

# Radio Communication



The Journal of the Radio Society of Great Britain

March 1992

Volume 68 No 3

**THE VOICE OF AMATEUR RADIO FOR 79 YEARS**

**Stay ahead of the race . . .**



**. . . at the RSGB VHF CONVENTION  
Sandown Park, Saturday 14 March**





## The review said it all

"What a lovely transceiver" said Chris Lorek when he reviewed the TS-850S. He wasn't just talking about its appearance, he was referring to the obvious lead in performance which is evident when you use a TS-850S for the first time and the supreme ease of use; which is one of the hallmarks of Kenwood design.

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John Wilson G3PCY

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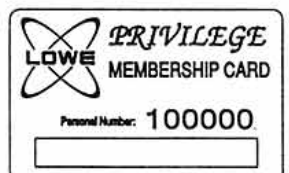
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**N.B. for all other RSGB telephone numbers see page four.**

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# Radio Communication

## This month's extra sixteen pages contain:

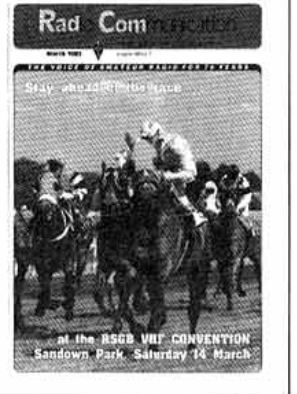
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- \* VHF, UHF and Microwave Amateur Radio Bandplans
- \* Novice Licences (A and B) Schedule
- \* Third Party Liability and Legal Expenses Insurance
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#### COVER PICTURE:

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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  
Member society of the international Amateur Radio Union

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**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

**Members Hotline and Book Orders:**

**0707-49855**

## The Radcom Leader

# THE PRESIDENT'S ADDRESS

**THE TEXT OF A SPEECH given by the Society's 58th President, Mr J T Barnes, G13USS, at his Installation Dinner on 11 Jan 92.**

MR MAYOR, COUNCILLOR MRS CREE, distinguished and honoured guests, ladies and gentlemen, we now come to the part of the proceedings where the newly installed President has a well satisfied and hopefully receptive audience, eager for his words of wisdom. These, they trust, will not be too many or too weighty. I hope that you will not be too disappointed.

First, let me thank the Mayor, Councillor Leslie Cree, for his kind remarks about the Radio Society of Great Britain. Thank you Mr Mayor. Then my special thanks to the Council of my home Borough of North Down for granting the use of the Council Chamber in the Town Hall for this function. Coupled with this is my thanks to my old school friend, the Town Clerk, Mr Jack McKimm, for his assistance and advice. It is not often that the Council grants the use of the Town Hall for functions unrelated to its own activities and I am very conscious of the privilege accorded to the Society and myself as President by their kind and generous action. It seemed only right and proper that as I was born in Bangor not more than half a mile from this castle, my installation dinner should take place in the Town Hall.

I am also privileged to have no less than five former Presidents of the Society attending this function: Barney Patterson, G13KYP, who in 1967 was the first RSGB President from GI; John Bazley, G3HCT; John Allaway; G3FKM, Willie McClintock, G3VPK and of course the Immediate Past President, John Case, GW4HWR.

We are also honoured to have, for the first time I believe at an RSGB Presidential Installation, the current President of our neighbouring Society, Dr Thomas Rea, EI2GP, President of the Irish Radio Transmitters Society, and his charming wife. I thank you for travelling all the way from Galway and hope that you enjoy your short stay in Bangor.

The Society has had a traumatic time of recent years and I am pleased to report that our financial state is much more healthy than it was even as short a time ago as last January. Thanks are due to our General Manager and his hard-working staff who have contributed in no small way to the turn around in our financial fortunes.

With this capital in the bank we must not become complacent as our efforts are directed to slow down and reverse the decline in our membership numbers. This decline is caused by a variety of factors, not least the current severe recession and the steadily advancing average age of our membership.

The recession we cannot influence, but the ageing membership must be addressed by bringing in new, younger, fresh and enthusiastic members to the wonderful hobby of amateur radio and, of course, to our Society. The Novice Licence scheme pioneered by the RSGB is one way to inject new blood into the hobby (and a valuable method it is) but it can only, in my opinion, be a first stage towards obtaining a full licence and enjoying the extra privileges which go with it.

We must strive to make our hobby more attractive and interesting to the young elements of our population. We must either attract them to amateur radio before they become 'addicted' to computers or attempt to wean them away from computers in isolation. Computers can play a very valuable part in amateur radio and we must educate the young to use them as an adjunct of radio and not instead of it.

The theme for my year as President is: "We are all engaged in a communications hobby. Then let us all communicate". The RSGB has been accused of being a closed Society; let us strive to make it more open by communicating more openly and effectively with our members and ultimately with those outside our membership. Some matters are naturally commercially confidential but for the others we must bring them into the open more so that our members, who after all are the Society, will feel and become more involved with the running of the Society - *their and our* Society.

There is a great deal of apathy amongst at least some of our members. They are quite happy if their *RadCom* arrives on time, if their QSL cards are dealt with efficiently by the Bureau and if nobody bothers them too much. They do not want to get involved in case somebody actually asks them to do something. I have found that the pleasure of any hobby is directly related to the amount of effort I have put in: No effort, no pleasure - result, apathy.

There is a myriad of tasks waiting for someone to help with:-

- EMC: Have you helped a fellow amateur clear his TVI and remain on good terms with his neighbours?
- Aerial work: Have you helped an aged or disabled amateur by erecting or repairing his aerial system?
- Clubs and Rallies: Do you help run a club, possibly for young people, or do you help your local club or society organise and run a rally?
- Novices: Could you instruct or help instruct Novices and pass on your hard-gained knowledge and expertise to make the way easier for them?

continued on page 61 ►



# Terry Barnes, President No. 58

● THE SOCIETY has produced an information booklet entitled *A Closer Look at the Novice Licence*. This puts the RA terms, provisions and limitations booklet for the Novice Licence into simple language. Novice Instructors will be sent a copy automatically but anyone else wanting a copy can send a Self-Addressed Stamped Envelope size A5 to Hilary Claytonsmith, G4JKS, whose address is correct in the *RSGB Call Book*.

● STOLEN from Moretonhampstead, near Torquay: Kenwood TS-850S(AT) S/N 30600715; Kenwood TS440S(AT) S/N 9100940; Daiwa DC PSU S/N 307035. Information to the Police on 0392 52101.

● THE JAPANESE Amateur Radio League held a 'membership reinforcement promotion' in November. Existing members and clubs were mobilised to recruit new members in order to strengthen JARL.

● THE VERY latest on call sign number plates is that on 17 February (just after we went to press) a meeting was scheduled to take place between Council Member Clive Trotman, GW3YKL, and the DVLA. More next month.

● COSMONAUT Musa Manarov, UV3AM, was hospitalised in early December for treatment of the effects of his many months of weightlessness on board Mir.

● THE RA has announced a reciprocal licensing agreement between the UK and Kenya. The Kenyan licence is reciprocal with a UK Class A licence.

● FOR DETAILS of an FCC (USA) amateur licence testing session to be held in Central London, contact R J Wright, 11 Airlie Gardens, London, W8 7AL; tel 071 221 4399.

● AT 5 FEBRUARY, the latest call signs issued were in the G\*0RJ\* and G\*7LQ\* series, and Novice calls were in the 2\*0AB\* and 2\*1AJ\* series.

● GB8MS IS being operated by the Macclesfield and District RS during March to raise funds for Multiple Sclerosis.

● MORSE Enthusiasts Group Scotland (MEGS) has a net on 145.275MHz each Thursday 1930 - 2130. Details GM3YOG.

● THE 11th International Symposium on Electromagnetic Compatibility will be held 2 - 4 Sep 92 in Wroclaw, Poland.

ON SATURDAY 11 January, at a ceremony in the beautiful Council Chamber of Bangor Castle, Co Down, Terry Barnes, GI3USS, was formally installed as the Society's 58th President.

The dinner was attended by VIPs from the world of amateur radio, and outside it, including the Mayor of Bangor, the Town Clerk, representatives from the RA, RSGB Council Members, senior HQ staff, former RSGB Presidents and the President of the Irish Radio Transmitters Society (IRTS).

In addition, many of Terry's friends from the radio clubs of Northern Ireland were there to wish him well.

The new President received a number of gifts, including a Tyrone Crystal bowl, presented on behalf of the Bangor and District ARS by Alex Bailie, GI3XEQ. The Bangor club, of which Terry was a founding member, celebrates



Outgoing President John Case, GW4HWR, transfers the chain of office to Terry Barnes, GI3USS, at the installation ceremony.

its Silver Jubilee this year. The event attracted much favourable publicity in the local newspapers, plus BBC Radio, local commercial radio and Ulster TV.

THE full text of Terry's speech can be found on page 4, and colour photographs are on p6.

## HQ Open Day

RSGB HEADQUARTERS at Potters Bar is now being refurbished and on Saturday 11 April there is an opportunity for members to visit their HQ and see behind the scenes.

The book shop and shack will be open and tours of the offices and QSL Bureau will be provided.

In order to plan refreshments, we would like an idea of how many members (or non-members - bring a friend) will be coming. If you would like to visit HQ, please write to Justine Coles, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts, EN6 3JE, marking the envelope "Open Day".

The names of those who write in will be put into a 'hat' and the person whose name is first to be drawn out at the Open Day will be given £10 to spend on RSGB books during the day.

## WARC 92

THE RSGB is present at the World Administrative Radio Conference currently taking place in Torremolinos, Spain. The UK delegation includes David Evans, G3OUF, nominated by RSGB Council as the Society's representative.

Also present is *RadCom* columnist John Allaway, G3FKM, though he is there in his capacity as IARU Region 1 Secretary.

A full report on this important event will be published as soon as possible. Background information was published in *RadCom*, Dec 91.

● AMSAT-UK has a UK Counties Award to encourage contacts via satellite with UK amateurs. Available to licensees or SWLs, in the UK or overseas, the basic award is for 26 counties. Details can be obtained from G3AAJ, QTHR.

## Stop Press

### 400 Watts on Top Band

THE Radiocommunications Agency has informed the Society that from 1 April 1992, UK Class A licence holders may use 26dBW PEP output power in the frequency range 1.830 - 1.850MHz.

This is the result of discussions between the RSGB and the RA which have been taking place for some time (see p6, *RadCom* Sep 90), and is yet another example of the Society working to improve licence conditions for all UK amateurs. **Support your national Society.**



# Presidential Installation, Bangor Castle



125 guests sat down in the Council Chamber to welcome the Society's new President in style.



The Mayor of Bangor, Councillor Leslie Cree and his wife, Councillor Mrs Irene Cree, headed the VIP guest list.



RSGB Council Member Ian Kyle, G18AYZ, presented the President with a blackthorn walking stick.



The RSGB banners were dwarfed by this magnificent stained glass window adorning an entire wall of the Council Chamber.



Terry Barnes made the first of many speeches as President, watched by his wife Yvonne.



Another president: Dr Tom Rea, EI2GP, President of Eire's IRTS.



Barney Patterson, GI3KYP, was one of five past-presidents attending.



John Forward, G3HTA, presented Terry Barnes with a glass vase on behalf of Members of Council. The RSGB diamond is inscribed on the stem.



Martin Shardlow, G3SZJ, supplied a Rolls Royce umbrella as protection from the shower of gifts.



# BBC Daventry to Close

THIS MONTH will mark the end of an era in broadcasting. The historic BBC HF transmitting station at Daventry, the site of the UK's first scheduled national broadcasts, is to close on Saturday 28 March at the end of the winter broadcasting schedule.

Daventry's transmissions will move to Wooferton in Shropshire which now has surplus capacity owing to the reduction in Voice of America broadcasts, making the station an unlikely victim of the end of the cold war.

There will be a final closing ceremony around midday on Sunday the 29th when one of the senders will carry a special transmission followed by an official switching off.

Many BBC staff (and several RSGB members) began their careers at Daventry and a large number have been invited to the closing festivities.

The station was used for domestic broadcasting from 1925 until 1974 when the Third Programme (now Radio 3) moved to Droitwich. In 1932 it opened the Empire Service, later the World Service. Robert Watson Watt conducted successful experiments on an airborne target from the site in 1935 which spawned the development of Radar.

NEWS AND REPORTS  
CONTINUES OVERLEAF  
AND ON PAGE 61

## An Amateur's Dream

DAVENTRY'S CLOSE has given the Ariel Radio Group a unique opportunity to use some of the station's massive aerial arrays. They will operate over the weekends 4 - 5 and 11 - 12 April using the 80, 40, 30, 20, 17 and 15 metre bands. A very special callsign, GB67XX, has been issued for this event. The '67' is the number of years that Daventry has been on the air, and the 'XX' commemorates the original station callsign 5XX (incidentally, the local UHF repeater is GB3XX). The antennas will be several horizontally polarised arrays between masts up to 100m (325ft) high!

The BBC will still retain buildings on the site at Borough Hill, housing the mobile transmitter-maintenance teams, stores and the BBC tape service unit. Only one mast will remain, removing a well-known landmark visible to all who travel the Midlands section of the M1 motorway. The club station, GB5XX, is to move to the site from the BBC Club in the town, ensuring that HF transmission will continue to originate from Borough Hill.

PHOTOGRAPH: GJTTC



These imposing aerials at BBC Daventry will soon be demolished.

## Diamond Jubilee for Emerald Isle

THE IRISH radio Transmitters Society (IRTS) celebrates its 60th Anniversary this year. The Diamond Jubilee Award is available to anyone contacting 20 of the 26 counties in the Republic of Ireland during 1992. SWLs may claim the award on a 'heard' basis. There are no mode or band endorsements. A log extract, signed by two amateurs, should be sent together with IR£3.00 or equivalent to the WEIC Award Manager, PO Box 462, Dublin 9, Eire.

## Antenna Photos Needed

THE PLANNING Advisory Committee is seeking new display material for use on the stand at the RSGB National Exhibition in May to illustrate masts and aerials which are well-sited in their local environment. If you have, or know of, such a thing can you supply us with a photograph and a brief outline of its technical features, planning history etc? Either 'homebrew' or commercially manufactured systems will be welcomed.

A competition is also proposed for the 'Ugliest Aerial System'. To enter, all that is needed is a photograph of your favourite (?) eyesore! Ugly metalwork, bad siting or any other feature which really offends. It does not have to be your own aerial; if it can be seen and photographed from a public right of way it will be of interest. However if you need to enter private land to obtain the true benefit of its ugliness then do not forget to obtain the permission of the landowner. There will be a suitable prize and a really well-qualified panel of judges is promised.

Initially, for either category, please send a small print, colour preferably (keep the negative yourself) to:- Peter Whitworth, G4CTO, 'Tredorge', North Hill, Launceston, Cornwall PL15 7PQ. Please say which class you wish to enter! Entries please by 31 March.

## Data Vacancy

THE Datacommunications Committee has a vacancy for a Secretary. Applicants should have a wide and knowledgeable interest in data communications, be able to attend meetings in London on a regular basis and be in a position to provide draft minutes to the Chairman within two weeks of a meeting.

Applications should be sent to GM4AUP (QTHR) from whom further information can be obtained.

## Write for RadCom

ANYONE WISHING to write a technical article for *RadCom* should first request a *Style Guide*. Of particular interest are construction projects which can be completed in a single weekend, and articles of any kind for the VHF enthusiast.

## RSGB VHF/UHF Awards News

G7GMD WAS recently awarded the RSGB 144MHz 40 squares/10 countries award; particularly noteworthy as it was endorsed "All contacts made during the first year of being licensed." Another certificate with a slightly unusual endorsement, "All CW Contacts" was issued to G4OUT, who reached the 80sq/18c level on 144MHz. This shows there are plenty of stations active on 2m CW if one has the time to find them. Before anyone asks "who checks the Awards Manager's applications?" this was done by former VHF Awards Manager G5UM who also signed the certificate. VK3OT continued on the award trail when he was issued 50MHz 60 countries (2-way) sticker number 4, while GM8MBP achieved 200sq confirmed on 6m. Also active on 6m was GW1EH1 who added the 30 countries (2-way) and the 75 and 100 sq to her collection.

Congratulations to all RSGB award recipients who include:-

**50 MHz:** 10c (2-w) to G0KUX, GU7DHI, G6LAU, G4BAL and G1ABW; 20c (2-w) to G0KUX, GU7DHI and G4BAL; 30c (2-w) to G0KUX and G1SDO. 25sq to GU7DHI and G4BAL. 50sq to GU7DHI and G8BFL. 75, 100 squares to GM1XOG. DX 25 countries award to G4BAL.

**144MHz:** Senior Transmitting and 100sq/20c awards to G6JFU.

**432MHz:** The solitary award, a 60sq/15c sticker, went to G6TTL.

During the next few months readers might care to look through their collections of QSL cards - they might be surprised to find that they have qualified for one of the RSGB VHF, UHF or microwave awards (see *RSGB Call Book* for details).

Ian L Cornes, G4OUT,  
VHF/UHF Awards Manager.

## EI Activity Period

AN EI Activity period will be held 14 - 17 March by the Irish Radio Transmitters Society (IRTS). All 26 counties will be activated, many of the rarer ones on both HF and VHF. See above for details of Diamond Jubilee Award.



# Repeater Information Control and Supervision

LICENSED AMATEURS using repeaters, and those responsible for running them, will have noted the comments in the letter from Mr B Maxwell of the Radiocommunications Agency that appeared in Dec 91 *RadCom*. Likewise the comments from G3STG (who is responsible for the organisation of AROS) that appeared in the January edition.

The Society's Licensing Advisory Committee in conjunction with the Repeater Management Committee have over the past 9 months been examining ways of improving the information, control and supervision of the network to meet concerns raised by the Radiocommunications Agency. Draft proposals were submitted at the beginning of November last year and have now been approved by the Agency.

The RSGB runs the repeater network under licence from the RA for the benefit of all amateurs. The RA has made it clear that the licence conditions must be complied with and that it is the responsibility of the Society, and the repeater keepers to whom it grants franchises to set up and control repeater stations on its behalf, to ensure that this is done. The following attempts to explain the wide range of work involved, why the charges and tighter procedures are necessary.

The RA expects RSGB as the sole licensee to vet all applications for new stations - this involves liaison with the group, explaining the details of the procedures involved, establishing that the group has the technical and organisational abilities to run a repeater to the appropriate standards, frequency and geographical planning to identify a suitable frequency and coverage area to avoid clashes with adjacent groups, the assignment of a callsign, submitting the site clearance forms to the RA, pro-

gressing them through the RA approval system, and finally passing the authority-to-operate to the group.

Suitable technical standards have to be defined for each type of repeater which involves liaison with the HF, VHF or Microwave Committees. Technical assistance is provided to the groups if required. Documents such as the *Guide to Repeater Licensing* have been produced to assist new applicants. As the licensee the RSGB has to ensure that Public Liability Insurance exists for each station, and so provides this as standard. The Society has also negotiated favourable agreements for site sharing with such organisations as the BBC, NTL and Philips.

Once new units are operational within the network of over 270 stations, there is a regular stream of changes and updates to be logged, including changes of 'close-down' operators, requests for technical changes to the station parameters or periods when the stations is off the air.

Random checks have been made to ensure that the records are accurate and routine monitoring of the stations carried out to ensure that all is well. Where problems of abuse occur it is the job of the repeater group, together with AROS, to assist in identifying and gathering evidence against the abusers. Where conflicts occur between groups these have to be resolved. These activities may require visits to the individual stations and groups by members of the RMG. When making decisions on frequency planning the Society must take into account the interest of all other amateurs who wish to use the bands.

Information has to be circulated to those involved in the network, eg progress of applications, changes to close-

down operators and more general news in *Repeater Report*. More general information on the network is published in the *Call Book* and in repeater lists.

All this takes up a considerable amount of staff and volunteer effort. This is the main responsibility of the Repeater Management Group but also involved in a considerable amount of time is the Amateur Radio Observation Service and the Licensing Advisory Committee who deal with routine RA liaison. Liaison with other National Societies is also needed to agree band plans and standards internationally. HQ staff are involved in assisting with all of this work and maintaining the databases.

The repeater network has grown dramatically since the first repeater, G3BPI, came operational in 1972. Likewise so has the cost to the Society. Over the past 20 years the RSGB has supported this activity to the point where we now have over 270 operational sites. Our records have required up-dating for some time and Council, within its policy of examining the whole of the Society Organisation and expenditure, agreed that a charge must be introduced to contribute towards these administrative costs.

The real cost of running a repeater network is much greater than is generally appreciated. The value of the time and effort put in by members of the Groups to install and maintain a station is considerable. The groups' subscriptions probably only cover their out of pocket running costs. In making this charge for a franchise, the Society is only recovering a small part of its costs in providing this support and in the context of running a national network of repeaters it is a very small sum compared with a commercial network.

The charge to all groups for the 12 month period from 1 April 1992 - 30 March 1993, will remain at £25.00 per franchise.

All repeaters groups that have a permit to operate issued by the Society have been written to several times during the past year together with a request to pay a franchise charge for the last period ie 1 April 1991 - 30 March 1992. The majority have paid but there is inevitably a small minority that have completely ignored all letters sent them including requests for up-to-date information on the people responsible for running their repeater. This situation cannot be allowed to continue because it puts the Society in breach of its obligations under the repeater licence.

Shortly, all groups will be receiving a series of forms that must be completed and returned to enable franchises to be issued effective from 1 April 1992 when all existing franchises will cease. A renewal procedure will then take place annually to maintain accurate records as stipulated by the RA.

To put the repeater franchise agreements on a more formal basis will involve an increase in effort and costs. However we believe that this will also produce a number of benefits: the duties and responsibilities of all parties involved will now be more clearly defined and the records more accurate. It is also hoped that this will make it easier to tackle problems of abuse which should benefit all repeater users and improve the image of amateur radio.

**Geoff Dover, G4AFJ, Chairman  
Repeater Management Group.**

## HQ NEWS

THE RESULTS for the year presented on pages 59 and 60 are slightly better than budget. However I am a little disappointed with December which shows the failure of several traders and an increase in our bad debt provisions. The amateur radio business sector is really feeling the recession now and it is surely important that we encourage traders not to throw in the towel. The provisions that we have made represent about £80,000 of annual advertising income which once lost may not be recovered.

There is some evidence that as customers cut back on equipment purchases they spend more on books, and this has been borne out by our substantial increase in book revenues over the same period last year. A similar pattern was experienced by ARRL during the United States' recession.

As some of you will know I am trying to introduce a package of incentives to encourage new membership. Initially this has taken the form of a free *Call Book* to new members and I have had one or two letters from existing members who feel, understandably, left out. The strategy is two-fold: firstly, the *Call Book* is half way through its shelf life and the existing membership will have to carry the cost if we have any left in October 1992 when the new edition is published. Secondly, introducing new members immediately to the *Call Book* gets them used to referring to it for information rather than phoning HQ and, hopefully, provides customers for future editions of the *Call Book*. Finally, the greater the number of *Call Books* printed the greater the ability to maintain the price which has been held at the same level for two years.

To encourage our existing membership to persuade other amateurs to join the Society a free *Call Book*, or a £5 book token for RSGB books, will be given to every member who introduces a new member to the Society. Each such application for membership should be signed by the existing member and annotated with his callsign.

The alterations to Headquarters are progressing smoothly and the reception and book-shop area will be fitted in the latter part of February. The modules are currently being designed and built in the factory for installation in as short a time as possible to minimise disruption. We plan to have an Open Day on 11 April to inaugurate the new facilities and hope as many members as possible can join us.

To conclude I would like to thank all those subscribers who have so kindly donated the balance of their subscriptions to RSGB funds on discontinuance of the newsletters.

**Philip Smith,  
General Manager**

## RSGB and Raynet

BECAUSE OF much recent speculation over the future of the relationship between Raynet and the Society it might be of help to outline the current position.

It is common knowledge that many members of Raynet wish to pursue their particular interest in amateur radio within an organisation independent of, but closely allied to, the RSGB. The Society has no wish to put obstacles in the way of any democratically decided cession. In order to determine the best way to arrive at a solution which takes into account the wishes of the majority of Raynet members informal discussions have recently taken place between the Chairman of the Raynet Committee and the Company Secretary of the Radio Society of Great Britain.

A number of avenues of approach were discussed in a spirit of mutual understanding which the Council of the Society will be asked to consider in the near future.

As a further indication of the Society's continuing support for Raynet activities the Finance and Staff Committee, at its meeting of 23 January, voted unanimously to increase the budget provision for Raynet for the current financial year by £1,000. This will bring the amount allocated to the Raynet Committee to £3,300.

Both the Raynet Chairman and the Company Secretary hope that this statement will go some way to clearing up any misunderstandings or rebutting any misinformed comments which may be in circulation at the present time.

Given understanding and tolerance they believe a solution can be arrived at that takes into account the wishes of most who are active in this sphere of amateur radio.

31 January 1992.



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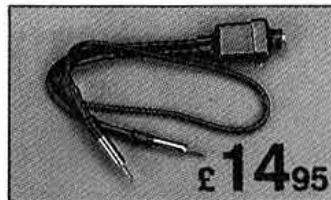


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- VM-2SK Super-Slim 2m 1/2 wave mobile whip.** Foldover base. Power rating 50W FM Length 1m Gain 3dB. Connector Concentric 259 style **£19.95**
- VM-7SS Super-Slim 70cm 1/2 wave mobile whip.** Foldover base. Power rating 50W FM, Length 360mm, Gain 3dB. Connector Concentric 259 style **£17.95**
- VM-720SKR Super-Slim 2m/70cm dual band mobile whip.** Foldover base. 1/2 wave on 2m, 2x5/8 wave on 70cm. Power rating 50W FM Length 930mm Gain 3dB(2m), 5.5dB(70cm). Connector Concentric 259 style **£26.50**
- HS-VM2 2m 1/2 wave mobile whip.** Foldover base. Power Rating 100W FM, Length 1340mm, Gain 4.1dB. Connector Concentric 259 type **£22.95**
- HS-727VM 2m/70cm dual band mobile whip.** Foldover base. 1/2 wave on 2m, 2x5/8 wave on 70cm. Power rating 120W FM, Length 875mm, Gain 3dB(2m), 5.5dB(70cm). Conn. Concentric 259 **£25.95**
- VM-727E 2m/70cm dual band mobile whip.** Foldover base. 6/8 wave on 2m, 3x5/8 wave on 70cm. Power rating 150W FM, Length 1465mm, Gain 4.5dB(2m), 7.2dB(70cm) Conn Concentric 259 **£39.95**
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- WT-500 Multi-band mobile whip.** 144/430/900MHz transmit, plus receive on 108-136/140-180/200/300/400/800/900MHz. 1/4 wave (2m), 6/8 wave (70cm), 2x5/8 wave (900MHz). Power rating 100W (2M/70cm), 50W (900MHz), Length 500mm, Gain 0dB(2m), 3.8dB(70cm), 5.5dB(900MHz) Conn Concentric 259 style **£35.50**
- WT-1000 Multi-band mobile whip.** 144/430/900MHz transmit, plus receive on 108-136/144/200/300/430/800/900MHz. 1/2 wave on 2m, 2x5/8 wave on 70cm, 4x5/8 wave on 900MHz. Power rating 150W (2m/70cm), 50W(900MHz), Length 1m, Gain 3.1dB(2m), 6.8dB(70cm), 8.7dB(900MHz). Connector Concentric 259 **£49.50**
- WT-1500 Multi-band mobile whip.** 50/144/430MHz transmit, 70-90/108-136/150/200/300/450/800/900MHz. receive. 1/4 wave (10m), 1/2 wave (2m), 2x5/8 wave (70cm). Power rating 100W, Length 1.24m, Gain 0dB(6m), 3dB(2m), 5.5dB(70cm) Connector Concentric 259 style **£57.00**
- WT-1800 Multi-band mobile whip.** 21-29/144/430MHz transmit, 70-90/144/150/200/300/450/800/900MHz. receive. 1/4 wave (10m), 1/2 wave (2m), 2x5/8 wave (70cm). Power rating 100W Length 1.66m, Gain 0dB(10m), 3dB(2m), 5.5dB(70cm) Connector Concentric 259 style **£59.95**
- WT-1062 Tri-band mobile whip.** 21-29/50/144MHz. 1/4 wave on 10m, 1/4 wave on 6m, 1/2 wave on 2m. Power rating 100W (FM), 200W (SSB) Length 2m, Gain 0dB(10m), 0dB(6m), 3dB(2m) Connector Concentric 259 style **£62.00**

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- HS-WX1 2m/70cm dual band** base station glass fibre enclosed vertical. 6/8 wave on 2m, 3x5/8 wave on 70cm. Connector SO239, Power rating 200W FM, Height 1.8m, Gain 4.5dB(2m), 7.2dB(70cm) Connector SO239 **£64.00**
- HS-WX2 2m/70cm dual band** base station glass fibre enclosed vertical. 2x5/8 wave on 2m, 4x5/8 wave on 70cm. Power rating 200W FM, Height 2.65m, Gain 6dB(2m), 8dB(70cm), Connector SO239 **£82.95**
- HS-WX290 2m/70cm/23cm tri-band** base station glass fibre enclosed vertical. 1/2 wave on 2m, 2x5/8 wave on 70cm, 4x5/8 wave on 23cm., Power rating 150W (2m/70cm), 50W(23cm), Height 1.1m, Gain 3dB(2m), 6dB(70cm), 8.4dB(23cm) Connector N type **£64.95**

HS-727VM



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**KPC4 - £247.** Dual port TNC for HF/VHF/UHF. 300 & 1200 baud with simultaneous operation on two bands. Gateway facility between bands.



KPC-2, KPC-4 & KAM

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**DVR2-2 - £199.** A specially designed 2 metre FM transceiver for Packet Radio. The DVR2-2 provides crystal controlled stability on transmit and receive (supplied on 144.65MHz) with ultra fast switching for high speed data transfer; 2 Watts output needing only 12Vdc to operate and a microphone input for using it as a talk box.

**D-410 - £199.** The same as the DVR2-2 but for 70cm.

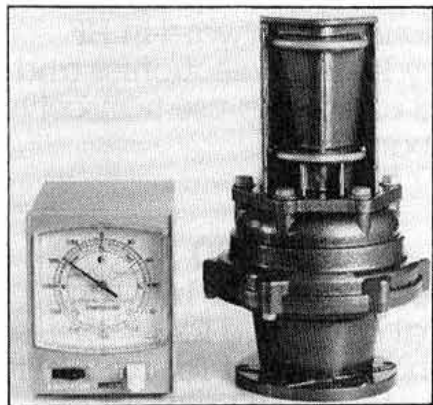
**DATA ENGINE - £335.** The "Next Generation" TNC. Featuring dual radio ports and high speed capability, it can also accommodate two internal or external modems. Supplied with AX-25 firmware and one 1200 baud modem.

*For a more detailed view of what Kantronics hardware and HOSTMASTER software can do for you, see what a packet enthusiast had to say about it on page 12 of the January 1992 edition of RADIO COMMUNICATION.*

## EMOTO ROTATORS

Rotators from this long established company are amongst the best engineered units we have ever seen. Designed by an engineer who knows his subject, the EMOTO rotators are a pleasure to own. All rotator controllers incorporate clear backlit compass scales for beam heading and the cabling is simple and straightforward. Models range from the 105TSX for VHF/light HF use, through the variable speed 747SRX to a mighty 1800SFX for turning large log-periodics. Buy the best you can; it's always folly to cut corners on your rotator. The best is EMOTO.

105TSX	..... VHF/light HF use .....	£163
747SRX	.... 3 element HF and up .....	£329
1105MSAX	.. 3 element 40 metre beams, etc.....	£459
1200FXX	... even bigger and variable speed .....	£531
1300MSAX	.. I believe that this turns the 16 inch guns on the USS Missouri .	£914



## IN MY OWN WRITE

(apologies to John Lennon)



I read a one-liner recently which asked the question: "How do you know a teenager lives in the house?". The answer is: "The clock on the video recorder isn't flashing."

In amateur radio, a similar little 'bon mot' could be created to highlight the 'advances' in handheld transceivers which offer a new kind of thrill to the adventurous operator. May it give him many hours of happiness!

For me, with blunt fingers that inevitably hit the buttons in tandem and ageing eyes still stenuously denying the ever-increasing need for glasses, there is a hankering after the word 'amateur' in Amateur Radio. How about a simpler, well-built transceiver like the TS-700G or TS-711E with a few homebrew bits and pieces around it? That will do me nicely.

I know I'm not alone because how many TS-700Gs, TS-711Es or similar does one see being advertised for sale? Evidently there are plenty of other 'amateur' hands tuning the bands!

'Horses for Courses' as the saying goes. What do you think?

John Wilson G3PCY, *Technical Director*

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The FT-650 packs substantial communications power in a streamlined, compact case. A flip out handle makes it the perfect portable, especially for those remote locations. The three frequency operation lets you win the battle of the bands on 6m, 10m, and 12m. The transceiver covers from 24 to 56MHz continuous on receive with a full 100W output.

An optional power supply and desk mic are available for base station operation.

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Have you always wanted to stand out from the crowd? Well now's the time to stand head and shoulders above the crowd with the FT-1000 and FT-990 HF transceivers from Yaesu, arguably the crown king and prince of all HF transceivers. Designed with no expense spared, these transceivers offer exceptional performance combined with the ease of operation, a truly marvellous step forward in HF communications. The FT-1000 and FT990 feature the very latest in electronics and microprocessor technology to ensure a highly reliable and exciting-to-use transceiver for all modes of operation on the HF bands.



### FT-990

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- \* General coverage Rx.
- \* Power output up to 100W PEP.
- \* Auto ATU and internal P.S.U.
- \* 50 memories.

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- \* Amateur bands Tx 160-10m.
- \* General coverage Rx.
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P30	30ft post mount.....£500.55
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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.

### ROTATORS



Suberb engineering standards combined with pin sharp setting accuracy means new technology from Yaesu create Kenbro Hygain.

G-250	Bell type twist/switch CTL.....£79.70	C
G-400	Bell type meter controller.....£152.00	C
G-400RC	Bell type round controller.....£182.89	C
G-600RC	Bell type round controller.....£240.11	C
G-800SDX	Bell type 450 deg. var. speed.....£332.07	C
G-1000SDX	Bell type 450 deg. var. speed.....£376.00	C
G-2000RC	Bell type round controller.....£454.68	C
G-2700SDX	Bell type 450 deg. var. speed.....£649.00	E
G-500A	Elevation meter controller.....£203.32	C
G-54008	Azimuth/elev. dual control.....£383.16	D
G-56008	Azimuth/elev. dual control.....£444.00	D
RC5-1	Bell type round controller.....£223.76	C
RC5-3	Bell type preset.....£280.98	C
RC5A-3	Bell type var. speed. & preset.....£434.24	C
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GS-050	Rotary bearing 1.5' mast.....£20.39	B
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GC-038	Lower mast clamp G-400, 600 etc.....£17.32	B
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### COMPUTER INTERFACES FOR G-5400/G-56008

IF-100PC	I/F C/W lead & software IBMPC.....£142.02	B
IF-100C64	I/F C/W lead & software CRM64/128.....£148.16	B

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RC5W	5 way G-250, 400, 600, RC XR500 per mtr. £0.74
RC3W	8 way G-2000 create series.....£0.88

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Rotator cable  
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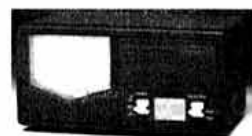


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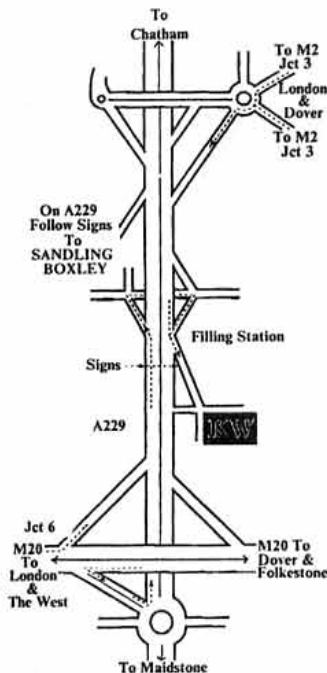
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(MON open 10am,  
SAT close 5pm)





**H**AVING READ about G5MY's experience with a loop antenna, G3DOP has reported on the performance of one which he built for 21 and 28MHz a couple of years ago. It is made of 1m of half-inch copper tube tuned with a 25pf capacitor and is a foot above ground standing on his patio. With power not exceeding 4W he has worked 100 countries and has had no RFI problems.

