediately see on what bands and modes the selected country has been worked (bottom left grid). Basic details of the selected country, including beam heading from your QTH, is also shown.

to other stations and a host more. As incoming messages arrive they are immediately displayed on the screen.

**CONCLUSIONS**

THE PROGRAM HAS BEEN well thought out, both in its screen layouts and range of facilities. Screen colours can be determined by the user. What is more, the program is very user-friendly. TL will run on PCs or compatibles with 640k of memory and a hard disk. It comes complete with a comprehensive and well written 100-page manual and command crib card.

Turbolog has been written by John Linford, G3WGV, of Canberra Communications. This Company also provides a range of complementary services and products such as conversion from other computer and paper logs and useful external databases (eg IOTA). TurboLog is available at £60 from Canberra Communications, Canberra Lodge, Heath Ride, Finchampstead, Berkshire, RG11 3QJ.

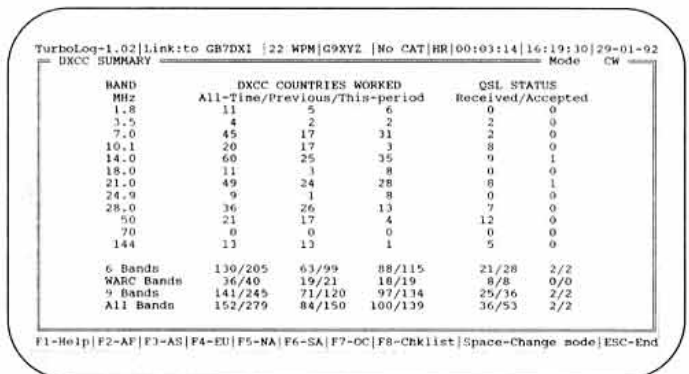


Fig 3: The DXCC screen summary. Any 12 bands can be selected for maintaining DXCC records.

# Amateur Radio Insurance Services

MANY READERS will be aware from recent media coverage that the household insurance market is going through a difficult period. A number of leading insurers have been forced to increase premium rates, often substantially, in the light of huge underwriting losses.

Buildings insurance premiums are being adversely affected by the increased frequency and size of subsidence claims. Most insurers now link rates to postcodes, which means that property owners in 'high risk' areas such as the South-East, can expect to pay more. In some cases premiums will be up to 80% higher than in 1991.

Contents premiums, especially in the major towns and cities, have been steadily rising since the middle of 1991. There has been a marked increase in the number of break-ins which is consistent with a general rise in crime and economic recession.

The Amateur Radio Insurance Scheme (ARIS), run exclusively for RSGB members, was subject to a modest rating review in September 1991 (the first for several years). Premiums do, however, look set to remain at their current competitive levels for the foreseeable future.

ARIS has, of course, processed a considerable number of claims and, we believe, benefited not only claimants but all policy holders with the comfort of knowing they have solid insurance protection.

A number of members have enquired about

the most common types of claim dealt with under the ARIS scheme. These are listed below in descending order of frequency:-

## Storm and Wind Damage to Masts, Towers and Antennas

CLAIMS ARE inevitably most frequent in winter months and the hurricanes of October 1987 and January 1990 saw huge pay-outs from the scheme underwriters, Cornhill Insurance. Approximately two out of every five

claims submitted are weather related, and policy holders in exposed areas of the country are the most susceptible.

## Theft from the Home and Radio Shacks

ALTHOUGH RISING crime is usually associated with inner city areas, one of the largest recent claims occurred in a remote area of Devon. An ARIS policy holder's shack was broken into and nearly £3,000 worth of equipment stolen. A similar loss recently took place in Cheshire and resulted in a claim for £4,000.

## Accidental Damage

EVEN THE most careful of Amateurs find their equipment can become damaged by accidental means. As the ARIS policy provides cover on 'all risks' basis, policy holders are entitled to claim for repair or replacement costs.

## Thefts from unattended vehicles

THIS TYPE of loss, especially involving portable radio equipment, is an almost everyday occurrence. Some household underwriters are now refusing to provide such cover, but the ARIS scheme continues to provide protection, subject to policy terms and conditions.

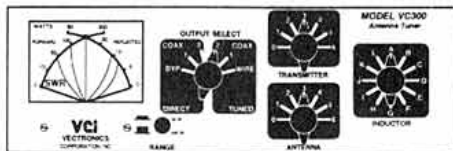
**The ARIS scheme offers not only specialist help but also a personal approach to claims related matters. Further details of this RSGB membership benefit can be obtained by writing to ARIS at Shepherds Hurst, Green Lane, Outwood, Surrey, RH1 5QS or by contacting Jennifer Lawson on 034 284 4000.**



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## CHALLENGER DX-VI

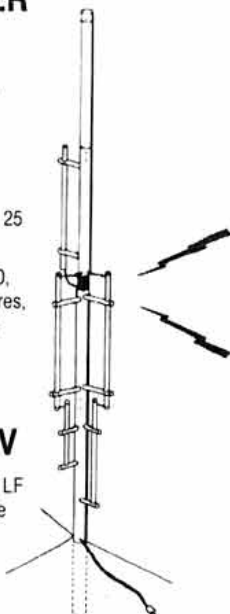
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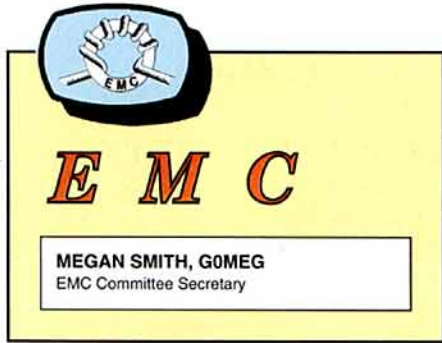
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THIS MONTH'S COLUMN concentrates on alarm systems. Many thanks to readers who have sent in their own examples of alarm systems which are susceptible to the effects of RF. This can have its funny side, for example one amateur found that when he transmitted on HF his CQ calls were broadcast to the neighbourhood in a 'Donald Duck' voice via the siren of his neighbour's alarm!

However, constant 'false alarms' in the middle of the night tend to have a negative effect on the usefulness of the alarm, and on relationships with neighbours! G8SOZ, the EMC Committee Chairman, and G1OSC have collected a fair amount of information about alarm systems so we thought it would be useful to devote part of the column to it.

## ALARMING PROBLEMS

THERE ARE MANY possible reasons for false triggering of burglar alarm systems in buildings. One is that the system may be falsely activated by strong radio signals, for example a nearby radio amateur or a mobile transmitter in a passing vehicle. If a radio amateur's signal triggers a neighbour's alarm, they may blame the radio amateur when it is clearly the alarm system which is at fault.

If the alarm is sensitive to amateur signals then it may also be set off by radio transmitters in passing vehicles, for example, police, taxis, CB or cellular telephones (mobile or portable). Bringing such a problem to light and solving it actually *improves* the alarm system. This is because it may also eliminate unexplained false alarms from passing vehicles, or someone using a portable cellular phone next door! Unfortunately, not all owners, installers or manufacturers of alarm systems are willing to improve their systems in this way!

Several readers have provided useful information on immunity (or otherwise) of alarm systems. David Meare, G4IPW, found that any power over 70W on the 7 to 28MHz bands would trigger his neighbour's new alarm system. G4IPW does not operate on VHF so he does not know whether the system was susceptible to VHF transmissions. The first problem was to persuade the installer that this was actually a problem with the alarm system!

The problem was found to be caused by the the Passive Infra-Red (PIR) sensors being triggered by radio signals picked up in the wiring, but ferrite beads had no effect. Fortunately G4IPW was able to show that the alarm system in his own house did not suffer from any false alarms when he transmitted. G4IPW's own alarm has Racal-Guardall PIR sensors type IR771 MkII and he eventually persuaded his neighbour's alarm installer to fit the same type of PIR sensors. This

immediately cured the problem and there have been no RF susceptibility problems for the three years since.

G4IPW has since installed an extra PIR sensor in his own house. The new sensor, which has also been free of RF susceptibility problems, is a FOX-1 model made by Visonic Ltd of Israel and is claimed to have immunity to RF fields of at least 20V/m on a number of (unspecified) frequencies up to 1 GHz. It costs about £22+VAT (trade price). He also mentions the Wondrex FX-35 made by Optrex Co Ltd which also claims immunity to 20V/m but frequency limits are not specified. This model costs about £28+VAT (trade price) but G4IPW has not tested it for RF immunity.

Clive Tombs GW4MOG installed his own alarm system in his house using an 'Olympus 4' control panel and two 'Pulsacan XL' PIR sensors. He writes, "During commissioning tests, I checked for RF immunity and was not surprised to find that with as little as five watts to a dipole on 3.5 and 7MHz the alarm panel was bleeping and triggering of its own accord. The panel itself was found to be at fault, and its immunity increased to acceptable levels by placing 10nF chip capacitors from the PSU negative rail to the four security loop returns. The anti-tamper loop is a negative loop rather than a positive one so 10nF between that loop return and the positive rail was applied.

"Finally, the negative output of the PSU was earthed (mains earth). The alarm now enjoys total immunity to 100W of HF in use in the shack". GW4MOG found that the 'Pulsacan XL' PIR sensors were sufficiently immune for his application.

EMC Committee Chairman Bob Peace, G8SOZ, had two 'Elkron' PIR detectors, (model IR15LD) in his alarm system. He found that one was susceptible to triggering by VHF and UHF transmissions but the other was not! The two had slight differences in the decoupling of their 12V supply inputs. The one which was more immune had a choke wound on a six hole ferrite bead in series with its supply and a 10nF capacitor to ground. In the less immune sensor, there was a 100Ω series resistor instead of the choke. Replacing the resistor with a choke wound on a six hole ferrite bead cured the problem. At 435MHz, G8SOZ found that the immunity of the Elkron PIRs was now very good, and they were not triggered at this frequency unless a one watt transmitter was held less than an inch away!

## DO IT YOURSELF

ONE OF G8SOZ's neighbours has a Wickes 'do it yourself' alarm system which suffered from a false alarm caused by a (non-amateur) UHF mobile transmitter in a vehicle about 10 metres away. The power was approximately 10W ERP in the 450MHz UHF PMR band. This gives a theoretical free space field strength of 2.2V/m at a distance of 10 metres. A 1w handheld on 435MHz activated the Wickes PIR sensors at a distance of three metres, corresponding to a theoretical free space field strength of 2.3 V/m. The immunity of the control box itself was good at 435MHz. G8SOZ contacted Wickes who referred him to their supplier, Deans Park Electronics. They, in turn, referred the matter to the designer who is in the Far East. A reply is still awaited!

A reader told us that an alarm installer had charged his neighbour £70 each for the supply of some 'EI Cheapo' type non-immune PIRs, not including fitting. The installer then asked for an extra £40 per PIR for supplying a more immune type! When it was pointed out that the original type was listed in a trade catalogue at £20 each, and the more immune type at £40 each, the installer agreed to waive the demand for further payment!

## CENTRAL MONITORING

SOME ALARM SYSTEMS have a direct link to a central monitoring station and some of these have to be reset by an engineer's visit if triggered. If there is a false alarm and no fault is found in the system, it is often assumed to be the customer's fault and there is a call-out charge. This has caused a few problems in the past with some monitored systems which suffered false alarms due to RF susceptibility of PIR sensors. Fortunately, most monitored installations installed recently seem to use sensors with better RF immunity.

Many alarm systems are covered by a maintenance contract, either because an insurance company requires it or because the system was installed to BS4737. Radio amateurs are advised not to modify such systems and in any case not to modify any system belonging to someone else. In such cases, the problem may be finding a service engineer with sufficient technical expertise to deal with RF susceptibility problems.

EMC Committee Chairman, G8SOZ, has received information from a company called ACT Meters Ltd., which specialises in false alarm prevention and troubleshooting. ACT offers technical advice, training courses, test equipment and various surge, spike and RFI filters. The RFI filters contain chokes and are designed to be connected in series with cables to any part of a security or fire alarm system which is susceptible to RF. These filters are available in four or six-way versions, with or without a box. The type number is ACT6030 and they are supplied by ACT Meters Ltd, Sandwash Close, Rainford Industrial Estate, Rainford, Merseyside WA11 8LY; tel 0744 88 5163/4.

Several years ago, the EMC Committee approached a fairly well-known manufacturer of alarm systems pointing out that one of that company's products was susceptible to false alarms triggered by nearby radio transmissions. We thought that they would be interested in any information which could reduce the number of false alarms, but they showed remarkably little interest in doing anything about this problem. Fortunately, there is now greater awareness in the security industry of the need for good immunity to RF and new standards are being introduced. At least one company, Modern Alarms, is doing its own RF immunity testing of bought-in sensors etc.

## HEARD THE ONE ABOUT . . ?

AN ALARM SYSTEM belonging to a radio amateur's neighbour went off whenever the amateur transmitted. The amateur told the installer that the alarm system should be properly screened but the installer replied that it was the amateur's aerials that should be properly screened!



# QRP

GEORGE DOBBS G3RJV  
St. Aidan's Vicarage, 498 Manchester Road,  
Rochdale OL11 3HE

## SURVEY OF COMMERCIAL QRP EQUIPMENT

### PART 3: POSTSCRIPT ON TEN TEC

ONE OF LIFE's little oddities is the Ten Tec RX10 Receiver. A letter from a reader reminded me that I had not mentioned this piece of equipment in my description of the early Ten Tec equipment. This was intentional because I only planned to include transceivers in the survey. I know this item of equipment well. I own an RX10, and in fact the one I own is the only one I have ever seen. The RX10 is not a common piece of amateur radio equipment and I venture to suggest that it was probably never a very popular item.

The RX10 is housed in a case which looks much like the early PM Transceivers, complete with the slide-rule scale and external wire pointer which seems intent on scraping the markings off the scale. It is a four band, direct conversion receiver of simple design using a single tuned circuit input and a dual-gate MOSFET mixer. The band selection uses a novel combination of a VFO with switched tuning inductors to 80 and 40 metres, followed by doubling or tripling the signal for 20 or 15 metres. The RX10 was intended for the novice market and even contained an audio oscillator circuit designed for morse practice or perhaps a sidetone with a suitable transmitter.

I think even Ten Tec would concede that the RX10 is a marginal performer. It has inadequate input tuning, a less than average mixer and an over-simple frequency generation method, which leave it with all the classic problems of a direct conversion receiver. It has more than its fair share of image problems, cross modulation and broadcast breakthrough. If monitoring 40 metres is becoming boring there are usually alternative signals to listen to! But it was a brave venture - a multiband direct conversion receiver, four amateur bands with nine transistors, produced over 20 years ago when few people even knew of the technique.

## THE HISTORY OF THE DC TECHNIQUE

THE DISCUSSION of the RX10 leads back to the remarks I made in this column in *RadCom*,

Dec 1991. I suspected that Ten Tec were the first manufacturers to produce receivers and transceivers using the direct conversion technique. I also mentioned that my first contact with this technique was when Pat Hawker, G3VA, mentioned the Ten Tec PM2 in his *Technical Topics* column in 1970. Pat has written to me suggesting that Charles Bryant, GW3SB, was the first to suggest that a direct conversion receiver could form the basis of a simple transceiver. That is gratifying. I know Charles as a member of the G QRP Club who is still experimenting with simple home built techniques for our hobby.

G3VA was kind enough to send me a copy of his paper 'Keep It Simple: Direct-conversion HF Receivers' presented at an IERE Conference at Southampton University in July 1978. After pointing out in the paper that the average radio amateur expects a performance from an HF receiver every bit as exacting, if not more so, than those demanded for professional services, this may have to be achieved on a very limited budget. The paper then goes on to discuss the development of the HF direct conversion receiver. It appears that prior to 1961 the technique had a long but frustrating history.

The first practical amateur radio design seems to have appeared in an article by J R White, 'Balanced Detector in a TRF Receiver' in *QST* May 1961. White described a simple receiver for CW and SSB reception which, although referred to as a TRF in the title, was a forerunner of the simple direct conversion receiver that has become so popular with home constructors.

In *Electron* Jan 1967, PA0KSB, illustrated the simplicity of these receivers in solid-state form in a receiver for the 80 or 40 metre bands. Shortly afterwards GW3SB (reported in *Technical Topics* July 1967) pointed out that the direct conversion receiver could form the basis of a simple transceiver. Fig 1 shows the block diagrams of his suggestion. The local oscillator being used for the receiver and the transmitter without the need for frequency conversion. The next year a practical design from Wes Haywood, W7ZOI, (*QST* Nov 1968) brought the design back to the 'New World'.

Since then the direct conversion receiver, even with its limitations, has remained a favourite with the amateur radio constructor. As G3VA said in his paper, "we have re-opened to many enthusiasts the opportunity of building a receiver on the kitchen table". I would never pretend that a direct conversion receiver can compete with a half-decent superhet receiver, but, my word, the returns are good for what is involved! And many radio amateurs have had the first experience of the thrill of hearing amateur radio signals coming from a receiver they have built themselves, using this technique. If you have never built a receiver, try a simple direct conversion project.

## TWO FORTHCOMING QRP EVENTS

### AGCW - DL QRP/QRP PARTY

Date and time: 1 May, 1300-1900GMT

Frequencies: 3.510-3.560MHz, 7.010-7.040MHz

Mode: CW Only

Participants: Any licenced radio amateur or SWL

Classes:

A: Input max 10W or output max 5W

B: Input max 20W or output max 10W

C: SWL

Call: "CQ QRP"

Exchange: RST + QSO number/Class. QSO Number starting at 001 example; 579 021/A

Scoring: 1 point per QSO with one's own country, 2 points per QSO outside one's country. Each QSO with Class A station counts twice. Each station may only be worked once per band. SWL logs must show both call signs per QSO heard, plus at least one complete QSO report.

Multipliers: Each DXCC country + 1 point per band.

Band results: QSO points x multipliers

Total Score: Sum of band results

Logs: to be submitted by 31 May (postmark) to: Stefan Scharfenstein, DJ5KX, Himberger Str 19a, D/W-5340 Bad Honnef 6, Germany.

Enclose an SAE plus IRC if a list of results is required.

### EUROPE FOR QRP WEEKEND 1992

1 Dates and times: From 1600GMT on 2 Oct 1992 until 2359GMT on 4 Oct 1992.

2 Mode and frequencies: CW only on 3560, 7030, 14060, 21060, and 28060 kHz, all  $\pm 10$  kHz.

3 Power: Not to exceed 5W RF output. Stations unable to measure output take half their DC input (10W input = 5W output and so on).

4 Stations eligible: Any licenced radio amateur.

5 Contest calls: Call 'CQ EU QRP' when seeking contacts.

6 Contest exchanges: For a contact to be valid RST, power output, and name of operator must be exchanged and logged.

7 Scoring: Contacts with own country do not score. European stations score 1 point for each European contact and 3 points for each contact outside Europe. Stations outside Europe score 5 points for each contact with Europe.

The final score is the sum of the points scored on each band used.

8 Logs: Separate log sheets must be used for each band, showing for each contact date, time, call and RST, name, and power received and sent. A summary sheet must be provided showing call, name and address, claimed score for each band, total claimed score and brief details of equipment used.

9 Submission of logs: Logs must be submitted to P. Doudera, OK1CZ, U1 baterie 1, 16200 Praha 6, Czechoslovakia, by 15 Nov 1992.

10 Awards: Merit certificates will be awarded to the three leading stations from each continent.

11 The judges' decision is final in the case of dispute.

This event is organised jointly by the G QRP Club and the OK QRP Club.

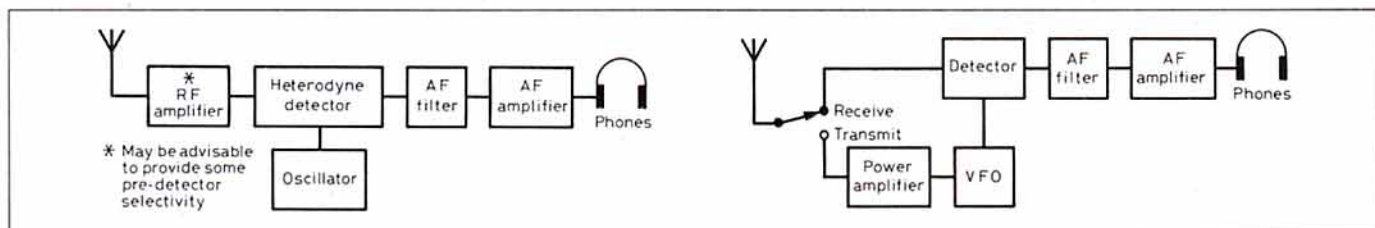


Fig 1: Basic outline of direct conversion receiver and transceiver.

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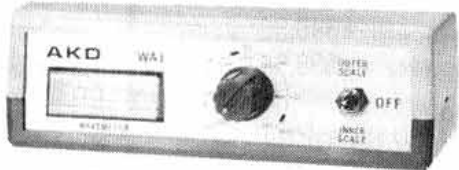
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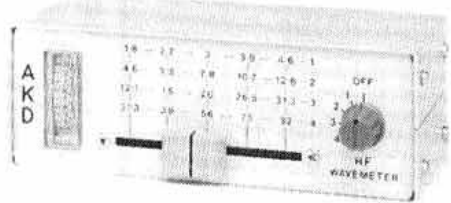


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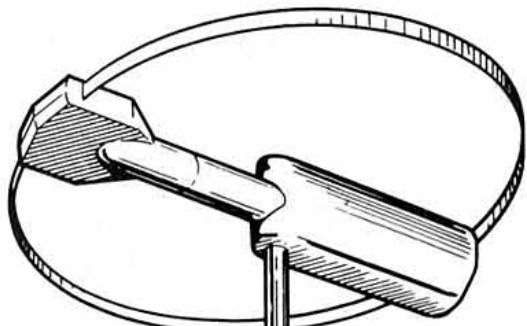
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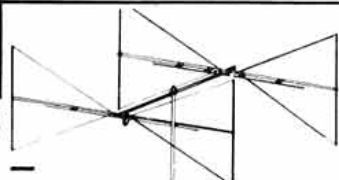
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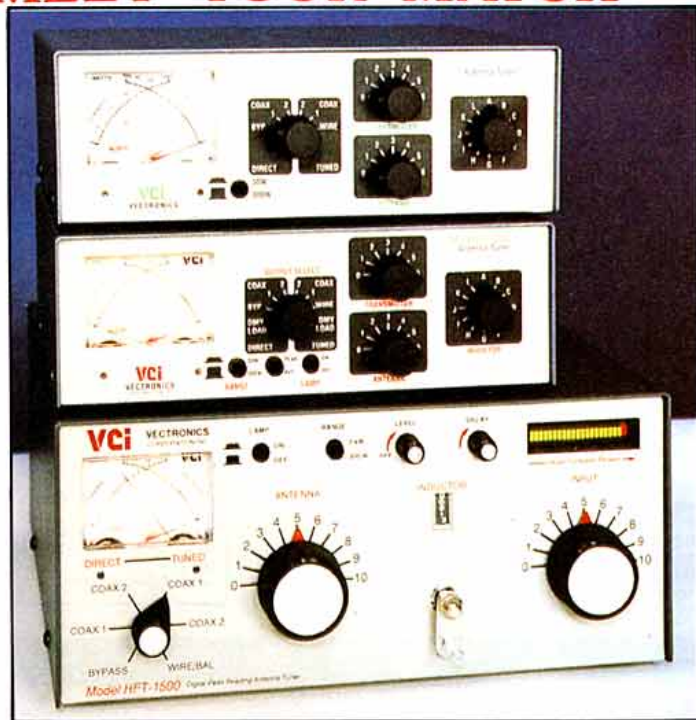
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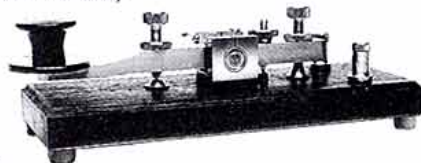
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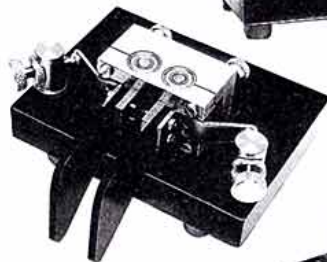
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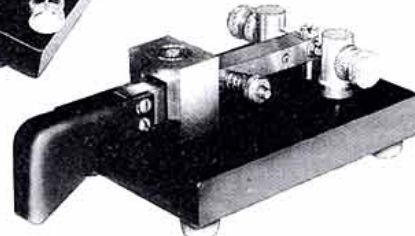
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# C O N T E S T N E W S

All rules should be read in conjunction with the General Rules published in *Contest News* January 1992

## HF RULES

### 21/28MHZ TELEPHONY CONTEST 1992

**1: The General Rules** for RSGB HF Contests, published in the Jan 1992 edition of *Radio Communication* will apply.

**2: Eligible entrants:** Overseas (which includes EI) - all licensed amateurs. British Isles - as per General Rules.

**3: When:** 0700 to 1900GMT, Sunday 11 Oct 1992.

#### 4: Sections:

(a) British Isles

(b) Overseas

(Single-operator and Multi-operator entries will be accepted in each section.)

(c) British Isles Receiving

(d) Overseas Receiving

**5: Frequencies/Mode:** 21150-21350kHz and 28450-29000kHz, Telephony only.

**6: QSY (10 minute) Rule:** An entrant who QSYs from one band to another and makes a scoring contact may not change bands again until at least 10 minutes have elapsed since the last scoring contact on the original band.

**7: Contest Exchange:** RST and serial number, commencing with 001. UK stations must also send their County Code as published in Jan 1992 *Radio Communication*.

#### 8: Scoring:

(a) British Isles stations work only Overseas stations. Each completed contact counts 3 points. Multipliers as per General Rules.

(b) Overseas stations work only British Isles stations. Each completed contact scores 3 points. Multipliers: 1 for each British Isles County worked on each band.

**Total Score:** The number of QSO points on each band are added together. The total number of multipliers on each band are added together. The final score is the total QSO points multiplied by the total multipliers.

**Note:** The same stations may be contacted on both bands for QSO points and Multipliers.

**9: Logs:** Separate logs are required for each band. Overseas entrants are invited to use the stationery provided by their National Society. British Isles entrants are referred to the General Rules. Checklists ('Dupe Sheets') are requested where more than 80 QSOs are made and please don't forget the list of multipliers.

**10: Address for logs:** RSGB HF Contests Committee c/o G3UJFY, 77 Bencham Manor Road, Thornton Heath, Surrey, CR7 7AF, ENGLAND.

**11: Closing date for logs:** British Isles entrants, postmarked by 2 Nov 1992. Overseas entrants, delivered by 1 Dec 1992.

#### 12: Awards:

UK Single-operator Section: The overall UK winner will receive the Whitworth Trophy with Certificates of Merit to the Second and Third placed entrants. The Powditch Transmitting Trophy will be awarded to the entrant with the highest score on 28MHz.

Overseas Single-operator Section: Certificates of merit will be awarded to the three leading entrants.

Subject to the decision of the RSGB HF Contests Committee, additional certificates may be awarded to the leading

entrant from each continent/country, provided that a score of at least 50 per cent of that of the overseas winner is achieved.

Multi-operator Sections: A Certificate of Merit to the highest placed Group in each section.

### RECEIVING SECTION

Rules as for the transmitting section except where specified below. Holders of transmitting licences for frequencies only above 30MHz may enter the receiving section.

**8: Scoring:** British Isles SWLs may only log Overseas stations in contact with British Isles stations participating in the contest. Overseas SWLs may log only British Isles stations in contact with Overseas stations participating in the contest. Scoring and multipliers as for the transmitting section.

**9: Logs:** Columns to be headed: time GMT; callsign of station heard; report/serial number sent by that station; County Code sent by that station (if applicable); callsign of station being worked; multiplier (if new); points claimed.

**Note:** In the column headed 'station being worked' the same callsign may only appear once in every three contacts except when the logged station counts as a new multiplier.

**12: Awards:** The Metcalf Trophy will be awarded to the leading UK entrant. The Powditch Receiving Trophy will be awarded to the leading British Isles entrant on 28MHz (subject to there being sufficient entrants on this band). Certificates of Merit to the stations being placed second and third in the British Isles, and to the three leading overseas entrants.

### 21MHZ CW CONTEST 1992

**1 The General Rules** for RSGB HF Contests, published in the Jan 1992 edition of *Radio Communication* will apply.

**2 Eligible entrants:** Overseas (which includes EI) - all licensed amateurs. British Isles - as per General Rules. Single-operator or Multi-operator entries will be accepted in the transmitting sections.

**3 When:** 0700 to 1900GMT, Sunday 18 Oct 1992.

#### 4 Sections:

(a) British Isles

(b) Overseas

(c) British Isles QRP

(d) Overseas QRP

(e) British Isles Receiving

(f) Overseas Receiving

QRP stations may use 10W RF Output or less.

**5 Frequency/Mode:** 21MHz CW only. Entrants are requested not to operate in the band 21.075 - 21.125MHz.

**6 Contest Exchange:** RST and serial number, commencing with 001. UK stations must also send their County Code as published in Jan 1992 *Radio Communication*.

#### 7 Scoring:

(a) **British Isles stations** work only Overseas stations. Each completed contact counts 3 points. Multipliers: as per General Rules.

(b) **Overseas stations** work only British Isles stations. Each completed contact scores 3 points. Multipliers: 1 for each UK County worked.

The final score is the total of QSO points times the number of Multipliers worked.

**8 Logs:** Overseas entrants are invited

to use the stationery provided by their National Society. British Isles entrants are referred to the General Rules. Checklists ('Dupe Sheets') are requested where more than 80 QSOs are made and please don't forget the list of multipliers.

**9 Address for logs:** RSGB HF Contests Committee c/o G3UJFY, 77 Bencham Manor Road, Thornton Heath, Surrey, CR7 7AF, ENGLAND.

**10 Closing Date for logs:** British Isles entrants, postmarked by 16 Nov 1992; Overseas entrants, delivered by 14 Dec 1992.

**11 Awards:** The leading British Isles single-operator station will be awarded the T E Wilson G6VQ Trophy. Certificates of merit will be awarded to the leaders and runners-up in each section, and to the highest-placed multi-operator entries from UK and Overseas. Additional certificates may be awarded (at the discretion of the HF Contests Committee) to the leading stations from each Overseas continent/country.

### RECEIVING SECTION

Single-operator entries only will be accepted. Rules as for the transmitting section except where specified below. Holders of transmitting licences for frequencies only above 30MHz may enter the receiving section.

**7 Scoring:** British Isles SWLs may log only Overseas stations in contact with British Isles stations participating in the contest. Overseas SWLs may log only British Isles stations in contact with Overseas stations participating in the contest. Scoring and multipliers as for the transmitting section.

**8 Logs:** Columns to be headed: time GMT; callsign of station heard; report/serial number sent by that station; County Code sent by that station (if applicable); callsign of station being worked; multiplier (if new); points claimed.

**NOTE:** In the column headed 'station being worked' the same callsign may only appear once in every three con-

tacts except when the logged station counts as a new multiplier.

**11 Awards:** Certificates of merit will be awarded at the discretion of the HF Contests Committee to the leading three entrants from the British Isles, and to the leading entrant from each Overseas country.

### HF CONTESTS CALENDAR - 1992.

Apr 4/5	SP DX (SSB)
Apr 5	RoPoCo1 (Feb 92)
Apr 19	Low Power Feb 92
Apr 25/26	Helvetia
May 2/3	A Volta RTTY
May 9/10	CO-M CW/SSB (RSF)
May 16	County Roundup SSB (Mar 92)
May 17	County Roundup CW (Mar 92)
May 16/17	ARI Intnl. DX CW/SSB
May 30/31	WPX CW
May 30/31	Ibero/American SSB
Jun 6/7	NFD (+ IARU R1 FD)
Jun 20/21	AA (CW)
Jun 27/28	Summer 1.8MHz

### HF RESULTS

#### SSB FIELD DAY 1991

"The finest field day WX ever!". Virtually every log included a comment along these lines. Unfortunately propagation, which was initially quite promising, began tailing off during the first few hours of the contest, and by the Sunday morning the HF bands were really quite poor. No surprises, then at the huge leads opened out by the 'guys with the gear'. All three open-section winners used a TS930 or TS940 with a TL922 linear. Lichfield used a TH6, 7MHz quad and 3.5MHz loop. South Manchester used a 3-ele tribander, a 3-ele 28MHz monobander, backed up by a tri-band vertical and dipoles for 3.5 & 7MHz. The prize for unbelievable aerial farms must go to the Midland Tower Snatchers' Single-Operator station for the following line-up: 28MHz - 5 ele at 40', 21MHz - 5 ele at 70', 14MHz - 4 ele at 100', 7MHz - 2 ele at 115', 3.5MHz - Delta Loop at 100'. I wonder how they got their name!

Full recognition must also be given to the efforts of those outside the Super League, especially Windmill, Stratford upon Avon and Lordings, the certificate winners in the Restricted Section. The lot of the more modestly equipped station can be hard if conditions are poor.

Thanks to all who included check logs to make the life of the adjudicators (G3UJFY & G3WRR) a little easier. Commiserations to those who didn't and failed to find the unmarked dupes! One group logged half a page of QSOs on the wrong band, and a surprising number of entries contained arithmetic slips, but other than that the standard of log-keeping was good.

A number of groups commented on the clashes of date with a 2-metre contest, and also with the All-Asian event. It is difficult to find a slot which satisfies everyone - at least one IARU Region 1 society does not formally support this event solely on the basis of its date, and possible changes are being considered. Your comments on this, or on other aspects of the rules, would be welcomed.

G3UJFY

### OPEN SECTION

Pts	Call	Club	OPEN SECTION						Mult	Score
			3.5	7	14	21	28			
1	G3WAS/P*	Lichfield ARS	781	1303	1427	913	141	198	903870	
2	G03FVA/P*	South Manchester RC	901	1214	1480	178	325	169	692562	
3	G3VH8/P*	Midland Tower Snatchers	909	1189	1125	731	107	135	548235	
4	G0KFW/P	Martesham DX & CG	665	1354	542	875	180	148	535168	
5	G6PNW/P	North West ARC	688	948	1271	294	101	139	458978	
6	GWACC/P	Swarsea ARS	803	632	925	608	58	125	378250	
7	G4SZD/P	Out BB	728	401	942	1219	42	112	373184	
8	G4HRS/P	Horsham ARC	890	506	806	216	177	124	321780	
9	GM3ZET/P	Lerwick RC	685	705	1230	91	15	97	264422	
10	G4FRS/P	Famborough & DRS	839	588	657	503	36	99	259677	
11	G3ASR/P	Edgware & DRS	586	872	342	137	169	109	229554	
12	G3XEP/P	White Rose ARS	554	667	463	300	164	97	208356	
13	G4IRC/P	Ipswich RC	1029	1009	138	59	89	89	207726	
14	GU3HFN/P	Guernsey ARS	130	583	945	643	8	87	200883	
15	GW3EOP/P	Port Talbot ARC	484	179	588	365	22	95	155610	
16	G3SFG/P	Southgate ARC	508	744	346	110	77	77	137445	
17	G0MEG/P	11th Hour CG	456	647	205	210	100	78	122304	
18	G6FDX/P	Central Lancs ARC	644	461	384	252	24	68	120020	
19	G3ZME/P	Torbay ARS	582	305	733	48	10	87	112426	
20	G3VGG/P	Bromsgrove & DARC	466	455	294	42	77	70	93390	
21	G4RSE/P	South Essex ARC	743	650	163	105	6	55	91685	
22	GM3ZRC/P	Greenock & DARC	199	299	863	32		57	79401	
23	G0KTD/P					1398		42	58716	
24	G3YRC/P	Gt Yarmouth RC	470	634	29	6	21	39	45240	
25	G0BRC/P	Bredhurst RATS	180	385	193	116	49	49	42826	
26	G3VCP/P	Crystal Palace & DRC	178	302	89	54	71	51	35394	

### RESTRICTED SECTION

1	G3GRS/P*	Windmill CG	975	942	269	262	69	104	261768
2	G3FGU/P*	Stratford upon Avon & DRS	841	855	705	179	57	97	236389
3	G4UDJ/P*	Lordings CG	699	799	307	222	37	109	230426
4	G3NUA/P	Torbay ARS	796	803	484	94	36	100	221300
5	G3AHD/P	Liverpool & DARS	775	373	733	70	15	79	155314
6	G4RFR/P	Flight Refuelling ARS	719	474	394	351	26	78	153192
7	G4WGE/P	Sutton & Cheam RS	1169	560	181	40	60	71	142710
8	G4FOX/P	Melton Mowbray ARS	1060	469	227	87	56	74	140526
9	G6RC/P	Crawley & Reigate	652	433	243	79	44	79	114629
10	G3ZID/P	Barrow-in-Furness CG	314	362	527	120	76	72	100728
11	G4CRC/P	Cornish RC	282	439	294	271	11	66	85602
12	G4HRC/P	Havering ARS	696	835	102	13	15	51	84711
13	G4FUR/P	Wimbledon & Coulsdon ARSs	352	344	171	82	44	75	74475
14	GW4LZP/P	Meirion ST	701	396	528	7		44	71808
15	G4WKS/P	Warwick School ARS	316	406	161	101	55	65	67535
16	G6QM/P	Queen Mary CG	514	341	303	37	2	54	64638
17	G6UQP/P	Stockport RS	625	376	146	28	46	46	54644
18	G1OLX/P	Carmskerry ARG		287	582	7		37	47212
19	G3BPK/P	Douglas Valley ARC	583	424	219	10		35	43260
20	G4ECT/P	Cheshunt & DARC	208	360	149	74	14	43	34615

### CheckLogs

G0OCE/P G0OSH/P\* GM0CLP/P GM3UM SP9EWT Y08ROO YU7KM YU7SF

\* Trophy Winner  
\* Certificate Winner

VHF RULES

RSGB VHF/UHF/SHF CONTESTS 1992

432MHZ CW SINGLE/MULTI-OP

21 Jun: 1800-2200GMT

General rules apply.