This year sees a rather sad change to the traditional Bermuda Contest because the sponsors are no longer supporting the costs of travel to, and accommodation in, Bermuda for the top winners. For some reason the number of entrants was falling - in spite of the wonderful prize - and I wonder just what would have persuaded more UK stations to take part? An incredible prize lost because of lack of interest . . . . Please note that the originally published date of this year's Bermuda Contest was not correct - and the one given below is the correct version!

## CONTESTS

### BERMUDA CONTEST

0001 21 March - 2400 22 March

Actual operating time not to exceed 36h. Off periods must be clearly logged and each must be for not less than three consecutive hours. Single operator only and operation must be from own property. 3.5 to 28MHz phone and CW but no cross-mode QSOs. UK stations send RS/T plus their county, VEs give province, Ws their state, and VP9s their parish (SAN, SOU, WAR, DEV, PEM, PAG, SMI, HAM, and STG). Each QSO counts five points and contacts made with the same station on the same band on a different mode only count the second time if they are separated by at least one hour.

Multipliers are the number of VP9 stations worked on each band (CW and phone contacts count as two multipliers as above). Each VP9 novice (VP9N\*\*) counts for a multiplier of two.

Winners receive a trophy - but, sorry to say - this will no longer be presented at the annual dinner of RSB during an all-expenses paid visit to the island. It can be collected - but only at the winner's expense. I can supply copies of the rules (SASE please).

### BARTG SPRING RTTY CONTEST

0200 21 March to 0200 23 March

3.5 - 28MHz (no WARC bands). Single-operator, single and all band, multi-op all band, and listener sections. Send RST and message number which is the serial QSO number starting from 001. Also send time in GMT - four characters (NB "same as yours" etc not permitted!) Each QSO counts one point and a station may be worked on more than one band. Multipliers consist of DXCC countries plus all VE/VK/W call areas on each band, plus continents (which however only count once). Logs must reach John Barber, G4SKA, 32 Wellbrook St, Tiverton, Devon, EX16 5JW, no later than 25 May 1992. Copies of rules available (SASE please).

## DX NEWS

IN ORDER to celebrate the 75th Anniversary of Finnish independence the Telecommunication Administration Centre of Finland has given all Finnish amateurs the right to use the OG prefix instead of their usual OH during the whole of 1992. SRAL is issuing a special award (see Awards).

Stations in Yugoslavia who hold a Class A licence are now allowed to use 50W in the band segment 1.85 - 1.915MHz in addition to their allocation between 1.81 and 1.85MHz. Israel is now issuing 4Z5 calls because the 4X4, 4X6, and 4Z4 prefix series are now all used.

Another letter from Brian, C21BR. He complains of very poor propagation and says that 50MHz expectations have not been fulfilled. 21MHz has been reasonably good into S Africa and S America but the only UK station worked recently was GW4OFQ.

Another G exiled in a far away place is V85KX (G3JKX) who has written again. He is trying to work all UK stations heard with his IC735 and isoloop antenna (which covers 14 to 28MHz) and dipoles for 7 and 10MHz. For 3.5MHz he is end feeding the coax to the dipoles against ground and finds getting into the USA and NE Europe quite easy. Static is a big problem and also the wall to wall S9 JAs. Mike asks everyone to keep trying and preferably call him 1kHz up.

At present he is on CW only and would welcome skeds on any band from 3.5 to 28MHz *made in writing please*. He suggests 0400 to 0600 for 24 and 28MHz, 1030 to 1600 on any other HF band, and 2200 to 2330 on 3.5, 7 or 10MHz. He made 3,500 QSOs between mid-October and late December and will be in **Brunei** for at least three years. Like all rare DX stations he would like to read a good book on how to be a DX station as it's like a contest whenever he appears on the air!

7Z1AB is a small club station located in the US Embassy in Riyadh, **Saudi Arabia**. There are 16 members and these include two from the UK (one of whom is, I believe, Barry Whittles, G4KUD) and other nationalities. Operating times are mostly between 1700 and 2000 on Wednesdays, and from 0630 to 0830 on some Fridays - both days on 14MHz.

VR6BX is a new station on **Pitcairn Is** and has been worked from the USA on 24MHz. Look out for him on 28MHz too after 1500. DJ5CQ is reported by *DXpress* to keep schedules with

VR6YL and VR6TC on Sunday mornings at 0700 on 14.140MHz. If you hear VI2RC this year it is VK2DEJ who is celebrating the 200th Anniversary of Settlement at Ryde, NSW, and its' elevation to city status.

If you need **San Felix Is** try looking for XQ0X who is often on 28.457MHz around 1800. According to *DX-NL* he is willing to arrange schedules on 24MHz. LA2GV should be in **Antarctica** until the end of the month as 3Y2GV, and it is also said that there are several amateurs in the team which was relieving the crew at the **Terre Adelie** base (FB-Y).

## GBOQRP

CHRIS, G4BUE, has written a most interesting piece about the G QRP Club's 1991 Winter Sports Contest. He says that ever since 1978 the G-QRP Club has promoted the QRP Winter Sports between 26 December and 1 January. It is *not* a contest as such, more of an activity period to encourage two-way QRP communication, although certificates are awarded by G8PG who first thought of the idea. Chris operated last Christmas using the callsign GBOQRP and all contacts were made on CW using a Ten-Tec Argonaut II with 5W output. He made 645 QSOs on eleven bands (1.8 to 144MHz inclusive). Of these 476 were with other low power stations including 231 different members of the G-QRP Club. DXCC score was 62 and this total included BV, HI, J7, JW, KL7, KP4, SU, VP5, VS6, VU, and ZA. AA2U, NG1G, W3TS, and N4AR were worked on two-way QRP on *eight* bands, and in a five hour period on 1.8MHz EA8QO, K1KI, OY9JD and RA9CT were raised using only 5W. Don't let anyone tell you that conditions were bad over the 1991 Christmas holidays or that there isn't much QRP activity around. Keep an ear open for GBOQRP next Christmas!

## DXPEDITIONS

IRIS AND Lloyd Colvin had completed their HS0ZAP operation by early December and were at that time *en route* to Vietnam. John Vajo, HS0ZAA, was instrumental in getting licences for foreign nationals in **Thailand** as well as assisting the locals. He is station manager of the club station HS0AC from which Iris and Lloyd operated. Conditions were not good but they made more than 1,500 QSOs scattered throughout 120 countries - making them yet another DXCC.



Min Yuri-Kimm, HL1KXS, in his well equipped shack.



Steve, G4UOL, had considerable success operating in the 1991 CQ WW DX Contest (CW section). He made 8,079 QSOs and a claimed score of 1.3 million points. No doubt he will be trying to do even better this year!

A group of American amateurs is expecting to be active from **Belau Is** during the first two weeks in March. They will be on all bands 3.5 to 50MHz with SSB, CW, and RTTY. At the time of writing, their KC6 calls are not known.

Also at the time of writing all was in line for the expedition to **Clipperton Is** to start the seven day operation by FO0CI on about 6 or 7 March. Seven operators were already signed on but the total might be nearer to a dozen when the event happens. There will be four stations operating continuously and the QSO target is 40,000. An expensive exercise - the cost of the boat alone will be almost US \$60,000.

The other 'big one' due this month is the eight-man visit to **S Sandwich**. Good news for Europeans particularly - Martti, OH2BH, is one of the team. Operations should start about 21 March and carry on for 16 days. The cost of this one is even higher than the Clipperton expedition and it is reckoned to be going to exceed US \$100,000.

**PROPAGATION**

THE G8KG report this month goes as follows: "The generally settled HF band conditions reported last month continued for the rest of December and the first half of January. During this period the average of the daily Boulder A indices was only 12, with the index above 15 on only a few days and no major disturbances. In mid-December the daily solar flux values dipped briefly below 200 only to climb steeply into the 250 sfu region by the end of the year with a peak of 280 on 3 January and high values continuing. The

27-day average, a useful indicator of the cumulative effect of high solar activity, rose steadily for some thirty days from a low of 167 to a high of 241sfu, well above the value at the corresponding time a year ago though below the high peak of February/March 1991.

As with last year we are fortunate that a period of favourable solar/geomagnetic activity has coincided with part of the winter DX season although the cycle is now well into its sixth year and it was not to be expected that HF conditions would be quite up to last season's standard. Nevertheless even the higher bands have again been useful for worldwide communication for which we must be thankful.

It has been mentioned previously that Cycle 22 has proved to be markedly double-humped and this fact is nicely illustrated by the annual averages of 2800MHz solar flux for 1989, 1990 and 1991 which are 214, 190, and 208sfu respectively. It will be most surprising if the figure for this year is anything like as high."

**AWARDS**

**1992 WARC BANDS TABLE**

Only two entries to date! G4OBC 10MHz = 8, 18MHz = 10, 24MHz = 24. G4XRV 10MHz = 16.

**WORKED ALL RUSSIAN OBLASTS**

For this you need to make contact with all Oblasts in Russia after 1 January 1992. (I have a list of the relevant Oblast numbers). Send a list of contacts (or listener reports) plus QSLs and US\$5.00 or ten IRCs to Oleg Zhukov, UA6HPR, PO Box 410, Kaliningrad-10, Moscow Obl, 141070 Russia. As well as copies of the Oblast list I can supply details of other awards issued by HMDXC

*continued on page 20* ►

**NINE-BAND TABLE No 1**

	1.8	3.5	7	10	14	18	21	24	28	Total
G3KMA	140	258	314	181	323	254	322	242	314	2348
G3XTT	162	222	275	133	312	204	307	188	286	2089
G4BWP	121	247	288	101	318	170	313	187	295	2040
G3GIQ	71	211	276	108	323	187	321	166	307	1970
G4GIR	114	244	282	94	319	137	315	141	299	1945
A92BE	58	159	207	-	314	203	299	185	275	1700
GM3PPE	68	164	183	125	252	185	239	147	216	1579
G4OBC	123	155	202	69	278	95	252	99	227	1500
G4LJF	43	217	255	-	314	53	298	46	274	1500
G3JXN	44	111	176	57	254	146	260	162	265	1475
G3JJG	52	102	191	130	230	149	256	131	199	1440
G3NOF	5	101	106	-	320	129	323	158	292	1434
G3TXF	72	169	217	-	295	26	295	13	259	1346
G3YMC	82	123	210	-	259	105	266	77	220	1342
G4NXG/M	2	40	81	-	219	77	236	124	227	1006
AVERAGE	77	168	218	67	289	141	287	138	264	1648

For the next table please send your scores to reach G3GIQ by 8 April 1992. Please also note that the entry level is a total of 600 and that there is no need to work on all nine bands.

**BAND REPORTS**

Quite a nice response this time so thanks go to G2HKU, GM3CSM, G3s GVV, KSH, LPS, YRM, G4s CMZ, DJC, DXW, GW4KGR, G4's NXG/M, OBK, XRV, G0s CKP and KDS, as well as the UK DX Cluster (via G4PDQ). As always stations listed in italics were using CW.

- 7MHz**
- 0500 *FJ5BL, FS4PL*
- 0600 *A35DX*
- 0900 *J79DX, V63JC*
- 1500 *K6DC, K7OXB (Utah), K7RO, UI9ACP*
- 1600 *A35DX, JA, N7MC, N7UA, V63ES, VE7JQ*
- 1900 *HL1UA, UA0YO, 7Q7LA*
- 2000 *JWOC, TA4Z, UA0QFC, VU2PFT, 5B4ADR, 9X5NH*
- 2100 *JA, VK6HD*
- 2200 *A61XL, FM5WD, VQ9RS, VU2UR, 9V1YC.*
- 10MHz**
- 0700 *H18AX, SU1HV, 3C1EA*
- 0800 *JH2CLV, KL7U, P40V*
- 1700 *UW1ZC/JW, VK2OLV, VQ9QM, ZL1HN*
- 2000 *KH2T, RY0U, VP5/WA2TMP, ZS6BUIV, 4K2MAL*
- 2100 *H18A, J68AP, PJ2AMU, VK3MR, ZS6QU*
- 2300 *JA2TLS, PY1BVY, VP5VEU, ZA1TAJ, 5U7M.*
- 14MHz**
- 0700 *C21BR, H44BC, T32LN*
- 0800 *KL7XD, V63YL*
- 1000 *9V1JY (LP).*
- 1200 *BY4WNG, JT1AA, 4K4POL, 4S7WP*
- 1400 *HSOZAP, OK1IAI/YA, XU8KG*
- 1600 *AH6DM, FO5JV, NL7DU, XV7TH, ZA1TAD, ZL1AH*
- 1700 *A71CD, C9RTC, UW1ZC/JW, XU1NOM, XUBKG, 4K4BCU*
- 1900 *A61AC, AH3B, D2AXYK, S42U, 5R8GW*
- 2000 *VK, VU, 9L1TH*
- 2200 *KL7YR, TT8SA, VK.*
- 21MHz**
- 0800 *BY5SZ, DU1/G4DUW, 9X5HG*
- 0900 *BV3AF, BY4AJT, VS6DA, YJ8RB*
- 1000 *BZ4RBD, EP2/HA5BUS, V63YL, 9N1MM*
- 1200 *A35DX, V63NW*
- 1300 *P29JR, XV7TH, XW2A, XW8KPL, 5Z4PL*
- 1500 *A61AC, VR6BX, VU2GG*
- 1700 *A71AB, VA1C, 7Q7 JH, JL, LS, 7P8SR*
- 1800 *KH6IDU, S79KMB.*
- 24MHz**
- 0900 *A92BE, TK5XN, TR8GL, ZL1HV, 5U7M*
- 1200 *J29DX, KP2A, SU1HV, OK1IAI/YA, VQ9QM, 3B8FG*
- 1400 *VE3CPU/C6A, UW1ZC/JW, ODS/LA4GHA, RW9FW/RZ0G, ZS0Z, 3X0HNU*
- 1500 *A22AA, CN8LR, HR2JEP, TF3EJ, ZB2AZ, 6Y5EW*
- 1600 *C56/OH3XR, CE8ABF, FJ5BL, P4K1MD, 5T5CJ*
- 28MHz**
- 0900 *BY5RA, JT1BG*
- 1000 *BV2DA, VS6BG, XW8KPL, 4K4BG, ZA1TAH*
- 1100 *KG6JH, TT8SA, VS6CT, XX9AS, 5X5WR, 9N1MM*
- 1200 *XX9AW, 3X1AU*
- 1300 *A71AB, C56/G4GZG, C9RTC, OK1IAI/YA, ZS0Z, 5R8GW*
- 1400 *C6A/G4AML, P40V*
- 1600 *JY5CI, WB8GEX/VP5, 3C1EA, 3B8DB, 9K2ZZ*
- 1700 *FG5FC, HK0NAF, UA1ZC/JW, V31DX, VP5P*

**QTH CORNER**

- C9RTT** via IV3GTU, Giordano Fichera, via dei Piccardi 24, I-34141 Trieste, Italy.
- FO0CI** (CW and RTTY) via KA6V, J Branson, 93787 Dorsey Lane, Junction City, Ore 97448, USA. (SSB) via AA6BB, G Branson (as above).
- GB0QRP** via G4BUE (QTHR) or via bureau. KP1 expedition all cards to NOTG, 2120 Reverchon Drive, Arlington, Texas 76017, USA.
- V85KX** via G3JKX, 12 Ullswater Close, Priorslee, Telford, Salop, TF2 9RB.
- VR6BX** PO Box 21, Pitcairn Is, Central Pacific.
- XFOC** Box 231, Colima 28000, Mexico.
- XU8KG** via YASME, PO Box 2025, Castro Valley, Cal 94546, USA.
- ZK2RW** via ZL1AMO, Ron Wright, 28 Chorley Av, Massey, Auckland 1208, New Zealand.
- 5U7M** via JA bureau only.
- 7Z1AB** via WB2QMP, J Pope, 38 Collins Av, Port Monmouth, NJ 07758, USA.

**FINAL 1991 28MHz TABLE**

G0DOO	232	(SSB)	GM4CHX	106
G0JZA	230	(SSB)	G4NXG/M	101
G0OFE	224	(SSB)	G2FQR	91 (SSB)
G0AEV	207		G4YNG	76
G0KDS	207		GM0CEI	55
G4DXW	183		G0DUS/M	54
G4MUW	173		G3ING	52 (CW)
LA0GC	170	(SSB)	G4XAH	43 (RTTY)
G4CI	113		G2AKK	31 (CW)

Congratulations to G0DOO and all the others who made it more than 200. A clean sweep for the G0's! Thanks for taking part - and please keep your 1992 scores - I might start a table again this year.



# VHF/UHF NEWS

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

ONE VERY fascinating aspect of VHF operation is the variety of propagation modes available. Another is the surprise element, when for example, a superb aurora occurs following a spectacular solar flare, or a meteor stream produces an unexpected storm. A welcome illustration occurred on 4 January when there was a brief Sporadic-E opening on 144MHz.

In January, the Quadrantids meteor shower produced good reflections and there were periods of enhanced tropospheric propagation at VHF and UHF. On 50MHz, there were some excellent Es openings to mainland Europe and significant openings to the Americas and Africa.

## PUBLICATIONS

FOLLOWING THE note about the possible demise of the *6 Metre and Up DXer* in the Jan VHF/UHF News, Dave Hardy, G8ROU (DYS), offered to edit it. Meantime, the RSGB Council decided the Society should discontinue publication due to the limited circulation. So Dave is now proposing to relaunch the newsletter as an independent publication, to be known as *The VHF-UHF DXer*... to combine news, views and technical articles".

He plans to have a free, pilot issue available at the VHF Convention on 14 March, and he has offered to send a copy on receipt of an A5-size SASE. Six further issues are planned till the end of this year with future publication depending on support from subscribers. He is QTHR, which for the benefit of newcomers, means that his address is correct in the current *Call Book*.

Ken Hatton, G4IZW (NLD), is the UK agent for the excellent quarterly *DUBUS* magazine. It is edited and published by a dedicated team of German amateurs. Articles are bi-lingual - English and German - and each issue runs to over 100 pages with no advertising. The 1992 subscription is £10.50. Anyone wanting a sample copy of a back issue should send £2.25 to Ken. (QTHR).

## BAND PLANNING

FOLLOWING THE item on 144MHz band planning and packet radio frequencies on page 14, *RadCom* Nov 1991, the Data Communications Committee (DCC) has formally rejected the VHF Committee's 12.5kHz channel spacing proposal. It has agreed to the VHFC's other proposals which were that operators setting up nodes and BBSs should consider horizontal antenna polarization; that operators attempt to reduce their deviation to 3.5kHz and that a recommended set of TNC settings be published.

## REPEATER NOTES

THE JANUARY *Newsletter* of the Aylesbury Vale Repeater Group includes status reports on its three relays, GB3VA (R4), GB3AV (RB2) and GB3BV (RB1); an article on the continuous tone-coded squelch system (CTCSS), with a map showing the Repeater Management Group's CTCSS allocations for the UK and Northern Ireland; advice on dealing with repeater abuse, and Committee and membership details. The secretary of the AVRG is G8BQH. (QTHR).

The Clacton ARC's VHF repeater GB3TE has been on air (QRV) since 17/11/91 on R3 using a Pye R18/T30 combination with modified GB3US Mk 1 logic. The antennas are two half-wave vertical dipoles on a 35ft mast. The station is in the look-out bunker on the roof of the Essex Aviation Society's Martello tower at Point Clear, St Osyth (ESX); locator JO01MT.

The club is awaiting the licence for its UHF repeater GB3CL on RB9; it will be at the same site. The repeaters serve the Tendring area of Essex with good coverage seawards for any maritime mobile stations. For more details send an SASE to repeater keeper Tony Horsman, G0MBA, at 58 Hampstead Avenue, Clacton-on-Sea, Essex, CO16 7HE.

## ROUNDTABLE

THE MARTLESHAM Radio Society is holding its third VHF Roundtable at the BT Laboratories, Martlesham Heath, Ipswich, Suffolk on 12 April. Comprehensive measuring and testing facilities will be available and there will be technical workshops and talks. Refreshments and car parking will be provided. Admission is by ticket only. Send an SAE to Roy Smith, G6GAU, with a list of all in your party - BT Lab security requirement. Roy is QTHR.

## PROPAGATION

IN HIS report for December 1991, Ray Cracknell, G2AHU (HWR), included graphical data on Cycle 22. These show that the sunspot maximum period was remarkably flat-topped and appears to have lasted four years. From Jan 1989 to June 1991 the smoothed sunspot numbers were 150 +/- 10. (These are the 12 month running averages, calculated like the familiar annual inflation figures).

Geomagnetic activity has markedly dropped so, with fewer disturbances, F-layer propagation should remain good even though the cycle is declining. In previous cycles, as sunspot activity has decreased Es propagation has increased, so hopefully there will be more Es openings on 144MHz this year than there were in 1991.

The IUWDS data for January recorded a solar flux of 280 on the 3rd, some 30% more than expected, and remained over 200 till the 11th after which there was a dramatic decline. There was a sharp drop in sunspot activity, too. However, the NOAA in Boulder, USA is predicting another period of high solar activity in April. If correct, there could be Spring openings to Australia and the Pacific on 50MHz.

In normal cycles solar activity rises steeply to the maximum, as happened in 1988, but declines much more slowly after the peak. If cycle 22 follows this pattern the 50MHz band should sustain long distance propagation for a year or two yet. Transatlantic F2 openings may become rare but north/south F2/TEP should occur. Ray wrote: "Please spread the word that this is not the time to decide that the party is over. If you do, you may miss out on a great deal of fun and rewarding results."

## CONTEST NOTE

THE DERBY society, DADARS, is holding its sixth annual 144MHz SSB Contest on 22 March, 1300-1700GMT. Usual RS report, serial number and administrative county exchange. Two points per QSO but club stations G3ERD and G8DBY are worth 10. Each new county is worth one bonus point with countries outside the UK scored as extra counties. Final score is QSO points times total bonus points.

There are single-op and multi-op sections each for low power, 30W maximum output, and full legal power stations. Fixed and portable stations may participate. Entries should be sent to the Society at 119 Green Lane,

Derby, DE1 1RZ by 21 April. If you want a copy of the rules send an SASE to Dave Goodwill, G1VAB, at that address.

## MOONBOUNCE

NO REPORTS of EME activity were received this time and *2M Direct* had not arrived by the deadline. The next perigee weekend is 14/15 March and is a 432MHz sked weekend, but nobody on the 14MHz EME net on 26 Jan knew if the French REF contest was on that weekend. As space is at a premium this month, I won't give the usual moonrise and moonset data since regular EME operators will have their own computer programs.

## 50MHZ

LOTS OF interesting news this time from Ted Collins, G4UPS (DVN). Operation in Czechoslovakia is limited to Class A and B nationals. Although a signatory to the CEPT agreement, visiting foreigners are not permitted use of the band. Licence conditions are 50-52MHz, 20W output, horizontal antennas and a strictly non-interference basis as there is still some Channel 1 TV.

The latest reliable information on the Spanish situation is that there is little possibility of any legitimate activity before the summer. ES5MC (KO30JJ) has been using a 1.8W transverter, loaned by SM0KAK, with a 5-el Yagi and Ted wonders if anyone can donate a transverter and/or an amplifier? ES5MC is Arvo Pihl, PO Box 301, Tartu 202400, Estonia. ESs 1CW, 5QA, 5PC and 5WE have shown an interest in 50MHz.

Now that the Baltic states are independent they no longer use Box 88, Moscow. The Estonian QSL bureau is now at PO Box 125, Tallinn 90, Estonia; the Lithuanian one at PO Box 1000, Vilnius-1, Lithuania, and the Latvian one at PO Box 164, Riga-c, Latvia. The YU3 bureau in Yugoslavia no longer functions. Cards for YU3ZV may be sent to Drago via the Austrian bureau to OE6LOG.

Ivan Nanut's, YT3ET, address is Cankarjeva 76, Nova Gorica 65000, Slovenia. 9H5ET is Brian Cole, 140 St Mary St., Zetjun, Malta. In Belgium, ON1CAK is now ON4ANT and Johan's brother Gees, ON1CDQ, is now ON4GG. They still both live at the old address. Zdeno Sterbacek's, OK2PZW, address is Dvorska 16, CS-67801 Blansko, and Rudolf Tuzin's, OK2ZZ, is Pricni 482/b,



CS-59301 Bystrice nad Pernstejnem, both in Czechoslovakia.

**BEACON NOTES**

CU3URA/SIX (HM68) is a new beacon on Terceira Island in the Azores; it is on 50.0185MHz and was widely heard in North America within hours of switch-on at 1130 on 8 Jan. From Manila in the Philippines DX1HB/B (PK04) is QRV on 50.008MHz. It runs 20W to a J-pole antenna. GB3LER (IP90JD) came on on 11 Jan running 40W on 50.064MHz. The antennas for the 50 and 144MHz beacons were damaged in the December hurricane, so the 50MHz Tx is feeding a dipole.

**ACTIVITY**

A two weeks DXpedition to the South Sandwich Islands in the South Atlantic is scheduled to start on 14 March with 50MHz operation likely from VP8SSI. QSLs for CW and RTTY contacts should be sent via KA6V, while AA6BB will handle the SSB ones.

G4UPS's reports show that in December, 4X4IF worked into G from 0850 on the 21st. Caribbean and central American countries were copied from 1240 with W1-4 and W8 districts heard. Caribbean and VE1 stations were worked on the 23rd. On the 26th, 0840-1000, VS6BG worked most European countries but heard no Gs.

In January, there were daily Es openings to many European areas till the 6th, the 4th being exceptionally good. During that afternoon, Ted noted: "Strength of Es signals intense regardless of antenna direction!" There was Es to DL and OE on the 8th and to CN8 on the 12th, with the ZB2VHF beacon heard at S7, and in the afternoon of the 18th to YU3; I4, CT and CN8 were worked later.

Apart from the Es sessions, 4 Jan produced long and loud MS bursts from the Quadrantids shower. From 1655 there was an F-layer opening to the W9 area, EN52, 53 and EM34 squares; CO2KK (EL83) and NSVC (EM66) were also worked. From 1752 on the 6th, stations in all W call areas, apart from 6 and 7, were heard/worked. Squares worked included EM69, 95 and 99, EN35, 53, 54, 61, 72, 80 and 91 and FM08.

The next day the W1-3 areas were favoured and at 1714, G4UPS heard N6CA who acknowledged Ted but couldn't get his call sign; W2CAP heard both stations. There were further reasonable afternoon transatlantic openings on 8-11 Jan, and minor ones on 15 and 16.

Callsign	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total Points
	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	
G6HKM	65	53	-	-	80	24	40	11	33	7	313
G4FCD	27	22	-	-	85	19	57	17	35	9	271
G0NFH	44	25	30	7	61	17	43	11	13	2	253
G8ESB	9	6	25	6	86	16	46	9	20	5	228
G0EHV	-	-	43	6	78	15	43	11	-	-	196
G4LDR	27	20	18	2	67	14	36	6	-	-	190
G0FYD	10	27	-	-	72	28	-	-	-	-	137
GW6VZW	78	56	-	-	-	-	-	-	-	-	134
G8XTJ	30	22	-	-	53	11	-	-	-	-	116
GI4OWA	12	33	-	-	51	18	-	-	-	-	114
G3FIJ	1	1	10	2	52	11	21	3	3	1	105
G4OUT	-	-	30	6	51	15	-	-	-	-	102
G8LHT	0	8	25	4	24	17	8	3	6	3	98
G6MXL	10	15	6	3	14	6	24	5	11	4	98
G8PYP	15	32	1	1	24	11	8	4	-	-	96
G3FPK	-	-	-	-	74	20	-	-	-	-	94
G7JAF	-	-	-	-	47	12	-	-	-	-	61
G7CLY	-	-	-	-	40	11	-	-	-	-	51
G6ODT	-	-	-	-	20	6	12	3	-	-	41
GW7EVG	-	-	-	-	24	7	-	-	-	-	31

British counties were those listed on page 64 in Jan 1991 *RadCom*, but excluding HBN; 77 in all. Up to three different stations were allowed in all 12 GM regions. EI counties were excluded. Countries were the usual DXCC ones plus IT9.

The January issue of *Six News* has a bright red cover to commemorate the tenth birthday of the UK Six Metre Group. As usual, the journal, edited by John Livesey, G0JLL, and Neil Carr, G0JHC, is full of varied and interesting items. A new section is an Interference Register. This lists known sources of interference to 50MHz reception, including a video recorder and a telephone answering machine. For details of membership of the group send an SASE to G3WOS, (QTHR).

**70MHZ**

VIC MADDEX, G0RAS (BUX), noting the usual lack of 70MHz news, wrote that he, G8YPK and G0HND are newcomers to the band. They monitor 70.260MHz using AM from home and mobile in BUX, ESX, HFD, LDN and even up to LNH on occasions. All are keen to arrange skeds; G8YPK can be contacted at GB7ESX and G0RAS at GB7OXF.

**144MHZ**

STUART WISHER, G8CYW (TWR), wrote for the first time to report a very unusual event in the afternoon of 4 Jan. He was monitoring 144.300MHz, with his 9-el Yagi pointing at 330°, when he heard Italian-speaking stations giving contest exchanges. At 1609 he contacted I0FHZ (JN62AP) with RS59 reports each way; the stations faded out abruptly at about 1613.

On his QSL card, I0FHZ stated he was running 300W to four 15-el Yagis, beaming 305° - the true azimuth is 329°. He suggested it was F1 propagation but it was almost certainly an Es QSO. There was exceptionally good Es propagation to Italy on 50MHz at

the time, as previously reported. Nevertheless, it was a very rare contact; QRB (distance) 1,694km. Stuart can dine out on this one for years!

Reg Woolley, G8VHI (LEC), reported that DD0VF (JO61) worked GW7DHW (IO82FJ) at 1629 the same day, again with RS59 reports, but Stefan thought it was an MS burst. The QRB is roughly 1,200km but plotting these two paths on a map did not reveal a common reflecting point. So was it an Es QSO?

There was some welcome tropo at the end of December. On Christmas Day, Midlands and South Wales stations worked to north Spain in the morning. There was a repeat performance on 27 and 28 Dec. The EA1VHF beacon on 144.867MHz is now QRV from a new site 500m ASL in IN53 and has been putting in a good signal.

On 1/2 Jan the band was open in many directions. Colin Redwood, G6MXL (DOR), worked into JO31, 32 and 41; Mark Holloway, G4YRY (DOR), contacted SP6HEI (JO81) and Lyn Leach, GW8JLY (GNS) worked stations in DL, EA, EI, F, HB and PA. In more good tropo on 10/11 Jan, Lyn's best DX was DL1KUS (JO63), a new square.

The period 13-15 Jan brought more fine tropo. After working lots of DX from home, GW8JLY went out portable (IO81LS) on the 15th and netted ten each SPs and OEs, 12 HB9s, an IW2, 17 OKs, five OZs, assorted F, ON and PA stations and 276 DLs; sounds like a contest log. G4YRY also worked lots of similar DX.

New contributor Edward Allely, GW0PZT (GDD), is ex-GW7LAG and the son of GW3KJW. He listed 35 QSOs with DL, EA, F, HB9, OE and ON stations on 14/15 Jan. On the 19th he contacted

<b>50MHz Annual Table - 1991 Final Placings - Top Four</b>				
Callsign	Counties	Countries	Ctr	Pts
GW6VZW	78	56	134	
G6HKM	65	53	118	
G0NFH	44	25	69	
G8XTJ	30	22	52	
<b>70MHz Annual Table - 1991 Final Placings - Top Four</b>				
Callsign	Counties	Countries	Ctr	Pts
G0EHV	43	6	49	
G0NFH	30	7	37	
G4OUT	30	6	36	
G8ESB	25	6	31	
<b>144MHz Annual Table - 1991 Final Placings - Top Four</b>				
Callsign	Counties	Countries	Ctr	Pts
G6HKM	80	24	104	
G4FCD	85	19	104	
G8ESB	86	16	102	
G0FYD	72	28	100	
<b>430MHz Annual Table - 1991 Final Placings - Top Four</b>				
Callsign	Counties	Countries	Ctr	Pts
G4FCD	57	17	74	
G8ESB	46	9	55	
G0EHV	43	11	54	
G0NFH	43	11	54	
<b>1.3GHz Annual Table - 1991 Final Placings - Top Four</b>				
Callsign	Counties	Countries	Ctr	Pts
G4FCD	35	9	44	
G6HKM	33	7	40	
G8ESB	20	5	25	
G6MXL	11	4	15	

EA1TA, EA1BCB and EA1DKV/P between 1230 and 1302. Thanks also to Terry Chaplin, G1UGH (SFK), Richard Girling, G4FCD (OFE), Shane Hogarth, G7EWL (NHM) and Andrew Lambert, G7JAF (BUX) for reports.

Several contributors reckoned the Quadrantids shower was good this year. Arlen Pardoe, GM0HUO (FFE), completed on CW with OH2BAP and OH3EX (KP20), HG7PL (JN97) and DL1DSB

continued on page 20 ►



# RSGB NATIONAL VHF CONVENTION

Sandown Exhibition Centre, Esher, Surrey

**SATURDAY 14 MARCH 1992**

- One Day Exhibition and Lecture Programme
- Specialist Groups
- Full Lecture Programme on VHF, UHF and Microwave Subjects
- Morse Tests (by prior booking)
- Presentation of Trophies
- Comprehensive Trade Exhibition

## PROGRAMME

- 1030 Convention opens. Enter through main entrance.  
Refreshments. Snack bar in the hall will be open from 1100 to 1800 and the licensed bar will be open throughout the convention.
- 1130 AGM 6m Group.
- 1330 Convention address and presentation of trophies by RSGB President J T Barnes, G13USS.

## LECTURE PROGRAMME

Detailed Arrangement for Lectures will be Notified on Arrival

	A	B	C
1415	VHF/UHF Propagation <i>Dr Geoff Grayer, G3NAQ</i>	DX Packet Clusters <i>John Clayton, G4PDQ</i>	Amateur Radio Observation Service <i>Geoff Griffiths, G3STG</i>
1515	Amateur Satellite Information Update <i>Ron Broadbant, G3AAJ</i>	Novice Licence — the First Six Months <i>John Case, GW4HWR</i>	47GHz Equipment <i>Arnold Mynett, G3HBW</i>
1615	VHF Contests Committee Forum	Remote Imaging Group AGM <i>Henry Neale, G3REH</i>	Linked 1.3 and 10GHz TV Repeaters — GB3TV/GB3TG <i>Dave McQue, G4NJU</i>
1715	Lecture Sessions End		
1800	Trade Exhibition Closes. Convention Ends.		

## ADMISSION

Admission will be by payment on entry as follows:

Convention and Exhibition £2.00	(over 65s)	£1.50
	(under 18)	£1.00
	(under 14)	Free

## ACCESS MAP TO SANDOWN PARK

### RAIL TRAVEL:

British Rail  
WATERLOO TO ESHER

### TALK-IN STATION:

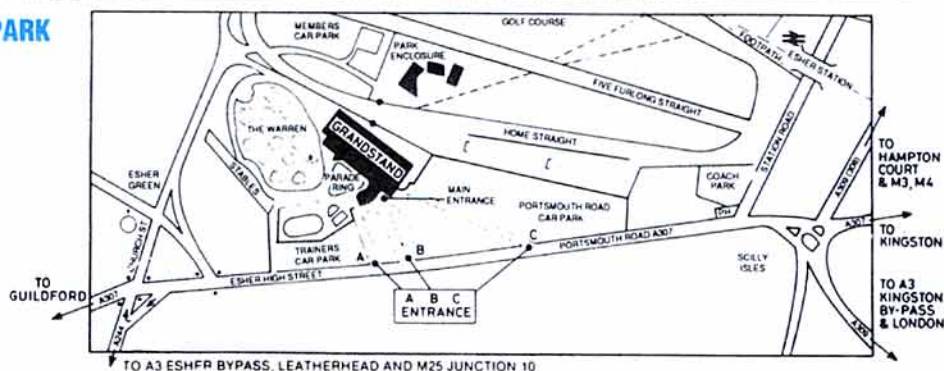
GB2VHF:  
Channels S22 SU22

### STAND BOOKINGS:

Les Hawkyard G5HD  
Tel: 040-928342

### DETAILS:

Geoff Stone G3FZL  
Tel: 081-699 6940



Map by courtesy of United Racecourses



# QSL

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

● Mr Green, GW3MRI, is no longer RSGB Bureau Sub-Manager for the GW0, 1, 6, 7, and 8 cards. All GW cards now go to Mr K Hudspeth GWOARK, 67 Bloomfield Road, Blackwood, Gwent, NP2 1LX.

● There is a new RSGB Bureau Sub-Manager for the GORAA-RZZ series: Mr A D Robinson, G0GRA, 'Arandale', Gainsborough Road, Gate Burton, Gainsborough, Lincs, DN21 5BA.

● Because of the troubled situation in Yugoslavia we are holding back outgoing cards for that country until the position becomes a little more clearer. This is despite an official looking letter from YU asking for cards for YU2, YT2, YZ2 and 4N2 (Croatia) to be sent to a different address. It might be

of help if I explain the position the bureau finds itself in. The only benchmark we have for addresses of official QSL bureaux is the IARU approved list and we stick rigidly to that. You can imagine that if all bureaux deviated from that list and sent cards to other addresses as a result of appealing and authentic looking letters from overseas then chaos would result. We therefore take our advice from IARU and are holding onto the cards for the time being.

● To update readers on the bureau position in the former USSR, the situation for Latvia, Estonia and Lithuania has changed. New bureaux have been set up in those newly independent countries. For cards already despatched there is an agreement between the Central Radio Club in Moscow and the new bureaux to ensure that cards sent to Moscow are forwarded.

● Latest on the GB1MIR card is that we have received some designs from the printer and we are in the process of selecting one. Then its back to the printer for a final proof and colour selection. Once we reach that stage its

over to the printer. We will try not to keep you waiting too much longer.

● Readers may be interested to know how other QSL Bureaux of the world operate and we will try and bring you details of some in forthcoming columns. As a start the bureau run by the Deutscher Amateur Radio Club (DARC) is one of interest. The Bureau services about 1200 local clubs whose members receive a monthly

despatch of cards from the central bureau. All QSL cards used by German amateurs have to be magnetically coded in order that they can be read, and sorted by a special code reading machine. DARC is currently installing an improved magnetic reader. The machine sorts the cards into boxes allocated to each club. The bureau currently employs ten part time staff to administer its operation which is based at Baunatal.

**John Hall, G3KVA**

# MORSE

The first "M" prefix callsign to be operated from the United Kingdom

\*MORSE was operated by members of the--  
Ariel Radio Group (BBC), Cheltenham Amateur Radio Assn.,  
Mid-Sussex Radio Club, First Class CW Operators Club,  
Marple Contest Club, Darwen Amateur Radio Club,  
Darley Amateur Radio Club, Gravesend Radio Club,  
FISTS CW Club and the Verulam Amateur Radio Club.\*

QSL to PO Box 599, Hemel Hempstead, Herts HP3 0SR, UK.



*Celebrating the  
Bicentennial of  
Samuel F B Morse  
1791-1991*

For those awaiting cards from the MORSE operation last year, they are on their way. I have one of the cards in my possession and it is reproduced here. All credit is due to David Evans, G3OUF, and the various clubs who were responsible for this operation.

## VHF NEWS

*continued from page 18*

(JO61). He thought the peak was around 0003 on 4 Jan. GW8JLY suggested it was 0002 and Lyn completed on SSB with I1DMP, I5JUX, IW5AVM, IV3HWT, I4XCC and YU2PT.

### 430MHZ

THE POWER restrictions hurriedly requested in December put

the proverbial 'kibosh' on activity for those north of latitude 53°. However, Rik Royall, G8ESB (YSN), did manage to get FC1PAU to QSY to 434.2MHz to make a QSO. G4FCD enjoyed the lift on 13-15 Jan making dozens of contacts with F, HB, LX, OE, OK and OZ stations. G6MXL worked DL and F stations on the 13th, JN58 and JN69 being new squares.

### 1.3GHZ

G4FCD WORKED OE5XBL (JN68) in the mid-Jan lift and netted G6LEU (CNL) for a new county. G6MXL contacted DF6IY (JN48), FC1BJD (JN08) and FC1EZQ (JN27) on 13 Jan and was pleased to hear some reasonable activity. G8ESB now keeps a regular sked with G6JQV (DYS) at 1900 local time on Monday, Wednesday and Friday, and 1830 on Tuesday and Thursday.

### DEADLINES

NOT A bad start for the New Year. Please send all your news and claims for the **May** issue by **26 March** and for the **June** edition by **23 April**. If you can access BT Gold, don't forget my mailbox is 76:MSX021. See you at the Convention.

## HF NEWS

*continued from page 16*

- SASE please. Special 'streamer' QSLs for QSOs with R6E are available from UA6HPR for US\$4.00 or eight IRCS.

### SUOMI 75 VUOTTA AWARD

To qualify for this you have to work 75 Finnish stations. during the calendar year 1992. Europeans gain two points for each Finnish station worked - others three. Each station may be worked once per day. Endorsements are available for CW, SSB, VHF, and UHF. Send full details of QSOs together with US \$5.00 or ten IRCS to Jukka Kovanen, OH3GZ, Varuskunta Rak.47 AS 11, SF-11310 Riihimäki, Finland, no later than 31 January 1993.

### WARC 79 AWARD

New rules have been announced for this certificate which should have finished being issued at the end of 1990. Applications may now include QSLs for contacts between 1 July 1989 and 31 December 1991, and they may be submitted until 31 December 1992. Requirements are QSLs

from 79 stations on 10, 18, and 24MHz (including at least one from each of the 10 Japanese call areas). Single-band endorsements are available. Send a list of QSLs showing time, date, frequency, mode, signal report and location of station worked. This may be certified by two other amateurs or an IARU Member Society award manager. Send the list, plus 10 IRCS, to Japan Amateur Radio League, 14-2 Sugamo 1-chome, Toshima-ku, Tokyo 170, Japan. Listeners may also apply for this.

### S6S

QSOs with at least one station located in each of the six continents since 1 January 1950. Only single-mode - CW, SSB, RTTY, or SSTV. Band endorsements available for 3.5, 7, 14, 21 and 28MHz.

### THANKS

FOR THE news items obtained from the *Lynx DX Group Bulletin* (EA2KL), *DX'press* (PA3DZN), *DX-NL*, the *Ex-G Radio Club Magazine* (WA8GTA), the *Long Island DX Bulletin* (W2IYX), and the *RSGB DX News Sheet* (G4DYO). As mentioned before please send news for the **May** issue to reach me no later than **19 March**.

## RSGB National VHF Convention

Sandown Exhibition  
Centre, Esher, Surrey

**Saturday 14  
March 1992**

See page 19 for details



# HF F-LAYER PROPAGATION PREDICTIONS FOR MARCH 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
** EUROPE	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802	000001111122 024680246802
MOSCOW	....467762..	....688884..	...38999971.	...58888993.	211776667984	865543345799	875211112578	+42.....25+
MALTA	....577764..	....7888861.	...29999993.	1..588889962	531876678997	997754445899	897421113689	+5.....3++
GIBRALTAR	....155443..	....3776751.	...69988883.	...88889961	32.387777995	885765445799	99863222589	+++3.....2++
ICELAND	....2221..	....24443..	....577761.	....1788884.	1...57778883	652365456788	997632223568	+++3.....23+
** ASIA								
OSAKA	....361.....	....1673.....	...277421...	...37543321.	...152125653	....2...2574	.....351	.....2.
HONGKONG	....268862..	....3788742..	...26766751.	...145457731.	2...12125875	2.....2686	.....364	.....3.
BANGKOK	....3788872..	....4788884..	...24767871.	...25457831	3...2125886	4.....2688	1.....367	.....34
SINGAPORE	....3788872..	....4688884..	...24667871.	...15457842	3...2125886	3.....2688	1.....366	.....33
NEW DELHI	....488883..	....578886..	...44666721.	1..1223457432	521..1125787	73.....2689	61.....367	3.....34
TEHERAN	....5888882..	....7778894..	...654668721	2..2522457853	6342..125888	973.....2689	751.....367	52.....34
COLOMBO	....5888883..	....5678895..	...335668821	2...112457953	62...125888	72.....2689	5.....367	2.....34
BAHRAIN	....5888983..	....77788961.	1..644668842	312422447975	8541..115899	973.....2689	751.....367	52.....34
CYPRUS	....4999996..	....69999982.	1..888889952	411876778985	865643456899	996311124789	8841....1478	+5.....4+
ADEN	....6++++961.	....766789832	31.633468975	632411247998	9751...15899	983.....2688	761.....367	53.....34
** OCEANIA								
SUVA/S	....1332..	....35542..	....2566651.	...14545772.	...45312572.	....42...25..	...1.....2..	.....
SUVA/L	32..531..175	43.174311386	331485433774	122674334862	..275211473.	..42...15..	...1.....2..	.....
WELLINGTON/S	....14542..	....366542..	...1666675..	...37545772.	..55212574.	..32...252.	...1.....2..	.....
WELLINGTON/L	22..2...24	43..4.....46	442262...166	3334731..374	..13652..2651	..42...152.	...1.....2..	.....
SYDNEY/S	....2787641..	....4887763..	...68766861.	...575457821	..252125862	..2...2651	.....32.	.....
SYDNEY/L	....21...22	1..431...44	221.7521..76	221175322286	..252113573	..13...144.	.....22.	.....
PERTH	....5888531..	....5888753..	...466667621	1..245457853	3...12125887	2.....2686	.....363	.....3.
HONOLULU	....1.....	....131.....	....21.362..	...1311572..	..112431155..	..352...22..	..13.....	.....
** AFRICA								
SEYCHELLES	...56688551.	1..666787742	31.433568975	632211347998	973...15899	961.....2689	73.....367	5.....34
MAURITIUS	...58+++9721	1..667889953	411433668986	742211347998	973...115899	951.....2689	73.....367	5.....34
NAIROBI	1..587888842	2..666689975	631633368998	863411147999	9961...15899	984.....2588	772.....366	54.....33
HARARE	2..3788+9964	41.566689986	741633368999	973511147999	9962...15899	985.....2588	772.....367	54.....34
CAPETOWN	2..2888++975	41.487789998	74.664468999	972732237999	99651..14799	9972...1589	784.....267	55.....34
LAGOS	42.19+++986	64.286689998	972573337999	994751116999	99872...3799	8985...589	7762...267	453.....34
ASCENSION Is	32..8+777755	54..97667877	873285334899	995572112799	99975...599	88852...279	7763...57	444...24
DAKAR	21..7+++974	43..88767996	773186433899	996474112799	999751...589	98862...279	7763...57	444...24
LAS PALMAS	....69999951	....89999972	23.198888996	562388778998	997776555799	999743222589	88752...268	++52...3+
** S. AMERICA								
Sth SHETLAND	21...48++974	43...15888986	763236667788	986455346678	899752113357	78862....24	4663.....2	234.....
FALKLAND Is	11...16+++874	33..37887886	763166665688	886375333478	99975211..147	89862....15	6863.....2	354.....
R DE JANEIRO	11...8866773	22..28766786	663147533588	885365211279	999752...58	98862....27	7763.....5	543.....2
BUENOS AIRES	....26+88873	22..47876785	552167643478	885375421268	9996521...37	89862....5	6873...2	354.....
LIMA	....888862	....1.876663	221.42653246	554163421.27	8985521...5	79863...2	5773...2	254.....
BOGOTA	....888861	....1876663	211...2653356	443123421.27	8874421...6	89863...3	6773.....	354.....
** N. AMERICA								
BARBADOS	....6888862	....7876774	221.17643377	553135411158	9985521...27	99863.....5	7873.....2	554.....
JAMAICA	....887761	....876663	11...2653356	432.23431127	8873421...5	79863...3	5773.....	254.....
BERMUDA	....2887861	....4877773	11...6654576	432.25431267	8863431...37	89863...4	6773...2	344.....
NEW YORK	....57775..	....1677762	1...2865575	321..4443357	77523311..26	78853...3	5763...1	243.....
MEXICO	....7774..	....177652	1...365333	321.21342113	57524211...1	48853...4	1663...3	33.....
MONTREAL	....46674..	....1677762	1...2665675	321..4443467	77522311.136	78853...4	4763...1	244.....
DENVER	....1453..	....26641..	1...46543	21..1..45333	56313.112..2	37853...1	1463...2	24.....
LOS ANGELES	....452..	....663..	...27532	21..1..36322	353131.13..	15743...1	263...3	3.....
VANCOUVER	....11..	....132..	....3541	21...15542	34213..14212	25652...1	253...2	2.....
FAIRBANKS	....1122..	....1122..	....1122..	1...21123442	331242114553	23453...2321	133...1	.....

The provisional mean sunspot number for January 1992 issued by the Sunspot Data Centre, Brussels was 149.3. The maximum daily sunspot number was 219 on 30 January and the minimum was 71 on 18 January. The predicted smoothed sunspot numbers for March, April and May, are respectively: (classical method) 126, 123, 121; (SIDC adjusted values) 135, 133, 132.



# ANNOUNCING THE IC-2SRE A NEW HANDHELDS WITH WIDB

Until now, you needed to carry both a transceiver and a wideband receiver to enjoy a QSO and wideband receiving.

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\*specification guaranteed: 50 - 905.

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Appearing simultaneously are the clock and transmit frequency for total monitoring capability.

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# AND IC-4SRE, TWO EXCITING BAND RECEIVE CAPABILITY

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on March  
7th &  
8th



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- One-band indication for simplified operation.
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- A variety of tuning steps separately programmable for each band.
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# SWL NEWS

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

**A**S THIS IS BEING written at the start of the New Year, let us review 1991 through the eyes of two of the column's most regular contributors - Robert Small, BRS8841, and David Whitaker, BRS25429. Although I have not had space for any tables this year, Robert and David have kept their own records and Robert was the 'unofficial' winner of the 1991 Countries Table. Robert heard 1046 band-countries, while David managed 1020 but also heard 140 countries on 18MHz. Robert reached the 100-country mark on 1.8MHz. David failed to hear S2 and XW on the 'traditional' bands but heard them instead on 18MHz. Robert's all-time total is now 1603 countries as follows: 1.8MHz - 102, 3.5MHz - 262, 7MHz - 291, 14MHz - 330, 21MHz - 320 and 28MHz - 298.

## FESTIVE PICKINGS

QUITE A FEW listeners took some extra time during the holiday period to monitor the bands, which appeared to be in quite good condition. Stations from XX9 appeared on 14, 21 and 28MHz. The real activity, however, was on the LF bands, where SWLs strove to boost their heard scores.

Some took advantage of the holidays to monitor the LF bands at around sunset (grey-line propagation time). In years gone by the mid-afternoons were really good

for exotic Pacific and Far East DX and maybe we will have a taste of superb LF conditions as we get further in to the current cycle. It was a disappointment not to tune the receiver to the top end of 3.5MHz and hear good DX rolling in from KG6, VS6, ZK2 and ZL.

This year's 'grey-line' season was not too bad. Between 26 December and 3 January, seven JAs, four W7s, three ZLs, a VE7 and a VS6 were heard on 3.5MHz between 1530 and 1645. Later in the afternoon some Africans appeared, the pick being A22BW and 7P8DX. JAs were audible on different evenings between 1900 and 2200 and VS6VO was heard again at around his sunrise at 2130. Signals from North America and the Caribbean could be copied at good strength from 2200 onwards, with some particularly loud signals heard at 0100 on most days.

Most of my reporters appear to have favoured late night as opposed to early morning sessions on 3.5MHz, so some good DX had been missed. For example, JAs on the long path at 0800 and ZLs and W6s on the short path until 0800. On 7MHz, only two W6s were reported at about 1515, but from 1700 a number of Russian Republics could be heard. From sunrise the band was good to the West, with DX still audible at 0930. One particularly worthwhile frequency to monitor in the mornings is 7.184MHz. This is the home of a seemingly never-ending stream of DX. Another frequency to monitor is 7.158MHz from about 0600. A great deal of Caribbean DX seems to congregate there. When I listened on 1 January at 0830, V63JC was a surprisingly good signal.

By the time this is read, the longer days will render much of this DX impossible but keep a note of 'when and where' in readiness for the next festive break.

Mick Toms, BRS31976, reported some good DX on 50MHz as well. David Whitaker and I also monitored the band over the holiday period. We all caught a very good Sporadic-E opening mainly to OK, OE, YU and DL on 4 January from around 1415 until 1755. With rumours of the Germans losing the band in the summer, a chance was taken to collect some of the squares in the '4' and '5' lines. However, the OKs and 2 LXs proved to be the best catches and provided new countries for Mick and myself.

Mick pulled off the masterstroke this time being home on the late afternoon of 6 January to catch a very good Stateside opening. Some of the better DX

was K0US (EN10), KA2DRH/4 (EM64), K9HMB (EN52), WD5GEN (EM14), K9VGE (EN52), WA8LXJ (EM79), WW8M (EN72), KE9I (EN61), K4CKS (EM74) and WQ4V (EM95). This opening took Mick's squares tally to 166. Both he and David had claimed the UK Six Metre Group's '6x6' award for hearing squares and countries on 6m. Mick claimed a 'Grade 3', and David a 'Grade 4' (the top award, Grade 6, has been claimed by very few 6m enthusiasts so far).

On the 50MHz countries front, I have 84 heard and 62 confirmed while David has 57 confirmed. Mick has 58 heard but very few confirmed due mainly to the fact that he took rather a long time ordering some fresh QSL cards. It is good to know that Brian Underdown, BRS93818, will have 50MHz capabilities by the time this is read, and it would be interesting to catch up with Martin Parry's, BRS52543, recent exploits on the band and learn of his countries and squares tallies.

## OTHER HF NEWS

ACCORDING TO reporters, conditions on 14MHz were not too good. Many Europeans were audible during the day, but the band closed very early. However, some interesting DX was heard in the shape of VP5/SM3TLG and CE0YAA. 21MHz was rather poor too, but EP/HA5BUS, P29JR, BV2CD/7 and 9M8FH had been reported.

However, monitoring 28MHz proved fruitful, with DX heard from Africa and the Far East, and North America later in the day. Ian, GM1XOG, wrote to remind listeners of the DX Net which assembles on 28.510MHz at 1300. He copied some interesting DX during the Christmas holidays, eg CE9AA, 7Z1AB and 9X5SW. Most people seem to have their ZA1A cards now to confirm one of the best DXpeditions in recent times. Once again, the WARC bands provided some good DX, Robert Small mentioning ZS0Z (Penguin Island) and JM1GLZ/JD1 (Minami Torishima) on 18MHz. 24MHz gave Robert some useful DX, including OK1IAI/YA and ZS0Z.

## OTHER VHF NEWS

BRIAN UNDERDOWN, BRS93818, reported a good year on 144MHz: He heard 155 squares in his first full year on the band. On 3 December he found some tropospheric propagation to OE and OK, followed by an

opening to HB9 and mid-France on the 5th. On the 8th, there was a good opening to France, the JN59 area of Germany and several HB9s. The 9th gave him propagation to Northern Germany, while the 14th gave him some meteor scatter loggings to OH, SM and OK. Just for good measure, he copied EAs in IN53 and IN73 around 1800 on 22nd.

## MARCH CHALLENGE

LAST MARCH, I ran a Challenge aimed at seeing what could be logged on 14MHz between 1 and 31 March. Unfortunately, very few listeners entered. However, I will persevere. This year the Challenge is for 21MHz between 1 and 31 March. Points will be available as follows: stations in Oceania count 12 points; Africa 10; Asia 8; South America 6; North America 4 and Europe 2 points. Only one station from each country may be claimed for points. I hope that beginners as well as established listeners will take part. This Challenge is only for British Isles listeners. If there is sufficient interest, I will donate a prize. Log to me at the above address, postmarked no later than 20 April 1992.

## CONTEST RESULTS

THE CRAY VALLEY Radio Society has passed on details of its SWL contest. The Committee was so disappointed at the response last year that it has withdrawn its support for this year's event. This is very sad indeed. There were only three entries in the SSB leg - BRS28198, ONL383 and Mathias Kropf, a German SWL. ONL383 was the only entrant to the CW event. I am advised that no certificates will be awarded.

## BARTG RTTY CONTEST

THE 1992 BARTG Spring Contest takes place from 0200 on 21 March to 0200 on 23 March. There will be an SWL section. Full rules are available from John Barber, G4SKA, 32 Wellbrook Street, Tiverton, Devon EX16 5JW.

## FINALE

PLEASE CONTINUE writing and I would welcome some more photographs. Let me finally acknowledge the SWL poem forwarded by BRS30144. It will be featured in the column when there is sufficient space. Deadline for the May issue is 10 March.

## SWL BOOKS FROM RSGB SALES

### Complete SW Listener's Handbook

Members price: **£16.50** inc p&p

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# Novice NEWS

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

**N**EVILLE, 2E1ACS, has featured in this column before, when it was reported that he was interested in working ATV (Amateur Television) on 24cm.

On Saturday 14 December he received pictures direct from PA3LRS and PE1DWQ, but he could not get back to either station due to the limitation on Novice power output. He did, however, work PE1DWQ on 433.400 FM with a signal report in both directions of 5 3.

He modestly asked if he was the first 2E1 station to work into Holland on 70cm. This was the first report that I have received, but can anyone beat it? If so - please let me know.

## US NOVICE FREQUENCIES

A NEWS SHEET has reached me reporting on the annual Novice Roundup which ran from 25 January to 2 February. This is a US event, but for all hopeful DXers here is some information to note for the future.

The 80 metre Novice frequencies have changed since last year's Roundup and the US Novice HF allocations are now:

- 3.675 - 3.725MHz (CW)
- 7.100 - 7.150MHz (CW)
- 21.100 - 21.200MHz (CW)
- 28.100 - 28.300MHz (CW)
- 28.300 - 28.500MHz (SSB & CW)

## A GENEROUS OFFER

DEL, G0DLN, wondered if the prevailing noise on 80 metres after dark deters Novices from calling on that frequency as he had never heard any. On a practical note he suggested that a narrow CW filter may be the answer, adding that audio filters are easy and cheap to make.

Generously, he made the offer to any Novices in the Croydon area that they were welcome to go and operate his HF station for

a couple of hours on Saturdays. If you would like to take him up on his kind offer, write to me and I will pass your letters on.

He also suggests that other RSGB members might like to provide the same facilities to other Novices. If you are interested in helping Novices gain operating experience, let me know and I will endeavour to compile a list covering all areas. Many amateurs already do this but there must be Novices who do not have anyone to contact.

## SPECIAL EVENT STATIONS

ON A SIMILAR note to Del's offer, was the one reported in January from Alex, G0DZH, concerning Coastal Defence stations. He has sent a list of proposed stations - I will include them nearer the time, but a chance to meet some of the amateurs involved will arise at the Sandown Rally on 7/8 March.

We all know that local clubs invite Novices to their various activities, including special event stations, but this is the first invitation on such a wide scale. It may be that Novices do not know of these possibilities until after the event.

Please help me to advertise them - and do yourselves a possible favour too. This column may reach parts that word of mouth cannot reach! By reporting your success, you may also encourage others to do the same.

## EMMA CALLING

MIKE G3OIL, made a plea to all amateurs to listen - or call - on 51.26 for Novices and enjoy a QSO as reported last month. He also introduced his daughter Emma. The photograph shows Emma thoroughly enjoying herself using her callsign 2E1AFC for the very first time, talking to Ted, G4UPS, on 6 metres.

Emma passed the September exam gaining the 2E1 callsign and became quite active on 6m, making a lot of new friends. Sometimes she operated on 10m using Mike's callsign and supervised by him. She passed the Morse test and gained her 2E0AAX callsign, then wrote to me before she even gave it an airing! If she had used it first, she may never have had time to write, so I applaud her self-restraint!

Emma's very first QSO (using her dad's Icom 757) was on 1 November with PA3EUI, when

there was an aurora. The next day she contacted four 'G' stations - the start of a counties list. Two Scottish stations followed and on 9 November, Emma's fourteenth birthday, she 'collected' Austria.

Using her own callsign on 6m, she had worked eighteen stations - including Yugoslavia and using Mike's rig (under his supervision) she worked the USSR, Brazil and North America on 10m.

Her other hobbies include dancing, singing, playing the piano, recorder and drums (not at the same time) in a group, is learning Russian and French (already speaking fluent Swedish) and enjoys constructing too!

She has one ambition however. To work another Novice - or even hear one. I hope by the time this is printed, that ambition is fulfilled and the frequency where you call to find Emma is 51.26MHz.

## NOVICES, WHERE ARE YOU?

STAN, G3LQI has written to ask if I can tell him where to find Novices. He has regularly listened on 3.565 to 3.585MHz and called and called CQ but with no success. As a Morse 'fanatic' (his own words) and a Morse examiner, he would dearly like to meet and encourage Novices into the joys of 'brass pounding'.

At the time of writing he has worked many American Novices, but has not heard a British one. Nor has he heard of any Novices who have taken the test, and wonders where they are.

As Emma shows above, class 'A' Novices are rather thin on the

ground - but there are some around. What makes Stan even more interesting is the fact that most of the time he is /M on his narrowboat, cruising round England's waterways.

We all fully realise that there are other things in life that must be done - like working for a living, housework, school, homework and sleeping but come on Novices, you will make many amateurs happy if you spread yourselves about a bit. In Stan's case, think what you will learn about the beautiful countryside. He is currently in Hertfordshire and uses low power like yourselves.

## FUND RAISING FOR CHILDREN IN NEED

THE CHILDREN In Need appeal often benefits from sponsored radio events. The Old Swinford Hospital School in Stourbridge held such an event using the special event callsign GB2OSH.

With the holder of the school callsign (G4CVK), Clive, G4IEB, in charge, the average age of those operating was fifteen and all hold a class B licence. Simon, Michael and Mark, who took the December Novice RAE, were able to pass two-minute greetings messages and helped with the logging.

Over £135 was raised for Children In Need at this event, bringing the total for the four years' efforts to over £400. Very well done.

The new term in September brought a new subject for many - Morse - and one pupil took the latest RAE exam, I hope successfully.

In operation for the past 22



Emma, 2E1AFC, (14) can be found on 51.26MHz.



years, the school club enters several contests and runs special event stations for school open days and JOTA. Hardly surprising then that the hobby has gained many new members from the ranks of past pupils. A variety of aeriels top the main teaching block and the present favourite means of communication is computer operated RTTY.

The school would like to try some satellite working next, and they are looking for someone in the West Midlands to give a little help. If you can assist, please contact Clive at: Creative Technology Centre, Old Swinford Hospital, Hagley Road, Stourbridge DY8 1QX, or phone him on 0384 392006 (school) or 0384 370025 (home).

## EVER BEEN CONNED?

IT STARTED when Peter, G0JKW rang me. A local Badger (junior wing of St John's ambulance) group had been doing an extended project on 'communicating', incorporating postal and telephone services, radio and TV, semaphore etc. Paul, G7GFT, one of the parents, had asked Peter if he could suggest someone to talk to the youngsters on amateur radio.

As Badgers are seven years old or younger, they were looking for someone who could talk at the right level. Yours truly sprang to mind.

Older members were also present, and all agreed that the specially set up station and brief talk were a resounding success. Location and conditions were poor, but using the Halifax club callsign, GX2UG, the youngsters could hear a few stations, and a couple of them even managed to overcome their shyness to give their names to Ken, G0ITI, who was sitting outside in his car.

Paul's son had the next bright idea. The top class of his school had been on a conducted tour of Granada studios, and follow-up work had been completed and he wondered if . . . Can you guess the rest?

Rawson Street Junior School is quite large and there are three classes of about 35 in each year group. All the top Juniors had been on the trip and all of them were eager to learn more.

Phone calls to the school settled a date and time - this was time-tabled for the whole morning from 9.30am until 12. Peter owed me a favour after the Badger



Peter, G0JKW, with pupils of Rawston Street Junior School.

night so he 'volunteered' to come, bringing his HF gear and a portable aerial. He is into contesting and therefore was well prepared - and Ken, once again, prepared to sit in the car if necessary.

Each class had a short talk from me before moving on to the specially set-up station, and the youngsters asked many intelligent questions. One boy already knew all the letters and numbers in Morse and could read them quite quickly. A couple more had built their own simple working projects - another showed me his electronics kit with a working example inside. All the children were extremely well-behaved and showed great interest in the subject.

The station (GX2UG again) was a success too. Foreign stations were heard in conversation in English and other languages - surprise was expressed at the number who spoke English although it was not their national language. Ken called into the RNARS net, as a member and knowing many of the others, and they were extremely kind and let him disrupt the entire proceedings, giving the youngsters a chance to speak very briefly.

It was a very enjoyable morning - I would recommend the experience to anyone - and, who knows there may be future recruits amongst those youngsters.

The sequel: The local newspaper descended on me and wrote a very good, balanced report, but the reporter admitted that he knew nothing about anything technical

so could not make anything up. At the interview, I made the point that any school wanting a similar performance must have done the preparatory work *first*. After 'head-butting' a cupboard and being sewn together again four days earlier, I refused to appear in the photograph with the children. Sorry!

Perhaps there is someone out there who could give some time to a local school, youth organisation, or other group for something similar? If so, please don't hesitate - you will find it most rewarding, I would be happy to help if I can.

Second sequel: Three potential Novices have phoned following the press report.

## SCROOGE'S CORNER

BY NOW YOU have probably collected some interesting 'junk'. To an amateur nothing, or practically nothing is useless. It is a well known fact that the day after you throw something away, it is *exactly* what you need.

The nuts and bolts, self-tapping screws, brackets, hinges and even cases no longer fit in a shoe-box with the resistors and capacitors, so now is the time to look for a more suitable storage system.

Egg sheets etc have been mentioned before, but they will only store small items and themselves need storing.

Slightly bigger containers, with close fitting lids are used to trans-

port medicines in numbers to your local friendly chemist. He dispenses them in smaller numbers - and throws the containers away. Sometimes there are even nice square tins which stack together very neatly with no wasted space. If you ask him nicely, I am sure he will save you a week's supply - you would be surprised at how many pills are swallowed locally. Wash well and dry them before you fill them with your treasures, and already the storage looks tidier.

Surely some of those tins and jars are still around from the festive season. Many square biscuit 'tins' are made of sturdy flexible plastic, but you may have to fight other family members for those - they have many uses. All those chocolates too. Families often buy them in larger quantities and it is likely that they were packed in jars - again possibly clear plastic. The jars almost never are thrown out immediately because they 'look useful'!

Shoes are often taken from the boxes and put into carrier bags. Ask for the boxes, they are only thrown away. Containers from small electrical goods are very sturdy and will house more fragile items. A good shopping session produces more wrapping material than goods - recycle it.

The foregoing should separate the bits and pieces into manageable sections and the shack will be tidier - and appear much bigger. There may now be space for shelves or even an old chest of drawers or cupboard for you to repaint or otherwise make presentable. You will be much more popular *and* you will know where things are - especially if you label everything.

We will go back to filling those containers next time, but meantime, start hunting out those discarded digital watches - you will need them.

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SX-2000	1.8-200 MHz, 5.20-200 watts AUTO	95.00
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D-707	Active rx. 1.5-1300 MHz 12V	99.00

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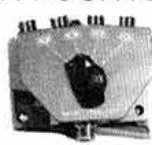
X-50	2m/70cms 4.5/7.2db gain 1.7m long	59.95
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**RADCOM  
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# VFO Tracking for Less than Two Pounds

**F**OR OWNERS OF compatible VHF and UHF transceivers who would like the facility of tracking VFOs found on the FT 726/736, TS970 etc, here is a cheap way of linking your two sets together without having to do any internal mods to the transceivers and at a fraction of the factory cost (where available).

The basic requirements are that both the sets have a scan facility which can be operated from the microphone, and that the scan is activated by the same basic principle which will be explained later on. So if you are the owner of a pair of Icoms, Yaesus, Trios etc, there should be no problems in getting the scan controller to work on your sets. [Note, though, that any modification may invalidate your guarantee - Ed]

The first attempt to link the VFOs on Transmit and Receive was done on his Icom 290E/490E sets. The scan on these sets was activated by putting a grounded source to the PLL chip via pin 3 on the microphone socket, this sent the set scanning upward in frequency. By grounding it via a 470Ω resistor the set scanned down in frequency.

Having sorted the basics, it was just a matter of reversing the process from the scan buttons on the mic so that as the VHF set went up in frequency, the UHF set went down.

The first attempt was carried out on the fist microphone attached to the VHF set. This required some soldering inside the mic but the basics were the same as Fig 1, ie finding the 470Ω resistor on the PCB, making the appropriate connections and having to introduce an extra 470Ω resistor due to complications on the PCB.

Once the connections were made it was

**An ingenious add-on for satellite users by Dave Camac, G1100. Reproduced by kind permission from AMSAT-UK's magazine OSCAR News.**

just a matter of synchronising the scanning speeds on the two sets. Having found the scan speed adjustment controls set both to minimum speed, and then (with a little bit of patience!) tweak the slowest of the two up to the speed of the faster one.

To check, set the increment steps to 100Hz on SSB on both of the sets, get three zero's on the frequency readout on both and set off scanning, stopping at various points and

adding the last three numbers on the sets together and, with any luck, it should leave you with three zero's at the end of the sum!

As the method using the fist scanning microphone left a few untidy wires hanging from the mic plug, it was decided that an independent unit would be a better alternative so the unit shown in Fig 1 was constructed.

This left only a single connection to the UHF mic plug to be made. An in-line connector was fitted to allow the scanning unit to be taken out of operation when not required.

When the unit is working and in position, it leaves the main tuning dial free to do any correction for doppler shift as you move up and down the passband on the satellite. The initial set-up has to be done in the usual way then, when you have found your downlink (on a clear frequency), away you go. But make sure that the increment steps are the same on both sets otherwise you might find yourself transmitting to Oscar 10 instead of Oscar 13!

As the Icom mic that was used on the initial construction works with all Icom sets it would suggest that the scanner will work with any combination of the Icom range. As for other makes of transceiver, it should be reasonably easy to construct a similar scanner for them.

On the FT290R I used, the scan was activated by an applied voltage (6.8V) from pin 2 to pin 7 (down) and from pin 2 to pin 1 (up). Therefore, all that was needed was to cross the lines from pins 7 and 1 to pins 1 and 7 respectively on the FT790R.

The cost of the scanner unit: 1 x 470Ω resistor @ 5p; 2 x push to make switches @ 25p each; 1 x 8-pin mic plug @ £1.20; total cost £1.75p, excluding box.