Sections: F Single operator fixed, O All others, L Listeners

Adjudicator: G4XUM, QTHR

VHF FIELD DAY

4/5 Jul: 1400-1400GMT

Rules will be published later.

144MHZ LOW POWER/SWL

25 Jul: 1400-2200GMT

General rules apply. Plus rule 14.

25W PEP output from TX

Sections: F Single operator fixed, S Single operator portable, O All others, L Listeners

Adjudicator: G4XUM, QTHR

432MHZ LOW POWER/SWL

26 Jul: 0800-1400GMT

General rules apply. Plus rule 14.

25W PEP output from TX

Sections: F Single operator fixed, S Single operator portable, O All others, L Listeners

Adjudicator: G4XUM, QTHR

432MHZ FIXED/SWL

23 Aug: 1600-2000GMT

General rules apply plus rule 14.

Sections: S Single operator fixed, M Multi operator fixed, L Listeners

Adjudicator: G4OUT, I Comes, 6 Haywood Heights, Little Haywood, Stafford, ST18 0UR

144MHZ TROPHY/SWL

5/6 Sep: 1400-1400GMT

General rules apply

Sections: F Single operator fixed, S Single operator portable, O All others, L Listeners

IARU contest. Please score 1pt per kilometre for IARU entry and also radial ring for RSGB. Entries scored by kilometres will be entered into IARU contest. Please duplicate cover sheet if entering IARU.

Adjudicator: G8HHI, J Pilags, 43 Bartons Drive, Dunggells Lane, Yateley, Camberley, Surrey GU17 7DW

Notes for All Contests:

All entries must be postmarked at the latest by the 16th day after the end of the contest i.e. if contest ends on a Sunday (say October) then the entry must be postmarked on or before the 3rd Tuesday after that Sunday (17 October). For VHF Field Day an extra week is allowed, i.e. the 4th Tuesday.

Any late entries can only be accepted at the discretion of the adjudicator.

No recorded delivery or registered post.

Entrants can obtain a proof of posting certificate from the Post Office which we will honour if an entry has been delayed in the post.

QTH information to be exchanged on 70MHz only.

General rules: 1 through to 9, 11, 12, 13, 15 to 23, 25, 26, apply to all contests any changes will be noted in individual contest rules.

Adjudicators will not normally enter contests which they are adjudicating, however if the adjudicator does wish to enter then his entry will be vetted by a sub-committee before final adjudicated list is published.

Every contest is open to foreign entrants who will be listed separately from UK stations, certificates will be issued to section winners (and runners-up, if enough entries).

10/24GHZ SUMMER CUMULATIVE CONTEST RULES

0900-2100GMT 26 Apr, 24 May, 14 June, 19 July, 16 Aug, 13 Sept, 4 Oct 1992

This year there will be separate contests on 10 and 24GHz concurrently.

The rules for each band are the same and are given below. Except where noted below the general rules for VHF/UHF/SHF contests apply.

The total score is the sum of the three highest scoring days for 10GHz, two for 24GHz. No normalisation is used by the adjudicator, i.e. the scores are summed as total points/km. Entries from outside the UK will be accepted, whether or not they are from RSGB members. Stations operating from within the UK must refer to their logsheets the national grid reference of the sites used.

There is no limit to the number of antennas used.

Unlike previous years, there will be One Section for all entrants.

Narrowband and wideband modes can be used, but points may be claimed for only one mode.

If a station is contacted on both modes, the 'repeat contact' should be clearly marked in the log (and no points claimed).

The contest exchange shall consist of both callsigns, signal reports and serial numbers, QTH and IARU locator. Serial numbers start at 001 and advance by one for each contact, irrespective of section.

Awards will be made to the leading station and runner-up, and additional awards will be made to the leading wideband station, foreign station and fixed station. The overall winner of the 10GHz contest will receive the G3RPE memorial trophy.

During each activity period a station may change its location once. For the purposes of this contest the location is defined as any point within a 5km radius of a fixed point. Contestants may start from a new location for each activity period.

Contacts will be scored at one point per km. Half points may be claimed by both stations for a crossband contact if two-way communication cannot be established on the scoring band. A full contest exchange must take place for a crossband contact to be valid. All crossband contacts must be clearly marked as such in the logs and a note made of the other band used.

Please do not send in logs until after the last event. All entries and checklogs to: The VHF Contest Committee, c/o P Suckling, G4KGC, 314A Newton Road, Rushden, Northants, NN10 0SY.

144 MHZ CW AND MARCONI CONTEST NOVEMBER 1991

Despite bad weather conditions, bursts of tropospheric/MS propagation brought good long distance contacts, verifying good activity on the continent for the Marconi section and the effectiveness of the CW mode. Most G stations seem reluctant to participate for the full 24 hours in this contest, preferring the RSGB 6 hour sections, or odd hours here and there. Some participants had their logs rescued using the points per kilometre method and were not penalised on this occasion, but please read the rules before entering. Logs where appropriate have been forwarded for the Marconi section, but a plea once again, make your instructions (on a separate cover sheet) and logs explicit. The adjudicator cannot always guess which section you have entered. Congratulations to certificate winners.

G8HHI

24HR SINGLE OPERATOR SECTION

Psn	Callsign	Pts	QSO	Loc	Pwr	Ant	Best DX	Km
1	G4PIQ	71244	199	J001	400	4X15	DL5MAE	865
2	G4WKN	30243	124	I092	300	17	DL5GBG/P	755
3	G4OUT	19906	79	I092	40	12	DK6ZB/P	774
4	G4ZTR	15961	55	J001	100	11	DL0UL/P	720
5	G3JJZ	2296	19	J001	3	9	DL1EJA	434

6HR SINGLE OPERATOR SECTION

Psn	Callsign	Pts	QSO	Loc	Pwr	Ant	Best DX	Km
1	G4HUP	32932	90	J002	400	2X18	DL1JF	637
2	GW4VEQ	19810	56	I073	90	2X8	OK1AME	1328
3	G4KSO	10520	28	I064	300	13	G4XBF/P	581
4	G4XPE	5447	26	I092	10	10	ON6HT/P	579
5	G0ADH	5077	32	I091	50	6Q	GMAFF	612
6	G0DJA	1416	7	I093	3	9	GMA4ZUK/P	387

24HR MULTI OPERATOR SECTION

Psn	Callsign	Pts	QSO	Loc	Pwr	Ant	Best DX	Km
1	G4XBF/P	75051	219	J000	400	4X9	OK1KTU/P	887

6HR MULTI OPERATOR SECTION

Psn	Callsign	Pts	QSO	Loc	Pwr	Ant	Best DX	Km
1	G0FBB/P	25151	85	J001	200	4X9	DL0DK	788
2	G5RS/P	20477	79	I091	200	2X17	Y41C/P	735
3	G0CLP/P	17412	68	I093	60	8	OK1DMX/P	1340
4	FM4ZUK/P	13352	33	I087	400	19	F6FLB	724
5	G3LRS	7159	41	I092	—	12	DL1EJA	514

Checklogs received with thanks from G2AFV and G4ZVS.

G8HHI

VHF RESULTS

144MHZ 6 HR / 24 HR (MARCONI) CW

The contest this year was not as well supported as in previous years. This was probably due to an error which occurred when the rules were published, which meant that the multiplier rule did not exist! Many comments were received on this, unanimously supporting multipliers. The VHFCC will take care of the gremlins for next year and reinstate the contest to its former glory! Thanks to all who took part and congratulations to all winners and runners up.

Also thanks go to the Northern Lights for producing another check log which would have taken top stop had they entered.

G4XUM

MULTI-OP 24 HOURS

POSN	CALL	POINTS	OSO	LOC	DX	KM
1	G4LIP/P	11482	878	03BF	DD05DK	792
2	G8LNC/P	10388	791	90JO	DG5OAF	816
3	GW8TF/P	8466	678	81LQ	DC20C	891
4	G1KAR/P	7740	596	00DR	DL9DAF	797
5	G4ZAP	7706	718	93DC	DJ2JA	771
6	G4VIX/P	7591	607	01HW	Y27RQ	868
7	G4ERQ/P	7438	571	94PH	DL8GP	864
8	GW4GF/P	7201	641	81NV	DC20C	871
9	G8HFT/P	6814	614	91GI	DC20C	808
10	G10QY/P	6554	557	01IT	DK4VT	708
11	G8SDS/P	4823	496	80TP	DF9QT	779
12	G3WRS/P	4095	402	94MJ	DL0WAE	678
13	G6CTU/P	3965	455	91XG	DL3LAB	772
14	G4KSO/P	3897	315	74BI	PA3FOC	738
15	G0KEG/P	3822	426	91PS	FD1JRX	735
16	G6ARC/P	2574	366	92FM	DD0PXA	691
17	GMOCC/P	2321	197	86EE	OH1CDY	765
18	G7FDC	1745	188	80FJ	DC9VC	767
19	G7WE/P	1518	250	83RP	PE1EWR	476
20	G3CRC	1287	139	01NS	DC20C	606
21	GMMOC/P	650	85	75VX	G1KAR/P	655
22	G6GM	630	85	94DB	OH5FF	445
23	G8WSP/P	616	104	81MH	GM4ZUK/P	625

SINGLE-OP 24 HOUR

POSN	CALL	POINTS	OSO	LOC	DX	KM
1	G4PIQ	9182	751	01MJ	OK1BL/P	799
2	GM4ZUK/P	5255	326	85RW	GU3EJL	801
3	G0CDP/P	4386	429	93AD	DG2FCQ	766
4	G4WKN	3182	396	92OG	DR3VE	622
5	G8DWQ/P	3057	336	01BO	DC12N	632
6	G8FBG	2554	284	91SG	DG7AAF	727
7	GM8ORG/P	1878	185	74TO	PA3FOC	655
8	GW7GXV/P	1493	188	83AB	PA3FYJ	697
9	G0AHO	1238	207	83UB	E15FK	443
10	G6GAU	1046	113	02MB	DC12N	590
11	G0MYE	871	79	70GE	GM4ZUK/P	774
12	G8ZOB	779	108	92JN	DJ6LV	564
13	G0EYI	347	34	82OR	GM4ZUK/P	468
14	G0NIF	17	10	91SG		

SINGLE-OP 6 HOURS

POSN	CALL	POINTS	OSO	LOC	DX	KM
1	G6HRM	2442	215	01FT	DL8SDE	712
2	G6GAU	617	73	02MB	GM0BC/P	471
3	G0JDL	538	59	02JL	GM4ZUK/P	566
4	G8ZFE	473	78	83NE	GM4ZUK/P	408
5	G4WKS	330	67	92FG	DL1EJA	546
6	G0EYI	260	40	82OR	GM4ZUK/P	468

SWL SECTION

POSN	CALL	POINTS	OSO	LOC	DX	KM
1	BRS28198	281	43	00HX	GW3KJW	410

OVERSEAS SECTION

POSN	CALL	POINTS	OSO	LOC	DX	KM
1	PE1EWR	638	50	11SL	GM0OC/P	703

NEWS FLASH

VHF FIELD DAY

VHF Field Day is now also open to non RSGB members as long as the Club or Group that they represent is an RSGB Affiliated Society. This being the same rule used in AFS contests. Clubs or groups wishing to enter VHF Field Day under this ruling must send in a signed Declaration with the entry that the operators of the station or stations are all fully paid up members of the Affiliated Society, the declaration must be signed by Club Chairman or Secretary.

Clubs or Groups who previously entered under the standard rules (all operators must be RSGB members) are still accepted and it is hoped that most entries will participate in this way.

The change in rules is to try to get more groups active, so generating more interest in our VHF contests, and thus increased membership of the RSGB!

VHFCC NEW AWARD

A new Certificate of Merit will be awarded in all contests, and will be given to the highest placed Single-Operator station, running no more than 25W output to a single antenna. It will be available to Fixed stations and Portables.

The new award comes into effect from 01/03/92

B.Llewellyn on behalf of VHFCC

VHF CONTESTS CALENDAR

5 Apr	50MHz Trophy (Mar 92)
12 Apr	1296MHz Fixed (Mar 92)
2/3 May	432MHz to 24GHz & 70cm Trophy (Mar 92)
16/17 May	144MHz/SWL/Single/All (Mar 92)
7 Jun	70MHz CW (Mar 92)
7 Jun	50MHz CW (Mar 92)
21 Jun	432MHz FM Fixed/Open (Mar 92)
21 Jun	432MHz CW Single/Multi-Op (Apr 92)
4/5 Jul	VHF Field Day
25 Jul	144MHz LP/SWL (Apr 92)
26 Jul	432MHz LP/SWL (Apr 92)
23 Aug	432MHz Fixed/SWL (Apr 92)
1/16 Sep	144MHz CW Cumulative
5/6 Sep	144MHz Trophy/SWL (Apr 92)
20 Sep	70MHz Trophy/SWL
3/4 Oct	432MHz-24GHz
3/4 Oct	2.3GHz and 1.3GHz Trophies
3/4 Oct	SWL Contest and IARU
1/16 Oct	144MHz CW Cumulative
6/21 Oct	1.3 & 2.3GHz Cumulative
14/29 Oct	432MHz Cumulative
1 Nov	2nd 1296MHz Fixed/SWL
2 Nov	144MHz CW Cumulative
6/19 Nov	1.3 & 2.3GHz Cumulative
7/8 Nov	144MHz CW Marconi/RSGB 24-hour
8 Nov	144MHz RSGB CW 6-hour
13/30 Nov	432MHz Cumulative
6 Dec	144MHz AFS/Fixed/SWL
7 Dec	1.3 & 2.3GHz Cumulative
15 Dec	432MHz Cumulative
26/29 Dec	70MHz Fixed Station
26/29 Dec	144MHz Fixed Station
26/29 Dec	432MHz Fixed Station

For details of rules for European contests, contact G4PIQ, QTHR.

DIRECTION FINDING

GEOFF PECK MEMORIAL TROPHY

Date: 22 Mar 1992

Map: 174 (Newbury and Wantage)

Assembly: 1.00pm for start at 1.20pm

Location: Bury Down, The Ridgeway, NGR 480840.

Competitors requiring tea should notify Bill Pechey, Jays Lodge, Crays Pond, Reading, RG8 7QC. Tel: 0491 680552, no later than 14 Mar 1992.

COVENTRY QUALIFYING EVENT

Date: 12 Apr 1992

Map: 140 (Leicester and Coventry)

Assembly: 1.00pm for start at 1.20pm

Location: Burbage Common, NGR 452952

Competitors requiring tea should notify Norman Rathbone, 7 Foreland Way, Keresley, Coventry, CV6 2NN. Tel: 0203 337124, no later than 5 Mar 1992.

# Wireless

## YOUR SPECIAL LUXURY COACH IS WAITING TO TAKE YOU TO THE FRIEDRICHSHAFEN HAMFEST 1992!

### Don't miss the bus and get left behind!

Every year at the end of June, the attractive town of Friedrichshafen, set alongside beautiful Lake Constance, hosts Europe's largest amateur radio show. The number of visitors usually exceeds 15000, and the huge indoor flea market is second only to the Dayton HamVention.

### Getting there

Our reasonably priced trip will enable you to travel there in comfort in our luxury coach. The coach comes equipped complete with video, coffee machine and a toilet. We'll be picking up passengers from Victoria Coach Station in London, early in the morning of Thursday June 25. Then we drive to Dover, to catch one of the first ferries across. We'll arrive in Friedrichshafen late that evening, so there's **no overnight travelling** involved on this holiday!

### Where we stay

During our holiday in Friedrichshafen we will be staying for four nights in what is considered to be the best Hotel in town The Buchorner Hof Hotel. Roger Hall G4TNT, has examined the Hotel Bar (very closely!) the rooms, and eaten in the restaurant, and he says it's certainly very luxurious.

### Double rooms

The only minor problem is that most of the rooms are doubles. In this

case, they really mean double-beds, not twins! This means that this trip is more suitable for couples, and so we can encourage more husband and wife/or girlfriends to come, I have organised a couple of day excursions for the Friday and Saturday. One trip is to the beautiful Island of Mainau, famous for its flowers and topiary and the other is into the heart of the Black Forest, the home of the cuckoo-clock. Both trips will provide delightful days out.

There's so much to do, so much to see and it's such a good value-for-money trip that the coach will soon be booked up so hurry! The complete holiday including: coach travel, all tolls, four nights Hotel accommodation (with breakfast and evening meal) and excursion costs just £199.95 each (based on two people sharing a room). A few single rooms are available for a supplement of £12.50 a night.

Interested in coming? Why don't you call me, **Roger Hall G4TNT, on 071-731-6222 during the day or weekends, or the answerphone at night**, for further information. Or you can call **Rob Mannion G3XFD**, the Editor, on **0202-678558** for a chat about the trip. Alternatively you can send your deposit of £25 now to book your place to:

**Friedrichshafen Holiday 1992,  
PW Publishing Ltd., Freepost, Enefco House  
The Quay, Poole, Dorset BH15 1PP.**

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This microprocessor based system is fully automatic and has many unique features such as the key ahead buffer that ensures a steady output despite pauses in keying. Stored messages can be recalled from memory directly from the key! Space limits description, full details on request.

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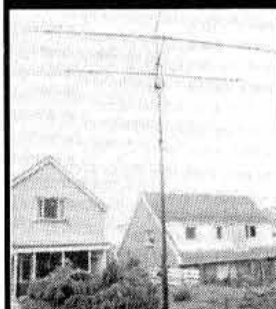
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**572B's** suite FL1000Z etc: £50 each. (London) 0959 75992.

**60FT** heavy duty tower with reinforced head unit, includes heavy duty rotator with control unit and connecting cable. Also new worm drive winch fitted. Buyer inspects and collects: £700ono. IC-2E and IC-4E H/holds both include battery pack, wall charger, leather case, speaker mic, boxed with CCT diagrams: £180 and £230 or £375 for both. G4KZZ QTHR. (Coventry) 0203 444160.

**730V** 40-10m rotatable dipole, ideal for small garden, unused, boxed, cost: £150, sell: £90. Buyer collects. G0IRK QTHR. (Surbiton) 081 390 2650.

**AEA PAKRATT** PK232MBX multimode data controller, complete with manuals and documentation. Driver programs for both BBC and IBM PC included: £250. Post paid. Also BBC-B computer, twin two track diskdrive, Hires monitor, Acorn data recorder, user guide, books: £200. G3RDX QTHR. (NW London) 081 455 8831.

**AMSTRAD** PC1512, 20mb, hard disk, 5.25" floppy, CGA, colour, mouse, excellent condition: £180. G3ASE QTHR. (Cambs) 0480 63129.