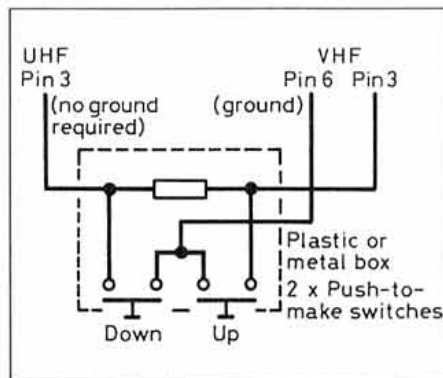


Fig 1: Simple method of tracking two similar radios.

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# Plotting of Magnetic Deviation and Aurora

by D J Smillie, GM4DJS

**T**HE RECORDER I USE is a Chessell 301 running at 1 centimetre per hour. You may consider this an expensive venture, but there is no reason why you should not use your computer to record a spot reading, say every minute, and then later display the day's readings as a chart. Some computers, like the BBC, are well suited for this sort of operation, converting analogue to digital. If the day is interesting then a printed copy can be made, and this is a relatively cheap way of observing the earth's magnetic field deviations. It may also be possible to program the computer to give a warning of the possibility of an aurora when the deviation exceeds a certain amount.

## WHAT CAN BE ACHIEVED

RECORDINGS OF PAST magnetic storms, auroras, and magnetic anomalies, have enabled the waveform characteristics to be identified with particular events such as:

1. Sinewave pulse: Possible storm with visual aurora.
2. Sawtooth pulse: Storm and possible radio aurora.
3. Irregular pulses: Storm, possible radio or visual aurora.
4. Slow transient: Very large storm condition.
5. Fast deflection: Motor vehicles or local cause.
6. Squarewave pulse: Motor vehicle arrives and later departs.

Note that these are superimposed on the day-to-day diurnal changes.

## THE MAGNETIC STORMS AND AURORAS OF 10 TO 13 JUNE

### The June 91 Solar aspects.

Solar activity had been very high since 3 June, with X-ray events up to an X12/3B on the 4th, and 2695MHz radio bursts reaching 11,000 solar flux units. This was followed on the 6th by another X12+/4B flare and a radio burst of 55,000sfu, and again on the 9th by an X10/3B flare. All this activity came from the same solar region (No. 6659) which was the first to have ever produced three such major events in one solar crossing. This region, in the following week, produced 21 of the energetic events and saturated the GEOS sensors twice more with X+12/3b events.

A proton event which started on the 4th

## Part Two: The practical application of the jam-jar magnetometer.

was repeatedly enhanced by the major flares, finally reaching its peak of 3,000 particle flux units on the 11th when protons of greater than 100MeV were recorded. The Polar Cap Absorption due to the protons reached 17dB by the 11th, an extremely high level. Region 6659 is the first on record to have saturated the GOES satellite sensors five times during its passage, producing 39 C-class, 26 M-Class, 6 X-Class flares and 105 optical flares.

### The magnetic aspects

The main storm of the 10th to the 13th received wide publicity on radio and TV, alerting many amateurs to impending auroras, which in turn followed the weak auroras of the 8th and 9th. Fig 6 shows my magnetometer re-

cordings of this storm which started at about 0630GMT on the 10th. A large magnetic pulse developed with weak auroral signals being heard at 1308GMT. From then on, signal levels increased becoming very strong between 1800 and 1900GMT, with stations throughout the UK and Europe taking part. This period coincided with the larger magnetic variations detected and recorded by the magnetometer. During the 10th, seven beacons were heard and 54 contacts made with the following countries: West Germany 15, Holland 11, Belgium 4, England 8, France 6, Eire 3, Northern Ireland 1, Wales 2, East Germany 1, Norway 1, Poland 1, Czechoslovakia 1.

The aurora was active for almost seven hours, and a point of interest towards the end of this event was that a number of G, GI and GM stations were heard with both clear and auroral tones, although no second phase radio aurora was detected in spite of considerable magnetic activity. The visual manifestations were not seen in Scotland due to cloud cover, but were evident coast to coast in Canada and the USA, as indicated in Fig 7.

Magnetic activity continued for the next three days triggering a further five radio auro-

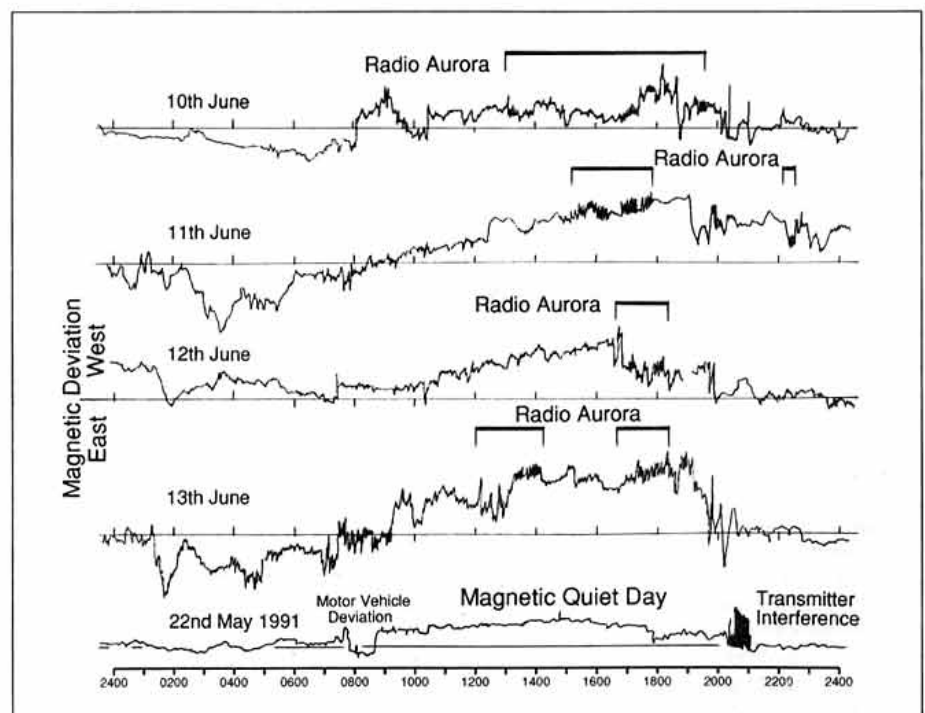


Fig 6: Recordings of the very magnetically active 10 to 13 June, - compare the quiet day of 22nd May.



## PLOTTING MAGNETIC DEVIATION

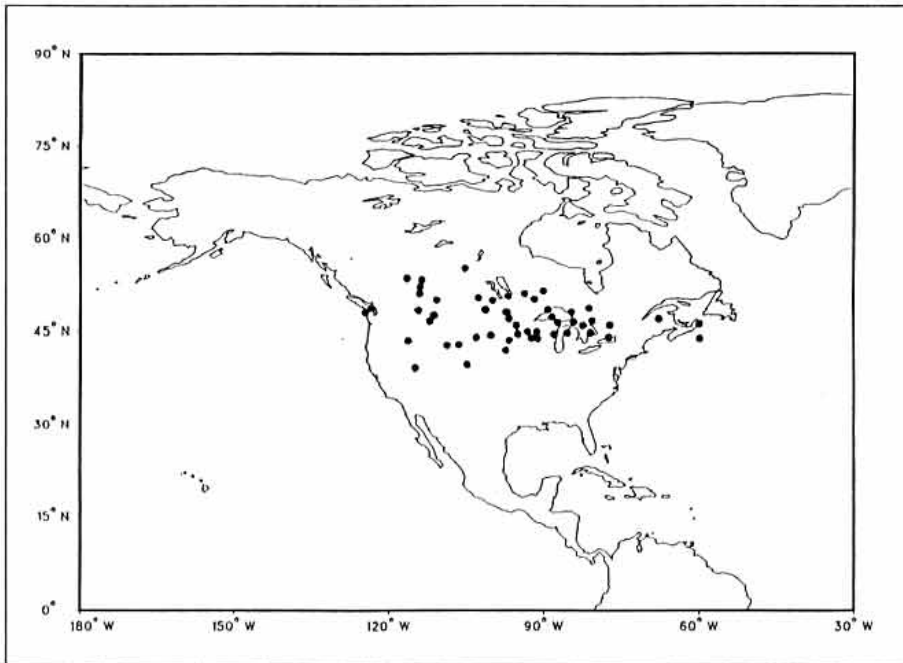


Fig 7: Reported auroral sightings from US and Canadian weather stations, 11 June 1991. Data supplied by SESC, Boulder, Colorado.

ras, two of which were second phase events. Radio auroral activity finally ended at about 1840GMT on 13 June when the magnetic storm concluded with several large violent pulses at about 2240GMT. To show a comparison with a reasonably magnetic quiet day I have included the trace for 22 May which clearly shows that the only activity then was man made.

Not surprisingly, considering the solar activity, June 1991 produced thirteen radio auroras on 2, 5, 8, 9, 10, 11, 12, 13, 17, and 23 June. Three of these, on 2, 5 and 13 June, were second phase events. This total has exceeded any other previous month known to the writer and shows the extent of the major solar activity that took place.

### FORECASTING AURORA

FORECASTING SOLAR EVENTS which are the precursor of auroral events is almost impossible without a constant supply of data, and even then it is very difficult. However events can be plotted on a suitable solar rotation base map such as that shown in the *RSGB Call Book*, in particular the weekly geomagnetic averages. Data can be obtained by listening to the *GB2RS* news forecasts for passage of coronal holes and expected magnetic levels, and listening to WWV solar and magnetic alerts.

There is also the GEC-Marconi Research Centre which gives forecasts by telephone on 0245 73331 extension 3152. These are all aids to forecasting which anyone can use. Some events turn up again on the sun's next rotation, so here the base map helps to indicate when this will occur. However, the only reliable way that I know is to record the earth's magnetic field changes, and when these are active then the chance of aurora increases very considerably.

Auroral signals are best received when the antenna is pointing in a northerly direction, with north-east being favoured at the writer's location. Fig 8 shows an example of signals

from the Shetland beacon, GB3LER, as received on a horizontally polarised 12-element Yagi at 1630GMT on 15 October 1990. The Yagi was rotated through 360°, and (since signal strength and antenna direction, are related), 27° magnetic giving the strongest signals. Note the signal level increases going down the chart.

### VISUAL AURORA

MAGNETIC PULSES RECORDED on my magnetometer during darkness hours occasionally coincided with observational reports of visual aurora, which can also be present

during radio aurora. An example of this occurred on 17 November 1989 (Fig 9). This event shows that radio aurora and visual aurora result from different mechanisms, as the visual displays continued through the Harang discontinuity period when the radio aurora had disappeared. This particular display was observed in the north of Scotland as red and white coronal rays, green rays and pulsating bands, even giving a diffuse light in the southern sky.

A number of useful beacon stations both on 144MHz and 50MHz bands are sited throughout the UK, Europe and Scandinavia (listed in the *RSGB Call Book*) which can be used for auroral indication of how far the aurora has spread. From my location, if only GB3LER can be heard then it indicates that the aurora is well to the north, Conversely if DL0PR and PI7CIS can be heard, the aurora is widespread, covering much of Europe.

During a number of auroras, signals were recorded on tape for later analysis by high-speed pen recorder. These have illustrated the considerable distortion and amplitude variation of auroral signals. The 50MHz Buxton (Derbyshire) beacon transmits one-second timing pulses locked into the MSF time standard. A recording of its signals during the very strong aurora of 10 April 1990 showed features of interest, such as the signal amplitude increasing by three times in only six minutes as the aurora increased in intensity. Wave patterns are evident ranging from 4 to 15 seconds, the one-second pulses show micro pulsations which are probably associated with the doppler shifts caused by the rapidly moving auroral electrons. High speed recordings can show some of the complex mechanisms active in the E layer ionosphere under auroral ionised conditions.

The recording of aurora signals and their correlation to magnetic activity gives an as-

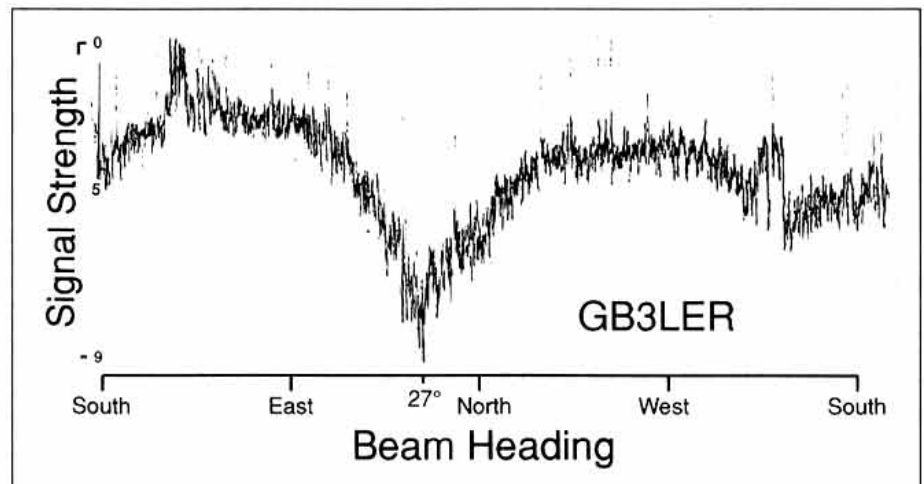


Fig 8: The effect of changing beam heading, note signal level increases down the chart.

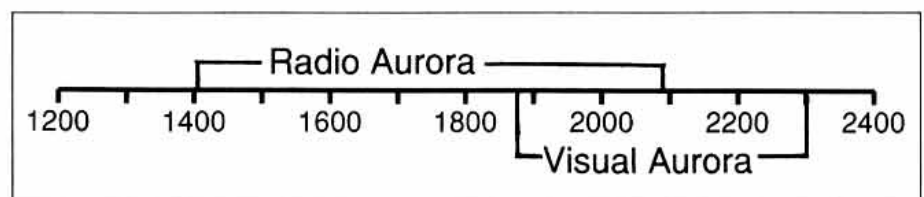


Fig 9: Radio and visual auroras are caused by different mechanisms so the times do not coincide. This shows the GMT times of the 17 November 1989 event.



assessment of the intensity and expansion of any particular event. It also provides a greater understanding of what is a complex and intriguing phenomenon. I hope to encourage others to record magnetic and auroral events so that a better understanding of this phenomenon can be built up, as I have shown it can be done with relatively simple equipment. Even though I have participated in many events over the years I still get exhilarated on hearing 'CQ AURORA', making contact with some distant station, and later attempting to interpret the propagation anomalies.

**ACKNOWLEDGEMENTS**

I WOULD LIKE TO THANK: Mr C Newton, G2FKZ, for reviewing this paper, and for his most helpful comments and suggestions; The British Geological Survey for use of their magnetic data; Space Environment Services Centre, Boulder Colorado, for use of their solar and visual auroral data; and Mr R Sterry, G4BLT, for help with diagrams.

**FURTHER READING**

● NOAA technical memorandum *ERL SEL-80* June 1990.

● Beacon list, *RSGB Call Book*.

● Explanation of solar and propagation information used on GB2RS news, *RSGB Call Book*.

● 'The Geomagnetic Storm', *Radio Communication* May 1989.

● 'The great Auroral Storm', *Astronomy Now* June 1989.

- Building a jam jar Magnetometer, *Astronomy Now* January 1990.
- *Radio Auroras* by Charlie Newton, RSGB.
- *Space Radio Handbook*, J Branegan, GM4IHJ, RSGB.
- 'Propagation News', *RadCom* August 1991.



**MAGNETOMETER PARTS LIST**

See last month for circuit diagram.

The Phillips KMZ 10A sensors can be obtained from: Unitel Ltd, Fishers Green Road, Stevenage, Herts, SG1 2PT.

The magnet is Maplin type FX, 25 by 6 by 6 mm.

Recommended chart recorder: Chessell 301, chart speed 1cm/hour.

Digital millivoltmeters: RS 258-827 or equivalent, not essential.

Clear plastic jar (35mm spoolcase) 50 by 30 mm.

All other parts are readily available.

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## WIDEBAND 'BIG MOUTHS'

THE DECEMBER *TT* item 'Big Mouth, linearity and splatter', based on W6SAI's notes in *CQ* (September 1991), emphasised the harmful effects of driving a power amplifier beyond the point at which intermodulation products (IMPs) start to become evident due to non-linearity (flat-topping) of the stage. It was noted how two-tone testing, particularly in conjunction with a spectrum analyser, can show how SSB signals spread out, resulting in serious splatter interference either side of the frequency channel in use. This may occur when any stage of a transmitter is overdriven. It was also pointed out that while most discussions of IMPs and splatter tend to relate to HF transmissions, the problem can be even more serious at VHF where the receiver noise floor can usefully be much lower than on 'noisy' HF.

This item has resulted in a helpful letter from Steve Thompson, GW8GSQ who works at his home, near Bridgend, South Wales as a power-amplifier designer and consultant. He highlights a form of wideband interference that arises from incorrect operation of automatic level control (ALC) but can pass undetected during a two-tone test. He writes: "The piece on 'Big Mouth' came to mind when I encountered the signals of a couple of local amateurs who visited a nearby high site, a few miles from me, to take advantage of good conditions on 144MHz. The signal levels at my house long ago prompted me to rebuild the front end of my TS700 to cope with strong signals, and it now seems to withstand almost anything my modest antenna picks up.

"Station A was operated by a friend who has recently completed a home-brew PA. On his signals there were two forms of spreading, one was the normal muffled IMD from speech, about 20kHz wide; the other was much wider and took the form of a click at roughly syllabic rate over a much wider bandwidth (about 100kHz). I call this form of spreading 'spitch' rather than 'splatter'. I verified that both forms of interference were on the transmission and not generated in my receiver by feeding the antenna into my 'professional' spectrum analyser. I spoke to the operator of Station A who said he had spent some time with a two-tone source and a spectrum analyser setting the bias throughout the transmitter chain to arrive at a compromise where low order IMD was higher than ideal, but high order IMD was well suppressed. He could not understand the wider-band interference which had been totally absent during his testing.

"Later the same day, Station B, using an FT726, visited the site and promptly wiped out most of the bottom half of the band with 'spitch'. On the spectrum analyser, a curtain of interference some 300-400kHz wide could be seen building up on a storage display at only 25-30dB below PEP; each click appeared to be of very short duration. I called him and explained the situation. He responded by reducing his microphone gain and this dramatically reduced the problem.

"Station A uses an FT221 for his exciter, which I know has ALC acting on the audio input. I know little about the FT726 used by Station B (except I feel it has far too many knobs!). I suggest that the wideband interference from both transmitters would not show

# Pat Hawker's Technical Topics

up under two-tone testing. It is my guess that during the short period before the ALC acts, the transmitters are, in effect, being grossly overdriven, resulting in an output with a fast-rising edge, similar to a key click. There is also the possibility of a short duration spike with some of the characteristics of an impulse. I also postulate that, in general, ALC applied to an audio stage takes longer to control the final output than when it is applied to an RF stage (especially if it is post crystal-filter).

"I find that wideband interference is much more of a nuisance than close-in IMD from speech; the opposite may be true on a crowded HF band. Monitoring techniques other than off-air receivers can easily miss this form of overload and interference. Perhaps it is worth reminding readers to operate with the minimum required microphone gain and drive levels, forgoing the 'comfort' of a flickering ALC meter needle".

The action of an audio-derived ALC system for SSB transmitters is directly analogous to audio-derived AGC in receivers. Last year *TT*, (April and June, 1991) presented the thoughts of LABAK on the shortcomings of audio derived AGC and showing how in some cases this can produce wideband noise in receivers in much the same way as outlined by GW8GSQ above. LABAK emphasised that really good AGC systems still represent 'a difficult technique'. All of this bears out GW8GSQ's advice that operators should not rely on ALC to offset excessively high microphone gain!

## THE 7MHZ DIPOLE ON 21MHZ

IT HAS LONG BEEN accepted that a 7MHz half-wave dipole may be used as a 1.5-wave dipole on the 21MHz band. This approach can often work satisfactorily, even without an ATU, particularly with older valve-type rigs that are happy to 'see' a moderately high SWR. Remember that unless an HF coaxial feeder is very long, a reasonably high SWR does not represent significant lost power. But with modern solid-state rigs that may begin to throttle back the power with an SWR above about 1.5 or 2.0:1, so the 7MHz antenna can prove unsatisfactory in practice.

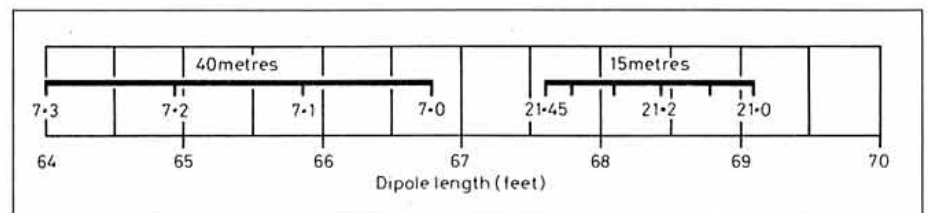


Fig 1: The resonant frequency of a harmonic antenna as a function of length in feet. Calculated from the formula  $492(n-0.05)/f$  where  $f$  is frequency in MHz and  $n$  is the number of half-waves in the antenna, so that  $n$  is 1 for a half-wave dipole and 3 for a 1.5-wave dipole. For example, a dipole resonant at 7.1MHz is not resonant at 21.3MHz but at nearer 22MHz. The radiation resistance of a typical horizontal 7MHz antenna at a typical height will also differ significantly as a 1.5-wave dipole at 22MHz.

Bob Raffaele, W2XM in 'Hints and Kinks' (*QST*, December 1991) points out that 'end effect' causes a half-wave dipole resonant at 7.1MHz to resonate as a 1.5λ dipole at about 22MHz and not 21.3MHz: Fig 1. Furthermore the feed-point impedance of a resonant 1.5λ dipole tends to be higher than that of a half-wave dipole. His suggestions include using a compromise antenna length of 67ft and feeding the antenna via a coaxial feeder that includes a 21MHz quarter-wave matching section between the antenna element and its 50Ω feed line; this 21MHz impedance transformer should have little effect at 7MHz. He uses 7ft 7in of RG-59 cable as the Q-section. Since different cables of a common impedance vary in capacitance per unit length, the length of the matching section may have to be changed slightly. With this compromise arrangement W2XM provides a lower SWR at the low end of 7MHz and the high end of 21MHz.

In an editorial comment, WJ1Z notes that at a height of 25ft (about 0.2λ) above ground, a flat-top half-wave 7.1MHz dipole exhibits a radiation resistance of around 65Ω. A 50Ω feed line connected to such an antenna should exhibit an SWR of about 1.3:1. Operated as a 1.5λ dipole, the same antenna (0.5λ high at 21MHz) exhibits a radiation resistance of about 110Ω at resonance, resulting in an SWR of about 2.2:1 when fed with 50Ω cable. Resonance is at about 22MHz, so that the SWR may be unacceptable (without an ATU) when operating at the low-end of the 21MHz band, unless some compromise solution, such as that suggested by W2XM is adopted.

## POWER SUPPLIES, RF AND THE 723 REGULATOR

'RICK' STERRY, G4BLT, agreed with G3RZP's comment (*TT*, January 1992, p39) that the ubiquitous 723 regulator chip is susceptible to disruption by strong RF fields. However he considers that all is not as hopeless as it may seem. Indeed, on page 33 of that same (January) issue there is a design for a medium-to-high power HF amplifier featuring a 723 regulator actually on the same PCB as the PA transistors!

"I have built many PSUs using the 723 chip over the past 15 years or so, and many times I have noticed the output voltage waver about when there was RF in the vicinity. However, at VHF/UHF, I have found the cure to be simple in every case. First of all, I always use a metal case; if the PSU is built in a plastic one then you are inviting trouble! Secondly, I by-pass the two DC output terminals to the case with 470-1000pF ceramics, using short leads. Thirdly, I by-pass the unregulated supply to



## TECHNICAL TOPICS

the 723 with a third 470-1000pF capacitor, close to the IC, ie across the +ve and -ve connections. So far I haven't found any need to use ferrites. For protection at HF, it is advisable to fit additional capacitors of a higher value, say 0.05µF.

"During 144MHz contests, my local society runs a meaty 400W PEP valve linear amplifier in close proximity to my 12V PSU (which uses a 723) with no problems. Indeed, all my efforts to couple as much RF into the PSU as possible, eg wrapping the antenna feeder round PSU and 12V leads, have failed to provoke the slightest reaction. I am not claiming that my suggestions will cure all such problems, but I do think it makes sense to fit these components whichever type of regulator(s) are used".

### 240V AC POWER RELAY

PETER MURLAGH, in *Electronics Australia* (January 1992, pp92-95) presents full constructional details of what he calls a '240V Power Relay' - a simple project that monitors the power drawn from a 'master' socket and then, when current is detected, automatically switches power to a 'slave' socket. The design stems from a rather similar project described in *Popular Electronics* (September 1991) as a 'Socket Sentinel'.

One can think of useful applications of such a device in an Amateur Radio shack since it would allow several separate pieces of equipment to be turned 'on' or 'off' by the operation of the switch on just one of the units - eliminating the common problem that when one turns off the main transceiver it is very easy to forget to turn off every other item of ancillary equipment unless they are all wired up to one master power switch. It should perhaps be stressed that from a safety viewpoint each unit connected to a power relay (Fig 2) should either be unplugged or at least switched 'off' by its own double-pole switch before doing any maintenance work etc.

In operation, the power relay detects the voltage drop across a series of back-to-back silicon diodes (0.7V per section) and uses this to switch on a TIC236N triac which can deliver 12A at 800V. In practice the power diodes have to carry the current delivered through the master socket, and the triac carries all current taken through the slave socket(s).

In the EA unit, IN5404 power diodes rated at 3A are used with a total load current (master and slave sockets) well below the 5A fuse rating. For higher-power loads and multiple slave sockets the ratings of both diodes and triac may need reconsidering, and the fuse rating increased. For low-power slave loads, a rather lower-power triac would be possible but Peter Murlagh advises a minimum triac rating of 6A and 400V. The triac must be mounted on a suitable heat sink (eg 60 by 37 by 31mm universal heat sink is specified for the EA unit). A 275V metal oxide varistor (type V275LA20A) is fitted to remove mains voltage transients. The RFI filter coil (L1) comprises 520mm of 1mm diameter (B&S 18) enamelled copper wire wound on a ferrite former (23mm length of 10mm diameter broadcast aerial rod).

A possible hitch that showed up during the design of the EA unit was that the computer

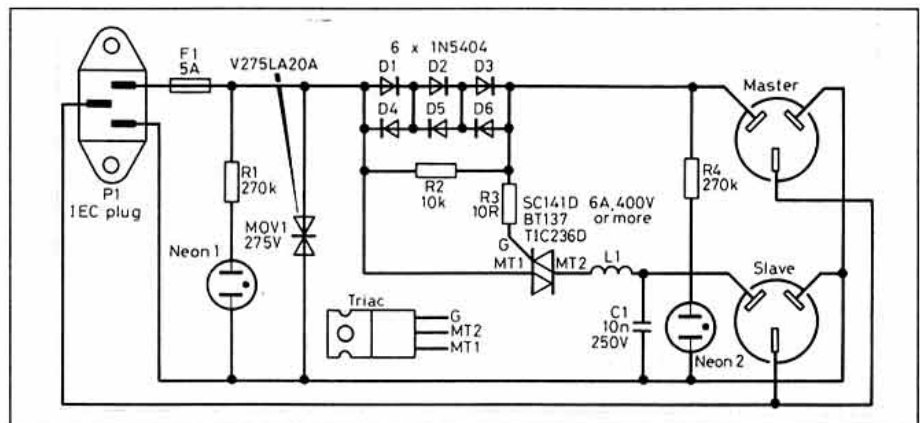


Fig 2: The circuit diagram of the *Electronics Australia* 240V power relay. The 'master' current flows through the diode network and turns on the 'slave' socket. The current for the slave socket flows through the triac. The MOV protects against mains spikes.

powered from the master socket had three RF-filter capacitors totalling 1.5µF across its power switch on the active side. This meant that the AC leakage current was high enough to keep the slave socket turned off, even when the computer was turned off. However, such high-value filter capacitors should not be found in modern equipment as these values are much higher than those recommended from a safety viewpoint.

In the EA design the complete unit is enclosed in a plastic jiffy box 50 x 90 x 150mm with the master and single slave socket mounted on the box. As in any unit involving 240V AC mains supplies close attention should always be given to safety aspects.

### CUTTING 'ISLANDS' IN PCB MATERIAL

RICHARD COOK, G4XHE, adds an alternative suggestion to G3KMG's advocacy of non-etch use of PCB material (*TT*, July). He writes: "I have been using the following technique to produce circuits on single or double-sided boards. But instead of gluing small pieces of PCB material on to the board, I have produced a simple tool that cuts the islands directly onto the board. It consists of a good quality screwdriver blade modified with a needle file to the shape of a fork with three prongs (Fig 3(a)).

The two outer prongs are slightly shorter than the centre one, which is there solely to prevent the tool from skating around the board. The modified blade is then placed into a drill and an almost perfect island can then be cut anywhere required. The major advantage is that pads can be added in exactly the right

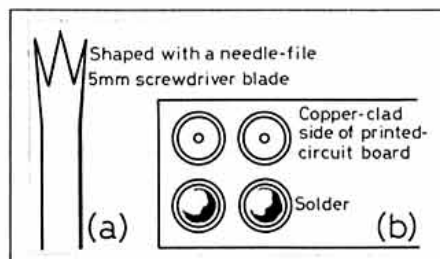


Fig 3: (a) G4XHE's simple tool used to cut 'islands' directly on PC boards. It consists of a good-quality 5mm screwdriver blade modified with a needle file to the shape of a three-pronged fork. (b) Results before and after soldering. The tool forms an insulated 'moat' around the 'island'.

place as the board progresses, making a neater job than stick on pads. Results so far have been very good indeed; it has even been possible to mount integrated circuits using a smaller version of the cutter that cuts pads around 2mm in diameter.

David Jones, G4FQR has recently used this method to construct a 7MHz transceiver with pads on the underside of the board used for DC connections. Results on stages checked so far are "most encouraging".

### BRYANT-CLARK 'SWEET-SPOT' PROPAGATION

ROGER CROFTS, VK4YB (who has also been licensed as G3UPK and as ZB2/ZD8/ST2/TJ1 with call letters AY) writing from Queensland, Australia draws attention to a most interesting form of propagation, affecting primarily 1.8MHz and the lower HF bands. This has been unravelled by two enthusiastic Australian broadcast-band listeners, John Bryant and David Clark. It appears to endorse some of the notes which appeared in *TT* (and later *Amateur Radio Techniques*,) many years ago on the 'whispering-gallery mode' etc and which shows that, contrary to accepted wisdom, it is sometimes possible to work 1.8/3.5MHz DX using low, horizontal-dipole antennas that provide only high-angle radiation.

VK4YB writes: "In these days of high sunspot activity, our lower frequency bands have been somewhat neglected, especially 160 metres. It's not much fun listening through heaps of static for extremely weak or non-existent DX signals. There is, however, one DX path on 1.8MHz which continues to provide amazingly reliable and frequently very strong long-distance signals. This path is from Australia to West and Mid-West North America, but only during the months May to August. This propagation path has been enjoyed by many VK, W and VE operators over the years, without too much thought as to why it occurs so reliably only during the northern summer. After all, the path is in total darkness for all the year at the WVE sunrise.

"Now, exciting work being done by John Bryant and David Clark has shed new light on the phenomenon. They are avid HF Broadcast DXers and their initial observations were made in the 60, 90 and 120 metre 'tropical broadcast bands'. Pains-taking research has revealed that the location of the origin of the enhanced signals corresponds to the part of



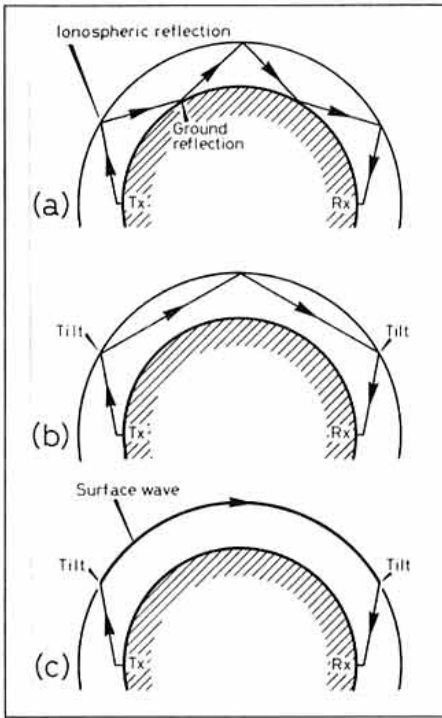


Fig 4: (a) Conventional HF multihop path with two ground and three ionospheric reflection points all reducing the strength of the signal. (b) Chordal hop propagation with no intermediate ground reflection points can occur when there are suitable ionospheric tilts - as in the classic dawn-dusk grey-line path. (c) Another possible form of chordal hop/ducting propagation.

the ionosphere experiencing the 'Spread F' effect associated with Travelling (Tropical) Ionospheric Disturbances (TIDs). These usually occur around 2100-local-time in tropical latitudes. The term 'Spread F' refers to the smudging or smearing in the presentation of the F-layer reflection as seen on an ionogram. Under these conditions, the exact height of the F layer is indeterminate. The effect declines at higher latitudes. In 1991, VK4 had trans-Pacific openings on 95% of days in the season, compared to 60% for VK3 (further south). These statistics are available thanks to the 'SEANCE Net' (South East Australia to North America Communications Exchange Net) which operates on 1832kHz, daily at 1100GMT, from May to August. Out of season, the TIDs move rapidly north and propagation returns to 'normal' levels.

"So what is happening in the TIDs? None of us is sure, but it does appear that high-angle radiation is somehow coupled into the 'single-sided duct' or 'whispering-gallery' mode. I say high angle radiation because low dipoles, on average, outperform full-size verticals. Once in the duct mode, the signals propagate along the underside of the F layer with very low attenuation. John Bryant and David Clark theorize that the signal level could actually increase after 10,000km, because the great circle routes would then begin to reconverge (That is 'ionospheric focusing' as discussed some years ago in *TT-G3VA*). At the eastern end of the circuit, the signals are nudged earthward by the downward tilting of the F-layer at the dawn terminator, giving rise to the well-known dawn (grey-path) enhancement.

"The bad news for British amateurs is that it would appear that the British Isles are too far north to experience a 'sweet spot' of

Spread-F enhancement overhead. Furthermore at max dawn, the position of the sweet spot is such as to provide excellent propagation to a totally unpopulated region of the eastern Pacific! Perhaps this goes some way to explaining why John Bryant could find no mention of the phenomenon in Amateur Radio literature".

It was in the 1960s that a great deal of interest was generated (as a result of 'round-the-world echoes') in the various forms of chordal hop and whispering gallery modes, and the effects of ionospheric tilts (Figs 4 and 5). (See also *ART7*, and *HF Antennas for all Locations* by G6XN). VHF enthusiasts are also likely to see the apparent links between this 'sweet spot of Spread-F enhancement' affecting frequencies as low as 1.8MHz and the well-documented 'Trans-Equatorial Propagation' (TEP) modes on frequencies up to at least 50MHz (with the UK again too high in latitude to benefit directly). In *TT* and *ART* in a section 'When long-path is better', I concluded that there are several lessons to be learned which appear also to apply to the Bryant-Clark mode:

- (a) Longer may be louder.
- (b) Going up in frequency may put your signals down in strength.
- (c) The traditional amateur 'dawn/dusk' (grey-line) periods of optimum DX are directly linked with the regular appearance of ionospheric tilts which occur because of the difference in effective layer height in darkness and daylight. Fig 4(b) shows how a chordal hop propagation may occur when the signals hit a tilted layer.
- (d) When the tilts are roughly overhead, one can launch a satisfactory chordal hop signal even with an antenna providing a high angle of radiation. (*ART7*, p327). The new work seems to confirm that tilts in layers also occur in tropical regions during Spread F conditions.