**AR88** rebuilt, ex cond: £550ono. HRO, gwo + coil packs PSU: £500ono. Buyer to collect. (Stourbridge) 0384 894428 eves/wends.

**ATARI** 520 ST FM computer, perfect condition: £195. High resolution monitor for same: £85. Dot Matrix printer: £50. Also included is Wefax and packet software. Kenwood TM221 ES 15/45W FM: £195. PSU for same: £35. Demo available on all items. Phone Chris G0HRX. (Birmingham) 021 784 6413.

**AZDEN** PCS3000 2M FM 784 with detachable head up/down reverse repeater on mike: £100ono. G4KJV QTHR. (Bedford) 0234 345137.

**BTH** 16mm sound projector type SRB form B/G stamped WAF FINISH. Collectors item? Offers. Plessey portable contamination monitor, complete with 2 GM tubes, accessories and wooden carrying case. Offers. CAPCO AMA-3 magnetic loop antenna with control box: £160. Tony G4MDJ. (Leek) 0538 371747.

**BBC** masterly vigen case double disk drives microvitec colour monitor beeb hand scanner many extras: £350. Would consider exchange for 2m all mode rig. Treat the xyl, brand new knitmaster option 4 knitting machine with table, demo video: £100. G3ZYQ QTHR. (Enfield) 081 363 3363.

**BBC-B** DFS, 5.25in diskdrive 40/80T, mounted in screened solidisk CPU and keyboard case, datacard, software includes minioffice-2, database, sat-pack, RTTY, disk cabinet: £200. Yaesu FT290R 2m multimode with Mutek, boxed, soft case, nicads, charger: £250. Microwave modules MML144/30-LS 30W power/preamp: £50. Datong FL3 multimode audio filter with auto notch: £100. All vgc. G3ZJK QTHR. (Rugby) 0788 810535.

**BBC/B** with Cumana interface, 40T double sided drive, Watford sideways ROM board with Wordwise +, Tx-3, RX-4, RTTY tapes, TIFI interface: £220ono. Also Kenwood TH-215E VHF tcvr with extra battery: £155ono. HS-WX1 144/430MHz dual band antenna: £25. (Cwmbran) 0633 484577.

**BENCHER** chrome; vibrox, chrome jewelled: SP102 YO901 keys @: £50 each. spkr: £60, scope: £70. All excellent. Jim G3DKO. (Norfolk) 0760 23897.

**BUTTERNUT** HF5B butterfly mini beam: £150. All lb cond and instructions. (Gt Yarmouth) 0493 664497.

**CALL** books 1991 North America and International: £20 post free UK. (Beckenham) 081 777 3134.

## MEMBERS' ADVERTISEMENTS

**COLLECTORS** Items Ecko TV, model TMB272, band 1 and band 3, mains, battery, portable: £45. Lissen 4 pin triode from sky-scraper, 1930: £5. Tuning head 10D1570: £5. USA RCA valve 6A55: £4. Hinchley mains transformer, output 300-0-300V, 6.3V, 5.0V: £8. G3OQE. (Staines) 0784 454757.

**COLLINS** KWM-2/PSU/CC-2 case, £450. 75S3B: £300 with PSU (550 the pair). 30L1: £400. Over 60 spare valves: £100. All eqpt of late GD4BGK. Securicor delivery included, fax phone GW3NMH, 0492 448685.

**COMPLETE STATION**, mint condition, boxed, manuals. Icom-730 HF tcvr, Icom HM10 mic, Icom SP3 EXT speaker, Icom FMPS430, power supply, Kenwood HS6 headphones, Kenwood AT230 ATU, Daiwa AF606K all mode filter, Kenwood LF30A low pass filter, Daiwa DR7500R rotator, DC7011 controller, old Morse key: £850. Tennamast wall mounted tilt over tower, brand new, never assembled: £250. Prefer no split. (Hamilton) 0698 424836 eves.

**CUSHCRAFT** AV3 tapped vertical antenna 10'15"/20 meters: £40. (Greenford) 081 575 2671.

**DRAKE** R4C rx, handbook, FB condition: £300. KW Viceroy 3300PEP mic, LP filter, 10-80m, spare 6146s, ex cond. Collect or plus carriage: £100. (Ilminster) 0460 53349.

**DRAKE** station. TR-4CW + PSU, RV-4C VFO, MN2000 ATU, D104C mic, spare valves. All VGC: £600. Datong FL2: £50. G3GGK QTHR. (Cambridge) 0954 210374.

**DRAKE** TR7 tcvr, PSU7, VF7, MS7, service manuals, extender cards, vgc, fully operational. Call for demo: £450. (Aylesbury) 0296 661386.

**DUMB** terminals, ideal for packet, can be shown working: £30 or swap for XT bits, Trio TS700S vgc. Offer? (Watford) 0923 674842.

**EXPAND** your horizons! WARC bands, rotary dipole, Cushcraft D3WS: £110. Betamax video QTY 25, used tapes plus triple standard video needing repair, Sony SLT-7, best offer? Quartz 16, 2m FM, several channels: £80. Trio VFO-5 for TS510, no info, offers. Datong processor in untidy box: £30. Wren luggage CP/M computer books and software, offers. G4BWP QTHR. Eves before 10pm. (Near Newmarket) 0638 552080.

**FAILED** planning appeal means that Versotower E series 45ft must go, base plate mount: £350.00. G4JCC QTHR. (Hants) 0705 463504.

**FLUKE** 8062A, DMM, CW, handbook: £105. Fluke 8026B, DMM, CW, handbook: £95. Weston 4440, DMM: £25. G3OZY QTHR. (Hayes) 081 841 2575.

**FOR SALE**. Yaesu FT726R 2/70/6m sat module, very good: £750. Yaesu FT one, good condition: £850. Yaesu SP102: £45. Yaesu MD1B base microphone: £45. Bnos Zpm/430/10/50: £135. Microwave modules transverter 144/23cm, mint: £150. Bnos 25A power supply, mint: £150. Telerader CWR 610 Morse RTTY decoder Morse tutor: £70. Dressler 1296MHz masthead preamp: £100. (Orifield) 0262 87488.

**FRG7** communication rx, good condition: £110. Stan G3XHC QTHR. (Dartmouth) 0803 833621.

**FT101E**, fan spare, new output valves, manual, leads, boxed, vgc: £250.00. QTHR any trial. (Stoke-on-Trent) 775611.

**FT107M** HF tx/rx with FTV107R transverter for 2m and 70cm, vgc: £525. Yaesu MD1 desk mic: £25. MML 144/50S, 10W input, 50W output, 2m linear with pre-amp: £45. Tandata TD1000 Prestel terminal: £25. Mike Gathergood G4KFK. (Slough) 0753 540520.

**FT200**, FP200 mint condition all ten meters, original boxes, some spare valves: £180. Class D wameter: £8. G3FET QTHR. (Sussex) 0892 654156.

**FT290R** 2m all mode transceiver, good condition, complete with charger, new nicads case etc: £250. Alan G0FAU QTHR. (Cheddar) 061 428 5466.

**FT290R** in gd cond, plus 100W linear and Drae 24A PSU: £300.00. PK232 with MBX upgrade and PC software and cables: £200.00. Phone G4XWV. (Petersfield) 0730 231024 eves.

**FT290R**: £190, Icom 260E: £210, KW2000E: £120. Eddystone 830/3 sp, Dragon 32 monitor, modem, CW, RTTY, CT160 valve tester. Silent key sale. (Brownhills) 370663.

**FT290R** with FL202S linear. FT790R2 with FL702S linear. Nicads for both, softcases included, both vgc, boxed, original packing: £325 and £375 respectively. Might haggle! Rigs hardly used. GOMLY QTHR. (Walsall) 0922 683877.

**FT707**, FV707 FP700 HK707 key LF300A (low pass filter), complete station with handbooks: £425 complete. Datong speech processor: £30. Sx200 scanner: £100. Shure desk mic:

£35. Kenwood l/pass filter: £25. Tono 550 term, CW/RTTY/BAU: £140. Hygain H/D rotator: £75. AVO 8 multimeter: £35. 70cms 9ele antenna: £20. MM432/50 amp: £75. NEC green VDU: £30. (Chertsey) 0932 568089.

**FT757** FL7000 complete package, auto band change, including switched inbuilt ATU. Will include 14-21-28MHz beam: £200. No time-wasters please. (Chichester) 0243 717691.

**FT757GX** HF tcvr, gc: £690. RN Electronics, 6m transverter wired to suit above tcvr, 30W output: £130. Kenwood AT230 ATU, gc: £130. Variable output PSU (13.8V 20amps) available for above rig if required twin meters volts and current: £50. Terry G4OXD. (Hitchin) 0462 435248 after 6pm.

**FT790RZ** with charger and new set of nicads, boxed: £275.00. FTD401, fair condition with manuals: £135.00. G8FXG. (Holsworthy) 0409 241548.

FT7B HF mobile multimode, CW, YC7B digital frequency unit, plus full manual, excellent working order: £180.00. Call Adam G0ORY. (Leicester) 0533 548105.

**FT902DM**, good condition, new PA and realigned: £475. Epson MX 80/i, 9 pin printer, spares/repair: £25. MX80/i technical manual: £10. G3ZIF. (Huddersfield) 0484 863936.

**FV707DM** external VFO/memory unit, mint: £100. Datong ASP: £50. Dipole of delight, 7-28MHz + 90° feeder: £35. Jim. (Bournemouth) 0202 557631.

**HALLICRAFTERS** communication rx type SX23, gwo and condition: £115. Prefer buyer collects but carriage can be arranged at buyers expense. (Lynton) 645231.

**HEATHKIT** DX100U AM, CW, tx: £75. Murphy B40C rx: £75. Crystal calibrator, No 7 Mk1: £15. Trix 1941 PA amp: £25. Leak TL25 amp: £40. Leak TL10 amp: £40. Leak stereo 60 amp: £60. Philips PA amp 14 watts: £15. Linear PA amps, 30W: £30ea. Linear L45 4": £15. (Berkshire) 0734 785348.

**HEATHKIT** HWS400, matching PSU, inbuilt clock, 100W PEP, WARC bands, synthesised, with direct entry keypad. All diagrams: £475.00. (Swansea) 0792 884895.

**HF** linear 1200W input Heath SB230, very smart condition: £230.00. Standard C58 2m multimode, processor fault: £50. G3TCO. (Bristol) 0272 681068.

**HITACHI** disk drive, new with manual, disks, leads for BBC: £25. Yaesu monitor: £35. Cue DEE 15ele x 144mc, new, boxed, guaranteed 5 years: £75. Wanted: Strobtorch type 1202C. G3XNH. (Nr Norwich) 0953 788376.

**IBM 4869** 5.25" disk drive (standalone) unit: £65. IBM8503 display mono, 11": £75. QTY2 IBM 3191 keyboards: £25ea. QTY2 Sony Trinitron KTX9000UB colour viewdata terminal systems comprising 8" colour screen/display unit, miniature keyboard and printer: £50ea. Toshiba T2100 portable PC 2X3.5" drives: £60K RAM, DOS4.01 modem and carrying case. Ideal for contests and packet etc: £450. Kevin G4BUW QTHR. (Bracknell) 0344 862874.

**ICOM** 255E 2m B/M tcvr base P.P.: £200. Stolle memomatic rotator: £20. Panasonic printer KX1091, offers? G3GXX QTHR. (Kirkby by Stephen) 05396 23679.

**ICOM** 735, 9 band HF tx/rx. 100W, CW filter, mint condition in original box with all accrys, manual etc: £695. (Farnham) 025 125 3093.

**ICOM** 751, 9 band HF tx/rx. Built in PSU, CW filter, low level transverter output, fine condition, box, accrys: £795. (Farnham) 025 125 3093.

**ICOM** 751A HM36 scan mic, RC10 freq control, HP2 headphones: £875. Bnos 12/20E PSU: £125. Carriage paid UK. Both together: £950. Any test welcome. G3RHM QTHR. (W London) 081 423 2329.

**ICOM** IC-2E CW sprk mic and spare nicads: £125. Rascal RA-17, new valves throughout, manual: £175. IBM 8MHz AT motherboard, CW, 640K RAM and HD/FD card: £35. Several heatsinks and high power UHF transmitters - call. Pye PF1 tx/rx, offers? G3YEK QTHR. (Reading) 0734 734195.

**ICOM** IC-720A general coverage HF transceiver, narrow CW filter fitted, matching Icom PS-15 PSU, used little, good cond, boxed: £650.00. GW4WBT. (Llandudno) 0492 878107.

**ICOM** IC-R7000 with computer interface, excellent condition, boxed: £680. (Hemel Hempstead) 0442 66878.

**ICOM** IC240 with mount, mike, handbook, 12V lead, VGC: £110. Wanted Alinco ALR22E. (Isle of White) 0983 78756.

**ICOM** IC251E multimode base station with Mutek front end, service manual, boxed in good condition: £400. G8KUQ. (Cheltenham) 0242 572461.

**ICOM** IC720 HF tcvr, general coverage receiver with CW filters, matching IC-PS15, 20amp power supply in excellent condition.

Including original packing and handbooks, mic, leadset: £470. GM4HWO. (Edinburgh) 031 336 5917.

**ICOM** IC745, immaculate condition, FL44 filter, mic, manual, boxed: £715. IC SM6 mic: £25. Marconi 2GHz to 12GHz co-ax Attn, 20dB Cal certificate type 6534.4, unused Offers. (Exmouth) 0395 273090.

**ICOM** PSS5 20A PSU, brand new: £145. Dartcom professional, cased, metered etc weather satellite receiver, mint: £350. Paul G4XHF. (Crawley) 0293 515201.

**ICOM** R71E rx, as new. Fitted extras, remote control, voice synth, FM board, DCLoad: £750.00. ICOM R7000E, as new. Boxed, fitted extras, remote control, VHF/UHF, voice synthesiser, DC lead: £750.00. (Leicester) 0533 700827.

**JAYBEAM** TB3: Ham IV; telescopic mast. G4LIH QTHR. (Teesside) 0642 781818.

**KANTRONICS** TNC 2400 complete with manuals: £120 or exchange for test gear or 9,600 band TNC. (Derby) 0332 834228.

**KENWOOD** dual band, H/Head, TH-77E extended coverage, no scratches, boxed: £275. Yaesu FT2100Z, gwo, 400W out: £350. G4TKH QTHR. (Potters Bar) 0707 43879.

**KENWOOD** TH77E handheld dual bander, as new: £300. Cannon photocopy: £250. Sharp fax machine: £400. Contact G8CCV QTHR. (Milton Keynes) 0908 316052.

**KENWOOD** TR751E 2m r/mode mobile/base, 25W, unmodified, excellent condition with manual and box: £425.00. Possible exchange for FT102/similar. Will include 9ele tonna if desired: Eddystone 730/4 HF rx, 0.5 to 30MHz re-aligned with manual: £550.00. G8YOJ QTHR. (Leicester) 0533 811245.

**KENWOOD** TS530S, mint: £475. Yaesu FT102 extra filters, AM/FM board: £495. Collins "S" line: £450. KWM2A PM2 312B5 remote VFO: £625. (Trowbridge) 0225 753166.

**KENWOOD** TS830S, CW filter, VFO240, ATU 230, all first class cond with manuals, buyer collects: £700. Nelson 10/15 quad kit, unused: £100. Buyer collects. G3BII QTHR. (Beaconsfield) 0494 675528.

**KW1000** linear amp for 15m, 20m, 40 and 80m. Perfect working order and good condition: £350. Would swap for IBM comp 286etc. (Shotts) 0501 25111.

**KW2000A** HF tcvr, gwo, spare valves and manual, likes top band! Owner off overseas again: £130. Tony GOBBM. (Northampton) 0604 499782.

**MFJ** versa tuner, 3 962C, 1.5kw, PEP, 2kw/200W, SWR meter, antenna selector, 2xcoax/balanced, line/direct as new: £190. (Harrow) 081 864 6404 eves w/ends.

**MICROWAVE** modules, 144MHz, 200W amplifier: £185. Katsumi EK150 keyer: £70. Star masterkey memory keyer: £60. Shinwa SR001 scanner: £185. Cue Dee 144MHz, 10ele yagi: £35. Crofton 10" b/w monitor: £20. Early evening calls only please. John G4ZTR. (Colchester) 0206 860238.

**MICROWAVE** modules, 144MHz, 200W linear with pre-amp 3, 10 or 25W input: £180. 13.8V 35amp PSU: £70. Rotator with top bearing and brackets: £90. 70cms mast head pre-amp: £20. Winch 800 LBS pull: £15. Ring after 6pm. (Mnchester) 061 790 7673.

**MICROWAVE** modules, MMG1296, Ga As FET pre-amp, as new: £40. DL7QY, 23-13-9cm Ga As FET pre-amp, inc coax relay and N-type skts: £40. 5ft dish, 0.6/1D, 8 ribs and half inch mesh, OK 23-13-9cm: £50. Twin 2C39A 23cm linear, valves, metered PSU, in prof 19" case: £120. KR500 elevation rotator, hardly used: £100. Greenkatt telescope 75mm reflector, as new, original packing: £100. G8CYW QTHR. (Tyne & Wear) 091 414 6189.

**MMT** 50-28S transverter, unused: £150. Wanted EA12 Drake 2B, VESPA Mk2, G3RKZ QTHR. (Derby) 0332 883035.

**MOSELY** Mustang tribander, 3 element beam: £100. SB200 linear: £285. Yaesu FC757 auto ATU: £200. H/brew PSU: £30. Commercial PSU: £75. G4YRR. (Stoke On Trent) 0782 395017.

**NATIONAL** RF-B600LB/LBA FM-LW-MW-SW receiver, as new, digital display, memory scan, manual: £200.00. (Woking) 0483 728688.

**NOISE** generator 4423. SH.F at £35. Noise generator CT207 100-600MHz: £35. Noise generator CT82: £35. Transformers 500VA tapped 0-7V outputs: £10. G3EHM QTHR. Collect. (Stoke on Trent) 0782 397240.

**PADDLE** key, MFJ422B: £50. Auto trans 1kw 250/110: £15. Dummy load 1kw all as new. (Gillingham) 0634 379140.

**RACAL** RA17L, VGC, h/book, spare valves: £199. (Wanted, Top band bandspread coil, your price paid). Peter G4VUN, pref buyer collects. (Nr Ripon) 0677 60302 after 6pm.

**RADIO** controlled model yacht, BVR MVDAN sloop LOA 32" HOA 50", 4 channel digital rx/

tx complete batteries, VGC: £110. (Truro) 0872 864255.

**REDIFON** rcvr, R145-SSB, 1-KC read out, called LIF adaptor. Better than 8800 Addystone. Table top model, excellent: £175, very clean. (Southall) 081 571 5759.

**RX80** amateur band rx (from kit) inc. FM and 2m: £90. Maplin weather satellite decoder and matching framestore: £200. G8FDJ QTHR. (Sheffield) 0742 333847.