**SONYA'S REPORT**

THE RECENT PUBLICATION *Sonya's Report*, is a book originally published in East Germany in 1977, and now translated by Renate Simpson (published by Chatto &



The Great Survivor. A recent photograph of Ruth ('Sonya') Werner who, in her thirties, as Mrs Ursula Beurton, with a young family and an English husband in the RAF, successfully operated undetected between 1941 and about 1950, a clandestine radio circuit from the UK for Russian Military Intelligence (GRU). Her book *Sonya's Report* includes several references to Amateur Radio. (Photo courtesy of Chatto & Windus)

Windus, 1991, 318 + vi pages). While not adding greatly to our knowledge of radio communication, this must surely be of interest to anyone who wonders what it must have been like to operate a clandestine radio in various countries in the 1930s and 1940s, as a spy for the Red Army - and get away with it! Well worth borrowing from a library (ISBN 0 7011 3801 7).

'Sonya' is still alive and came to Britain for the publication of her memoirs and was born in Berlin in 1907 as Ruth Kuczynski. She has been a life-long communist, who in the early 1930s, while living in Shanghai, began to assist Richard Sorge and was recruited through him into the GRU (the Russian Military Intelligence service). Subsequently she became one of the most skilled and accom-

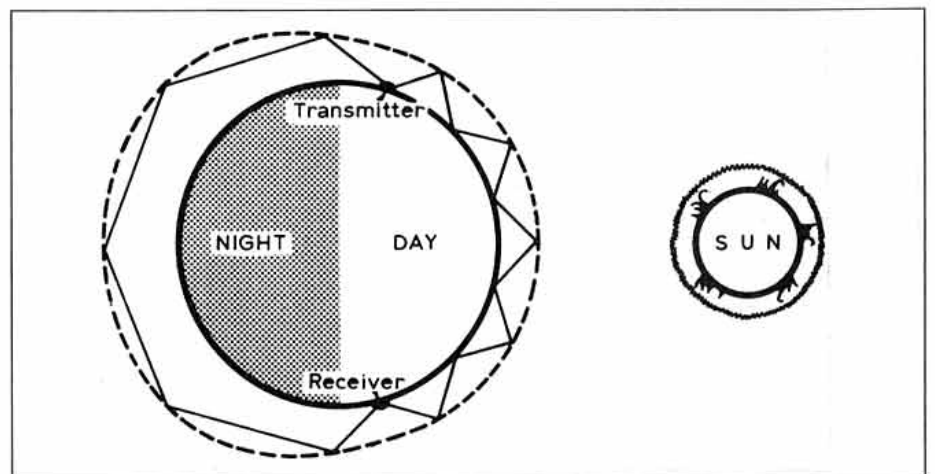


Fig 5: The change of effective height of the ionospheric F layer around dawn and dusk produces the tilts that make possible chordal-hop transmission over the 'long-path' with the low attenuation in darkness conditions and no ground-reflection losses. This provides stronger signals than the short-path with its multiple hops. The Australian work on 1.8MHz reported in the text suggests that signals can also be induced into chordal-hop paths by Spread-F travelling ionospheric disturbances in the tropical regions at certain seasons of the year.



plished secret radio-agents and almost certainly the only one to operate undetected in rural England from 1941 to about 1950. Whatever you may think of the damage she did to a country that gave her and other members of her family a home - for example, she provided communications for the atom-spy Karl Fuchs - one must surely acknowledge the resolution, daring and skilled trade-craft she showed in operating radio transmitters (some of which she built herself) in China, Poland, Danzig, Switzerland and from several villages in and around Oxford and the Cotswolds.

Within the GRU she eventually held the rank of a Red Army Colonel - emphasising some remarks I made in writing about clandestine radio in *Wireless World* (January/February 1982). As I pointed out, in the main Russian intelligence networks the radio operator was traditionally nearer to the centre of things than those of British or German networks, where the radio operator was often regarded as a minor character. Admittedly there is a considerable difference between a highly-trained peacetime agent and the large number of Russian radio operators dropped or infiltrated into their wartime Partisan groups. In 1933 Sonya was trained at the Russian special training centre near Moscow: "I settled in quickly, building the apparatus was fun, and I held my own in Morse, but I did not get on at all well with the theory, where I must have been a willing but untalented pupil. I built transmitters, receivers, rectifiers (power supplies) and frequency meters, learned to

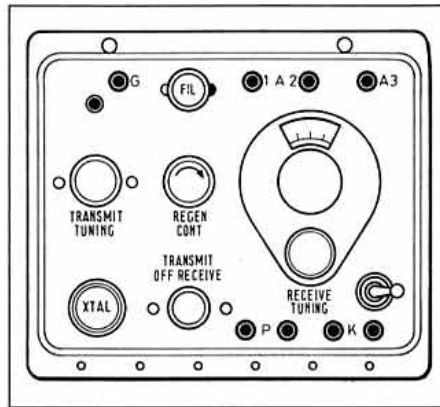


Fig 6: Front panel of the wartime Russian clandestine radio Model Belka M-2. (DL3CS archives).

speak Russian and found the political lectures stimulating."

The radio-agents were not always well served by their Controllers often being allowed or even encouraged to stay on the air for many hours at a time, working diligently through the night. She had several near escapes. Once in Danzig the wife of a Nazi official told her that her husband was convinced that the frequent interference to their broadcast radio was caused by a secret radio transmitter and enquired whether Sonya, then living in the same apartment block, had suffered similar problems. Sonya promptly claimed she always went to bed early - and hurriedly changed location. Another time, in

Switzerland, she was reported to the Swiss police as a radio-spy by someone who had seen a Morse key in her house. In fact the key had been a toy one, used to train fresh operators and she was able to convince the police that she was training a youngster about to join the Swiss Army. The key she really used was made from a metal ruler and was dismantled when not in use.

In England, Sonya clearly ran rings around the Security Services. In fairness to the Radio Security Service, they were too busy intercepting and looking for German and Italian transmissions to worry about signals using the different Russian procedures - from June 1941 to 1945 the USSR was, after all, an ally! MI5 made some desultory investigations following the return of Alexander (Allan) Foote who had been trained as a radio operator by Sonya in Switzerland in 1939-40 and who took over her 'Lucy-ring' transmissions to Moscow when she departed to England.

Her brother, also a dedicated communist agent, while living in London in 1944 acted as an adviser to the American OSS and was able to persuade them to employ several communists. Teams, organised by William Casey (later Director of the CIA), were dropped into Germany in 1945 carrying the miniature Joan-Eleanor hand-held UHF radio-phones for talking to Allied aircraft equipped with wire-recorders. Joan-Eleanor was a major breakthrough in miniaturisation and the GRU were delighted to receive early technical details of this equipment, passed to them via Sonya!

At first, in the UK, Sonya used one of her

### PRACTICAL SPREAD SPECTRUM SYSTEM

JAMES VINCENT, G1PVZ, believes that he may have recently carried out the first amateur-radio experiments in the UK on the feasibility of using a military-type spread-spectrum modulation on the 435MHz band. He has constructed a direct sequence frequency modulated (DFSM) transmitter and receiver/correlator with a spread bandwidth of 6.8MHz (Fig 51): The transmitter uses a pseudo-random sequence at a clock rate of

3.4MHz to bi-phase shift key an NBFM carrier; this creates a noise-like spectra centred around 435MHz which has a low spectral power density.

At the receiver the signal is amplified and then de-spread using a similar circuit with an identical pseudo-random code and correlator. The system is based on ideas from Andre Kesteloot, N4ICK, with Andre and Chuck Phillips, N4EZV, providing assis-

tance and advice. The system was field tested in Yeovil on January 19 with G6TIJ providing a monitoring receiver. These techniques have mainly been used by the military to provide anti-jam and low probability of intercept protection. The FCC have permitted American amateurs to experiment with spread spectrum techniques and recently the RA granted G1PVZ authority to test a spread spectrum system on 70cm.

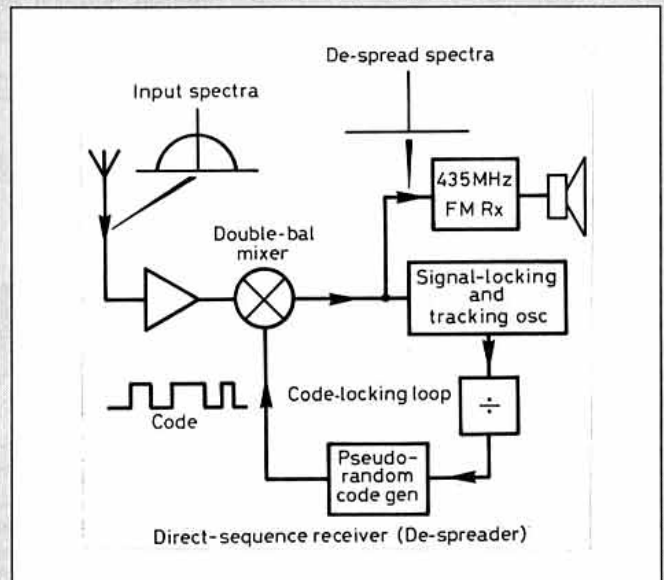
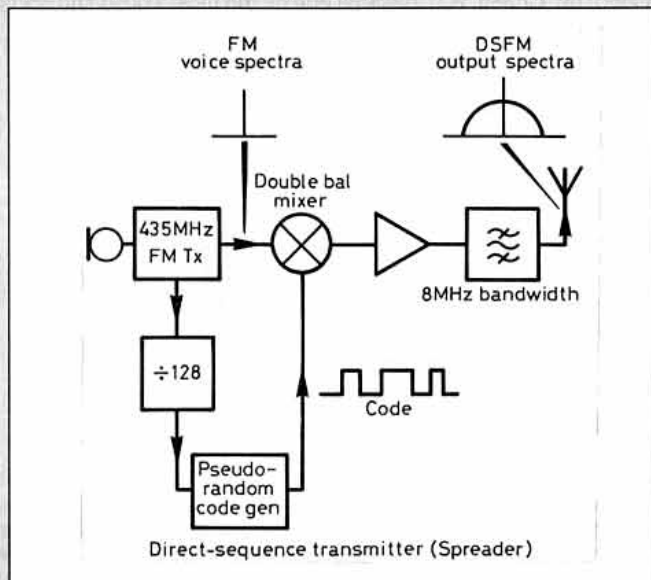


Fig 7: G1PVZ's direct sequence transmitter/receiver based on N4ICK's pseudo-noise spread spectrum system.



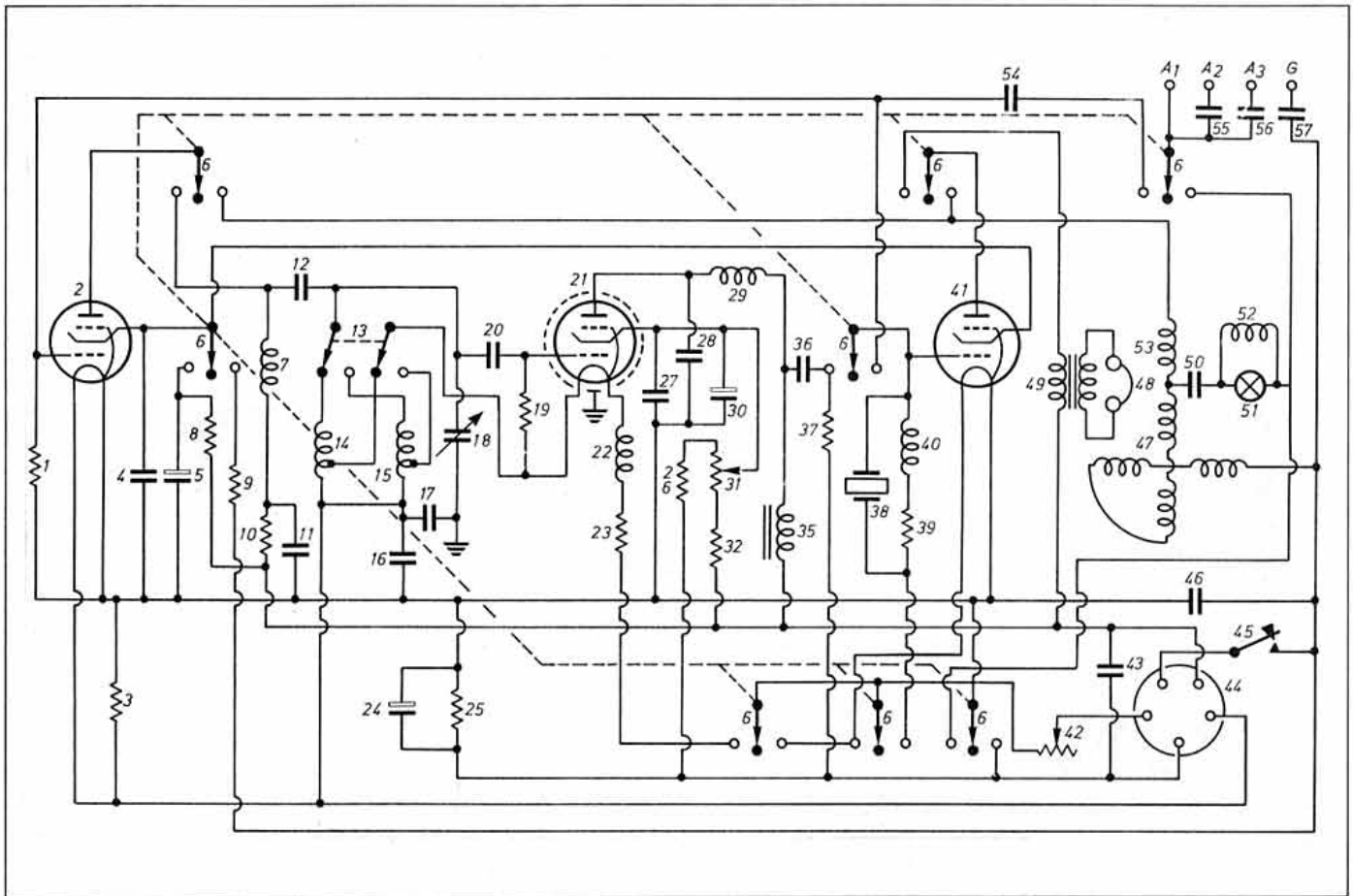


Fig 8: Circuit diagram of the Belka M-2 three-valve HF transceiver.

home-built transmitters but was later provided with one of the series of Russian-agent radios, probably brought into the UK in a diplomatic bag. Details of a number of these radios have been assembled by Rudi Staritz, DL3CS, and I also have a copy of a secret 1943 German publication on direction-finding written for the ORPO teams of the Funkabwehr (kindly supplied to me by Dick Rollema, PA0SE) with a chapter on agent-radios of Allied countries. Together, these sources describe such Russian models as Nobla, Sewer, Tensor, Jack and the Belka M-2.

The Belka M-2 (Figs 7 and 8) was a very simple but ingenious 3-valve transceiver with the audio-output valve used as a crystal-controlled keyed oscillator for transmitting. The regenerative 'straight' receiver had an untuned RF stage that would not have contributed much gain, but would have reduced the oscillator voltage to the antenna on receive and made the regenerative detector much more tame by eliminating antenna resonances etc.

**NOT-TOO-SIMPLE PSUS**

EINSTEIN ONCE DECLARED that everything should be as simple as possible, but not simpler. In *TT*, October 1991, p33 details were given of G3UPA's 'simple low-cost 13.8V, 10A PSU'. Due warning was given that, as presented, this did not include over-voltage protection against failure of one of the series-pass transistors (a not unusual fault).

Dave Lauder, G1OSC, adds that, from a designer's point of view, several other aspects of the design deserve comment even

though G3UPA reported that he had used his unit to run his HF transceiver for some two years, using two series-pass transistors and a 25A transformer, with no problems.

G1OSC writes: "First, there is no resistor between base and emitter of the series-pass transistor, TR2. It is often assumed that leakage of silicon transistors is insignificant but this may not be the case if power transistors reach a high junction temperature at full load during a long 'over'. If, at the end of the over, the current consumption drops to a low enough value on receive, there is a possibility of overvoltage at the output caused by the PSU losing regulation due to collector-base leakage current of TR2. The 78M12 regulator can drive current into the base of TR2 but I doubt whether it can pull collector-base leakage current out.

"It is a wise precaution to include a low value resistor (such as 100Ω) from base to emitter of the pass transistor(s) in any series regulator. Overvoltage protection is also wise but prevention is better than cure! All the power supplies which have appeared in *TT* in the past few years have had such base-emitter resistors other than the Australian 'Moonrabin Mk IV' unit outlined in the January 1989 *TT*.

"Secondly, as the 2N3772 used in the G3UPA PSU is specified as having an  $h_{FE}$  of 15 to 60 at 10A collector current, a transistor with minimum  $h_{FE}$  would require 667mA of base current rather than the 500mA-maximum rating of the 78M12.

"Thirdly, the only form of current limit is that the TR2 base current is limited by the 78M12 regulator and the effectiveness of this de-

pends on the  $h_{FE}$  of TR2. If TR2 has a relatively high  $h_{FE}$ , this form of current limiting would not be effective and TR2 and the transformer would not be protected in the event of an output short-circuit. It would, however, be worth mounting the 78M12 on the same heatsink as TR2, not to keep it cool but to warm it up! Then, if the heatsink gets too hot the 78M12 would go into thermal shut-down, limiting the TR2 base current. This could provide some over-temperature protection but not safe-operating-area protection as the latter would probably require 'foldback' current limiting." G3VA

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(see page 93 for ordering details)



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<p><b>YAESU FT767GX Series II</b>  Last year I was offering this excellent set with 2 and 6 metre modules at a special price - I can't be doing it again?!!</p>	<p><b>YAESU FT736R</b>  Who bought, in 1991, an FT736R with 6m included for a dirt price then? NO! Come along and see me!</p>	<p><b>YAESU FT470R</b> Just a few left at a very special price. Dual band handie, comes with nicads and charger.</p>	<p><b>YAESU FT26/76/415/815</b> Yaesu's latest handies all available for free groping (demonstrations by Valerie at no extra...)</p>	<p><b>Kenwood TS950SD</b> Alternative to the FT1000 - if you are seriously interested then lets have a serious haggle.</p>
<p><b>Kenwood TS850S</b>  With or without ATU, this has proved a favourite - so have my trade-in deals. Make yourself happy this Easter - stick the Easter egg!!</p>	<p><b>Kenwood TS450/690S</b>  It's a winner and it really is better than the old TS440. Bring yours along for trade-in and I'll show you.</p>	<p><b>Kenwood TM741E</b>  My seven pages of modifications for this one helped sell even more - only from MARTIN LYNCH.</p>	<p><b>ICOM ICW2E</b> Outsells all other dual banders - see why on the MARTIN LYNCH stand.</p>	<p><b>ICOM IC4SRE/2SRE</b> You asked for a scanner with a 2m or 70cm transceiver and you got it!</p>
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# RSGB Annual Meeting

7 December 1991

## ROYAL SOCIETY OF CHEMISTRY LONDON W1

THE MEETING WAS in three parts: the Annual General Meeting as required by the Companies Acts, an Extraordinary General Meeting and an Open Meeting comprising the President's speech, presentation of awards and a question and answer session. A report on the open Meeting will appear next month.

### MINUTES OF THE 65TH ANNUAL GENERAL MEETING OF THE RADIO SOCIETY OF GREAT BRITAIN

THE PRESIDENT E J Case, GW4HWR, introduced the platform party as J Hall, G3KVA, Company Secretary; T J Barnes, G13USS, Executive Vice President; F D Hall, GM8BZX, Immediate Past President; P D Tucker, GU4DWZ, Honorary Treasurer; Council Members P E Chadwick, G3RZP; C N Trotman, GW4YKL; J Greenwell, G3AEZ; G L Benbow, G3HB; A A McKenzie, G3OSS; J Bazley, G3HCT; I D Suart, GM4AUP; J Allen, G3DOT; J D Forward, G3HTA; F S G Rose, G2DRT and P Smith, General Manager.

Apologies were recorded from Council Members T I Lundegard, G3GJW; G R Jessop, G6JP and N Roberts, G4IJF. Apologies received from G3COJ, G0OFD, G4NFC, G4HPS, GM1YME, G4WRW and the Society's Auditor were also recorded.

The President announced that more than 50 members were present (the total attendance recorded was 134). The Company Secretary then read the notice convening the meeting which had previously been circulated to members with the November 1991 edition of *Radio Communication*.

#### Minutes

THE PRESIDENT drew members' attention to the first item on the agenda which was to receive and, if approved, confirm the minutes of the 64th Annual General Meeting circulated with the March 1991 issue of *Radio Communication*. He also pointed out that it was not a requirement of the Companies Act that the minutes should be presented at an Annual General Meeting or that details of discussion on them should be finally recorded but it was felt that members should have the opportunity to comment on them. There were no comments or questions and the minutes were confirmed as published.

The President then moved on to item 2 on the agenda: to receive and consider the accounts for the year ending 30 June 1991 and reports to Council and auditors thereon. The Executive Vice President read the Auditor's report which stated "We have audited the accounts set out on page 40 to 43 in accordance with auditing standards. In our opinion the financial statements give a true and fair view of the state of affairs of the Society at 30 June 1991 and of the surplus of income and its source and application of funds for the year ended on that date and have been properly prepared in accordance with the Companies Act, 1985".

The President called on the Honorary Treasurer to present the accounts for the 1990/1991 financial year.

I McLuskie, G8ORG, pointed out that it was his understanding that the auditors report should be read in full or be available for inspection by members present to which the Honorary Treasurer replied that he was in possession of a signed copy of the accounts and they were available for inspection by any member. The Honorary Treasurer then moved to his presentation by stating that the Society recorded a deficit of nearly £100,000 at December 1990 but this had been reduced to £57,000 on ordinary activities at the end of the financial year, and a surplus of £72,476 had been achieved mainly as a result of recovered VAT contributions. He pointed out that in real terms subscription levels had fallen and whilst the corporate subscription for the time being would remain at £30 some classes of membership had been adjusted in order to simplify them. Full details of those adjustments were outlined in a new application form, copies of which had been supplied to members present.

He then asked for any questions on the accounts.

P L Crosland, G6JNS, asked why no disciplinary action had been taken against the former Chief Executive of the Society in respect of allegations that he had exceeded his authority whilst in office. Mr Crosland indicated that he had no proof of those allegations and refused to withdraw the question. The Honorary Treasurer said he was not in possession of any evidence to support the allegation and considered the question improper to the meeting. G Smith, G4AJJ, said that he was in possession of documents which supported the allegations. The President said he considered the question out of order and this was confirmed by the meeting. (Legal advice obtained by the Company Secretary on this matter subsequent to this discussion confirms that the Council properly considered the matter, came to the decision that it did and was entitled to do so.)

A Butcher, G3FSN, then asked the Honorary Treasurer to comment on the provisions made for bad debts and it was pointed out that the increase was due to including debts which had not been provided for in previous accounts and that a more stringent policy was now being followed.

I McLuskie, G8ORG, asked about the apparent shortfall in income compared with expenditure in respect of newsletters but the Honorary Treasurer pointed out that GB2RS costs had been included which tended to give a false picture. In future accounts these costs would be itemised separately. He also confirmed that refunds would be made in respect of those newsletters which had ceased publication to the extent that they had not been circulated.

N Lasher, G6HIU, asked about the bad debts in respect of last year's NEC and the Company Secretary indicated that nearly all the monies due for this event had been collected. He then went on to describe the credit control system now in operation which ensured that bad debts were pursued vigorously.



G Stancey, G3MCK, then asked about the sum spent on exhibitions, publicity and advertising in 1991 and wanted to know how to compare the figure with that spent in 1990 where no sum was shown. The honorary Treasurer replied that the auditors did not have comparative figures available.

P L Crosland, G6JNS, asked about the situation surrounding Lambda Investments Ltd and RSGB Licences Ltd, both subsidiary companies of the Society. The Honorary Treasurer explained that the former had now been struck off and the latter had been formed to allow the Society to tender for the issue of licences but it had been unsuccessful in this venture.

I McLuskie, G8ORG, asked about the service provided by the QSL bureau and pointed out that the B class licensees did not, in his opinion, receive the same standard of service as the A class licensees. The Company Secretary then described the system in some detail and refuted the suggestion that any amateur received a second class service from it. The bureau could only deal with cards it received and these were despatched at regular intervals to the sub-managers. The number of sub-managers allocated per callsign group was done on the basis of work load and nothing else. He rejected a suggestion that a charge should be made for the bureau service because in his opinion it was an integral part of the benefits provided by the subscription.

I McLuskie, G8ORG, asked where the lottery income was shown in the accounts. The Honorary Treasurer replied that the lottery had made a surplus of nearly £8,000 and this was included in the accounts under general revenue.

G A Mills, G1CSF, asked about the cost of Raynet during the financial year and whether the amount spent was within the budget allocation. The Honorary Treasurer replied that the amount was £5094 excluding any staff time and was within the budget although the amount actually allocated to committee chairmen was much less than that. The balance was made up by administrative expenses incurred at HQ.

I McLuskie, G8ORG, asked about the computer facilities at HQ and wanted to know whether there would be additional costs over and above those covered by the maintenance contract. The answer was that there would be additional costs.

The President then read a written question from N Fitch, G3FPK, which asked why the leased computer was shown as a fixed asset. The Honorary Treasurer explained that it was standard accounting practice to show a lease in such a way.

#### 1992 Council

THE PRESIDENT THEN moved on to agenda item 3: to announce the names of those members to serve on Council for the year 1992 and to call for volunteer scrutineers for the 1992 Council election, but D Koopman, G1TLH, interjected by asking to be allowed to make a general statement about certain aspects of the election procedure. He went on to allege certain irregularities in procedure by stating that a number of members were denied ballot forms because they had not been inserted into *RadCom*. He further alleged that a Council member and the General Manager, in a mistaken effort to try and rectify some of the omissions, had taken ballot forms to a club affected by the error and distributed them. Mr Koopman considered that they might have invalidated the election.

The Company Secretary replied that he might well have done the same thing under the circumstances and he obviously regretted the fact that some members were disadvantaged by the inefficiency of the printers who were responsible for inserting the ballot papers into the magazine, but the fact that members could contact HQ for ballot papers if they were not in receipt of them had been well publicised and yet only 30 had taken the trouble to do so. He went on to point out that the system was not and could never be foolproof. Indeed, even the national electoral procedure had been manipulated in the past. However any mistakes that had occurred would be looked at with a view to seeing that they did not occur again (Company Secretary's note: The Society for Electoral Reform has been contacted and is willing to advise on future procedures).

R Horton, G4AOJ, then asked the President to terminate the discussion, as whether an election had been conducted properly was a matter for Council. If Council was satisfied with the conduct of the election then, in his opinion, that was the end of the matter.



## RSGB ANNUAL MEETING

The President then announced the result of the election as follows:

D W McQue	G4NJU	997 votes
E G Allen	G3DRN	1042 votes
E J Allaway	G3FKM	2030 votes
E P Essery	GW3KFE	881 votes
M H Claytonsmith	G4JKS	1900 votes
D J Gourley	G0MJY	416 votes
D J Hough	G4WRW	580 votes
R G Wilson	G4NZU	887 votes
N Roberts	G4IJF	1432 votes
G L Benbow	G3HB	1403 votes
J N Gannaway	G3YGF	1023 votes

E J Allaway G3FKM, M H Claytonsmith G4JKS, N Roberts G4IJF and G L Benbow G3HB were declared elected Ordinary Members.

In Zone C the result was as follows:

N Lasher	G6HIU	248 votes
R P Horton	G4AOJ	458 votes

R P Horton G4AOJ was declared elected.

In Zone A: P R Sheppard G4EJP was declared elected unopposed

In Zone D: P E Chadwick G3RZP was declared elected unopposed

In Zone F: I J Kyle G18AYZ was declared elected unopposed

The total number of votes disallowed was 301 as follows:

Received late	26
Spoilt	269
Others	6

The President then read out the names of those who would constitute the 1992 Council:

### Ordinary Members

J T Barnes	G13USS	1992 President
E J Case	GW4HWR	Immediate Past President
J Allaway	G3FKM	
J Bazley	G3HCT	
G L Benbow	G3HB	
M H Claytonsmith	G4JKS	
J D Forward	G3HTA	
G R Jessop	G6JP	
T I Lundegard	G3GJW	
N Roberts	G4IJF	
P D Tucker	GU4DWZ	Honorary Treasurer

### Zonal Members

Zone A	P R Sheppard	G4EJP
Zone B	J Allen	G3DOT
Zone C	R P Horton	G4AOJ
Zone D	P E Chadwick	G3RZP
Zone E	C N Trotman	GW4YKL
Zone F	I J Kyle	G18AYZ
Zone G	I D Suart	GM4AUP

The scrutineers were thanked for their work. They were B Bower, G3COJ, A Butcher, G3FSN, W Dunell, G3BYW, A Gard, G3LWA, E H Major, G3BYC, P Manning, G1LKJ, E Winchcombe, G6ZH, L Crane, G3BED and I Brothwell, G4EAN. Particular thanks went to W Craig, G6JJ, for leading the team.

The President announced that all had agreed to take part in the 1992 election, and called for further volunteers. The following put themselves forward: D J Koopman, G1TLH; H Bellfield, G3SBV; J Greenwell, G3AEZ; R Ray, G3NCL; G Lovelock, G3III; G Stancey, G3MCK; P Townsend, G6PMT; P Crosland, G6JNS; J Crabbe, G3WFM; F S G Rose, G2DRT; P Brazier, G6JFN; J Hein, GM1YME.

G Smith, G4AJJ, pointed out that J Hein, GM1YME, had volunteered last year and had not been contacted. The Company Secretary acknowledged that error had been his (the Company Secretary's).

G Foster, G1DRG, asked that disappointment be recorded at the low poll. Even though four times as many votes were recorded this year the total number of members exercising their franchise was pitiful.

### Auditors

LAST ON THE AGENDA WAS a resolution: to reappoint the Auditors, Peter Goddard and Co and to authorise Council to fix their remuneration. Proposed J Danby, G0OVM, seconded P Dombrowski, GW1NYO. On a show of hands the motion was carried unanimously.



(L to R) John Hall, G3KVA, Company Secretary; John Case, GW4HWR, President; Philip Smith, General Manager; Peter Tucker, GU4DWZ, Honorary Treasurer.

## EXTRAORDINARY MEETING

THE PRESIDENT THEN moved to the notice calling the Extraordinary General Meeting which had been circulated to members with the November 1991 edition of *Radio Communication*. The notice was read by the Company Secretary as follows "Notice is hereby given that the Extraordinary General Meeting of the Society will take place after the Annual General Meeting at the same location for the transaction of the following business":

1. That the Articles of Association of the Company be altered by deleting the whole of Article 20 and inserting the following new paragraph:

*Subscriptions shall be payable in advance and may be paid in one or more instalments as shall be determined by the Council from time to time. The first subscription shall be due on election and subsequent annual subscription shall be due subject to any instalment arrangements, either on the first day of the month in which the member was elected in each year or on such common renewal date as shall be determined by the Council from time to time.*

Proposed E J Case, GW4HWR. Seconded P D Tucker, GU4DWZ.

I McLuskie, G8ORG, asked how a 'paid up member' would be defined if membership subscriptions were paid by instalments. This was particularly relevant to the right of a member to vote at the AGM. The Company Secretary replied that it was his understanding that if, say, the AGM was held in the third quarter of the year and a member had paid his third or fourth instalments then he would be a paid up member within the terms of the Articles of Association.

On a show of hands the motion was carried.

2. That the Articles of Association of the company be altered by deleting from Article 22 the words "three months" and substituting the words "two months". In Article 92 deleting the words "three months" and inserting the words "two months".

Proposed E J Case, GW4HWR. Seconded P D Tucker, GU4DWZ.

On a show of hands the motion was carried.

3. That the Articles of Association of the Company be altered by deleting the whole of Article 33 and inserting the following new Article 33:

*The chair at the General Meeting or the meeting of the Council shall be taken by the President or, in his absence, by the Executive Vice President. In the absence of the President and the Executive Vice President or in the event that neither of them wish to take the chair at a meeting, then the chair shall be taken by any Council member present who is selected by the members present. Failing this, in a case other than a meeting of the Council, the members present may elect and corporate member as Chairman.*

Proposed E J Case, GW4HWR. Seconded P D Tucker, GU4DWZ.

G Smith, G4AJJ, said he was totally opposed to this motion because it would allow the President to abdicate his responsibility by not chairing certain meetings. The President replied by saying that all the proposition sought to do was to provide for the situation where the President felt there was a conflict of interest and that it would be better for someone other than the President to take the chair. He went on to say that it covered all meetings of Council and any other General meeting.

P Crosland, G6JNS, said he felt the motion had been badly drafted in that it covered all eventualities and not just the conflict of interest situation. He asked for it to be withdrawn in its present form and re drafted. The Company Secretary said that he taken written legal advice on the drafting and it was considered correct.

T Winchcombe, G6ZH, asked whether the eventuality was covered already by Article 67 which demanded that any member of Council who shall be personally concerned in a question under consideration shall declare his interest and shall retire during the discussion and determination of the same and shall not vote thereon. The Honorary Treasurer said that was not the same sort of eventuality covered by the proposed amendment which sought to allow a Chairman to take part and vote in a discussion but not chair the meeting because of a prior involvement in the matter under discussion.

A proxy vote was called for and the motion was carried. The total votes cast for the motion being 1160 and the total votes against being 40. The motion was therefore carried.

4. That the Articles of Association of the Company be altered by deleting in Article 51 "10th September" and substituting "1st September" and in Article 52 deleting the words "10th October" and inserting the words "1st October".

Proposed E J Case, GW4HWR. Seconded P D Tucker, GU4DWZ.

On a show of hands the motion was carried

5. That the Articles of Association of the company be altered by re numbering existing Article 93 as Article 95.

Proposed by E J Case, GW4HWR, Seconded by P D Tucker, GU4DWZ.

On a show of hands the motion was carried

6. That the Articles of Association of the Company be altered by inserting the new Articles 93 and 94 as follows:

*Article 93, The General Manager shall be appointed by the Council for such term, at such remuneration and upon such conditions as the Council may think fit, and any General Manager so appointed may be removed by Council. The Council may also appoint an Assistant, Temporary or Acting General Manager during a vacancy in the office of General Manager or if the General Manager is ill or otherwise absent from his office.*

*Article 94, No person who is a member of Council shall be appointed to hold office as General Manager, Assistant General Manager or Acting General Manager.*

Proposed E J Case, GW4HWR. Seconded P D Tucker, GU4DWZ.

P Crosland, G6JNS, was concerned that the wording of the new Article would preclude a member of Council temporarily assuming the responsibilities of General Manager in an emergency, but the Honorary Treasurer assured him that was not so and a member of Council could take on the role as Temporary General Manager.

H Claytonsmith, G4JKS, asked whether the headings on the Articles would be altered to reflect the changes. The Honorary Treasurer replied that the headings were merely there as an aid to reading and were not part of the actual Article.

On a show of hands the motion was carried.

The President then formally closed the Extraordinary General Meeting.

# Amateur Radio Band Plans

On all bands there are recommended sections set aside for use by each mode. In some parts of the world (eg the USA) observance of these band sub-divisions is mandatory. The IARU Region 1 HF band plan is set out below and should be observed at all times even though its recommendations are only advisory as far as UK amateurs are concerned.

1.8MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
<b>1.810</b>					
<b>CW only</b>		Available on the basis of non-interference to other services (inside or outside the United Kingdom)	(Not allocated)	15dBW (1.830-1.850 only: 26dBW from 1.4.92)	Morse Telephony RTTY Data Facsimile SSTV
<b>1.840</b>	1.840 ±2kHz RTTY				
<b>CW and phone</b>					
<b>2.000</b>					

Callsign	Location	Frequencies (kHz)
GNI	Niton IoW	1834
GNK	Norwick, Shetland	1824
GPK	Portpatrick	1883
GHD	Hebrides	1866
GKR	Wick	1827, 1922*
GND	Stonehaven	1856w, 1946, 1999*
GCC	Cullercoats	1838, 1953w
GKZ	Humber	1869, 1925(w)
GNF	N. Foreland	1848
EJM	Malin Head	1841w
EJK	Valentia	1827w
OST	Ostende	1817w, 1820w, 1905, 1908, 1971.5*
OSA	Antwerpe	1901w, 1904
PCH	Scheveningen	1862w, 1890w, 1919.5*, 1939w (1971), 1972.5*, (1995)
DAN	Norddeich	1911
DAO	Kiel	1880, 1883, 1915, 1918
AXB	Blavand	1813
FFU	Brest	(1894), (1995)
FFO	St Nazaire	1817, (1995)
FFC	Bordeaux	1820, 1862w
FFM	Marseilles	1906w, 1988
TKM	Grasse	1834, 1988

The 1.8MHz band is shared with other services. This is a list of coastal radio station frequencies which are to be avoided.

All frequencies are used for SSB, except those marked with an asterisk (rtty). Apart from those in brackets, which are available when required, they are all in regular use. "W" indicates a working frequency.

In addition to these, 1950 and 1953kHz, both J3E/USB, are assigned to all UK coastal radio stations. The frequencies which tend to suffer interference from stations in the amateur service are 1,820, 1,841, 1,852 and 1,953kHz, with the last being by far the most commonly affected.

### IARU: Band Plan co-ordination

As the RSGB represents the interests of radio amateurs within the UK, so the International Amateur Radio Union (IARU) represents amateur radio on an international scale. Its membership is made up of national societies rather than individuals and it has around 125 member societies. It was founded in 1925 and has its headquarters in the USA. It is split into three sections as is the International Telecommunications Union (ITU). Region 1 comprises the UK, Europe, Africa and the former USSR.

The aim of the IARU is to promote worldwide growth in the movement and where necessary represent the movement's interests at the ITU. It also regulates and co-ordinates band plans, and makes recommendations for the use in operation of specialised activities such as meteor scatter.

Another service provided is the Monitoring Service (IARUMS) which monitors unauthorised transmissions by other services within the amateur bands. Reports from the IARUMS are sent to both the ITU and national telecommunication administrations.

3.5MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission	
		Amateur Service	Amateur Satellite Service	PEP		
<b>3.500</b>						
<b>CW only</b>	3.500 – 3.510	Primary. Shared with other services	(Not allocated)	26dBW	Morse Telephony RTTY Data Facsimile	
	3.500 – 3.560					<i>reserved for intercontinental working contest preferred segment</i>
	3.590 – 3.600					<i>used by packet radio shared with CW/RTTY</i>
<b>3.600</b>	3.600 ±20kHz RTTY shared with CW/phone					
<b>CW and phone</b>	3.600 – 3.650					
	3.635 – 3.650					
	3.700 – 3.800					
	3.735 ±5kHz					
	3.775 – 3.800	<i>SSTV/fax recommended reserved for intercontinental working</i>				
<b>3.800</b>						



## BAND PLANS

7MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
7.000					
CW		Primary	Primary	26dBW	Morse Telephony RTTY Data Facsimile SSTV
7.040	7.040 ±5kHz <i>RTTY/SSTV/fax shared with CW/phone</i>				
CW and phone					
7.100					

10MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
10.100					
CW		Secondary	(Not allocated)	26dBW	Telephony RTTY Data Facsimile SSTV
10.140					
RTTY (shared with CW)					
10.150					

**Notes:** No contests should be organised on the 10MHz band. Credit for awards or diplomas should be accepted for contacts made on the 10MHz band. SSB may be used on the 10MHz band during emergencies involving the immediate safety of life and property, and only by stations actually involved in the handling of emergency traffic.

14MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
14.000					
CW	14.000 – 14.060 <i>contest preferred segment</i>	Primary	Primary	26dBW	Morse Telephony RTTY Data Facsimile SSTV
14.070					
RTTY (shared with CW)	14.089 – 14.099 <i>used by packet radio</i>				
14.099	14.099 – 14.101 <i>reserved for International Beacon Project (packet radio operators are asked to take special care to avoid causing interference in this segment)</i>				
14.101					
CW and phone	14.125 – 14.300 <i>contest preferred segment</i>				
14.250					
CW and phone	14.230 ±5kHz <i>recommended for SSTV/fax</i>		(Not allocated)		
14.350					

18MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
18.068					
CW					
18.100					
CW and RTTY		Primary	Primary	26dBW	Morse Telephony RTTY Data Facsimile SSTV
18.110					
CW and phone					
18.168					
21MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
21.000					
CW	21.100 ±20kHz <i>RTTY shared with CW</i> 21.100 – 21.120 <i>packet</i>	Primary	Primary	26dBW	Telephony RTTY Data Facsimile SSTV
21.149	<i>reserved for International Beacon Project</i>				
21.151					
CW and phone	21.340 ±5kHz <i>recommended for SSTV/fax</i>				
21.450					
24MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
24.890					
CW					
24.920					
CW and RTTY		Primary	Primary	26dBW	Morse Telephony RTTY Data Facsimile SSTV
24.930					
CW and phone					
24.990					
28MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
28.000					
CW	28.120 – 28.150 <i>packet radio</i>	Primary	Primary	26dBW	Morse Telephony RTTY Data Facsimile SSTV
	28.190 – 28.300 <i>reserved for International Beacon Project (to end 1992)</i>				
	28.190 – 28.225 <i>reserved for beacons (from end 1990)</i>				
28.200	28.100 ±50kHz <i>RTTY shared with CW</i>				
CW and phone	28.680 ±5kHz <i>recommended for SSTV/fax</i> 29.250 ±50kHz <i>packet radio NBFM</i> 29.300 – 29.550 <i>reserved for Satellite Service downlink</i>				
29.700					



## BAND PLANS

50MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission	
		Amateur Service	Amateur Satellite Service	PEP		
CW only	50.020 – 50.080 <i>beacons</i> 50.090 <i>CW calling</i>	Primary. Available on the basis of non-interference to other services outside the United Kingdom. Antennas limited to 20 metres above ground level. No Maritime Mobile operation		20dBW erp	Morse Telephony RTTY Data Facsimile SSTV	
All narrow band modes	50.100 – 130 <i>DX window Note 1</i> 50.110 <i>intercontinental calling Note 2</i> 50.185 <i>cross-band act. centre</i> 50.200 <i>SSB calling</i> 50.300 <i>CW MS calling</i> 50.350 <i>SSB MS calling</i>					
All modes	50.600 <i>RTTY (AFSK)</i> 50.630 – 50.750 <i>packet radio Note 3</i>					
SSB and CW only	51.110 <i>VK / ZL calling</i>					
All modes	51.210 <i>Note 5</i>					
All modes except FM	51.300 <i>calling (not FM)</i>					
51.410						
Note 4 FM simplex channels	51.410 – 51.590 <i>FM telephony</i> 51.510 <i>FM calling</i> 51.530 <i>Note 6</i>					
51.830						
52.000	51.940 – 52.000 <i>Note 5</i>					
<p>1: Only to be used for QSOs between stations in different continents.                  2: No QSOs on this frequency. Always QSY when working intercontinental DX.                  3: 20KHz channel spacing. Channels start at 50.630MHz.                  4: 20KHz channel spacing. Channels start at 51.410MHz.                  5: Raynet priority. Do not use without first liaising with local Raynet groups.                  6: Used by GB2RS and for slow morse transmissions.</p>						
70MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission	
		Amateur Service	Amateur Satellite Service	PEP		
70.000		Secondary. Available on the basis on non-interference to other services outside the United Kingdom	(Not allocated)	22dBW	Morse Telephony RTTY Data Facsimile SSTV	
Beacons	70.030 <i>personal beacons</i>					
70.030						
SSB and CW only	70.150 <i>meteor scatter calling</i> 70.185 <i>cross-band activity centre</i> 70.200 <i>SSB / CW calling</i>					
70.250						
All modes	70.260 <i>AM / FM calling</i>					
70.260						
Channelised operation using 12.5 kHz channels	70.3000 <i>RTTY/ fax</i> 70.3125 <i>packet radio</i> 70.3250 <i>packet radio</i> 70.3375 70.3500 <i>Note 1</i> 70.3625 70.3750 <i>Note 1</i> 70.3875 70.4000 <i>Note 1</i> 70.4125 70.4250 70.4375 70.4500 <i>FM calling</i> 70.4625 70.4750 70.4875 <i>packet radio</i>					
	70.500					
	<p>1: Raynet Priority: Do not use without first liaising with local Raynet groups.</p>					

144MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
144.000					
CW only	144.000 – 144.025 <i>moonbounce</i> 144.050 <i>CW calling frequency</i> 144.100 <i>MS CW ref. frequency</i> 144.140 – 144.150 <i>FAI working</i>				
144.150					
SSB and CW only	144.150 – 144.160 <i>FAI working</i> 144.250 <i>Notes 1 and 2</i> 144.260 <i>Note 3</i> 144.300 <i>SSB calling frequency</i> 144.400 <i>MS SSB ref. frequency</i>				
144.500					
All modes non-channelised	144.500 <i>SSTV calling frequency</i> 144.600 <i>RTTY calling frequency</i> 144.600± <i>RTTY working (FSK)</i> 144.625 <i>packet radio</i> 144.650 <i>mailboxes</i> 144.675 <i>packet radio</i> 144.700 <i>fax calling frequency</i> 144.750 <i>FSTV calling and talkback</i> 144.775 – 144.825 <i>Note 3</i>				
144.845					
Beacons	144.850 <i>Note 4</i>				
144.990					
FM repeater inputs	145.000 R0 145.025 R1 145.050 R2 145.075 R3 145.100 R4 145.125 R5 145.150 R6 145.175 R7	Primary	Primary	26dBW	Morse Telephony RTTY Data Facsimile SSTV
145.200					
FM Simplex channels	145.200 S8 <i>Note 3</i> 145.225 S9 <i>Note 3</i> 145.250 S10 <i>Note 2</i> 145.275 S11 145.300 S12 <i>RTTY AFSK</i> 145.325 S13 145.350 S14 145.375 S15 145.400 S16 145.425 S17 145.450 S18 145.475 S19 145.500 S20 <i>FM calling channel</i> 145.525 S21 <i>Note 1</i> 145.550 S22 <i>Note 5</i> 145.575 S23				
145.600					
FM repeater outputs	145.600 R0 145.625 R1 145.650 R2 145.675 R3 145.700 R4 145.725 R5 145.750 R6 145.775 R7				
145.800					
Satellite service					
146.000					

- 1: Used by GB2RS.
- 2: Used for slow Morse transmissions.
- 3: Raynet priority. Do not use without first liaising with local Raynet groups.
- 4: Used by Raynet subject to 14dBW ERP limitation. This note will eventually be deleted from the band plans.
- 5: Recommend frequency for rally and exhibition talk-in.

**Notes on UK 144MHz and 430MHz Band Plans**

MS operation can take place up to 26kHz higher than the reference frequency (see RSGB *Amateur Radio Operating Manual* p80).  
 The beacon and satellite service must be kept free of normal communication transmissions to prevent interference with these services.  
 The use of the FM mode within the SSB/CW section and CW and SSB in the FM-only sector is not recommended.  
 Repeater stations are primarily intended as an aid for mobile working and they are not intended to be used for DX communication. FM stations wishing to work DX should use the all-modes section, taking care to avoid frequencies allocated for specific purposes.



**BAND PLANS**

430 – 440MHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
<b>430.000</b>					
All modes Note 1	430.4 – 430.575 <i>Note 8</i>	Secondary. Not available for use within the area bounded by: 53°N 02°E, 55°N 02°E, 53°N 03°W and 55°N 03°W		16dBW erp	
<b>431.000</b>					
All modes Note 1		Secondary. Not available for use: a) within the area bounded by: 53°N 02°E, 55°N 02°E, 53°N 03°W and 53°N 03°W; b) within a 100km radius of Charing Cross, London (51°30'30"N, 00°07'24"W)			
<b>432.000</b>					
CW only	432.000 – 432.025 <i>moonbounce</i> 432.050 <i>CW centre of activity</i>				
<b>432.150</b>					
SSB and CW only	432.200 <i>SSB centre of activity</i> 432.350 <i>microwave talk-back</i>				
<b>432.500</b>					
All modes non-channelised	432.500 – 432.600 <i>Note 2</i> 432.600 – 432.800 <i>Note 3</i> 432.500 <i>SSTV activity centre</i> 432.600 <i>RTTY (FSK) activity centre</i> 432.625 <i>packet radio</i> 432.650 <i>packet radio</i> 432.675 <i>packet radio</i> 432.700 <i>fax activity centre</i>				
<b>432.800</b>					
Beacons		Secondary	(Not allocated)	26dBW	Morse Telephony RTTY Data Facsimile SSTV FSTV
<b>432.990</b>					
<b>433.000</b>					
FM repeater outputs in UK only	433.000 RB0 433.025 RB1 433.050 RB2 433.075 RB3 433.100 RB4 433.125 RB5 433.150 RB6 433.175 RB7 433.200 RB8 433.225 RB9 433.250 RB10 433.275 RB11 433.300 RB12 433.325 RB13 433.350 RB14 433.375 RB15				
<b>433.400</b>					
FM simplex channels	433.400 SU16 433.425 SU17 433.450 SU18 433.475 SU19 433.500 SU20 <i>FM calling channel</i> 433.525 SU21 433.550 SU22 <i>Note 4</i> 433.600 SU24 <i>RTTY AFSK</i> 433.625 <i>packet radio</i> 433.650 <i>packet radio</i> 433.675 <i>packet radio</i> 433.700 <i>Notes 5 and 6</i> 433.725 <i>Note 5</i> 433.750 <i>Note 5</i> 433.775 <i>Note 5</i>				
<b>434.600</b>					

*continued on page 53*

# ICOM

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7/8th.MARCH**

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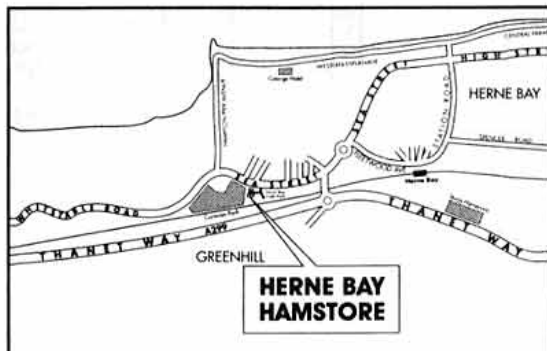
**3. IC-P2ET 144MHz FM Handheld Transceiver £275.**

**4. IC-P2E 144MHz FM Handheld Transceiver £259.**

**5. IC-2SRE 144MHz FM Handheld Transceiver/Wide Band Receiver £425.**



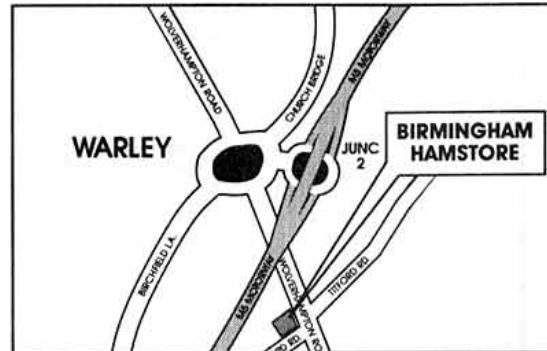
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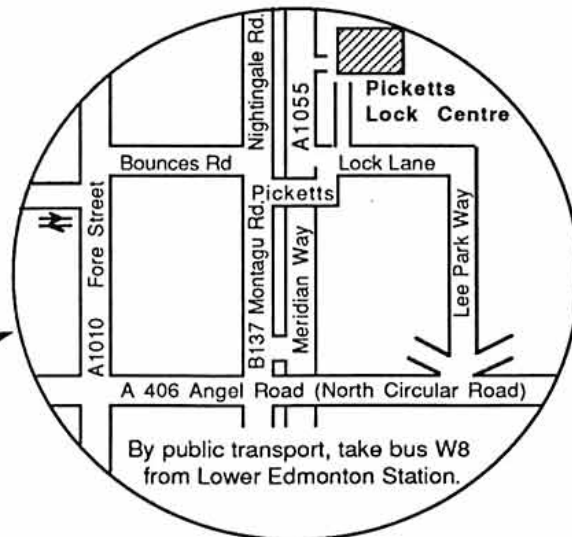
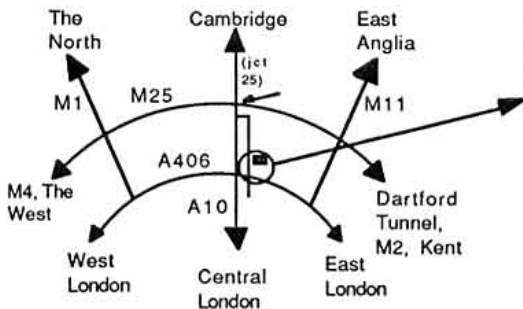
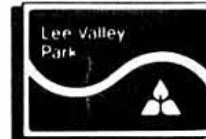
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**BLUE HALL**  
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Company	Block
The Flying Shop	I
Videk Ltd	S
Waters & Stanton	W
Weirmead Ltd	V

**EXHIBITORS — GREEN HALL**

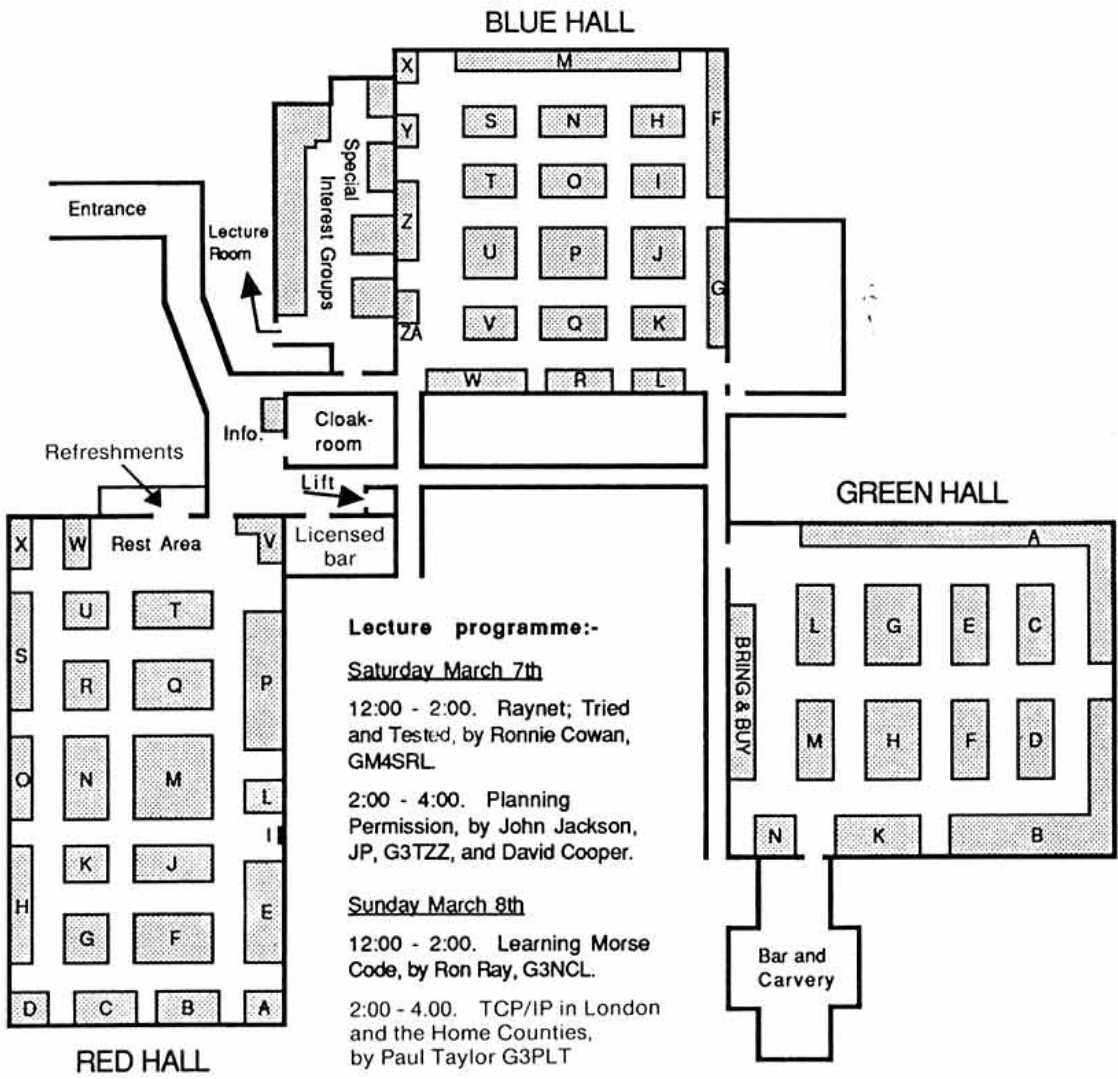
Company	Block
Alien	E
Amtech	H
Castle Electronics	F
Cirkit Distribution	A
Coltec Electronics	A
Cross Trading	E
Damson Computing	H
Dewsbury Electronics	A
Fisher Products	B
GQRP Club	A
Gunning	H
Ham Radio Today	L
Harrison Electronics	A
Hesing Technology	D
K.W. Communications	G
Kanga Products	A
Keytronics	N
LMW	C
Lake Electronics	F
Lee Electronics	K
Len Cook	H
Mainline Electronics	H
Merlin	D
Mutek	M
New Cross Radio	F
Potters Bar Radio	I

*continued*

Company	Block
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Radio Research	H
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Silvertronic Ltd	M
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Remote Imaging Group	
Royal Naval A.R. Society	
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Worked All Britain A/G	

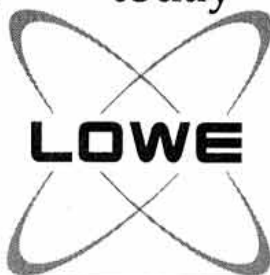




# 2

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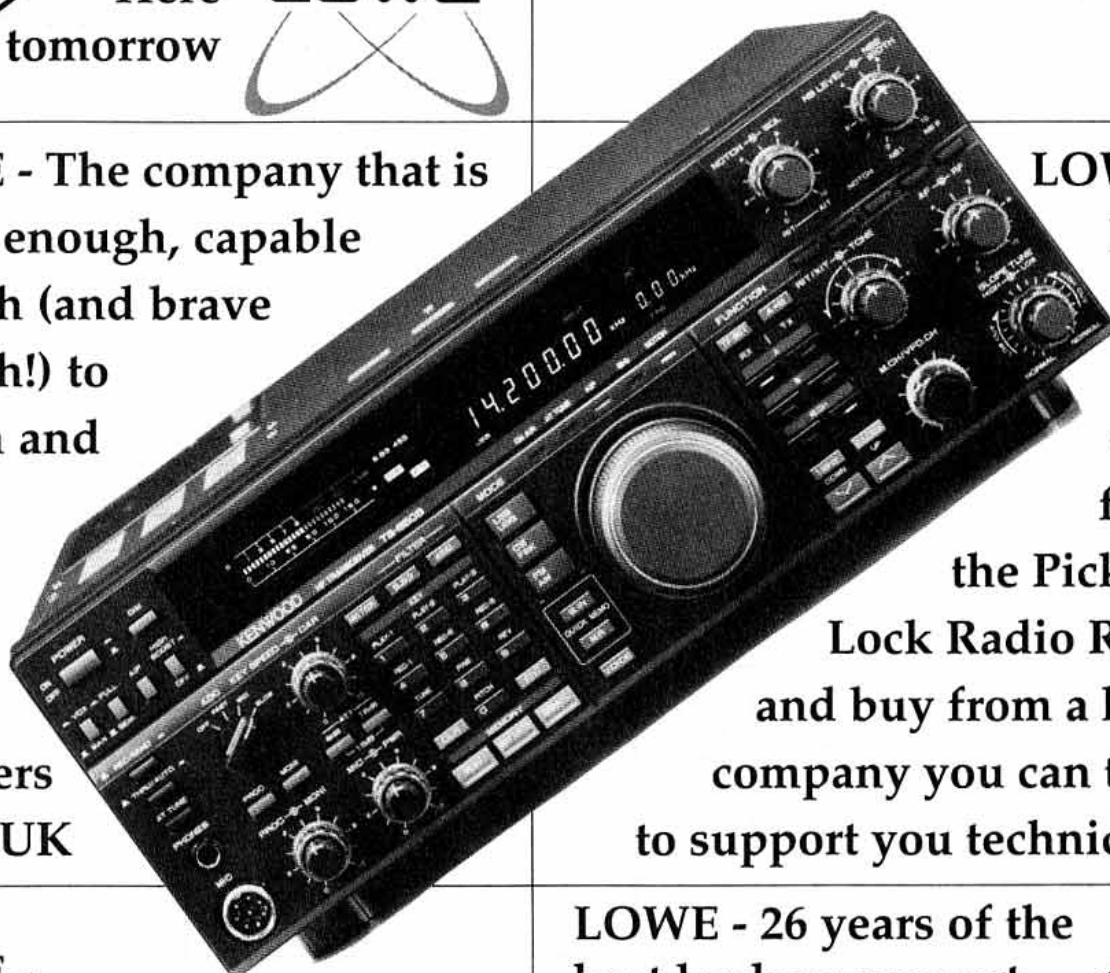


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# 365

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**430 – 440MHz**  
continued from page 48

	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
<b>434.600</b>					
FM repeater inputs (in UK only) and fast scan television Note 1	434.600 RB0 434.625 RB1 434.650 RB2 434.675 RB3 434.700 RB4 434.725 RB5 434.750 RB6 434.775 RB7 434.800 RB8 434.825 RB9 434.850 RB10 434.875 RB11 434.900 RB12 434.925 RB13 434.950 RB14 434.975 RB15	Secondary	(Not allocated)	26dBW	Morse Telephony RTTY Data Facsimile SSTV
<b>435.000</b>					
Satellite Service and fast scan television			Secondary		
<b>438.000</b>					
Fast scan television	438.025 – 438.175 Note 8 438.200 – 439.425 Note 1 439.800 – 439.975 Note 8		(Not allocated)		
<b>440.000</b>					

\* See page 58 for notes to the 430-440MHz band plans.

**1,240 – 1,300MHz**

	UK Band Plan Amateur Service	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Satellite	Amateur PEP Service		
<b>1,240.000</b>					
All modes	1,240.150 packet radio (150kHz b/w) 1,240.300 packet radio (150kHz b/w) 1,240.450 packet radio (150kHz b/w) 1,240.600 packet radio (150kHz b/w) 1,240.750 packet radio (150kHz b/w)		(Not allocated)		
<b>1,241.100</b>					
ATV					
<b>1,251.500</b>					
All modes					
<b>1,260.000</b>					
Satellite service		Secondary	Secondary, Earth to space only	26dBW	Morse Telephony RTTY Data Facsimile SSTV FSTV
<b>1,270.000</b>					
ATV					
<b>1,286.000</b>					
All modes c)					
<b>1,291.000</b>					
Repeater input	RM0 (UK) 25kHz spacing RM19		(Not allocated)		
<b>1,291.475</b>					
<b>1,291.500</b>					

continued on next page



**BAND PLANS**

1,240 – 1,300MHz <i>continued from prev. page</i>		UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
			Amateur Service	Amateur Satellite Service	PEP	
1,291.500						
All modes						
1,296.000						
CW		1,296.000 1,296.025	<i>moonbounce</i>			
1,296.150						
SSB	Narrow band DX segment a)	1,296.200 1,296.500 1,296.600 1,296.600 1,296.700	<i>narrow-band centre of activity linear transponder input linear transponder output</i>			
1,296.800						
Beacons exclusive	b)	1,296.500 1,296.600 1,296.700	<i>SSTV RTTY fax</i>			
1,296.990						
1,297.000						
Repeater output		RM0 RM19	<i>(UK) 25kHz spacing</i>	Secondary	(Not allocated)	26dBW  Morse Telephony RTTY Data Facsimile SSTV FSTV
1,297.475						
1,297.500						
FM simplex	d)	SM20 SM30				
1,298.000						
All modes			<i>digital communications</i>			
1,298.500						
		1,299.000 1,299.000 1,299.425 1,299.575 1,299.725	<i>remote control packet radio (25kHz b/w) packet radio (150kHz b/w) packet radio (150kHz b/w) packet radio (150kHz b/w)</i>			
1,300.000						

*UK extends to 1,325MHz.*

**Notes on the 1,240 – 1,300MHz Band Plan**

1. IARU Region 1 Band Plan  
the following notes are part of the provisional IARU Region 1 band plan, adopted at the IARU Region 1 conference in Cefalu (1984), and all member societies should strongly promote adherence to the recommendations made in these notes.
  - 1.1 Footnotes
    - a. CW is permitted over the whole narrow-band DX part of the band; CW exclusive between 1,296.000 – 1,296.150MHz.
    - b. Regional planning by the Beacon Co-ordinator only for beacons with more than 50 Watts ERP.
    - c. DARC draws attention to the fact that in order to avoid interference to/from primary users the use of 1,286 – 1,291MHz for ATV will be continued in The Federal Republic of Germany.
    - d. In countries which do not have access to 1,298 – 1,300MHz (e.g. Italy) the FM simplex segment may also be used for digital communications, if necessary.
  - 1.2. Miscellaneous agreements  
At the IARU Region 1 conference in Warsaw (1975) it was recommended that France, after their loss of the upper part of the band to other services, adopt the portion 1,238 – 1,240MHz for narrow-band operations in the same way as the rest of Region 1 uses in 1,296 – 1,298MHz segment of the band.
2. Usage  
The following notes are referring to the usage column in the band plan. In the right amateur spirit operators should take notice of these agreements which are made for operating convenience, but no right to reserved frequencies can be derived from a mention in the usage column or from the following notes.
  - 2.1 During contests and band openings local traffic using narrow-band modes should operate between 1,297 – 1,298MHz.

**2,320 – 2,450MHz**

	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
2,300.000					
Sub-regional (National band plans)	2,310.0 – 2,310.5 <i>repeater links</i> 2,310.100 <i>packet radio (200kHz b/w)</i> 2,310.300 <i>packet radio (200kHz b/w)</i> 2,310.0 – 2,310.5 <i>remote control</i>				
2,320.100					
CW exclusive	2,320.000 <i>EME</i> 2,320.025 <i>(moonbounce)</i>				
2,320.150					
CW & SSB	2,320.200 <i>SSB centre of activity</i>				
2,320.800					
Beacons exclusive					
2,320.990					
2,321.000					
Simplex & repeaters (FM)		Secondary	(Not allocated)	26dBW	Morse Telephony RTTY Data Facsimile SSTV FSTV
2,322.000					
All modes	2,322 – 2,355 <i>ATV</i> 2,355.1 – 2,364.0 <i>repeater links</i> 2,355.100 <i>packet radio (200kHz b/w)</i> 2,355.300 <i>packet radio (200kHz b/w)</i> 2,364.000 <i>packet radio (1MHz b/w)</i> 2,365 – 2,370 <i>repeaters</i> 2,370 – 2,390 <i>ATV</i>				
2,390.000					
	<i>EME (moonbounce)</i>				
2,392.000					
All modes					
2,400.000					
Amateur satellite service		Secondary. Users must accept interference from ISM users	Secondary. users must accept interference from ISM users		
2,450.000					

**Notes on the 2,300 – 2,450MHz Band Plan**

- a) In countries which do not have access to the ALL MODES against 2,322 – 2,390MHz, the FM SIMPLEX & REPEATER segment 2,321 to 2,322MHz may be used for digital data transmissions.
  - b) In countries where the narrow-band segment 2,320 – 2,322MHz is not available, the following alternative narrow-band segments can be used:  
2,304 – 2,306MHz and 2,308 – 2,310MHz.
- ISM (Industrial, Scientific and Medical).

**3,400 – 3,475MHz**

	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
3,400.000					
All modes					
3,456.000					
Narrow band CW/EME/SSB	3,456.200 <i>centre of activity</i> 3,456.800 – 3,457.000 <i>beacons</i> 3,457.000 – 3,458.000 <i>remote control</i>	Secondary	(Not allocated)	26dBW	Morse Telephony RTTY Data Facsimile SSTV FSTV
3,458.000					
All modes					
3,475.800					



**BAND PLANS**

**5,650 – 5,850MHz**

5,650.000	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
Amateur satellite service (up-link)	5,668 – 5,670 5,668.2 5,668.8 – 5,669.0	Secondary			Morse Telephony RTTY Data Facsimile SSTV FSTV
5,670.000					
All modes					
5,680.000					
All modes					
5,760.000					
Narrow-band CW/EME/SSB	5,760.200 5,760.800 – 5,761.000		(Not allocated)	26dBW	
5,762.000		Secondary. Users must accept interference from ISM users			
All modes					
5,830.000			Secondary. Users must accept interference from ISM users. Space to Earth only		
Amateur satellite service (down-link)					
5,850.000					

\* Proposed change.

**10,000 – 10,500MHz**

10,000.000	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission	
		Amateur Service	Amateur Satellite Service	PEP		
All modes (ATV, data transmission, FM simplex, duplex and repeaters)	10,006 – 10,026 10,006 – 10,026 10,100 10,150 – 10,170 10,150 – 10,170	Secondary			Morse Telephony RTTY Data Facsimile SSTV FSTV	
10,368.000						(Not allocated)
Narrow-band CW/EME/SSB/ Beacons	10,368.200 10,368.800 – 10,369.000					SSB centre of activity narrow band beacons
10,370.000						
All modes	10,400					wide band beacons
10,450.000						
Amateur and amateur satellite service (all modes)			Secondary			
10,500.00						

**Notes on the 10,000 – 10,500MHz Band Plan**

In those countries where the narrow-band segment 10,368 – 10,370MHz is not available, the segment 10,450 – 10,452MHz is suggested as an alternative narrow-band segment.

24.0 – 24.25GHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
24,000.000					
Amateur satellite service	24,025.000 <i>preferred operating frequency wide-band equipment</i> 24,048 – 24,050 <i>preferred narrow band operating</i>	Primary. Users must accept interference from ISM users	Primary. Users must accept interference from ISM users	26dBW	Morse Telephony RTTY Data Facsimile SSTV FSTV
24,050.000		Secondary. May only be used with the written consent of the Secretary of State. Users must accept interference from ISM users	(Not allocated)		
All modes					
24,150.000					
All modes		Primary. Users must accept interference from ISM users			
24,250.000					

47.0 – 47.2GHz	UK Band Plan	Status of allocations in UK to:		Maximum Power:	Permitted Types of Transmission
		Amateur Service	Amateur Satellite Service	PEP	
47,000.000					
	47,088.000 <i>centre of narrow-band activity</i>	Primary	Primary	26dBW	Morse Telephony RTTY Data Facsimile SSTV FSTV
47,200.000					

### Notes to the Schedule

(a) Maximum Power refers to the RF power supplied to the antenna. Maximum power levels will be specified by the peak envelope power (pep).