**S.E.M.** Z-Match 1.6-30MHz: £50. H/B 100 digit memory, pause, iambic keyer plus H/B double squeeze paddle: £20. Wx-WD gig gen 85Kcs-32MHz FM/CW, mod-tone ancient, heavy but good working order. Buyer must collect: £10. G4MYX QTHR. (Yorks) 0937 832061.

**SALE** Nevada. TM1000 2kW ATU, gd cond: £75. G4AFE QTHR. (Middleton in Telesdale) 0833 40907.

**SHACK** clearance. Old type radios and components. Also some black and white and colour televisions, all suitable for spares. G6DJQ QTHR. (London) 081 459 8274.

**SHURE** 444d mic fitted four pin plug: £45. G4RHI QTHR. (Axminster) 0297 32572.

**SILENT** key sale. FT747, CW, mic, less than 2 hours use due to illness, 6 months old: £400. HQ170 rcvr: £50. FT75 CW, AC/DC, pwr supply: £50. All ono, buyer collect. G3OXV QTHR. (Davertry) 0327 702265.

**SILENT** key sale. Kenwood TS950S digital: 2250. Desk mic MC-60: £50. ATU ATU-230: £120. Trio 2200: £60. Other items, Audix mixer 10/2: £250. Eddystone RX358 and coils: £75. Cheetham telx: £75. Creed 444: £25. Receivers IC700R: £60. KW77: £25. QTY 10, AR13/CV1664: £2 each. MMT 144/28: £80. Pye VHF Aero tx+rx: £25. Nobby loam tx/rx: £75. Texas 709 data terminal: £45. Ron G3NCL, Bucks RLO. Evenings. Ansaphone. (Chesham) 0494 776420.

**SILENT** key sale. TS830S plus speaker and DFC230: £625. FT-690 Mk2 new condition: £75. Heathkit 250MHz counter: £60. G3CXI. (Cheltenham) 0242 673834.

**SILENT** key, GD4BGK, TS-950SD CW SP-950, as new: £2250. Drake TR-4C CW PSU: £350. WH-7 wattmeter: £25. MS-4 sprk: £14. Icom IC-251E: £400. Heath HD-1424 active antenna: £25. IM-18U VVM: £30. Atlas 180 SSB tcvr: £200. Kenwood R-2000, new: £400. TR-2300: £40. TR-2500/PB-26/SC-3: £100. Spare PB-26's, new: £18. Phone/fax GW3NMH, 0492 548685. All prices include free Securicor delivery.

**STANDARD** C500 dual band, hand held transceiver, case, nicads charger, as new: £200. Z88 portable computer, 128K RAM, 32K ROM, printer, lead, books: £100. Amstrad PPC 512 portable dual drive, service manual: £100. G8KZJ QTHR. (Orpington) 0689 835815.

**STANDARD** C520 dual band 2m/70cms with extended coverage complete with two nicads, charger, dry battery case, speaker mic, car adaptor. All items boxed and unused. Cost £440 accept £340.00 or swap for IBM compatible, portable computer, plus cash adjustment. G6JFK. (Northampton) 0604 491627.

**STANDARD** C528 boxed: £325.00. Cushcraft A3 tri-bander: £175.00. TV DX antenna: £25. Possible PX TS811 FT790 or FT747. (Worthing) 0903 872278 eves.

**TEN** TEC Argonaut 2, never used, boxed, mint condition: £900. Geoff G4OWH. (Bath) 0761 431198.

**TEN** TEC Corsair II with matching power supply model 960, Ten Tec 705 electret desk mic, h/book, good condition, receipts available: £850. G4ERW. (Surbiton) 081 399 0922.

**TEN** TEC paragon, ex cond, 1.8kHz filter, Ten Tec power supply: £1200.00, may consider part exchange HF mobile tcvr. (Leicester) 0533 674112.

**TEST** equipment, Hewlett Packard 432A pwr mtr: £100. Marconi sig gen TF201 S 10MHz-520: £150. Marconi FT2012 sig gen 400-520MHz: £250. Amstrad 6128 with printer, tape, disks/tapes, many extras: £250. Complete Pye test gear (Westminster etc) reflectometers 1UHF & 1VHF sig gen/2 test meter: £250 the set. GWOAQ QTHR. (Caernarfon) 0286 3576.

**THREE** matched 6146B valves, brand new and boxed, ideal FT102: £25. 12BY7A drivers, brand new: £5 each used but good: £5 per pair. G3HVA QTHR. 0256 780482.

**TR2300** 2m portable nicads case: £115. Jupiter 2 hand held scanner, 28-1300Mcs, nicads case: £150. MMT 144/288 transverter, 25W: £110. Capco SP300 ATU: £110. (South Godstone) 0342 843866.

**TRIO** 2400 2m handheld, VGC, CW, mains, charger: £95. Widespaced monster variable capacitor about 180PF, free to collector. G3TMO QTHR. (Camberley) 0276 32204.

**TRIO** TR2400 2m hand held transceiver: £99. Base charger unit ST1 for TR2400: £15. Trio TR3500 70cm hand held transceiver: £140.



ST2 base charger for TR3500: £25. Workshop manuals: £10 each. Evets audio compander speech processor: £45. Creed 444 teleprinter: £40. All plus carriage. (Ashbourne) 0335 60755.

**TRIO TS 120V 10W** transceiver, boxed, manual, as new: £245. Yaesu FRG7700, manual. FRV7700 VHF converter: £250. Yaesu FT208R 2m handheld NC-8 base charger, speaker mic, YM-24A: £160. G4HUR QTHR. (Weybridge) 0932 846094.

**TRIO TS830S HF** tcvr, little use on HF. Superb transverter drive, bargain at: £550. G0EHV QTHR. (Tyneside) 091 482 0909.

**TRIO TS830S** with CW filter, MC35 mic and manual, PA tubes in excellent condition with clean output. Boxed: £575. Mutek TVHF230C tvr 2m>HF, all nine bands 10W output with manuals, suit FT290R or similar up to 10W input: £150. Mutek TVVF 144A tvr 10m>2m 10W output, full ALL feedback, cable for TS830, TS930 & TS940. Manual: £195. Wanted Icom IC-W2E. G4UDT QTHR. (Wembley) 081 902 5995.

**TS440** mint condition, little used, orig packing with manual: £700. Dave G4XWZ. (Stroud) 0453 752057 after 7pm.

**TS440S** narrow filter: £850. PSU50: £150. Both new, boxed. Heathkit transmitter, good: £50. Heathkit SB101: £50. Navy Key: £20. Kent brass paddle: £20. Icom IC240 2m FM: £110. Linear components 2x813 etc. Offers. Lattice tower sections, superb: £25 each., G0CUE QTHR. (Stoke On Trent) 0538 722648.

**TS520**, VFO520, SP520, MK355, gwo, ideal outfit for beginner, prefer trial before purchase: £3000.00. (Bradford) 0535 274201.

**VERSATOWER 16MBP60** + 13MBP60 on mobile trailers complete with head unit, winches etc: £750 each. May split trailers/towers. BNOS LPM144-10-180 2m lin, as new: £200. Microwave modules 2m transverter including PSU/relay switching unit and all connecting leads for FT980, "VHF/HF one switch operation": £80. Yaesu FT209R Mutek & matching FL2010, 10W lin: £270. 40' tower, very robust 2 section 18" foot input: £100. Yaesu FT209RH + NC15 PSU/charger: £200. (Chippenham) 0249 730325.

**VGA 14" colour TECO** monitor and IBM compat interface card: £150. Comes with manual and box. (Reading) 0734 811097.

**WS17** with h/phones and mic + WSB44, offers. Also ZX Spectrum +, recorder, thermal printer paper, software inc. w/proc: £60. Martin. (N Kent) 0474 853014.

**YAESU 290R** multimode tx/rx, mic, nicads charger, carrying case, manual, rubber duct, vgc: £230. G7HUI. (Carlisle) 0228 26436.

**YAESU 767GX**, 2", 6", 70cms mod: £1850. Yaesu 767 exp/sp: £50. SEM Z match: £75. Star/masterkey: £35. Bencher key: £40. Kent single pad: £25. American s/key: £20. Welz SP620 SWR/10W/PEP meter: £45. Regulated power supply, 7amp: £20. 70cms cross yagi: £10. HB9CV 6m aerial: £5. G2DYM multi trap dip: £75. Spectrum 200, 25-29MHz aerial (as new): £45. Cash preferred. (London) 071 281 1464.

**YAESU FL-2100Z**, gwo, 400W out: £375. Kenwood TH-77E, D/band, H/Held, no scratches: £250, boxed. Chris G4TKH QTHR. (Potters Bar) 0707 43879.

**YAESU FRG-8800** receiver with VHF converter, FRT-7700 ATU, and manual. Excellent condition: £425. Also Trio R-1000 receiver with manual, VGC: £220. Deecomm ATU: £20. Rob GOLZB QTHR. (Kingston Upon Thames) 081 546 2709.

**YAESU FRG7** comms rx with handbook, good condition: £100. Buyer collects. G7FOP QTHR. (Gosport) 0705 581136.

**YAESU FT One**, fitted with all options, fitted when purchased. One owner, complete with operating and technical manuals. Mic and DC lead. Only fault from new, dial lamp replaced: £800. G3OXV QTHR. (Davenport) 0327 702265.

**YAESU FT-470** dual band H/Held complete with charger, little used, as new. G3UQZ QTHR. (Birmingham) 021 373 8806.

**YAESU FT225RD** Mutek board, Datong RF clipper attached, exc contest rig: £350. Dressler D200 VHF 350W P.A., working but had repair work: £250. Wells RF/SWR meter: £30. Most RadComs, 1974 to present: £30 the lot. Buyer collects. G4CZZ. (Stevenage) 0438 748865.

**YAESU FT290R**, all accessories, vgc + complete station 13ele yagi + mounts, rotator, Drae 6amp PSU, may split: £375. G7YZ QTHR. (Colchester) 0206 42717.

**YAESU FT401DX** transceiver: £170. Datong Morse tutor: £45. (Chorley) 0257 279798.

**YAESU FT707**, 160m, CW filter, mobile mount (new) YM47 mike and headphone/bloom mike: £350. + carr. (Kelsos) 0573 224664.

**YAESU FT707**: £325 or may exchange for FT757GX with cash adjustment. Len GMOONX QTHR as GM6JIC. (Kilmarnock) 0563 34383.

**YAESU FT727** dual band handheld, 5W 12V, nicad, case, boxed, manual, as new. Post paid, mods sheet available: £210. G7DDD. (Solithull) 021 744 1536.

**YAESU FT757GX HF** tcvr with FP757GX matching power supply, as new with free X-match ATU, bargain at: £495. (Dulwich) 081 693 9149.

**YAESU FT757GX**: £525. Yaesu FC757 auto ATU: £200. Both together: £700. Deacade resistance box, RS610297: £50. As new, homebrew 30amp PSU: £30. Commercial 30A PSU: £75. Wanted narrow SSB filter for TS440, possible exchange, narrow CW filter. Ron G4YRR QTHR. (Stoke on Trent) 0782 395017.

**YAESU FT757GXII**, as new, little used: £650. (Bedford) 0582 34053.

**YAESU FT780R**: £250. FT290R III MML432 10/50: £140. MLL144 3/30: £80. Cossor comando 6ch AM 70MHz: £50. MML 50MHz counter: £80. All ono. BBC masters twin disk: £250. Olivetti PC, twin disk: £280. (Wallasey) 051 638 6755.

**YAESU** linear FL2100Z, mint: £450. Buyer collect inspect. G4PCH QTHR. (Grimsby) 0472 71211.

## WANTED

**AP1086** issue 1, 1938-1952 (RAF Radio Stores, Ref. Nos) also air publications relating to radio radar equipment. Excellent prices offered. Would purchase post-war to current magnetrons, klystrons, T/R cells, T.W.'s, photo multipliers, microwave and CV types. Required static or rotary converter, AC or DC input, with output of 80/115v, 1500/2000 cycles. Also rx type R1355 unmodified. (London) 071 511 4786 or 071 790 2846.

**BGY22** Mullard modules also Motorola MC1469R or MC1569R regulators. (London) 081 857 4084 daytime or 081 691 7908.

**BGY22** RF module also BGY21. Motorola regulator MC1469R or MC1569R and MC1466L or MC1566L. Having trouble getting these parts. Peter. (London) 081 691 7908 day 081 857 4084 after 6pm.

**BOOKS** (ceased issues) by Elektor Electronics Publications. Data sheet book one, also Bernard Babani Publications, BP40 BP42. Your price paid. Ron G3BNG QTHR. (Norwich) 0603 742841.

**ICOM** IC-3210E wanted urgently, must be in mint condition and complete with all accessories as originally supplied when new, preferably boxed and not modified for extended receive coverage. Highest cash price paid for the right example. (Hove) 0273 722955.

**MARCONI** R1475 and pwr unit, 310 metal mounting frames. These frames were used to mount the rcvr and P.U in a vehicle or on a bench (anti vibration purposes). They are mounting type 656 (10A/17535) and mounting type 657 (10A/17536). Someone somewhere must know where I can get these desperately needed items to complete my Marconi receiving station. Any help much appreciated, all letters answered. Your price. GODIC, Dick Fixler, 18 Linley Drive, Boston, Lincs PE21 7EJ, or phone 0205 360044.

**URGENTLY REQUIRED**. FM unit for FT101ZD or FT101Z also 6m unit for FTV901R or similar. Exchange. One pair 6J56C, very little used exchange for one pair 6146B. Rogers G3AIU QTHR. (Swindon) 0793 814280.

**6m TCVR**. eg FT690 or equivalent. Possible linear and antenna. Transverter also considered. GMOLZE QTHR. (Stornoway) 0851 705973.

**ADMIRALTY** handbook of Wireless Telegraphy, 1938 vol 2 or a copy of the section dealing with aeriels. Costs refunded. G4XEC QTHR. (Emsworth) 0243 373725.

**AMSTRAD** PPC 512 or PPC640 replacement screen (LCD) required. GOJGY QTHR. (Southport) 0704 78037.

**BIRD** thurline elements 100H (100W 2-30 MHz), 250C (25W 100-250MHz) Also loan circuit diagram KW160 tx. G3WDY QTHR. (London) 081 653 4738.

**BOOKS**. Can anyone help with the following: Complete sets or individual volumes.

Harmsworth's Wireless Encyclopedia (3 vols), Wireless Telephony and Broadcasting (2 vols Dowsett), Radiol Radiol (J Hill), Ron G4VBK QTHR. (Hastings) 0424 428428.

**DRAKE** filters. Still looking for SL4000, SL2300, SL1800. Stuart G4MIB QTHR. (South London) 081 674 6452.

**DRAKE** R7A, R1, R4C, filters and accessories. Good price paid for late model receiver. GW4POA. (Bridgend) 0656 653875.

**DRAKE** solid state rx, ESP, RR1, RR3, MSR2, DSR2, R4245, CW keyer, CW75, Collins 75A4, Racal 1772, any condition. (Shrewsbury) 0743 884858.

**EDDYSTONE** EA12 for good home, manual, circuit, please. Also KW Victor tx, WHY? (Ipswich) 0473 311665 after 7pm.

**ELECTRIC** magneto/shock machine, hand-cranked version preferred. Also 1960s money box, consisting of container with provision for coin to be placed vertically on top, after which time "hand" rises from a trap door, grips coin. Disappears quickly with same! Chris Williams. (Birmingham) 021 471 1860.

**FELDFERNSHREIBER** ZCG Nr 24A-32 Circuit diagram, manual, valve RV12 P4000, data on same, 12 way plug, any other bits! Reasonable price paid or exchange vintage radiobits, valves etc. Robert GM4FDT QTHR. (Invergorrdon) 0349 852332.

**ICOM** Micro 2E wanted, also Icom micro 4E. Most essential both in perfect working order. Good price paid. G4NNQ QTHR. (Colchester) 0206 768107.

**INFORMATION**: correct, dimensions, fixing centres for Hammarland etc. Tube screens larger UX valves. Bernard Litherland G4IMT QTHR. (Chippenham) 0225 891254.

**KW160** top band transmitter, any condition. G3WWT QTHR. (Staines) 0784 458583.

**LEDEX** type rotary switches, preferably 24V working, must be in good condition. G3HVA QTHR. 0256 780482.

**ORIGINAL** software or help to produce schematic diagrams on BBC-B. Not artwork package please. Contact Mike G3TOI. (Bournemouth) 0202 432506.

**REDIFON** R145 rcvr, workshop manual. Complete/incomplete rcvr. LFA10 freq adaptor. Operating, servicing experiences. (Westport Eire) 098 26317.

**REEL** to reel stereo recorder for Hi-Fi use. Reasonably modern and working reliably. Brian G3EDD. (Cambridge) 0223 880232.

**ROBOT** SS TV converter required. All costs covered. John after 6pm. (Glasgow) 041 632 2793.

**SOFTWARE** wanted for Apple IIE computer, ham programs, word processor and any other software. G10OUM. (Belfast) 0232 486919.

**SP430** must be in mint condition, good price paid for quality item, please phone between 5.30 and 6.30. G1EMJ. (Wolverhampton) 0902 771909.

**TILT OVER**, crank up tower, 60ft, HF linear, 2m linear, 100W. (Barnsley) 0226 287301.

**TOWER**. Anything considered, preferably a wind up and tilt over type. Will collect. (Derby) 0332 810003.

**VALVE** screening cans for larger UX types. Also Ferranti OPM6 output transformer. G4IMT QTHR. (Wilts) 0225 891254.

**VALVE TYPE EFMI** - new or good s/h. G1FPV QTHR. (Rugby) 0788 521282.

**WANTED** 250V DC output power pack 240V AC input for WW2 radio receiver. (Preston) 0772 686708.

**WANTED**. Receiver, 230V required for pensioner SWL. Could collect Manchester, NW area. G4PYQ QTHR. (Hyde) 061 366 0927.

**YAESU** FR101 working or for spares, also 2m converter and FM board, AM filter. G4WMC QTHR. (Bucks) 02406 6925.

**YAESU** FRG9600 all mode VHF UHF rcvr must be in gd cond. (Swansea) 0792 290770.

## EXCHANGE

**METER** FM tcvr model Kenwood TR-7600 exchange for gc communications rx (solid state). (St Helens) 0744 27541.

**AMSTRAD** PPC 512 portable PC exchange or p/ex for tower, HF beam, HF vertical or WHY? G3XZO. (Stratford) 0789 740073.

**EXCHANGE** my Panasonic RF8 general coverage receiver, CW, AC, PSU, antenna, case and batteries plus my realistic PRO2024 base scanner 66-512MHz AM Airband, 60 memories. Both items boxed with manuals, immaculate condition, less than 12 months old, rarely used, for your TM241E, FT690, FT790, HT106 or WHY? Contact Ian G1HQK. (March) 0354 660800.