(b) In the case of frequency bands above 1000 MHz, since high intensities of rf radiation may be harmful, the following safety precaution must be taken. In locations to which people have access, the power flux density on transmit must not exceed the limits recommended by the competent authorities (currently, this limit is 10 mW per square centimetre).

**(c) Primary, permitted and secondary services**

For the purpose of this Licence, frequency bands allocated to the Amateur Service and the Amateur Satellite Service on a primary basis cannot claim protection from Harmful Interference or Undue Interference from any other authorised services, such protection being afforded only to users whose frequencies have been registered nationally or internationally. In the United Kingdom, individual frequency assignments are not registered in the Amateur Service, except for beacons and repeaters. This applies equally to bands allocated on a secondary basis where stations of the Amateur Service and the Amateur Satellite Service are also required not to cause Harmful Interference or Undue Interference to stations of a primary or permitted service to which frequencies are already assigned or to which frequencies may be assigned at a later date.

(d) Any modulation technique (except for pulse emissions below 1000 MHz) may be used for the types of transmission specified in the sixth column of the Schedule which are defined as follows:

Morse: hand or automatically-sent international morse code

Telephony: speech, including selective calling signals

RTTY: radio teletype and AMTOR

Data: digital codes representing numbers, text, speech, images, measurements, computer programmes or other information authorised by the Licence

Facsimile: transmission of fixed or graphic images

SSTV: slow scan (i.e., reduced bandwidth) television

FSTV: fast scan television

**(e) Interpretation**

(i) Effective Radiated Power (erp): The product of the power supplied to the antenna and its gain in the direction of maximum radiation.

(ii) Gain of an Antenna: The ratio, usually expressed in decibels, of the power required at the input of a loss free reference antenna to the power supplied to the input of the antenna to produce, in a given direction, the same field strength or the same power flux-density at the same distance. When not otherwise specified, the gain refers to the direction of maximum radiation. The gain may be considered for a specified polarisation. The reference antenna is usually a half-wave dipole. The gain may be referred to as decibels relative to a half-way dipole (dBd).

(iii) Peak Envelope Power (pep): The average power supplied to the antenna by a transmitter during one radio frequency cycle at the crest of the modulation envelope taken under normal operating conditions.



**Amateur Radio (Novice) Licence (A) and (B) Schedule**

Those licensed under an Amateur Radio (Novice) Licence (B) may not transmit on those bands between 1.950 and 28.500MHz.

1	2	3	4	5
Frequency Bands in MHz	Status of Allocations in the United Kingdom to the Amateur Service	Maximum Power DC Input	Power RF Output (Watts)	Permitted Types of Transmission
1.950 - 2.00	Available on the basis of non-interference to other services (inside or outside the United Kingdom).			Morse Telephony RTTY Data
3.565 - 3.585	Primary. Shared with other services.			Morse
10.13 - 10.14	Secondary.			Morse
21.100 - 21.149	Primary.			Morse
28.100 - 28.190				Morse RTTY Data
28.225 - 28.300				Morse RTTY Data
28.300 - 28.500				Morse Telephony
50.620 - 50.760	Primary. Available on the basis of non-interference to other services outside the United Kingdom. Antennas limited to 20 metres above ground level, with horizontal polarisation only. No mobile operation.	5	3	Data
51.250 - 51.750	Secondary. Available on the basis of non-interference to other services outside the United Kingdom. Antennas limited to 20 metres above ground level, with horizontal polarisation only. No mobile operation.			Morse Telephony Data
433.00 - 435.00	Secondary.			Morse Telephony Data
1240 - 1325				Morse Telephony RTTY Data Facsimile SSTV FSTV
10000 - 10500				Morse Telephony RTTY Data Facsimile SSTV FSTV

**Notes to the Schedule (Extract)**

- (a) The maximum power specified in the third column of the Schedule refers to the peak input power (pip) and the maximum power specified in the fourth column of the Schedule refers to the peak envelope power (pep). The Licensee may use either measurement method, provided that the maximum power specified in the fourth column of the Schedule is not exceeded.
- (b) In the case of frequency bands above 1000 MHz, since high intensities of rf radiation may be harmful, the following safety precaution must be taken. In locations to which people have access, the power flux density on transmit must not exceed the limits recommended by the competent authorities (currently, this limit is 10 mW per square centimetre).
- (c) **Primary, permitted and secondary services**  
For the purpose of this Licence, frequency bands allocated to the Amateur Service on a primary basis cannot claim protection from undue interference from any other authorised services, such protection being afforded only to users whose frequencies have been registered nationally or internationally. In the United Kingdom, individual frequency assignments are not registered in the Amateur Service, except for beacons and repeaters. This applies equally to all bands allocated on a secondary basis where stations of the Amateur Service are also required not to cause undue interference to stations of a primary or permitted service to which frequencies are already assigned or to which frequencies may be assigned at a later date.
- (d) Any modulation technique (except for pulse emissions below 1000 MHz) may be used for the types of transmission specified in the fifth column of the Schedule which are defined as follows:  
 Morse: hand or automatically-sent international morse code  
 Telephony: speech, including selective calling signals  
 RTTY: radio teletype and AMTOR  
 Data: digital codes representing numbers, text, speech, images, measurements, computer programs or other information authorised by the Licence  
 Facsimile: transmission of fixed or graphic images  
 SSTV: slow scan (ie reduced bandwidth) television  
 FSTV: fast scan television

**Notes for the 430 – 440MHz Bandplan**

- 1: In Switzerland, Germany and Austria, repeater inputs are 430.6 – 431.825MHz with 25 KHz spacing, and outputs are 438.200 – 439.425MHz. In France and the Netherlands repeater inputs are 430.025 – 430.375MHz with 25KHz spacing and outputs at 431.625 – 431.975MHz. In other European countries repeater inputs are 433.000 – 433.375MHz with 25 KHz spacing and outputs at 434.600 – 434.975MHz. IE, the reverse of the UK allocation.
- 2: IARU Region 1 Linear Transponder outputs.
- 3: IARU Region 1 Linear Transponder inputs.
- 4: Recommend frequency for rally and exhibition talk-in.
- 5: Raynet priority. Do not use without consulting local Raynet groups.
- 6: IARU Region 1 Fax/AFSK.
- 7: Fast Scan Television carrier frequencies shall be chosen so as to avoid interference to other users, in particular the satellite service and repeater inputs. IARU Region 1 recommends that video carriers should be in the range 434.000 – 434.500MHz or 438.500 – 440.000MHz.
- 8: JIARU Region 1 Packet Radio.

**Third Party Liability and Legal Expenses Insurance**

IN THE FIRST of a series of articles by the Amateur Radio Insurance Service, we examine some of the specially designed insurance benefits available to participating members of the RSGB. This month we look at third party liability and legal expenses insurance.

**Third Party Liability Insurance**

THIRD PARTY liability insurance is designed to protect amateurs against legal liability arising out of the ownership or use of radio equipment, masts and antennas.

The scope of the insurance cover is wide-ranging and would indemnify the amateur in the event of loss of or damage to third party property or injury to third party persons for which he or she is held legally responsible. The cover provided is up to £1 million for any one claim. Here are a few examples of claims we have dealt with in the last few years:-

**Case 1:** A radio amateur erected a 17ft antenna on the roof of his house. During high winds two months later the antenna was blown off the roof and landed on the drive of his next door neighbour's house, hitting his neighbour's Mercedes which had been parked there overnight. The neighbour held our policy-holder responsible for the incident and, after investigation, it transpired that the antenna had not been properly secured. The claim was settled by the insurers at a total cost of £3,242.

**Case 2:** A radio operator was on a caravan holiday and had taken a number of items of equipment with him. One afternoon the caravan site proprietor called to sort out a problem with the water supply and, on entering the caravan, tripped on a trailing lead. He badly injured his leg and was off work for three weeks. The amateur radio operator was held to be negli-

gent and the injured third party successfully claimed £1,200 in compensation.

**Case 3:** An amateur radio policyholder was demonstrating his transmitting equipment to a work colleague in his radio shack. On entering the shack the colleague ripped his suit on a protruding item of equipment and was successful in pursuing a claim for the cost of replacing the suit at a total of £140.

**Legal Expenses Insurance**

IN THE NEXT few months Amateur Radio Insurance Services hopes to be launching an additional insurance benefit for RSGB members - legal expenses insurance - designed to give members protection and peace of mind in this increasingly litigious age.

The insurance will provide for each member a limit of indemnity between £10,000 - £25,000 in respect of:

- Defence of any prosecution or civil action arising out of ownership or use of amateur radio equipment.
- Defence of any prosecution or civil action arising out of activities undertaken on behalf of the RSGB.
- Appeal against a decision to revoke, suspend or curtail a licence under the Wireless and Telegraph Act 1949.

For further details of the Amateur Radio Insurance Scheme please contact Jennifer Lawson, ARIS, Shepherds Hurst, Green Lane, Outwood, Surrey RH1 5QS. Telephone 034 284 4000; Fax 034 284 4554.

**Membership News**

WE WILL INCLUDE in the April edition of *RadCom* our new style brochure and application form. We will offer the facility for you to pay your insurance premiums by Direct Debit or Credit Card (especially your RSGB Credit Cards). This new service is available to all new members and, at renewal, to existing members.

# RADIO SOCIETY OF GREAT BRITAIN

## Unaudited Income and Expenditure Account For the 6 months ended 31 December 1991

	Notes	6 Months Ended 31/12/91 £	6 Months Ended 31/12/90 £
<b>INCOME</b>			
Subscriptions .....	1 .....	402,000	313,105
Newsletters .....	2 .....	10,487	17,688
Advertising .....	.....	123,289	122,643
Book Sales .....	3 .....	191,939	154,982
Other Income .....	4 .....	39,835	28,726
<b>Total Income</b> .....	5 .....	<b>£ 767,550</b>	<b>£ 637,144</b>
<b>EXPENDITURE</b>			
<b>Cost of sales</b>			
Cost of printing & distrib (books) .....	.....	72,268	103,767
Cost of publishing & despatch staff .....	.....	25,802	26,797
Cost of printing & distrib (newsletters) .....	.....	20,711	17,574
Sundry .....	.....	7,192	4,712
		<b>125,973</b>	<b>152,850</b>
<b>Headquarters</b>			
Rates, lighting, heating & cleaning .....	.....	23,139	17,968
Repairs and maintenance .....	6 .....	35,380	8,130
		<b>58,519</b>	<b>26,098</b>
<b>Administration Costs</b> .....	.....	<b>247,982</b>	<b>260,271</b>
<b>Finance</b> .....	7 .....	<b>39,548</b>	<b>22,752</b>
<b>Membership Services</b>			
Radio Communication .....	8 .....	228,003	196,960
QSL Bureau .....	.....	13,320	10,798
Beacons, repeaters, satellites & Int Watch .....	.....	12,923	9,456
Cost of committees, regnl & Ccl mtgs .....	.....	22,633	15,895
Novice Licence .....	.....	15,474	6,862
Other services .....	.....	29,411	31,099
		<b>321,764</b>	<b>271,070</b>
<b>TOTAL EXPENDITURE</b> .....	.....	<b>£ 793,786</b>	<b>£ 733,041</b>
<b>DEFICIT FOR HALF YEAR</b> .....	.....	<b>£ 26,236</b>	<b>£ 95,897</b>

### NOTES

- Subscription income is brought in rateably during the year with any excess or shortfall being taken at the year end.
- Newsletter income and expenditure is subject to review.
- Book sales have increased substantially over the same period last year.
- All other small income figures have been added up.
- Total income is £130,000 ahead of the same period last year.
- The repair and maintenance includes the cost of re-wiring Lambda House.
- Finance costs include provisions for bad debts of £23,712. (1990 - £10,045).
- Radio Communication costs have increased but are still below budget for the year.



# RADIO SOCIETY OF GREAT BRITAIN

## BALANCE SHEET AS AT 31 DECEMBER 1991

	At 31 December 1991 £	At 31 December 1990 £
<b>FIXED ASSETS</b>		
Tangible assets .....	804,665	841,281
Investments .....	—	100
<b>CURRENT ASSETS</b>		
Stocks, at lower of cost and net realisable value .....	142,132	97,443
Trade and other debtors .....	110,995	105,977
Prepayments and accrued income .....	23,088	13,120
Cash at bank and in hand .....	236,288	41,851
	<u>512,503</u>	<u>258,391</u>
<b>CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR</b>		
Obligations under finance leases .....	19,874	19,874
Trade creditors .....	34,064	93,402
Corporation tax .....	1,000	5,000
Other taxation and social security .....	7,464	24,792
Other creditors .....	21,957	1,914
Accruals and deferred income .....	20,764	13,763
	<u>105,123</u>	<u>158,745</u>
<b>NET CURRENT ASSETS</b> .....	<u>407,380</u>	<u>99,646</u>
	<u>1,212,045</u>	<u>941,027</u>
<b>CREDITORS: AMOUNTS FALLING DUE AFTER MORE THAN ONE YEAR</b>		
Obligations under finance leases 2-5 years .....	(37,607)	(59,138)
	<u>£ 1,174,438</u>	<u>£ 881,889</u>
<b>ACCUMULATED FUNDS</b>		
Income and expenditure account		
Balance at 31st December .....	(20)	(142,157)
Current subscriptions reserve .....	289,172	138,760
Revaluation reserve .....	350,000	350,000
Special reserve .....	317,946	317,946
General reserve .....	217,340	217,340
	<u>£ 1,174,438</u>	<u>£ 881,889</u>

## Half-Year Accounts

THE UNAUDITED Income & Expenditure account for the half-year to 31st December 1991, set out on page 59, shows that the Society has produced a deficit of £26,236 (1990 - Deficit £95,897). This figure is some £5,000 below the anticipated budget deficit and within 1% of our overall budgets. The expenditure on the re-wiring of Lambda House was carried out in the period, and maintenance costs should be lower in the second half of the year.

An abridged format has been used for these interim accounts which should enhance their clarity. The comparative figures are shown for the same period last year and show a radical improvement in the society's affairs both in the income and expenditure account and in the balance sheet which has been greatly strengthened.

The recession continues to affect the Society and whilst matters have improved there is still much work to be done. Membership

has fallen since June 1991 to 31,506 as a result of lapses. Various incentives have been introduced and it is hoped that these will generate new members and also encourage past members to rejoin. Some of our advertisers are suffering, which is reflected in our bad debt provisions.

Whilst this time last year staff numbers were being reduced, we have now recruited some new staff to handle certain activities and improve our services to our members. A significant work-load is currently being carried out by a number of Council Members and other volunteers and these efforts, together with those of our hard-working staff, are making great progress.

Despite the continuing recession, the Society should show a small surplus at 30 June 1992.

**Peter Tucker**  
*Honorary Treasurer*

## THE PRESIDENT'S ADDRESS

CONTINUED FROM PAGE 4

These are only a few of the ways in which you could help. Have you tried? Will you make the effort to be a better ambassador for amateur radio and our National Society?

I well remember, many years ago, my real sense of pride when, having applied for membership of the RSGB, I received notification that I had been accepted as a member. I told everyone about it for days afterwards and no doubt to the point of boredom. Never in my wildest daydreams did I envisage becoming a member of Council, let alone aspiring to the Presidency of this prestigious Society. Yet all this has happened, I like to think, because I strove and still strive to put back something into this wonderful and unique hobby for all the pleasure I have got out of amateur radio.

The Society has been directed and governed largely by the same methods employed at its inception over 60 years ago. With a turnover approaching £1.5M these methods are no longer adequate in this day and age. Council is too large and unwieldy and meets too infrequently to manage the Society effectively. We must move with the times and let the policies decided upon by Council be implemented by an Executive Committee, smaller in number and meeting at least monthly. This Executive Committee will be, as are all committees, answerable and reporting to Council. Only by this method can we react swiftly to crises or opportunities and take decisions, and have them implemented, swiftly.

Each Council Member must surely have some specialised field of expertise which would benefit the Society. Zonal Council Members have more than adequate duties and responsibilities being Zonal Managers (their alternative title), although they could contribute expertise in some area. However, the main burden of work in specialised areas must fall on the Ordinary Council Members. I must confess that I dislike the title *Ordinary* Council Members; most are anything but ordinary! No one has, however, come up with a better alternative title.

What started off as a reorganisation of Council has to go much further and encompass the reorganisation of the Society itself to cope better with the requirements of the late 20th and early 21st centuries. To this end, a long term Corporate Business Plan will be discussed both in Council and at specialised meetings, culminating in a weekend seminar (probably in July) to formulate the plan. This will be implemented when the time is right.

From this one can perceive that Council and other officials have at last grasped the nettle of progress and hopefully a rejuvenated and more vigorous Society will emerge. This will still be your Society, but hopefully a more effective and efficient one. You all can and must play your part and obtain great satisfaction from helping your hobby and your National Society. **Go to it!**

*Terry Barnes, G13USS, President*

### Token help

THE RADIO Amateur Invalid and Blind Club (Northern Ireland Area) helps the blind and disabled to enjoy amateur radio by providing courses and radio equipment. They are appealing for tokens, vouchers and stamps (such as the ones which you get free with petrol) which they can convert into much needed cash. The BP Lifestyle Vouchers are particularly suitable and they went out of date on 31 December. They can be sent free of charge to: RAIBC (NI) FREEPOST BE1769, Belfast, BT12 5BR.

### Dubus

THE ENGLISH language version of this German magazine is available from UK distributor Ken Hatton, G4IZW.

The non-profit magazine includes articles on moonbounce, tropo, microwave parts, microwave news, meteor scatter, EME, 6m, aurora and workable new projects.

To subscribe, send a cheque for £12 payable to Ken Hatton Acct 2, to Hamilton House, Boat Road, Bellingham, Northumberland NE48 2AP.

### Visit the Friedrichshafen Hamfest

DARC's Hamfest at Friedrichshafen in southern Germany is the largest 'rally' in Europe. This year's Hamfest takes place in June. RSGB Affiliated Society the South Notts ARC is running a trip to the event which includes luxury coach travel and two nights (B/B) in a first class hotel from a mere £118. Departure is on 25 June from Nottingham with additional pick-up points en route to Dover.

Your place is secured by sending G0LXX a non-returnable deposit of £25 (£39 if you want a single room). The remaining £93 is due by 23 April. Insurance is also available at an extra £8.95. Enquiries/deposits to Julian, G0LXX, QTHR; telephone 0602 211069.

## An Open Society Business Strategy Conference

AMATEUR RADIO has changed, and the Society needs to respond and reflect this change in a Corporate Plan.

Further to the announcement in Jan 1992 *RadCom*, the dates for this conference have now been finalised for 10 and 11 July 1992 and the venue will be The University of Warwick.

This conference is very much a working conference which will be operated in syndicate groups who will each be concentrating on a specific area of the Society's activities.

Whilst all syndicates will have their own areas to concentrate on there will obviously be a considerable degree of interaction between the different groups and this will also be covered by discussions between those various syndicate areas. The intention is to come out with a draft plan which will give the Society a positive direction and approach for the next 3-5 years. The intention of the plan is not to make it so rigid that there is no room for change or advance, but to set outlines and parameters towards which everybody can work. The plan will be subject to review from year to year and a similar type of working conference may also be held in a further 3 or 4 years.

The actual workings of this conference could be something which you may wish to participate in.

Chairmen have been agreed for each of the ten syndicate groups and they will also include Committee Chairmen and other Honorary Officers of existing committees. Other members of the Society, with a particular interest or specialisation may wish to participate in the workings of the syndicates. A limited number of places will be open to members of the Society in an active role and observers will be welcome to all of the sessions relating to this strategy conference.

For those members wishing to participate, or act as observers, they are welcome to attend either on a daily basis or for the full two days of the conference. The cost for the full two days, including accommodation, will be £60 which includes one night's accommodation on Friday 10 July together with all meals, tea and coffee. Application forms are available from Justine Coles at Headquarters.

More details of the actual running and operations of this conference will be provided in the April edition of *Radio Communication*.

## Council Brief

11 January 1992.

- The Minutes of the Council Meeting of 9 November were accepted.
- The President welcomed to Council the new members - John Allaway, G3FKM; Hilary Claytonsmith, G4JKS; Richard Horton, G4AOJ; Ian Kyle, G1BAYZ; and Peter Sheppard, G4EJP.
- It was decided that the President should attend the Dayton Hamfest in the USA, to provide an RSGB presence, and to promote RSGB, its awards and publications. The President would also visit ARRL.
- In order to get the beacon GAM1 operational it was agreed that it would be temporarily installed at HQ, and would transmit four times per day, using existing equipment.
- It was agreed that the conference for producing the Corporate Business Plan would be held at Warwick University from 6 to 9 July.
- Peter Chadwick, G3RZP, was elected Executive Vice President for the year 1992.
- The Training and Education Advisory Group is to become a committee - the Training and Education Committee.
- The 1992 AGM will be held in London: tenders are being requested for venues elsewhere for the three years 1993, 4 and 5.
- Council decided to make the necessary expenditure on updating the HQ computer system and providing software support for it.



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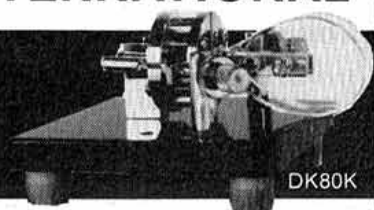
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73 John 63TLU

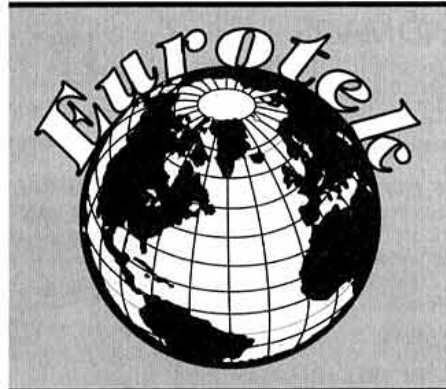
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TRANSLATED AND EDITED  
BY ERWIN DAVID, G4LQI

**G**RAPHITE CONDUCTORS have less RF skin effect than metals. 2mm thick pencil leads, which are actually made of graphite, show homogeneous current distribution and therefore constant resistance from DC through to 150MHz.

One such pencil lead has a resistance near 17Ω, and thus three in series provide 50Ω. Using them as the inner conductor of an air-dielectric coax of 50Ω characteristic impedance would require a 5mm ID outer conductor which, at 1kW, would create an excessive power density.

Instead, a 100mm outer conductor is used with a distilled water dielectric, which has the following relevant characteristics:

- 1) It is a good insulator. Even at the 1kW peak voltage of 317V there is no decomposition of the water, or the materials in contact with it.
- 2) It has great heat capacity. A volume of 3 litres at 1kW takes 16 minutes before it begins to boil.
- 3) Its dielectric constant relative to air is 81, which makes the 2mm inner conductor look like 162mm.

To make a 50Ω coax with it, a huge outer conductor would be required. The dimensions given yield an impedance of 30Ω with some capacitive reactance. If the graphite inner conductor is extended with copper wire not covered by water, inductive reactance is created which will compensate for the capacitive reactance. Thus the best SWR is obtained by adjusting the water level. Note that the unit can only be used upright.

### MAKING THE RESISTOR

NOT ALL PENCIL LEADS will work. Faber-Castel model TK, (cat ref 9071-3H-127113 leads ten-packs) for draughtsman's clutch pencils were best. As bought they have a DC resistance of 12-15Ω. They mainly consist of graphite and clay, with an oily binder which must be burnt away. Evaporating this admixture and sintering the clay is done in the kiln of Fig 1. The unhealthy oil vapour condenses on the inner tube, which can be a piece of aluminium broom handle. A ring of plasticine modelling clay forms a seal to keep the cooling water between the aluminium tubing and the tin can.

Each pencil lead is extended with bare-copper 'pigtailed' at each end, using the metallic innards of a 5A 'choc-bloc' terminal strip, and assembled in the kiln. Firing at 1000°C is required, and achieved by connecting to a variac and/or adjustable power supply of up to 36V AC or DC, at 10A. Slowly, ie over 5 mins, increase the voltage until, at approx. 24V, some vapour escapes and a dull glow appears. Raise the voltage to approx. 36V and leave it there for two minutes. The lead will glow bright orange. Thereafter, switch off and let it cool in air for ten minutes. The lead now has a ceramic appearance, and the reddish colour is that of baked clay.

For 50Ω, three or four sintered leads must be connected in series using metallic splices. They can be made of 3mm ID brass tubing slit lengthwise and compressed with pliers for a

Physics student **Marcus Thielen, DL1EHM**, created a *Poor-Man's 1kW LF-UHF Dummy Load*. Instead of expensive RF resistors and chips he uses baked pencil leads! From *CQ-DL* November 91.

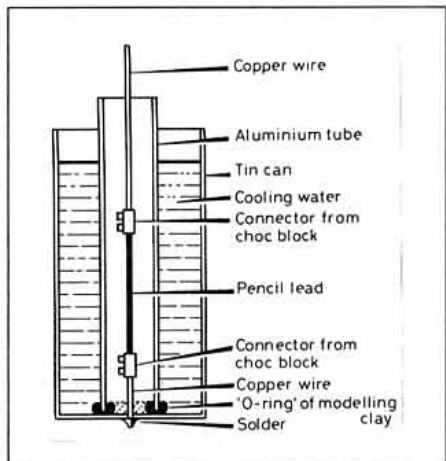


Fig 1: Kiln for the removal of the oily binder from the pencil leads and sintering of the clay content at 1000°C (cross section, not to scale)

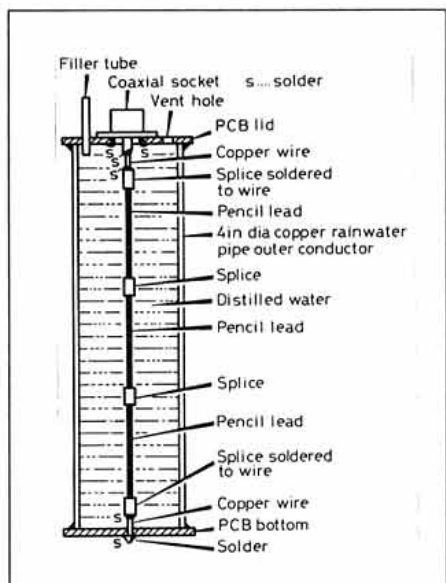


Fig 2: The finished dummy load (cross section, not to scale)

tight fit. Better still, use spring sockets for 2mm wander plugs, or female inserts from multi-connectors, soldered back-to-back.

To adjust the resistance to 50Ω, one of the leads can be shortened by scoring and breaking off small sections. Use an old-fashioned multimeter or VVM. For resistance measurements, digital multimeters apply too low a voltage to break the semiconductor barrier between the leads and the metal splices.

### CONSTRUCTION

THE OUTER CONDUCTOR is made of 10cm diameter copper rain pipe, 40 or 50cm long (for 3 or 4 leads respectively) Fig 2. It is expensive, and although coffee tins will work, they rust with time. If the outer conductor is not seamless, solder the seam to prevent leakage.

Bottom and lid are 110mm squares of double-sided PCB. A 4mm hole for the inner conductor is drilled in the centre of the bottom. Line this with a 10mm length of the 3mm ID brass tubing and solder it to both sides of the PCB. Then solder the bottom plate to the outer conductor. All soldering must be done quickly Use a hot propane-heated plumber's soldering iron.

In the lid, drill a 2mm vent hole, 4mm hole for the filler tube and a hole for the N or SO239 coax socket. The filler tube (50mm of the same 3mm ID brass tubing), and the socket, are soldered from below.

Now solder 1mm diameter bare copper wires to both end splices of the multi-pencil resistance rod: 20mm long at the top, 200mm at the bottom. The free end of the short wire is soldered to the coax socket. The long wire is fed out through the hole in the centre of the bottom plate. Solder the lid to the outer conductor and where the wire passes through the brass-lined hole in the bottom. Clip the protruding wire.

Funnel 3 litres of distilled water into the unit. Check for leaks, and if any do appear, empty completely, resolder and refill.

### COMMISSIONING

TUNING FOR THE BEST SWR at 440 MHz is done by removing distilled water, a little at a time. If no distinct dip in SWR occurs, refill and try again. With approx 200cc removed, better than 2:1 can be achieved.

Shortly after applying full power, a rushing noise may be heard due to bubbling on the leads, but it does no harm. A quarter hour at 1kW makes the water boil, releasing steam. **Do not operate unattended!**

### CONCLUSION

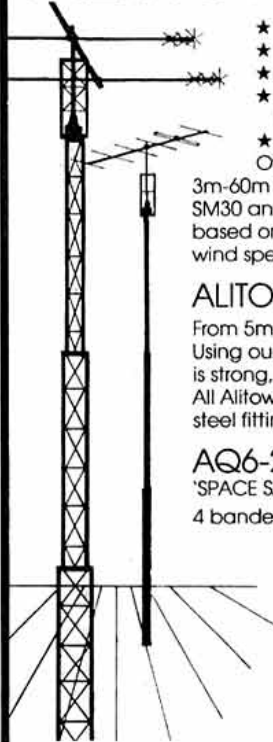
UNUSUAL MATERIALS permit the home construction of a 1kW dummy load for £5. The design has been successfully reproduced in our local radio club, and is usable up to 440MHz.

DG9ZK, using a single 'Lyra' 7H lead, and an outer conductor of the same diameter but less height, has achieved an SWR of 1.2:1 at 1.5GHz. His unit handles 200W.

Commercial exploitation requires the written permission of the author, Marcus Thielen, who solicits licence applications.



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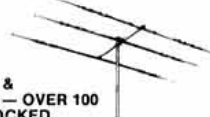
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CA10M	Dual band SSB/CW transceiver hardware pack:	£29.90
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CA30M	Antenna interface (ATU+SWR+Side-tone):	£28.90
CA5M	Digital frequency counter/display:	£23.90

Hardware packs contain the case, switches, knobs, sockets, nuts and bolts etc as appropriate for each project

### KITS TO BUILD THE ANTENNA INTERFACE

CTU30	ATU. Covers all bands 1.8 to 50MHz. 30W RF	£31.50
SWB30	SWR/Power indicator/load, includes custom made meter	£12.90
ST2	CW side-tone. Senses RF or direct key operation	£8.90

### KITS TO BUILD A 40 OR 80M QRP CW TRANSCEIVER

DcRx	Receiver. Balanced FET mixer, up to 1W audio O/P	£15.90
CTX	Transmitter. Up to 5W on 80M or 3W on 40M version	£14.80
CVF	VFO module. Tunes Tx and RX together with IRT offset	£10.90
CSL4	Filter. 300Hz wide CW filter circuit plus sharp SSB filter	£10.50
DCS2	"S meter". 2 chip driver circuit + custom made meter	£9.20

### KITS TO BUILD A 10 AND 15M SSB/CW TRANSCEIVER

DXR10	Receiver. Direct conversion, excellent performance	£26.60
HTX10	SSB exciter. Filter type SSB and CW generator	£49.90
HPA10	Power amplifier. Can be set for 10W or 3W PEP	£33.90
VF10	VFO module. Dual band with IRT	£17.50
DCS2	"S Meter". 2 chip driver circuit + custom made meter	£9.20

### KITS TO BUILD DIGITAL FREQUENCY COUNTER

DFD5	Counter. 5 digit, 1kHz and 100Hz resolution. 35MHz	£41.50
CBA2	Buffer/pre-amp	£5.90

Please add £1.20 P&P to your total kit order, or £3 if ordering hardware.

All **HOWES** kits contain a good quality drilled PCB with screen printed parts locations, full clear instructions and all board mounted components. Please send an SAE for a copy of our free catalogue. Sales and technical advice are available during office hours. Delivery is normally within 7 days.

73 from Dave G4KQH, Technical Manager



# More on Short Loop Antennas

**T**HE CIRCULAR LOOP gives a better performance than other shapes because of the higher radiation resistance that such a configuration presents. In fact, radiation resistance is also dependent on the area included in the loop. We know from geometry that a circle is the figure which has the greatest area for a given circumference. The loop, however, can be built with different shapes, but will have lower overall efficiency for the following reasons:

- 1) The area within the loop is smaller for shapes other than circles, and the resultant radiation resistance is lower.
- 2) The loop can be built with straight pieces of pipe. This simplifies the construction but increases the ohmic losses due to the welding which joins the various pieces. For example, an octagonal shape loop has (in theory) an efficiency very close to a circular shaped loop but at least seven joints have to be welded to obtain such a configuration. Therefore it is preferable to make the loop circular in a single piece, or if the loop is very large, split it into two semi-circles joined at the base. This then requires only one joint to form a large loop.

The square configuration has a lower radiation resistance and represents the worst case in terms of efficiency, but needs only four joints. This solution, despite the previous argument, is a very acceptable compromise between reduced efficiency and easy construction. Maximum care must be exercised in making the four joints (90° copper elbows) to reduce ohmic losses. Such losses can be

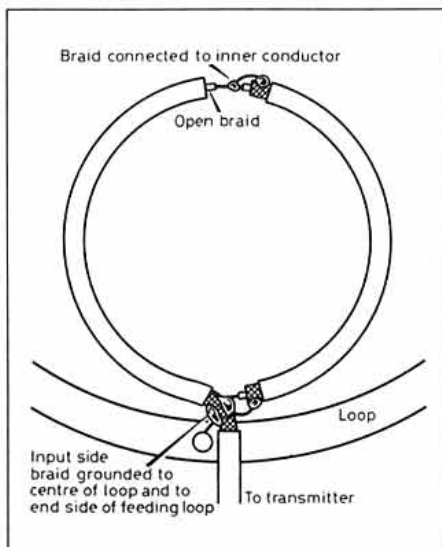


Fig.1: Details of the coaxial feed loop employed with the loop antenna.

**After publication of Roberto Craighero I1ARZ's article on short loop antennas in Radcom, he received several requests for further explanation about this type of aerial, both from the mechanical and electrical point of view. Here are answers to the various questions raised, followed by construction details for a Portable 20m Short Loop.**

partly compensated by using a larger diameter conductor. I used this method to build a 40/80m band square loop, having an overall perimeter of 10.70 metres. This used 40mm copper tubing of only 1/2mm thickness, resulting in a very light loop, supported in the middle by a discarded strong fibreglass wind-surf mast.

Copper tubing is the preferable conductor for loops but, alternatively, aluminium may be employed. To compensate for the lower conductivity of aluminium compared to copper, the diameter of the tubing must be increased to say 30/32mm. This gives the advantage of having a self supporting loop of aluminium pipe, strong enough to withstand dynamic wind stresses. It should be noted, however, that difficulties arise in the welding operation, as welding aluminium is not an easy task.

### EFFICIENCY

WHEN THE CONDUCTOR length approaches  $0.25\lambda$  the loop achieves its maximum efficiency. This also corresponds to the largest bandwidth, and the lowest voltage across the tuning capacitor, which is important for building a monoband antenna. In this case

the capacitance to bring the loop to resonance can be obtained using a fixed capacitor in parallel with a small variable one, sufficient to cover only the desired band. Another simplification is obtained from the relatively large bandwidth which permits faster and less critical tuning. Therefore good quality, wide spaced, silver plated butterfly capacitors for VHF use may be employed since low capacitance values will cover a single band.

The parallel fixed capacitor of appropriate value must be a high quality transmission type ceramic capacitor, with adequate rating to support the high RF voltages existing at that point. The use of a switch to insert various fixed capacitors for different bands is not possible due to the high ohmic losses existing on the contacts of the switch. A simple method of obtaining a good, highly insulated, fixed capacitor, is using a short piece of RG8 coax cable. Bearing in mind that such cable has a capacitance of about 1pF for each centimetre length, you can build your capacitor with length slightly greater than the calculated value of capacitance. With the old 'cut and try' system, you can easily bring the loop to resonance using this method. Maximum input power should not exceed 60-70 watts.