## ARCHEOLOGISTS UNITE

John Carlaw, GM2ACY, is interested in archeology and is convinced that there must be many other like-minded amateurs all over the world. He is interested in setting up skeds with anyone interested in this subject and can be contacted at 22 Ardencaple Drive, Helensburgh, Dunbartonshire, G84 8PS (Tel: 0436 73489).

## QSL CARDS

Des Kaylor, G4OBB, is trying to find a QSL printer who can supply cards printed on a reflective, almost galvanised, type card. If anyone knows of a suitable supplier please telephone Des on 0865 61866.

## GOOD HOME REQUIRED

Mr H Thomas has 6 copies of Wireless World for 1924. He also has 4-pin, and 5-pin 'catkins' and small glass valves (about 100) looking for a sympathetic home. Please write to him at 15 Churchfield House, Guessons Road, Welwyn Garden City, Herts AL8 6RJ.

## HF POINT-TO-POINT

Paul Hawkins, G4KHU, is researching the history of HF point-to-point radio, and would like to hear from amateurs who worked at Marconi and Post Office radio stations, or associated companies eg Cable and Wireless, AT&T. He may be contacted at Templeview, High Street, Templecombe, Somerset BA8 0JG, tel 0963 70045.

## FT757GX MK.I

Can any member help Dick Grindley, GOMNL, with details of the modification required to convert a Yaesu FT757GX Mk1 Tx/Rx into a broadband Tx. Also required is a UK supplier for CCD image array ICs and data (Thompson TH7852, TH7863 or similar). His address is 11 Mill Rd, Denmead, Waterlooville, Hants PO7 6PA, tel 0705 253219.

## CIRCUIT DIAGRAMS

Has anyone a circuit for the Kyokuto Denshi 144 10Sx6 II transceiver, or information on modifications for the rig. If so, contact Mark Austin, G1RGL, 107 Spicer Close, Brixton, London SW9 7UE.

Mr E J Butcher, G7JEP, requires the circuit diagram for a Teletipunit Oscilloscope S51B. His address is 8 Kelso Close, The Ridings, Worth, Crawley, W Sussex RH10 7XH.

Information or diagrams for 19 set Mk II (Philco Corp, USA) are required by K J Stocker, G1SVL, 53 Westmoreland Road, Harrow, Middx HA1 4PL. All expenses will be reimbursed.

John Hunt, G7JJA, is looking for a circuit diagram/service manual for his receiver type 1547 Ref No: 10D/2190 which covers 2-60MHz. He also requires a 430 expander which goes with the FDK Mull 750X 2m all mode P11 transceiver so that he can operate on 70cm. All replies will be answered and postage reimbursed. 2 Surtees Terrace, Craghead, Stanley, Co Durham, DH9 6EA.

Helplines is designed to help put people in touch with each other. If you have a problem, it's more likely there's someone out there who has the solution; if you are looking for an old colleague or amateur friend, there could be a reader who has some news of their whereabouts; if you have solved a particular problem, write and tell the rest of us. 'Helplines' is there to help you and to give you the opportunity of helping others. Write to us marking your envelope 'Helplines' and we'll do what we can to get the message out.

## CLUB NEWS

**DEADLINE** - Items for inclusion in the June 1992 issue must be sent to HQ marked "Club News - DIARY", to be received by 17 April latest. If news is received by the published deadline, it should appear in the listing. It is your responsibility to ensure that items are sent DIRECT to HQ in good time. News items should be sent in writing, preferably typed or written legibly, and be signed by the club secretary or the person responsible for publicity.

**NOTE:** This is primarily a service for clubs affiliated to the RSGB, to whom priority will be given.

## AVON

BRISTOL ARC - 2, construction night; 9, PC computer workshop. Details 0272 721744.  
CITY OF BRISTOL GROUP - 27, talk 'RSGB Morse Testing System' by Phil, G3ZJH. Details 0275 855123.  
SOUTH BRISTOL ARC - 8, visit to HTV Studios; 15, bring & buy junk sale; 22, talk 'Weather Forecasting - How it Works' by Jean, GOAWX; 29, mystery subject...come and find out. Details Whitchurch 832222 on a Wednesday evening.  
WESTON-SUPER-MARE RC - 6, bring & buy sale. Details 0934 415700.

## BEDFORDSHIRE

DUNSTABLE DOWNS RC - 3, repeater linking; 24, talk TBA; May 1, studio lighting. Details 0582 451057.

## BERKSHIRE

BRACKNELL ARC - 8, quiz vs Farnborough; May 13, visit to Rascal Communications Field Trials Site. Details from Steve, G4AUC.  
BURNHAM BEECHES RC - 6, talk 'LF DX' by G3XTT; 20, 2 metre foxhunt G7KBBG. Details 0628 25720.  
READING & DARC - 9, talk 'Understanding Transceiver Specs' by Gary Clark, G0BRK; 23, talk 'G5RV and Other Antennas' by John Crabbe, G3WFM; May 9, Support Christian Aid Walk. Details 0734 722489.

## BUCKINGHAMSHIRE

AYLESBURY VALE RS - 1, talk 'Aspects of VHF Aerials' by Roger Piper, G3MEH; 15, talk 'Linear Amplifiers' by Peter Chadwick, G3RZP. Details 0296 81097.  
CHESHAM & DARC - 1, April Fools' topic (G8AHS); 15, visit to WX Centre Bracknell (provisional); 29, talk 'Worked All Britain' by G8XTJ. Details 0494 482479.  
MILTON KEYNES & DARS - 13, junk sale; May 11, talk 'Fighter Aircraft and Aces' by Stuart Lightfoot, G0GOF. Details 0908 611005.

## CAMBRIDGESHIRE

CAMBRIDGE & DARC - 3, talk 'Work of the RSGB HF Committee' by Bob Whelan, G3PJT; 24, talk and demonstration '2m Fox Hunting' by Dave, G6KWA. Details 0763 243570.  
GREATER PETERBOROUGH ARC - 'NEW SECRETARY' Ron Finlayson, G0JXB, 45 Napier Place, Orton Wistow, Peterborough PE2 6XN, tel: 0773 361468. 'NEW VENUE' Standground College, 6th Form Building, Peterborough Road, Farret, Standground, Peterborough, Cambs. 'NEW DATES' Club now meets every Fourth Wednesday in month.

## CHESHIRE

CHESTER & DARS - 7, radio ideas and discussion; 14, general discussion on Contests; 21, talk 'BT International' by G4LU. Details 051-608 3229.  
NORTH CHESHIRE RC - 3, talk 'Learning and Teaching Morse in 1941' by Alf Dudley; 12, talk 'Unusual Signals in the RF Spectrum' by Gordon, G3LEC; 26, talk 'Jodrell Bank - the Hardware' by Keith, G4WKD; May 3, talk and slides 'Roses for your Garden'. Details from Ian Tidswell, G7HKQ.

## CLWYD

CONWAY VALLEY ARC - 2, talk and demonstration '24cm Amateur TV' by John Lawrence, GW3JGA. Details 0492 530725.  
WREXHAM ARS - 7, talk 'Beginners' Guide to Planning Permission' by Cliff, GW3YTL; 21, talk 'Converting PMR Rigs' by Peter, GWAIGF. Details 0978 266887.

## CORNWALL

CORNISH RAC - 2, Annual General Meeting; May 7, 'Ham Snaps from Ozz' by Les, G0SFF. Details 0209 820836.

## DERBYSHIRE

BUXTON RA - 14, aerial topics; 28, QSL night; May 12, video show. Details 0298 25506.  
DERBY & DARS - 1, foolish junk sale; 8, talk 'AMTOR - What it is and How it Works' by Alan, G3XOF; 15, talk 'RADAR - The Early Years' by Denis Godfrey, G0KIU; 22, video show; 29, cheese & wine party; May 6, junk sale. Details 0773 852475.

## DEVON

SOUTH DEVON RC - 5, 50MHz trophy contest at club HQ; 12, 1296MHz fixed contest at club HQ. Details 0803 522995.  
TORBAY ARS - 24, talk by SWEb. Details 0803 526762.

## DORSET

POOLE RAS - 10, Annual General Meeting. Details 0202 760231.  
SOUTH DORSET RS - 7, Annual General Meeting and construction competition. Details 0305 781164.

## ESSEX

LOUGHTON & DARS - 3, Annual General Meeting; May 1, joint event with another club TBA. Details 081-504 4581 (eves & w/ends).

## FIFE

DUNFERMLINE RS - 2, visitors/open night, including slides on portable operating from Scottish Mountains; 23, talk 'Scottish Tourist Board Radio Amateur Expedition Group' by John McGill, GM3MTH. Details 031 331 4340.

## GLOUCESTERSHIRE

GLOUCESTER ARS - 1, construction contest; 8&29, homebrew clinic; 15, Packet self help group; 22, construction group. Details 528533, extn 2733.

## GREATER LONDON

ACTON, BRENTFORD & CHISWICK ARC - 21, discussion on 'Problems relating to remote control of small loop antennas' led by G3OJX. Details 071-938 2561.  
BROMLEY & DARS - 21, talk 'Antenna Matching Units' by A R Bartle. Details 081-462 2689.  
CLIFTON ARS - 'NEW SECRETARY' Keith Lewis, G4TJE, 84 Rider Close, Blackfen, Sidcup, Kent DA15 8TC, tel: 081 859 7630.  
COULSDON ATS - 13, surplus equipment sale. Details 081 684 0610.  
CRAY VALLEY - 3, talk 'Mayan Adventure' by G3DCC; 17, Annual General Meeting; May 7, surplus sale. Details 081-850 1386.  
CRYSTAL PALACE & DARC - 18, talk 'Packet Radio' by Peter Burton, G3ZPB. Details 081-699 6940.  
HAVERING & DARC - 15, video night; 29, talk by Mr Chris Winton of the Radiocommunications Agency; May 13, talk on Portable Appliance Testing by Bill Ardley, G0BOF. Details 0255 821554.  
SOUTHGATE ARC - 9, Grand surplus equipment sale; 23, construction project. Details 081-360 2453.  
SUTTON & CHEAM RS - 16, junk sale. Details 081 644 9945.  
WHITTON ARG - 17, 'New and Used Equipment' - advice from Alan Brackley of ARE Communications; 24, Annual General Meeting. Details 081 894 9131.  
WIMBLEDON & DARS - 24, talk 'Oscillators' by George Cripps, G3DWW. Details 081-397 0427.

## GREATER MANCHESTER

ECCLES & DARS - 7, talk 'Rugby Football' by G0KFP; May 5, talk 'The Pros and Cons of Owning a Fiesta XR2i' by G6FEI. Details 061-773 7899.  
MANCHESTER & DARS - 'NEW VENUE' Simpson Memorial Community Association, Moston Lane, Manchester M10 9NB. Club meets Tuesday evening, 1900 to 2200. Details from Roger, G0KTR, OTHR.

## GUERNSEY &amp; DEPENDENCIES

GUERNSEY ARS - Club meets Tuesdays and Fridays, 24, visit to the Vale Power Station. Details from R W Beebe, GU4YOX, OTHR.

## HAMPSHIRE

HORNDEAN & DARC - 2, Brains Trust; May 7, EMC update. Details 0705 472846.  
ITCHEN VALLEY RC - 24, talk 'Desk Top Publishing' by Frank, G6OLK. Details 0703 736784.  
THREE COUNTIES ARC - 8, talk 'Long Distance Microwaves' by Ian Lamb, G8KQW; 22, Annual General Meeting; May 6, talk 'British Nuclear Fuels Ltd - Their Operations and the Environment' by a speaker from BNF. Details 0420 83091.

## HEREFORD &amp; WORCESTER

BROMSGROVE & DARC - 10, construction competition.  
HEREFORD ARS - 3, talk 'Civil Emergency Planning' by Geoff Haskell, County Emergency Planning Officer. Details from E G Robinson, Club Secretary.  
VALE OF EVESHAM RC - 2, constructors evening. Details 0386 41508.

## HERTFORDSHIRE

CESHUNT & DARC - 8, talk on Howes Kits by C M Howes; 22, video night 'Radio Investigation Service' Details 0992 464795.  
HODDESDON RC - Club meets 1st and 3rd Thursdays of month, from 8pm to 10pm at Rye Park Conservative Club, Rye Road, Rye Park, Hoddesdon. 2, social evening; 16, talk by Mark Francis, author of 'The Secret of Learning Morse', and new products from Waters and Stanton. Details 081-804 5643.  
STEVENAGE & DARS - 7, talk and video 'Elec-

trical Safety in the Shack'; 14, HF Packet primer and demonstration by Peter, G0GTE; 28, D/F antenna assessment by Alf, G7KPV. Details 0438 724991.

## HUMBERSIDE

GOOLE R&ES - 10, talk 'The Art of ARDF' by Ken, G6YIN; 17, contest planning evening with Alan, G6ZOI. Details Goole 769130.  
GRIMSBY ARS - 2, RSGB video show; 30, talk 'Desert Island Radios' by Trevor. Details 0472 825899.  
HORNSEA ARC - 1, talk 'Microwaves' by Ted, GBAZA; 15, RSGB videos by Richard, G4YTV; 22, talk 'Personal Computers' by Rick, G1YVL. Details 0964 533331.  
NORTH FERRIBY UNITED ARS - 3, discussion (Ken, G4VKK); 24, talk 'Packet Nodes' by Chris, G6KIA; May 1, Way Ahead meeting with Ken, G4VKK. Details 0482 650410.

## KENT

DARENTH VALLEY RS - 8, construction project; 22, bring & buy equipment sale. Details 0689 986733.  
DOVER YMCA ARC - 8, construction contest; 22, Annual General Meeting. Details 0304 821007.  
SWALE ARC - 'NEW SECRETARY' P J Lambe, G3MIU, 53 South Road, Faversham, Kent ME13 7LS.

## LANCASHIRE

BURY RS - 14, talk 'Digital Speech Generation' by Bob Price, G8DTF; May 12, talk 'The Sun' by L M Dougherty. Details 0204 883212.  
FYLDE ARS - 9, equipment sale. Details from R J Bourn, G7CUL.  
THORNTON CLEVELLEYS ARS - 6, auction of surplus equipment; 13, talk 'Photography' by Tom Richardson; 27, HF Field Day discussion. Details from G4BFH, OTHR.

## LEICESTERSHIRE

CHARNWOOD ARCC - Club meets every Saturday lunchtime at the Priory Hotel, Loughborough. 19, HF CW contest. Details from G4RVV, OTHR.  
LEICESTER RS - 6, constructors competition - trophies awarded to winners; 27, talk 'Remote Imaging' by Mike, G4YBB; May 4, VHF Contest review, NFD planning. Details Leicester 762241.  
LOUGHBOROUGH & DARC - 7, DF equipment; 14, talk 'Stamps and Radio' by G4WYN; 21, first 2m DF; 28, aerial experiments by Mike, Station Manager. Details 0509 218259.

## LINCOLNSHIRE

LINCOLN ARC - 15, ATV demo by G7AVU; 22, talk 'Meteor Scatter' by G4OLG; May 13, AGM. Details 0522 522715.

## MERSEYSIDE

LIVERPOOL & DARC - 7, 80th birthday discussion; 14, talk 'Roots' by G4CVZ; 21, talk 'Inter-space' by Albert, G0MSO; 28, surplus sale. Details from Gordon, G4VYR.  
WIRRAL & DARC - 8, talk 'Useless if Delayed' (Press & Commercial Photography) by Keith Medley; 22, Egg Race III; 29, inter club quiz. Details 051-666 1221.

## NORFOLK

ARC OF FAKENHAM - 7, visit from Bill, G3PNR, RSGB Liaison Officer for Norfolk; May 5, talk 'How to Start in ATV - Your First Tx' by Mark, G4WVU. Details 0485 528633.  
NORFOLK ARC - 1, Annual General Meeting; 8, talk 'Radar' by Officer from RAF Neatshead; 22, construction contest; 29, first HF NFD briefing; May 13, G83NB repeater AGM. Details 0603 747992.  
YARMOUTH RC - 9, talk 'Amateur Radio by Satellite' by G3IOR; 23, quiz night with G3YYQ; May 7, used equipment sale. Details Yarmouth 721173.

## NORTHAMPTONSHIRE

KETTERING SWC - 7, Annual General Meeting; 14, talk 'Aircraft to Ground Communication' by speaker from 10th Tactical Reconnaissance Wing (USAF). Details 0536 514544.

## NORTH YORKSHIRE

HAMBLETON ARS - 6, club project night. Details 0609 776608.

## NOTTINGHAMSHIRE

AMATEUR RC OF NOTTINGHAM - 2, Annual General Meeting; 16, talk 'Operators Guide to 2 metres' by Alan, G7DIJ; 30, talk 'Electromagnetic Compatibility' by Bob Peace, G8SOZ. Details 0602 733740.  
MANSFIELD ARS - 2, talk 'Satellite Communication' by Dave, G4CUO, plus judging of home construction projects. Details 0623 755288.  
SOUTH NOTTS ARC - 17, talk 'Organising Contests' by Richard, G4LPD. Details 0602 841940.

## POWYS

SOUTH POWYS ARC - 7, bring & buy sale. Details 0874 84266.

## SHROPSHIRE

TELFORD & DARS - 8, junk sale - Station Inn, Horsehay; 22, G83TF field strength tests/M; 29,

talk 'BT International' by G4LU. Details Bridgnorth 761203.

SALOP ARS - 9, construction competition; 23, 1st Fox Hunt. Details 0939 232090.

## SOMERSET

TAUNTON & DARC - 3, talk 'PSU - Design and Demonstration' by Geoff Wiggins, G0FMF. Details 0823 680778.  
WEST SOMERSET ARC - 2, Annual General Meeting followed by a junk sale. Details from G4AJU, OTHR.  
YEovil ARC - 2, talk 'How to DX' by G3NOF; 16, video 'The Secret Listeners'; 23, Annual General Meeting. Details from G0HDJ, OTHR.

## SOUTH GLAMORGAN

CARDIFF RSGBG - 13, talk 'Domestic Satellite TV Reception' by Bill Andrews, GW2DHM; May 11, talk 'Antenna Matching' by Jeff Diplock, GW3UZS. Details 0446 773212.

## SOUTH YORKSHIRE

BARNLEY & DARC - 6, talk by member of the Radiocommunications Agency; 13, talk 'Theatre Lighting' by Keith, G8SVX; 27, talk 'Getting Started on Satellites' by G4JJ; May 4, Open talk on 1992 Rally. Details from E Bailey, G4LUE, OTHR.

## STRATHCLYDE

WEST OF SCOTLAND ARS - 10, talk 'Electronic Developments in WX Predicting' by Angus, GM4JYZ; 24, talk 'World War II Radio Networks and Clandestine Operating' by Arthur, GM3EXX; May 8, talk 'WAB - 25 Years On' by Tom, GM4FDM. Details 041-776 4181.

## SUFFOLK

FELIXSTOWE & DARS - 6, visit to Schlumberger; 20, talk 'Construction of Simple Microwave Sources' by Sam Jewell, G4DDK. Details 0473 642595 (daytime).  
LEISTON ARC - 7, talk 'HM Coastguards' by Sector Officer Alan Bloom. Details 0728 832924.  
LOWESTOFT DISTRICT & PVE ARC - 9, talk 'The Work of an RSGB Liaison Officer' by G3PMR; 23, home brew and quiz evening; May 7, talk 'This is GB3LO' by G4RKP. Details G4KDL, OTHR.  
IPSWICH RC - 8, Repeater Group Annual General Meeting; 29, Annual General Meeting; May 13, talk 'Packet In - I'm a Bit Busy' by G0DVJ. Details 0473 742072.

## SURREY

ECHELFORD ARS - 9, Annual General Meeting; 23, talk 'Worked All Britain' by J P Fitzgerald, G8XTJ. Details 0344 843472.  
REIGATE ATS - 21, Annual General Meeting. Details from John Longhurst, G3VLI, OTHR.

## TAYSIDE

DUNDEE ARC - 28, talk 'HF Propagation' by John Branagan, GM4IHJ. Details from GM4FSB, OTHR.

## TYNE &amp; WEAR

BLYTH ARC - 'NEW SECRETARY' Keith Ritson, G0PKR, 14 Dunsdale Road, Holywell, Whitley Bay, Tyne & Wear NE25 0NG, tel: 091-237 1963. Club meets Wednesday 1900 hrs at Newsham Community Centre, Elliott St, Blyth, Northumberland.

## WARWICKSHIRE

STRATFORD-UPON-AVON RS - 13, Annual General Meeting and surplus sale; 27, talk 'What's on 80 Metres' by John Allen, G4PDP; May 11, talk 'Computers in Amateur Radio' by John Price, G4OIL. Details 060 882 495.

## WEST GLAMORGAN

SWANSEA ARC - 16, finalising details for the Rally on 26 April. Details 0792 403527.

## WEST MIDLANDS

MIDLANDS ARS - 21, RSGB talk. Details 021-628 7632 (evenings).

## WEST SUSSEX

HORSHAM ARC - 2, home brew evening; May 7, talk 'Miniature Antennas' by G3LDO. Details 073784 2150.  
MID SUSSEX ARS - 2, talk 'Mini NEC' by Stuart Bryant, G3YSX; 9, Westminster UHF Conversion Part 2 with Gordon, G3XTH and Paul, G0OJA; 16, Spring junk sale; May 7, talk 'MIDI' (Musical Instrument Digital Interface) by Reg, G3GZT.

## WEST YORKSHIRE

DENBY DALE & DARS - 1, talk 'Worked All Britain' by Brian, G0BFJ; 8, surplus sale. Details from Ivan Lee, 2E0AAG, Clayton Lodge, Sunraysia, Edgerton, Huddersfield.  
HALIFAX & DARS - 21, talk 'Marcconi - the Vision Realised' by H C Scott, MBE. Details Halifax 202306.  
KEIGHLEY ARS - 9, junk sale; 30, talk 'Moxon Slopes' by G3FDW; May 14, horse racing at the Cricket Club. Details from Kathy, tel: 0274 496222.  
NORTHERN HEIGHTS AR&ES - 2, Annual General Meeting. Details 0274 673116.  
SPEN VALLEY ARC - 2, Annual General Meeting; May 7, surplus sale. Details 0274 875066.

**WILTSHIRE**

CHIPPENHAM & DARCON - 7, Annual General Meeting. Details 0225 465557.  
SALISBURY R&ES - 7, guest speaker TBA; 21, talk '10GHz for Beginners or How to Convert a Pye Cambridge' by Martin Cranage, G8OFA; May 5, talk 'DX Packet Cluster' by Neil, G4LDR. Details from Dave Hay, Secretary.

**RALLIES AND EVENTS**

This is a list of all rallies, hamfests, exhibitions and conventions notified to HQ (as at press date). Items are given in detail for the next three months inclusive and in brief thereafter. Please send detailed information, including contact details and telephone numbers direct to HQ and marked 'Rally News - DIARY'.

**5 APRIL**

CENTRAL SCOTLAND FM GROUP - Annual General Meeting - Golden Circle Hotel, by Bathgate, West Lothian. Trade show (open to all) 11am - 2pm. Business meeting (restricted to members and those joining at the door) 2.15 - 5pm. Subscriptions, renewals, donations, raffle etc. Talk-in on S22. Details GM3AXX, QTHR, 0560-82720.  
LAUNCESTON 6th AR Rally - Launceston College. Doors open 10.30am. Traders, bring & buy, official Morse test (applications thro RSGB usual channels). Hot snacks from 7am. Talk-in on S22. Two large halls. Details from Maggie 040921-219 or Rodney & Joy, 0566-775167.  
25TH WHITE ROSE Rally - Leeds University. Doors open 11am. Major exhibitors, bring & buy, refreshments. Details from Tony, G4DXA, PO Box 73, Leeds LS1 5AR.

**12 APRIL**

CAMBRIDGESHIRE REPEATER GROUP AR Rally, Junk Sale, Bring & Buy Auction - Philips Communications Systems - Catering Centre, St Andrews Road, Chesterton, Cambridge. Doors open 10.30am. Details from Mike, G6COQ, tel: 0223 440373.  
MARTLESHAM RS 3rd VHF Roundtable - BT Laboratories, Martlesham Heath, Ipswich, Suffolk. Noise figure measurements for all VHF bands; SINAD measurements for complete receivers; power measurement to several kW; Measurement of isolation, cross talk, insertion loss of relays and attenuators etc. Technical workshops. Refreshments. Car parking. Admission by ticket only - send SAE to G6GUA QTHR. When applying for tickets, please remember to supply names of all applicants (BT Laboratories Security requirement).

**19 APRIL**

CENTRE OF ENGLAND Easter Radio & Electronics Rally. - National Motorcycle Museum, Bickenhill, near the NEC Jct 6 M42. Doors open 10.30am (10am for disabled visitors). Admission £1 (concession for RAIBC members and senior citizens). Over 60 traders in 3 large halls, ample free parking. Bar & restaurant facilities. Talk-in on S22. Easter Special: 'Spot the Egg' on many of the trade stands to win an Easter Egg. Details from F Martin, G4UMF, 0952 598173.

**24/25/26 APRIL**

DAYTON HAMVENTION. Details from ARRL.

**25 APRIL**

MARCONI Day Exhibition - Wireless Museum, Puckpool Park, Seaview, Isle of Wight. Exhibition shortwave transmitting station will be operating all day long, using the callsign GB0IMD. Special showing of early photographs of Marconi who, it will be recalled, built his first transmitter at Alum Bay on the Isle of Wight in 1897. Details from G3KPO, 0983 67665 or 616503.

**26 APRIL**

BURY RS Hamfest - Castle Leisure Centre, Bolton St, Bury. Doors open 11am (10.30am for disabled visitors). Usual traders, bring & buy, refreshments. Full facilities for the disabled. Talk-in on S22. Details from L H Jones, G4KLT, 081-762 9308.  
LOUGH ERNE ARC 11th Annual Mobile Rally - The Lilyhevin Hotel, Enniskillen. Talk-in on S21. Details from Alwyn, G10BFD, QTHR, 0365 323802.  
MARSK-BY-THE-SEA Radio Rally (East Cleveland ARC) - Marske Leisure Centre, High Street, Marske-by-the-Sea, near Saltburn. Details from Mike Tennent, G7ION, tel: 0473 610030.  
SWANSEA ARS Rally - Swansea Leisure Centre, on Swansea-Mumbles Coast Road A4067. Trade stands, bring & buy, bookstall, HF/VHF demo stations, licensed bar and full catering. Talk-in on S22 via GB2SWR. Details from Roger Williams, GW4HSH, 0792 404422.

**3 MAY**

9TH ANGLO-SCOTTISH Rally - Tait Hall, Kelso. Details from Bruce, GM4UIB, QTHR.

BATC Rally - Harlaxton Manor, nr Grantham, just off the A1. Usual traders, bring & buy, bar and refreshments. Lecture programme, Talk-in, demonstrations, flea market and craft corner. Family venue. Details Paul GBMJW, 0522 703348.

**4 MAY**

DARTMOOR RC Rally - St Pauls Church Hall, Yelverton. Doors open 10.30am. Usual traders, refreshments, bring & buy. Free parking. Details George Spray, 0822 853885.  
MID CHESHIRE ARS Rally - Civic Hall, Winsford. Doors open 11am (10.30 for disabled visitors). Full catering and ample car parking. Details from David G4XUV, 0606-77787.

**10 MAY**

MARS/DRAYTON MANOR Radio Rally - Drayton Park, Tamworth, Staffs. Details from Peter, G6DRN, tel: 021-443 1189. Trade stand bookings - Norman, tel: 021-422 9787.  
YEOVIL ARC 8TH QRP Convention - Preston Centre, Monks Dale, Yeovil. Doors open 9am; admission £1.50 including programme. Talks and demonstrations, QRP and DIY orientated traders. Good food and soft drinks. Free Spectrum Analyser Rig check. Construction Challenge adjudication. QRP Funrun in week prior to the event. Details from Peter Burridge, G3CQR, QTHR.

**16 MAY**

SWINDON & DARCON Radio Rally - Oasis Leisure Centre, Swindon. Details from GOLTPT, tel: 0793 852855.

**17 MAY**

DUNSTABLE DOWNS RC - 9th National Car Boot Sale - Stockwood Park, Luton (nr Jct 10, M1). Starts 10am. Talk-in on S22. Details 0582 451057.  
MID-ULSTER ARC 'PARKANAU' Rally - The Silverwood Hotel, Lurgan, Co Armagh. Doors open 12 noon. Usual trade stands, bring & buy stall, bookstall, QSL bureau etc. Talk-in on S22 145.550. The proceeds of this rally go to the Stanley Eakins Memorial Fund at Parkanau, nr Dungannon. Details from G10ND (QTHR G1YGS) 0762 851179.

**18 MAY**

RIPON & DARCON 35th Northern Mobile Rally - Flower Show Hall, Great Yorkshire Showground, Harrogate. Showground open 10am, doors open 10.45am. Bring & buy, cafeteria, 100's of stands, 45,000 sq ft of space. Talk-in on S22. Entry and parking off Wetherby to Harrogate Road. Separate arrangements for disabled visitors off Hockstone Wood Road. Details Mike, G0MKK, 0423 564353/507653.

**24 MAY**

EAST SUFFOLK Wireless Revival (organised jointly by Ipswich RC, Martlesham RS and Felixstowe & DARS) - Maidenhill Sports Centre, Maidenhill Approach, Ipswich. Send SAE for free maps. Details from G7HZV, QTHR, 0394 271257.  
PLYMOUTH RC Radio & Electronics Fair - Plymstock Comprehensive School, Church Road, Plymstock. Doors open 11am. Admission £1 at door. Over 25 stalls selling electronic, computer & radio components. Bring & buy, bookstall, hot & cold buffet, grand raffle. Club station on air. Free parking. Details Plymouth 787181.

**30/31 MAY**

RSGB National Convention - NEC Birmingham. Details from Norman Miller, G3MNV, QTHR.

**7 JUNE**

BURY ST EDMUNDS ARS Car Boot Sale - Scout Pavilion, Stanton, nr Bury St Edmunds. 10am-4pm. Admission free. Light refreshments. £3 per car boot. Talk-in on S22. Send SAE for free map. Details from G0MEV, QTHR, 0359 50271.  
NORTHAMPTON RC Radio Computer & Electronics Rally - rear of Red Lion public house (500 yds from Jct 16, M1). Starts 10am. Refreshments. Talk-in on S22 and GB3NH (RB3) and top band 1.933. Much more space for stalls this year - extra field just for parking. Pitches are first come first served. To book early contact Paul Young, G0HWC, 0327 41267.  
SPALDING ARS 24th Annual Mobile Rally - Springfields Exhibition Centre, Spalding. Doors open 10.30am. All under cover; 3 times more exhibition space than previously; full catering facilities; indoor flea market; bring & buy; 5 acres of car parking; entry to gardens available. Talk-in on S22 G1DSP/P. Details G4TWR, 0775 722940.

**14 JUNE**

ELVASTON CASTLE Mobile Rally - Elvaston Castle Country Park nr Derby. Details from John, G4PZY, tel: 0332 767994; trade enquiries Peter, G3WJU, tel: 0332 700265 (evenings).  
RNARS Annual Mobile Rally - HMS Mercury, nr Petersfield, Hants. 10am-5pm. Trade stands, RSGB, RAIBC, BARTG, Raynet, RAFARS, RSARS, SUNPAC, RNLI. Bring & buy; flea market; radio-controlled power boats & trains; children's amusements; ices and refreshments; arts & crafts exhibition; two raffles; arena displays; free parking & picnicking; admission £1.50 (free for children). Talk-in 2m and 70cm. Details from Cliff Harper, G4UJR, 0703 557469.

**20-28 JUNE**

FAREHAM & DARCON 1992 SECOND WIRELESS EXHIBITION - HMS Warrior 1860. Exhibits on display will represent the advance of wireless communication from Marconi/Jackson days up to 1942. Exhibits on loan from individuals, HMS Collingwood Wireless Museum and Mr Len Newman, G6NZ. Details Ray Mclean, G0JVE 0329 238642.

**21 JUNE**

DENBY DALE & DARS Annual Mobile Rally - Salendine Nook High School, Huddersfield (easy access from M62, Jct 23 eastbound 24 westbound). Doors open 11am. Usual traders; craft stalls; bar; catering; car boot sale; bring & buy. Ample car parking. Talk-in on S22 and SU22. Details from Philip, G4FSQ, 0484 644827.  
NEWBURY & DARS Annual Car Boot Sale - Cold Ash Playing Field. Less than 10 mins from A34 Jct 13 M4. 10am-3pm. Refreshments and children's play area. Free parking & entrance for buyers. £7 per pitch for sellers, no pre-booking. Talk-in on S22. No entrance to field before 8am. Details from N Jaques, G0HFU, 0635 63310.  
NORFOLK RAYNET Rally & Car Boot Sale - Barford, Norfolk (B1108) OS Map 144, Ref TG113078. Starts 10am. Trade stands, refreshments. Car boots £5. Talk-in on S22. Details from G0IYD QTHR 0692 404593 (eves).

**27 JUNE**

BRENTWOOD INTERNATIONAL AR & Computer Rally (run in conjunction with Southend ARC) - Brentwood International Centre, Dodinghurst Road, Brentwood, Essex. Easy access from M25 Jct 28 and A12 trunk road signposted by AA. Doors open 10.30am-6pm. 20,000 sq ft of Amateur Radio and Computers to see. Major suppliers and manufacturers of radio equipment, computers, accessories, antennas, computer software and second-hand gear. Bar and cafe; bring & buy; massive car park with easy access for disabled visitors. Talk-in on S22 and SU22. Details from CLPK, 18 Litchfield Close, Clacton-on-Sea, Essex CO15 3SZ.

**28 JUNE**

BROMSGROVE ARS Mobile Radio Ham Rally & Boot Sale - Lower Wick Country Fair on Worcester to Malvern Road, rear of Bennetts Dairy. Opens 9am-6pm. Tables for boot sale £4. Admission £1. Details from Dave Edwards, G4ZWR, 0527 546075.  
35TH LONGLEAT AR Rally - Longleat, nr Warminster. Follow the brown signs for 'Longleat House' from Warminster. Extensive trade exhibition; craft fair; RSGB bookstall & membership services stand; over 20 amateur radio clubs; bring & buy; catering; free car parking. Camping & caravanning facilities nearby. Details from Shaun, G8VPG, QTHR, tel: 0225 873 098.

**5 JULY**

KINGS LYNN ARC Rally - Com Exchange, Kings Lynn Tuesday Market Place. Details from G0MQL 0553 841189.  
NEWPORT ARS Junk/Boot Sale - Brynglas House, Newport. Details GW7BSC, QTHR, 0633 262488 (6pm-7pm wkdays only).  
YORK Radio Rally - York Racecourse. Details from David Moreland, G7FGA.

**11 JULY**

CORNISH RAC Rally - Penair School, St Clement, Truro. Details from Mr B Thomas, tel: 0872 862046.

**12 JULY**

SUSSEX AR & Computer Fair. Details from Ron Bray, G8VEH, QTHR, 0903 763978.

**19 JULY**

COLCHESTER RA Radio & Computer Rally. Details from G3FJU, QTHR, 0206 851189.  
9TH McMICHAEL Rally & Car Boot Sale - Haymills Youth & Community Centre, Burnham Lane, Slough. Details from G8XYN, 0628 25952.

**25/26 JULY**

Norfolk ARC & Hewett School Rally. Details M J Cooke, 4 Geddes Way, Mattishall, Norfolk NT20 3RE.

**26 JULY**

RUGBY ATS 4th Annual AR Car Boot Sale - BP Truckstop on A5, 3 miles east of Rugby, 2.5 miles NW from Jct 18 M1. Details from Peter 0455 552449 or Kevin (for bookings) 0203 441590.

SCARBOROUGH ARS Radio Electronics & Computer Rally - The Spa, South Foreshore, Scarborough. Details from Ian Hunter, G4UQP 0723 376847.

**30 JULY-2AUG**

AMSAT-UK Colloquium - University of Surrey. Details from G3AAJ, tel: 081 989 6741.

**2 AUGUST**

RSGB NATIONAL MOBILE RALLY - Woburn Abbey. Details N Miller, G3MNV, QTHR.

**9 AUGUST**

DERBY & DARS Mobile Rally. Details from G3SZJ, QTHR, 0332 556875.

FLIGHT REFUELLING Hamfest 92 - Flight Refuelling Sports & Social Club Grounds, Merley, Wimborne, Dorset. Details from GOAPI, 0202 691649.

**23 AUGUST**

WEST MANCHESTER RC 'Red Rose' Rally - Bolton Sports & Exhibition Centre. Details from Dave, G1IOO, 0204 24104.

**30 AUGUST**

TORBAY ARS Mobile Rally - STC Social Club, Brixham Rd, Paignton. Details G3HTX, QTHR, 0803 526762.

**6 SEPTEMBER**

BRISTOL Radio Rally. Details from G4WUB, QTHR, 0275 839855.  
PRESTON ARS Mobile Rally. Details from G Earnshaw, 0772 718175.  
MILTON KEYNES & DARS Car Boot Rally. Details from Ray, G1LUR 0908 660798.  
VANGE ARS Rally. Details from G4NVT, 0268 543025 or Doris Thompson, 0268 552606.

**12 SEPTEMBER**

WIGHT WIRELESS RALLY - National Wireless Museum, Arreton Manor, Newport, Isle of Wight. 11am to 5pm. Details from G3KPO, QTHR, 0983 67665.

**13 SEPTEMBER**

BARTG Rally - Sandown Park Exhibition Centre, Esher, Surrey. Details from Peter Nicol, G8VXY, tel: 021 453 2676.

**GB CALLS**

The list below shows all special event stations licensed for operation during this month and up to 8 August. It was taken from the HQ computer on 6 June. These callsigns are valid for use from the date given but the period of operation may vary from 1-28 days.

**16 MARCH**

GB2HC Harrogate College

**26 MARCH**

GB8LC Litchfield Club

**27 MARCH**

GB0WXP WPX Contest

GB8FXB Prefix Contest

**28 MARCH**

GB4SEI Spring Exhibition & Int. Day

**30 MARCH**

GB11CV Incident Command Vehicle

**1 APRIL**

GB0CDX Coastal Defence "X"

GB2MGY MGY Titanics Callsign

**3 APRIL**

GB0LAP Litchfield Adventure Playground

GB67XX 67 Years Broadcasting

**4 APRIL**

GB0IMD International Marconi Days

**7 APRIL**

GB2NOV UK Novices

**8 APRIL**

GB2XS Xray Sierra Square

**10 APRIL**

GB2SMC Scottish Museum Of Communication

**11 APRIL**

GB2KRC Kive Radio Communication

**12 APRIL**

GB0BR Borders Region

GB4OI Orkney Island

**16 APRIL**

GB2MAR Marconi Amateur Radio

GB2RCC Radio Caravan Club

**17 APRIL**

GB0HPK Dumfries & Galloway Region

GB0LTH Scottish Activity Weekend

GB0SCD Strathclyde District

GB0TYS Scottish Activity Weekend

GB2STB Scottish Tourist Board

**18 APRIL**

GB0CDB Coastal Defence "B"

GB0HLD Highland

GB0SLD Scottish Activity Weekend

GB0WIL Western Isles

**20 APRIL**

GB2FFA Flight Refuelling Anniversary

GB2GOC Gardens Of Christ

**24 APRIL**

GB0IMD Marconi International Day

GB2IMD International Marconi Day

GB2MDI Marconi Day International

GB4IMD International Marconi Day

**30 APRIL**

GB2RCC Radio Caravan Club

# RSGB BOOK CASE

## Antennas

**ALL ABOUT CUBICAL QUAD ANTENNAS (RPI)**  
William Orr, W6SAI, and Stuart Cowan, W2LX  
The famous handbook on quad design, construction and operation. 109 pages. **(£6.50) £5.53**

**ALL ABOUT VERTICAL ANTENNAS (RPI)**  
**(£7.50) £6.38**

**ANTENNA COMPENDIUM VOLUME 1 (ARRL)**  
G L Hall, K1TD, P Rinaldo, W4RI, M Thompson, KA1DYZ  
A collection of antenna articles with something for everyone. 175 pages. **(£10.25) £8.72**

**ANTENNA COMPENDIUM VOLUME 2 (ARRL)**  
Jerry Hall, K1TD  
208 pages. **(£10.25) £8.72**

**ANTENNA EXPERIMENTER'S GUIDE (DDP)**  
**(£9.75) £8.29**

**THE ARRL ANTENNA HANDBOOK (ARRL)**  
**(16.50) £14.03**

**BEAM ANTENNA HANDBOOK (RPI)**  
William Orr, W6SAI, and Stuart Cowan, W2LX  
Everything you need to know about beam design, construction and operation in this new 2nd edition. 268 pages. **(£7.50) £6.38**

**ANTENNA COLLECTION (RSGB)**  
Erwin David, G4LQI  
*RadCom* articles from 1968-89. A wealth of information on antennas, feeders, tuners, baluns, testing, modelling and the mechanics of mounting an antenna safely. 233 pages. **(£9.50) £8.08**

**HF ANTENNAS FOR ALL LOCATIONS (RSGB)**  
Les Moxon, G6XN  
This best-selling title explains all aspects of HF antennas, and takes a critical look at existing designs and the latest developments. A 'must' for the experimenter. 260 pages. **(£7.25) £6.17**

**PRACTICAL WIRE ANTENNAS (RSGB)**  
John Heys, G3BDQ  
Wire antennas offer one of the cheapest ways to put out a good signal on the HF bands and this popular guide has something to interest every amateur on a budget. 96 pages. **(£8.00) £6.80**

**RADIO AMATEUR'S ANTENNA HANDBOOK (RPI)**  
William Orr, W6SAI, and Stuart Cowan, W2LX  
An introduction to all aspects of antennas featuring DX designs that really work. 187 pages. **(£8.50) £7.23**

**REFLECTIONS: TRANSMISSION LINES AND ANTENNAS (ARRL)**  
**(13.25) 11.27**

**SIMPLE LOW COST WIRE ANTENNAS (RPI)**  
William Orr, W6SAI, and Stuart Cowan, W2LX  
How to build efficient antennas that get out from 2 to 160m. 190 pages. **(£8.00) £6.80**

**TRANSMISSION LINE TRANSFORMERS (ARRL)**  
Jerry Sevicik, W2FMI  
A comprehensive guide to designing and constructing this type of transformer. 247 pages. **(£13.50) £11.48**

**W1FB'S ANTENNA NOTEBOOK (ARRL)**  
Doug DeMaw, W1FB  
Explores the many aspects of simple antennas and related matters. 130 pages. **(£7.00) £5.95**

**W1FB'S NOVICE ANTENNA NOTEBOOK (ARRL)**  
Doug DeMaw, W1FB  
A plain-language introduction to practical antennas for complete beginners. 130 pages. **(£7.25) £6.17**

**YAGI ANTENNA DESIGN (ARRL)**  
James Lawson, W2PV  
An edited and updated series of important articles first published in *Ham Radio* in 1980. 210 pages. **(£10.00) £8.50**

## Awards

**AMATEUR RADIO AWARDS BOOK (RSGB)**  
Cris Henderson, G4FAM  
A compilation of all the world's popular and obscure awards which is suitable for the avid parchment chaser. Fully referenced and with many checklists. 188 pages. **(£9.50) £8.08**

## Beginners and Novices

**AMATEUR RADIO FOR BEGINNERS (RSGB)**  
Victor Brand, G3JNB  
Suitable for all ages, this new book explains how to build a crystal set, how to listen to shortwave radio, and just how to go about becoming a radio amateur. 65 pages. **(3.50) £3.50**

**D-I-Y RADIO SUBSCRIPTION (RSGB)**  
A 16-page all-colour magazine for beginners of all ages. Published six times a year, it includes simple construction projects, kit reviews, posters, ham facts, prize competitions and special offers. Six copies: **(£9.00) £7.65**

**FIRST STEPS IN RADIO (ARRL)**  
Doug DeMaw, W1FB  
Helps newcomers learn electronic theory for licensing exams and gain some insight into how radios work. **(£5.50) £4.68**

**HOW TO PASS THE RAE (RSGB)**  
Clive Smith, G4FZH, and George Benbow, G3HB  
A companion to the RAE Manual, this book contains some excellent practical advice on how to pass the exam and has nine sets of typical papers (and their answers) on which to practice. 84 pages. **(£6.50) £5.53**

**THE NOVICE LICENCE STUDENT'S NOTEBOOK (RSGB)**  
John Case, GW4HWR  
The official textbook for the RSGB Novice Licence Training Course and essential reading for the prospective Novice Licensee. 70 pages. **(£3.75) £3.19**

**RADIO AMATEURS EXAMINATION MANUAL (RSGB)**  
George Benbow, G3HB  
This is the standard textbook that almost every radio amateur needs to study in order to pass the RAE. The author is an experienced course tutor and the material is presented in an easy, understandable style. 129 pages. **(£6.50) £5.53**

**TRAINING FOR THE NOVICE LICENCE - INSTRUCTOR'S MANUAL (RSGB)**  
John Case, GW4HWR  
The official guide for instructors. 101 pages. **(£6.00) £5.10**

**TUNE IN THE WORLD WITH HAM RADIO (ARRL)**  
Copiously illustrated introduction to amateur radio which covers the material for the US Novice Licence. Includes two morse code training cassettes. 258 pages. **(£11.00) £9.35**

## Call Books

**AMATEUR RADIO CALL BOOK 1991/92 (RSGB)**  
Brett Rider, G4FLQ  
As well as an up-to-date list of all UK and Republic of Ireland radio amateurs, this invaluable reference also includes an 120-page information directory. Note: valid for 1992 as well (next edition to be published October 1992). 422 pages. **(£6.75) £5.74**

**INTERNATIONAL CALLBOOK 1991 (RACI)**  
**(19.50) 16.58**

**NORTH AMERICAN CALLBOOK 1991 (RACI)**  
1559 pages. **(£19.50) £16.58**

## EMC (Breakthrough)

**INTERFERENCE HANDBOOK (RPI)**  
William Nelson, WA6FGG  
How to locate and cure RFI in amateur radio, CB radio and power line problems. 250 pages. **(£8.75) £7.44**

**RADIO FREQUENCY INTERFERENCE (ARRL)**  
**(£12.00) £10.20**

## General Technical

**AMATEUR RADIO TECHNIQUES (RSGB)**  
Pat Hawker, G3VA  
Reprint of the 7th edition. A very large selection of circuit ideas and devices, information on antennas and related topics plus many constructional hints from *RadCom*'s Technical Topics feature. 368 pages. **(£7.50) £6.38**

**ARRL HANDBOOK 1991 (ARRL)**  
Larry Wolfgang, WA3VIL, and Charles Hutchinson, K8CH  
The largest and most up-to-date guide to every aspect of amateur radio. 1215 pages hardback. **(£18.00) £15.30**

**HINTS AND KINKS FOR THE RADIO AMATEUR (ARRL)**  
Charles Hutchinson, K8CH, and David Newkirk, AK7M  
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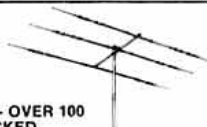


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## GUIDED INTO RADIO

I have followed the correspondence about the Novice Licence with interest. Since no Novice Licensee has commented so far, I feel I should say a few words in defence of Novices. Until yesterday I operated as 2E1ACA.

G3MWV (*The Last Word*, January) suggests that the introduction of the Novice Licence has lowered the standards of amateur radio. The doubts he voices must have been heard at every past innovation since the hobby was in its infancy. It is erroneous to believe that a full A or B licence holder is fully conversant with all aspects of amateur radio. It is possible to pass the RAE with purely theoretical knowledge but it will not make for operating excellence - that comes with practice. It is easier to gain the knowledge that comes with experience by having a go yourself, in preference to either watching someone else or reading about it. The Novice course appreciates this pedagogical point.

Building, testing and trying before the licence is granted seems to be a logical approach especially suited to the young and to those like me without a technical background. The course was as relevant to me as it was to my ten-year-old daughter and we were equally proud of our achievement. I would recommend it to all those wives, girl-friends and daughters who panic at the sight of soldering irons and yards of wire.

Looking for new activities for Guides, I ran Thinking Day on the Air last February. Thanks to exceptional help and co-operation from local amateurs, over 50 youngsters and their parents were introduced to amateur radio. Seven, none of whom had licensed parents, went on to take the Novice course while three parents opted for the RAE. I, a mature Guider with no technical background, gained my Novice callsign in July and passed the RAE and 12WPM Morse in December. The support for both the youthful and not-so-youthful new licensees has been excellent.

In October our JOTA station attracted 16 adult licence holders to enable the Novices, under supervision, to contact their fellow Scouts and Guides on the HF bands, hardly the response of those disillusioned with youth in amateur radio. The general feeling among the amateurs in South Oxfordshire is that the Novices' operating standards have shown an excellence that would put many experienced amateurs to shame.

Several of the group have been featured in the radio and guiding magazines, local press and national and local BBC broadcasts. Operating at Special Event stations has brought our youngsters into the public eye and encouraged others to try. This must surely be the Novice scheme working as intended. However, we are painfully aware of the limitations and in particular the problems experienced by young licence holders who do not have parents with licences. This is where the support of clubs and experienced operators is so valuable. A local club with a programme aimed at young operators starts up this weekend in celebration of our first year in amateur radio, and in an attempt to repay to the hobby the debt of gratitude, while affiliation will introduce more prospective members to the RSGB.

If G3MWV needs evidence of the joys of operating he should see our near neighbour and fellow Novice 2E0ABA as he reaps the fruits of his efforts both in building his equipment and in passing his 12WPM Morse just days before his 12th birthday. Try telling him to wait two years until he is fourteen! Both his parents have taken up amateur radio and his mother, a science teacher, is so impressed by the educational value of amateur radio, she is introducing it at school.

If he fears falling standards, G3MWV would be better employed in offering his services as a Novice Instructor or in helping others, especially the newly licensed, through his radio contacts.

Elizabeth A Gaskell G0RJX

## POLARITY

May I say how much I enjoyed John Case's series on the home construction of a power supply. However I must take issue with his statement that on the resistance range the polarity of a test meter is reversed.

In my workshop I have three meters; a modern low-priced digital multi-meter, an electronically assisted meter dating from the 60s, and a 'straight' (non-electronic) Heathkit meter, also of 60s vintage. In every case the polarity is NOT reversed on the resistance ranges, even on the simple, non-electronic meter. May I suggest that all constructors test their meters, and note whether it shows reversed polarity. If you have only one meter, you can still test it by using a resistance range to charge up a large electrolytic capacitor, and then quickly switching to a voltage range to find the polarity of the stored charge.

J S Linfoot G0CPP

# The Last Word

## ABOVE THE REST

I am not normally given to writing to letter pages of magazines and journals, but I feel I must give credit where it is due. I recently experienced a problem with a winch on my tower. The winch was purchased from Strumech, although the tower was not.

The level of service given by Strumech, and by the Fulton agents, was what I might have expected had I been spending thousands of pounds a year with them as a professional customer. A new winch was forwarded virtually by the next carrier, without question; I can only say that this experience has really demonstrated what a 'quality' approach means, and has ensured that for me Strumech is the automatic choice in the future.

Dave Powis G4HUP.

## CHEAP AND CHEERFUL

After reading some of the advertisements in *RadCom* for new 'amateur' equipment, I found the prices so astronomical that I composed the following little ditty which I think is a fair statement of amateur radio prices today. What do you think?

In this short life please let it be  
That I should own and have for me  
The latest rig with all the 'gear'  
That would be great, (and ever so dear).

A massive beam, an 80ft tower  
An enormous linear with lots of power  
A QTH on top of a hill  
With a lake outside, that's better still!

I'd win all the contest and work DX  
If local hams called me I'd send QRX  
I'd show all the others the way that it's done  
If I had the money . . . . but I ain't got none.

So at home I sit, and in vain I dream,  
With a piece of wire instead of a beam  
With an old fashioned rig without a memory  
And all full of valves, GOD! what an assembly.

But at least its mine, I shouldn't complain  
As I switch it on and turn up the gain.  
It'll do for now and at least it works  
(These new flash rigs are full of quirks).

So I'll carry on now as I have done before  
And if others have better I'll not get sore  
'Cos when all's said and done, at the end of the day  
What matters is fun, . . . . not how much you pay!

K Crittenden G0CGB

## FRESH AIR

I believe that, given a little time, the Novice Licence will provide a much-needed breath of fresh air to what many regard as an elitist hobby. Anything that *RadCom* does to encourage the novice or experienced operator, young or not so young, to construct and use simple equipment of all types and to use simple modes, has to be good for amateur radio. I look forward to seeing a 'simple' ATU and more test equipment.

Ian Wye G0OKY

Please note that the views expressed in *The Last Word* are not necessarily those of the RSGB. We reserve the right to edit letters for publication. All letters are acknowledged and may be passed to the relevant department or committee.

## G3TSO LINEAR

I feel I really must respond to the misleading letter from Mr Powell (*The Last Word*, March). He states that the cheapest source of RF power transistors for the HF Linear I recently described in *RadCom* (Jan/Feb 92) is likely to be £29 each in the UK and more costly from the USA. Contrary to his claim there are no additional credit card or foreign currency charges, except interest if you do not pay the bill in full.

The complete kit of parts for the AN762 amplifier is available from Communications Concepts for \$93.25. Assuming a commercial exchange rate of £1 = \$1.75 the cost is £53.28 for everything including the two transistors. Postage is \$6 or £3.43 representing a total cost of £56.71. Customs may charge 4.5% duty plus 17.5% VAT on entry to the UK.

The MRF454 transistors are readily available in the USA at \$15.50 each (Feb 92) from RF Parts, 1320 Grand Avenue, San Marcos, CA 92069. Including postage a pair will cost £20.86 or £25.61 including UK duty and tax. The Post Office charges a further £1 for collection of Customs duty.

The figures quoted in my article are still essentially correct today; a complete amplifier kit will cost you £70.63 by post from the USA. A pair of MRF454s will cost you £26.61 also by post from the USA and both should arrive within 14 days. On the other hand you can get a pair of MRF454s in the UK for £58 though I am not sure if the latter includes postage or VAT; the other prices I quote are the all-inclusive price to you. I know where my next pair are coming from!

Mike Grierson G3TSO

## TOO BUSY

I was very interested to read (*Novice News*, March) under the heading 'Novices, Where are You?' that G3LQI has not heard any Novice licensees nor indeed worked any, other than those Stateside. I raised the subject of the Novice Licence at the QRP Convention at Yeovil last year, saying that having three children all in secondary education, the prospect of any of them realistically being able to undertake a Novice course at the present time (they are 15, 13 and 11 years) was extremely remote, with the pressure of work at their school.

Several teachers came forward and confirmed that the National Curriculum and the pressure for children coming up to option stage was such that whilst an individual may wish to take a Novice course as part of a project in electronics say, most, except perhaps a dedicated few, will leave the licence till past school-days.

I wonder therefore whether we may have some of the strategy wrong. I am a strong advocate of Novice licensing and am well aware of it being open to all. The concept was, however, directed toward young people but in this extremely competitive age I really do wonder if they are available in any numbers?

I would be very interested to hear other views. Incidentally, do we know the current Novice numbers?

Peter Robinson G0EYF

[There are about 700 Novices at the time of writing, with an equal number currently on courses - Ed]

## ASCENSION CARDS

May I through the pages of your magazine clarify the situation concerning QSL cards. I will reply to all cards that I receive. Envelopes that contain a SAE and postage will receive my card direct, as soon as possible.

Envelopes that contain postage only will also receive my card direct. Although it makes the job a lot easier, if a SAE is enclosed, or even a printed adhesive address label.

Envelopes that contain a SAE but no postage, or envelopes that contain neither SAE or postage, will receive their cards through the Bureau when I return home in approximately eighteen months time. Do not despair, if you have sent a card and I have received it, you will get my card, be it sooner or later.

Steve Hodgson ZD8LI

## GOOD NEWS

I totally disagree with Mr D G Blake, G3MWV, (*The Last Word*, Jan 92). Anything that promotes amateur radio is good news. I find the *Novice News* pages of great interest, and for him to say that the Novice Licence has lowered the standards of amateur radio is beyond belief. Keep up the *Novice News* pages, as it is a hobby for all dedicated radio amateurs, regardless of age.

M Marsden RS85477

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The display advertisement copy date for our June 1992 issue  
will be 10th April 1992

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