The external braid must be welded to one loop end and the inner conductor to the other. Also welding must be performed with great accuracy. Another method of building a capacitor with a high insulation factor is by using copper clad printed circuit boards.[1].

A portable loop can be built using only the external copper braid of an RG213 coax cable, as a conductor. Compensation for losses due to the small diameter of the coax is desirable when using the loop for a single band.

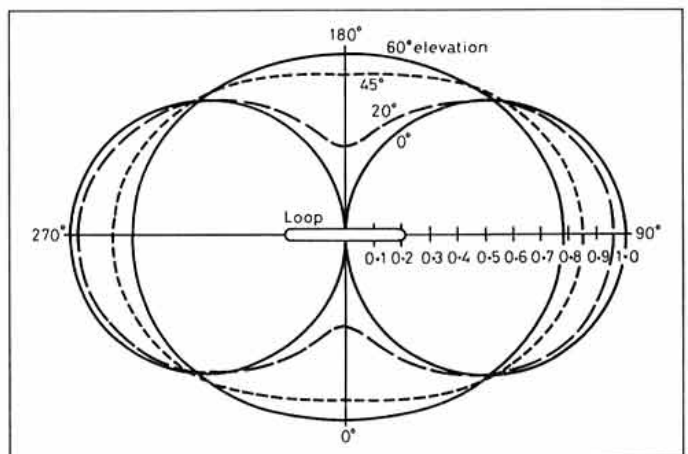


Fig.2: The interesting radiation pattern of a vertically mounted loop antenna (QST, June 1986).

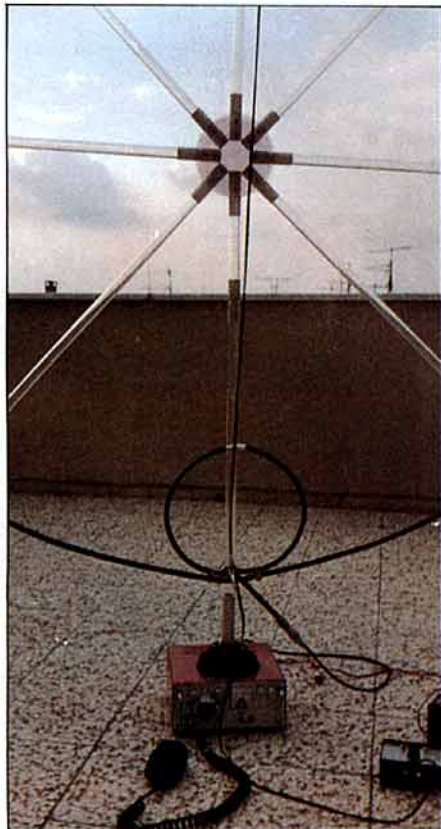


# A Portable Short Loop Antenna for the 20 Metre Band

AFTER EXPERIMENTING with short loop antennas at my QTH [2], I decided to build a portable antenna of this type to be used for field days or summer holidays.

My first attempt, was a short loop antenna for the 10 and 20 metre bands. It was 80cm in diameter with copper tubing of 22mm outer diameter, and was silver plated to obtain the best RF conductivity. The tuning mechanism had a remotely controlled electronic reduction gear. I fitted a strong magnetic mount to keep the loop standing on the roof of my parked car (see photograph). The antenna worked very well with outstanding results, even using very low power (less than 2W). The car roof acted as an efficient ground plane, providing excellent performance for semi-portable activity. For transportation, the antenna can be stowed in the car boot without difficulty. However for true portable operation, the loop is heavy and cumbersome.

I enjoy hiking and, therefore, decided to build a really portable loop that could be easily assembled and dismantled, was light in weight, and efficient at radiating the signal from my QRP rig.



A detailed view of the central frame assembly, feed loop, lower supporting arm and magnetic mount.

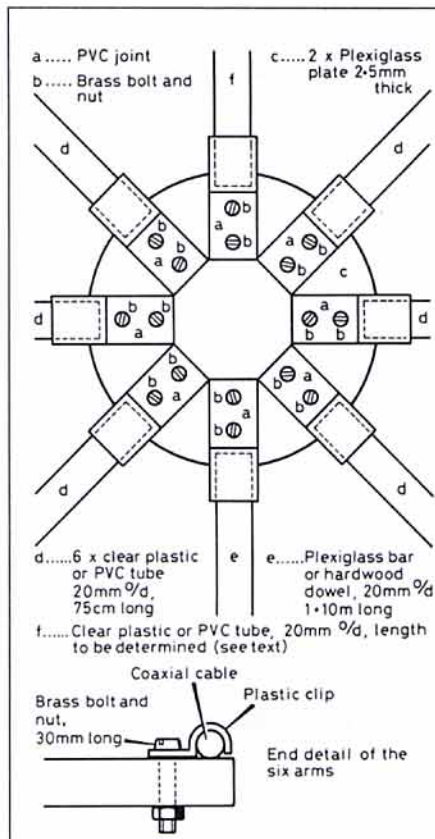


Fig 1: The loop has eight plastic/PVC supports.

## CONSTRUCTION DETAILS

AS MY QRP RIG IS 20 metres, I designed the antenna for this band. I decided to use the external braid of a coaxial cable as the loop conductor, bearing in mind the weight of the whole system and its portability. In fact a length of coaxial cable can easily be coiled for transportation, and I chose RG213 coax, which is excellent for this application.

To obtain the best radiation efficiency the maximum circumference of the loop was slightly less than  $\lambda/4$  length (about 5.1 metres) for the required frequency [2]. This length is necessary to compensate for the small diameter of the coax cable braid (about 10mm). The resultant loop diameter is 1.62 metres, and the calculated radiation efficiency about 80%.

Both ends of the coax are terminated with UHF PL259 plugs, and the coax inner conductor has only a mechanical function, not being electrically connected to the respective SO239 sockets. To ensure the best electrical contact and get a better flow of tin over the coax braid, additional holes must be drilled in the PL259 plugs. These joints will introduce

radiation losses due to ohmic resistance, and therefore good soldering is essential. Unfortunately it is impossible to avoid the connectors if you wish to obtain a fully collapsible loop.

## THE SUPPORTING FRAME

AN INSULATED SUPPORTING frame is required to keep the coax cable in its correct circular shape.

I then built a light plastic tubular structure which was easy to assemble and carry, but rigid enough to withstand dynamic wind stresses when in operation. The frame had eight arms connected to a central assembly.

This central assembly consisted of eight plastic joints, of a type normally used to

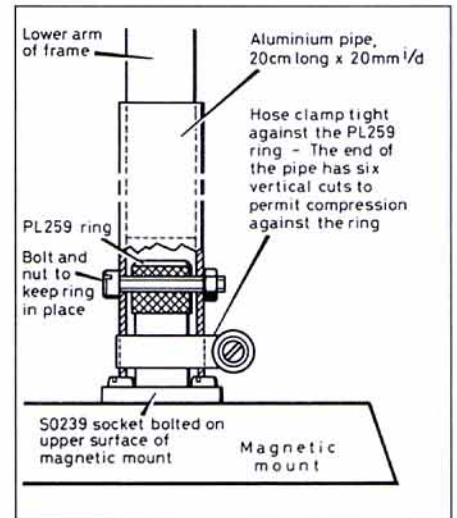


Fig 2: Detail of the magnetic mount assembly.

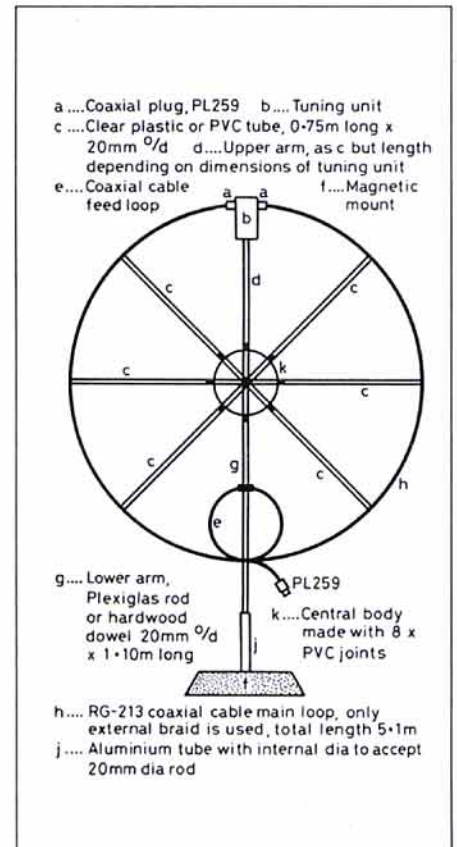


Fig 3: Construction of the 20m Portable Short Loop.



## SHORT LOOP ANTENNAS

connect two PVC pipes in domestic electrical wiring. Such joints will accept 20mm outer diameter plastic pipes, which are placed in a circle 45° apart. Two round plexiglas plates (2.5mm thick) keep each joint in place by means of two brass nuts and bolts (3mm) - see Fig 1. The 8 arms of the structure are clear plastic or PVC pipes with an outer diameter of 20mm. Six of these are 75cm long and have a small plastic clip at one end, kept in place with a brass nut and bolt (2mm). Such clips must be of the correct size for the coax cable.

The whole antenna is supported by the lower vertical arm of the frame. This must be strong, otherwise the structure will be unstable due to the weight of the tuning unit at the top. I used a 20mm OD plexiglas bar, but a hardwood rod of the same diameter could be used instead. The lower vertical arm is also the 'mast' of the antenna and must not be less than 1.1m long. The upper vertical arm is shorter because of the length of the tuning unit at the upper end. For transportation all eight arms can be lashed together and fastened on the side of a rucksack. The coiled coax line and central frame assembly are then stowed in the sack, together with the transceiver and other accessories.

### THE BASE MOUNT

DURING MY TESTS I found that the following method of keeping the antenna in position was both simple and practical.

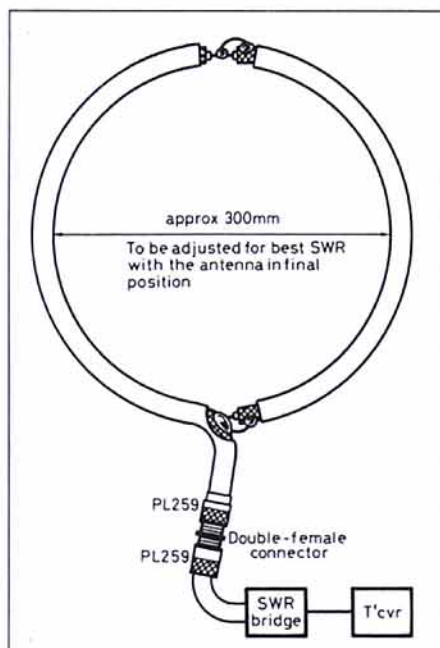


Fig 4: Adjust the coupling loop for best SWR.

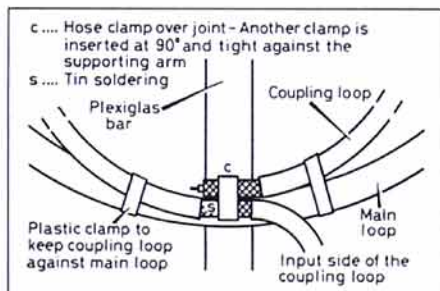


Fig 5: Coupling loop clamped to the main loop.



The short loop antenna in operation from the Italian Eastern Dolomites at 2250m above sea level. It is light in weight, and easily dismantled for transportation.

I used a strong magnetic mount originally intended for a CB whip antenna, which was placed on the steel cover of the transceiver. A short piece of aluminium tube was used to connect the frame to the magnetic mount, with an SO239 socket mounted as shown in Fig 2. The tube had an internal diameter to suit the 20mm plexiglas bar at the lower end of the supporting frame, and a coupling ring comprising a PL259 connector was bolted inside. It was then possible to screw the short aluminium tube onto the magnetic mount via the SO239 socket, and insert the 'mast' of the supporting frame into the opposite end of the tube. The antenna stayed perfectly upright and rotating the mast by hand gave an indication of the best orientation for transmitting or receiving (See Fig. 3).

### THE INDUCTIVE COUPLING LOOP

INDUCTIVE COUPLING, in my opinion, is the best method of feeding a short loop antenna. Maximum power transfer is achieved, and it is easy to adjust for minimum SWR over a very large frequency range.

The construction of the coil is straightforward (see Fig. 4 and 5). The dimensions are typical, and in practice the coupling loop must be trimmed until an acceptable SWR is

achieved. It is best to start with a slightly over-size loop and cut it symmetrically at the ends. Then rejoin it again, until an SWR not exceeding 1.3:1 is reached. An improvement in SWR can also be obtained by slightly deforming the coupling loop, and then fixing it in the best position. All adjustments must be made with the antenna mounted in its final operating position.

The input side of the coupling coil is terminated in a PL259 plug, followed by a double female coax connector and short feed line to the transceiver. An SWR bridge should be used to tune the antenna to resonance.

### REFERENCES

- [1] Ted Hart, W5QJR, *QST* June 1986
- [2] R Craighero 'Electrically Tuneable HF Loop' *RadCom* February 1989 pp 38-42.

... to be continued

NEXT MONTH in part 2, I1ARZ gives full constructional details of the tuning unit.





# Satellites

**ARTHUR GEE G2UK**  
21 Romany Road, Oulton Broad, Suffolk  
NR32 3PJ

THE SATELLITE SARA which we described in this column last November, seems to have stirred quite a hornet's nest over whether it is an amateur radio satellite. If so, then it is entitled to use a frequency within the band allocated to amateur radio satellites, otherwise it is an 'amateur satellite' but with no functions which can be related to amateur radio.

Those who take the view that it fulfils the requirements for amateur radio designation, want it to be designated OSCAR 23. Those who do not think it fulfils these requirements say it should not be so designated!

This might seem a pretty trivial matter to get all steamed up about, but it has practical implications as there will be continuing confusion if those who launch the next satellite refuse to admit SARA's entitlement to O-23, and insist on this numeral for their next creation!

On the other hand there are those who firmly believe that, with all the pressure for more band space by non-amateur radio organisations, we must strongly resist any apparent attempts to usurp our rights.

Pat Gowen, G3IOR, in 'Satellite Scene' (*Practical Wireless*, Nov 1991) states very clearly the views of those who favour a liberal attitude to SARA being classed as an amateur radio satellite. The campaign for SARA to be called OSCAR 23 is being supported by some of the amateur radio media as well as on a number of packet radio broadcasts. The questions being asked are "who says which frequencies can be used for satellite activities on the amateur bands?" and "who defines an 'amateur radio' satellite?"

Very briefly, the frequencies allocated to amateur radio services are decided at an international level by the ITU's Radio Regulations Authority, Geneva. Conferences are held fairly regularly at which interested parties can air their views and stake their claims. The next one affecting amateur radio is the World Administrative Radio Conference (WARC) which meets this year, when changes to the existing frequency allocations could take place. These may not necessarily be to our advantage as radio amateurs, so committee members of the International Amateur Radio Union (IARU) put up the best possible case on amateur radio matters.

The IARU has members who are designated 'Satellite Coordinators' and the representations made by these voluntary officials to the IARU should represent the needs of amateurs engaged in this mode of amateur radio activity.

Our own satellite coordinator is Ron Broadbent, G3AAJ, the Hon Sec of AMSAT-UK. His view on SARA is that it is not entitled to be designated an amateur radio satellite. He points out that there are official allocations

of frequency for the SARA type of activity which should have been used for SARA, not 145.955MHz which has been used. I am grateful to him for sending me a copy of these, which I reproduce herewith.

It would seem from these regulations that SARA could have been given a frequency in the allocation between 137 and 144MHz.

On the other hand, amateur radio is intended to be used for educational, scientific and technical self training. This means that as SARA is certainly intended for scientific purposes, it can be argued that it's place is in the satellite sub-band of the amateur band allocation.

At the AMSAT-UK Management Committee meeting held last October, this matter was thoroughly discussed. From information given by committee members, they formed the view that SARA's functions did not justify it being classed as an amateur satellite. This conclusion will be passed to the appropriate satellite coordinators, and we shall have to wait and see what action will be taken.

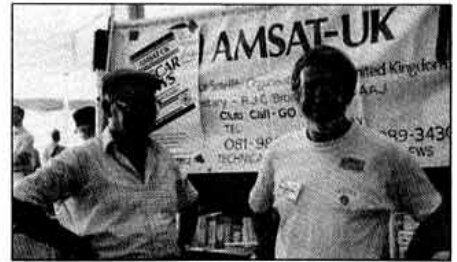
## SATELLITE ALLOCATIONS

THERE HAS been some confusion regarding the international satellite allocations. The following extracts from the ITU's Radio Regulations should clarify matters.

- 55 3.36 *Radio Astronomy Service: A service involving the use of radio astronomy.*
- 56 3.37 *Safety Service: Any radiocommunication service used permanently or temporarily for the safeguarding of human life and property (CONV).*
- 57 3.8 *Special Service: A Radiocommunication service, not otherwise defined in this Section, carried on exclusively for specific needs of general utility, and not open to public correspondence.*

## Section IV. Radio Stations & Systems

- 52 3.33 *Space Research Service: A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological research purposes.*
- 53 3.34 *Amateur Service: A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest.*
- 54 3.35 *Amateur Satellite Service: A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.*
- 600 *Additional allocation: in the Federal Republic of Germany, Austria, Belgium, France, Israel, Italy, Liechtenstein, Luxembourg, the United Kingdom, Sweden and Czechoslovakia, the bands 138 - 143.6MHz and 143.65MHz are also allocated to the space research service (space to Earth) on a secondary basis.*



Ron Broadbent, G3AAJ, and Fred Southwell, G6ZRU.

## MHz 137 - 146

Allocation to Services		
Region 1	Region 2	Region 3
<b>137 - 138</b> SPACE OPERATION (Space to Earth) METEOROLOGICAL-SATELLITE (Space to Earth) SPACE RESEARCH (Space to Earth) Fixed Mobile except aeronautical mobile (R)  598 597 598 599		
<b>138-143.6</b>  AERONAUTICAL MOBILE (OR)  600 601 602 604	<b>138-143.6</b>  FIXED  MOBILE /RADIOLOCATION  Space Research (Space to Earth)	<b>138-143.6</b>  FIXED  MOBILE Space Research (Space to Earth)  599 603
<b>143.6 - 143.65</b>  AERONAUTICAL MOBILE (OR)  SPACE RESEARCH (Space to Earth) 601 602 604	<b>143.6 - 143.65</b>  FIXED  MOBILE  SPACE RESEARCH (Space to Earth) /RADIOLOCATION/	<b>143.6 - 143.65</b>  FIXED  MOBILE  SPACE RESEARCH (Space Research) 599 603
<b>143.65 - 144</b>  AERONAUTICAL MOBILE (OR)  600 601 602 604	<b>143.65 - 144</b>  FIXED  MOBILE  /RADIOLOCATION/  Space Research (Space to Earth)	<b>143.65 - 144</b>  FIXED  MOBILE  Space Research (Space to Earth)  599 603
<b>144 - 146</b>  AMATEUR 510 AMATEUR SATELLITE  605 60		

A subparagraph in the Regulations defines the 'Space Research Service' as: A radiocommunication service in which spacecraft or other objects in space are used for scientific or technological purposes.

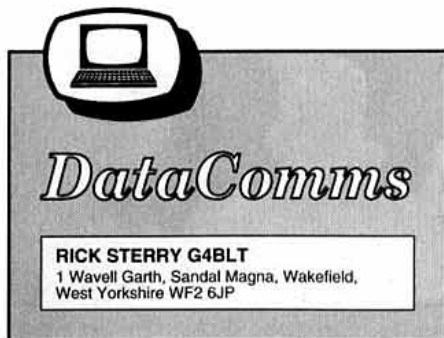
And 'Amateur-Satellite Service' as: A radiocommunication service using space stations on earth satellites for the same purposes as those of the amateur service.

## UoSAT-F

At the time of writing, UoSAT-F is undergoing final assembly before being shipped off to Kourou where it will be launched with an Ariane 40 launcher. The launch has been scheduled for 27 May.

Whilst testing in the RAE's thermal vacuum chamber, the one-inch quartz 'porthole' window of the chamber imploded, showering the inside of the chamber with glass fragments and diffusion pump oil! The spacecraft had to be taken back to UoS for inspection and fortunately no trace of oil and very few fragments of glass were found. When in orbit UoSAT-F will be designated OSCAR 22. It has been confirmed that it will have a transponder aboard with Packet facilities and a CCD camera.





MANY THANKS TO THOSE readers who sent me letters, discs etc in response to various items in this column. Rest assured that I read all correspondence very carefully, whether it comes via Packet, AMTOR, or 'snail-mail'. I just wish I had time to write full replies, but alas that simply isn't the case.

Many readers wrote to me about Hellschreiber, and I've sent quite a few discs out. Barry, G8RIW, tells me that he has a Hellschreiber program for the BBC B computer, written by G4BKI. Apparently it works to some extent, but isn't fully debugged, so does anyone have a copy which does work correctly? Perhaps someone could adapt the Acorn Electron version to work on the BBC B, as only the I/O port addresses and one or two register values should need changing. I think I will pass on that one, hi.

The December 1991 power restriction on part of the 70cm band, (432-000 to 433-500MHz), in the North of England certainly caused more than a slight stir. The temporary limit of 10W PEP ERP meant that many long-distance packet links using high gain antennas were effectively unusable, and considerable effort was needed to find ways round the problem. It was a sobering reminder that we are merely secondary users on this band.

## BEGINNERS PLEASE

ONE PROBLEM AREA WHICH crops up time and time again, is that of help for beginners in datacomms. Sadly, I simply haven't the space in this column to publish detailed explanations and tutorials for beginners. I am often asked if there are any detailed printed guides, and until recently the UK amateur has not had much home-grown material to read, apart from the various magazine articles. BARTG do publish a small booklet entitled simply *Beginners Guide to AMTOR*, though you really need to take note of the 'recommended reading' list. However, there is now a new RSGB book entitled *Packet Radio Primer*. This really does appear to be what people have been waiting for; a full and practical guide for the beginner.

## CLOVER UPDATE

THE NEW CLOVER MODE, mentioned in January *DataComms*, has now become CLOVER-II. Instead of five different modulation modes, there are now eight would you believe! It seems that the initial prototypes may be in the form of an IBM PC expansion card, rather than a separate controller, and there is at least one UK amateur on the Beta-test List. If the mode does match up to the designers' claims, I for one would certainly be very dismayed if hardware were only available

for the PC in the long term. Whereas for example my own Acorn 32-bit RISC machine can software emulate a PC very well, (I've yet to see the reverse), full plug-in hardware compatibility is a very different matter.

The CLOVER-II controller specification looks most impressive, but one sentence does ring alarm bells. "For satisfactory long-term operation on a CLOVERNET, the radio must stay to within 10Hz of the net frequency." Oh dear; does anyone want to buy my old faithful FT101ZD, complete with analogue VFO?

It may be a little premature just at the moment, but later you could try writing for details to HAL Communications Corp., PO Box 365, URBANA, IL 61801, USA, Fax 217/367-1701.

## PACTOR UPDATE

AFTER FIRST MENTIONING PACTOR in November 1991, I have been wondering how activity has been progressing. I saw a recent list of users of PACTOR, most of them in Germany as one would expect, and I was impressed by the number of stations claimed to be QRV on this mode. There even appear to be some PACTOR mailboxes. Unlike CLOVER, which seems to be an ambitious mode for the future, PACTOR is here with us now, and I would be most interested to hear what users think of it. Does it operate as well as claimed under heavy QRM, and is the throughput superior to AMTOR and HF Packet under all conditions? Any objective comments or mini-reviews would be most welcome. See Fig 1.

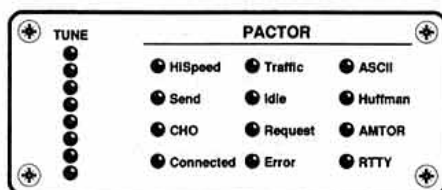


Fig 1: Front panel of a prototype PACTOR controller unit. Note that RTTY and AMTOR are included.

## NEW PACKET NEWSLETTER

BARTG ARE LAUNCHING A newsletter supplement to their *Datacom* magazine, called *Packet International*. This is in response to the demand for information specifically about packet radio, and will pay a great deal of attention to the work being done in other countries. The editor, Ian Wade G3NRW, first started this *DataComms* column some time ago, and also edited the *Connect International* packet newsletter.

He had problems getting enough feedback from readers then, but such is the huge increase in interest, that he doesn't anticipate any such difficulty now. Beginners will be catered for, as well as more experienced and specialised users. *PI* will be launched with the Spring 1992 issue of *DATAKOM*.

## BINARY FILE FORWARDING

I FIND THAT THE UK AX25 packet radio network seems to work fairly well when it comes to forwarding text messages around

the country. However, trying to send a non-text (binary), file through the network is not so simple for the ordinary user. By 'send' I mean actually forward a file, not merely upload it to the local BBS files area. Let's take a particular example. Suppose I want to send the file of that drawing of the PACTOR controller to someone at another BBS. I cannot simply treat it as text, because it contains the full range of 256 ASCII characters, and this would confuse my TNC, the BBS, or both! For example, the presence of character 26, which corresponds to Ctrl-Z, would cause the transfer to be terminated prematurely at that point. Also, the lack of regular linebreaks can cause problems.

The first thing I like to do is compress the data into as small an 'archive' file as possible, using a suitable utility. That reduces the size from 10k to 5k, which is a good start. Next, I UUencode that archive so that it is in the form of a text file, (with no awkward control codes etc), which the BBSs can forward. (It would be more efficient to use 7PLUS encoding instead, but at the moment there are still some problems associated with forwarding these files.) This increases the total size to around 7.5k, and also conveniently splits it into two sections, with individual checksums to detect corruptions.

The reason for this is that there is a limit of 5k, plus an allowance for the headers, imposed on the size of file that UK BBSs will forward. Some SysOps have increased or removed this limit, but I have no means of knowing which or where. In effect, the entire system is limited by its weakest link, which for the sake of argument we shall say is from Lerwick to Muckle Flugga!

So, I upload my two UUencoded files to the local BBS. After a while, the BBS forwards them to the next one down the line - possibly compressing them and decompressing them in the process, (depending for example on whether they are running the same software). If the BBS software is running under DRDOS-6, it might even store the files in a compressed form on the hard disc. Is this not ironic?

Once my files have arrived, the recipient has to download them from the local BBS, or his/her PMS, UUdecode them into one archive file, then extract the original file from the archive. Using multi-tasking desktop utilities and TNC drivers, as I do, this can all be done fairly easily and speedily, but even so you must admit that it really is a bit of a performance just to get a short file from one place to another.

Corruptions can and do occur, and if a bad checksum is detected, a repeat of the corrupt file is necessary. It makes sending a disc by 'snail-mail' quite an attractive proposition!

It seems likely that irresponsible use of the terrestrial packet network would always lead to congestion; just imagine the chaos if dozens of users decided to send out demo versions of 'Lemmings', or Megabytes of 'Madonna GIF' files!

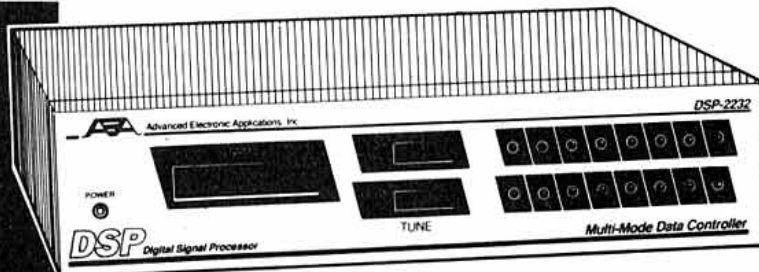
However, that apart, we still have a long way to go before we have a really efficient and user-friendly way for the user to forward binary files via the AX25 network. "What about satellites, and TCP/IP?", I hear someone cry. Well, watch this space . . .

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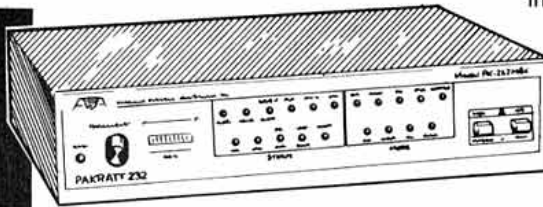


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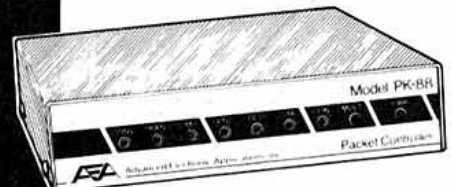
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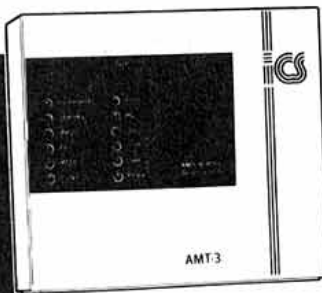
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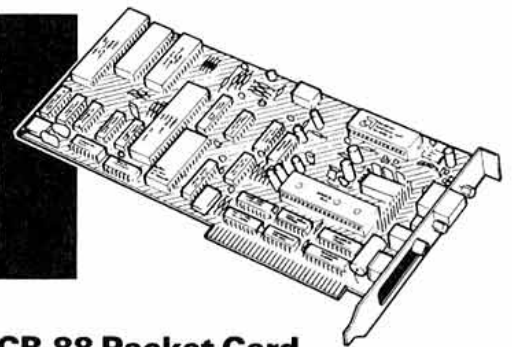


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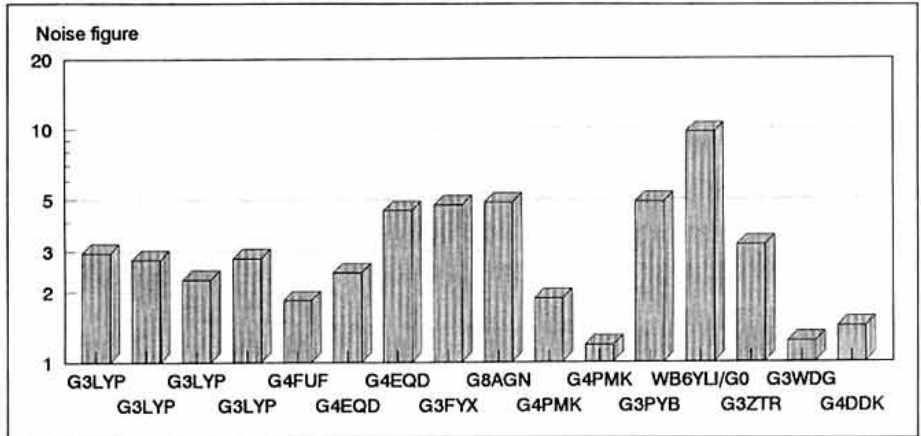
AS IN THE JANUARY COLUMN, there appear to be several 'Bits-n-Pieces' which have either had to be held over or have accumulated over several months in the in-tray: I guess some of them are no longer (strictly) news but are, nevertheless, interesting enough to be well worth putting into some sort of order here. So, without too many apologies, here are some more operating news items and views.

## TECHNICAL CORNER

AT THE LAST MARTLESHAM round table (November 1991, organised by the Martlesham Radio Society and held at the BT's Martlesham site, by courtesy of the management), there was a noise-measuring 'competition' on pre-amps and receive converters, brought by attendees, covering the amateur bands between 432MHz and 10.5GHz. This information was published in the *Newsletter*, but bears repeating here because it gives a clear indication of the direction in which UK amateur microwave activity is going. It also gives an indication of some of the excellent performances now being attained by amateur-built or modified surplus equipment, particularly at 10GHz, since the advent of affordable GaAs fets. This was one of my prognostications a long time ago: that the consumer market spin-off would be devices which would revolutionise amateur designs and performance. It's all happening right now! The next Round Table will be at either Leeds or Sheffield with a target date at the end of March, arrangements not known at the time of writing - keep your eyes on the *Newsletter*!

In his original write-up, Sam, G4DDK, described the impressive line-up of professional equipment used to determine the 'best on the day' noise figures: suffice it to say that the line-up really was professional and to stress, yet again for the benefit of newcomers, that this is the kind of function where you will learn a lot and have access to such measurements. The graph summarises the noise performance of several different constructors' equipment at 10GHz, some entirely home built and some based on the ex-Mercury (MA-Com) 'White Boxes'. **Table 1** gives some more detail covering the other bands and devices used and, in some cases, the source of the design. 3.4GHz equipment was presented for measurement but, due to technical difficulties, could not be measured.

If anyone has any doubts about the performance of the home-built G3WDG 10GHz transverter designs, it should be noted that the *worst* noise figure for Charlie's 'standard design' was about 4.5dB, with several other samples weighing in at 2.7 to



Spread of noise figures on 10GHz including both preamps and transverters. Figures are from the Martlesham NF competition.

3dB, using the 'standard' Birkett Red Spot (P35-1145) GaAsFET. This performance was only bettered by either the G3WDG stand-alone GaAsFET preamp (2.4dB), the G3WDG HEMT preamp (1.2dB from the Fujitsu FX03 HEMT) or the WB5LUA preamps using the Avantek ATF13136/13735/13336 devices (1.2 to 1.8dB). The overall winner was G4PMK's WB5LUA preamp using an ATF13136/13735 combination which returned a noise figure of 1.18dB with nearly 18.5dB of gain. The overall worst noise performance (9.67dB) was returned by an SSB Electronics transverter brought by WB6YLI/G0.

It will be most interesting, if this type of measurement session is repeated in, say, a year's time, to see how the mean noise figure and gain of amateur 10GHz receivers has progressed, for progress they surely will!

## SOME EU BEACONS TO LISTEN FOR

AS THERE APPEARS TO BE growing fixed-station activity once again (at least in some parts of the UK and on some of the bands!) I thought it might be useful to reproduce some information from Arie, PA0EZ, Veron VHF Manager, brought back from Holland by Sam, G4DDK, following his visit to the Dutch VHF convention at Appeldoorn. This concerns the microwave and some 70cm beacons currently operating in the Netherlands.

Why 70cm? Because those mentioned, besides being beacons, are cross band transponders. Many of them should be good propagation indicators for the trans-North Sea paths and almost certainly for some distance inland in both the UK and Europe. Unfortunately, locations are given (without

wanting to start that old controversy yet again) using the outdated and rather parochial QTH locator, rather than the universal, world-wide Locator. Nevertheless, accepting this limitation and the fact that not all information is complete, the current situation is summarised in **Table 2** opposite.

Don't let the fact that many are low powered (or you don't live near the coast in East Anglia) deter you from listening for them. The 'old hands' will be well aware that the unexpected often happens on the microwave bands!

Many of these devices appear to be the equivalent of our informal, attended or unattended 'personal callsign' beacons. Like most 'beacon keepers', I'm sure that the owners/operators/builders of these beacons would value reports of reception - especially from across the North Sea.

I feel that it would be very useful to compile a list of such beacons in the UK, something I mentioned some time ago: we have had a few personal beacons notified via the *Microwave Newsletter*, although, I feel, by no means all! Once there are enough notified, I'll put together a list in the column for those who do not see the *Newsletter*.

## BEGINNERS CORNER AND THE 1992 SUMMER CUMULATIVES

HAVE YOU THOUGHT about joining in the activity created by the Summer Microwave Cumulatives and using these sessions to learn something about microwave operating on the higher bands, perhaps in the company of someone already experienced in such operation? Even if you haven't yet built any

Band	Callsign	Design	Gain (dB)	N Fig (dB)	Comments
432MHz	G8VLL	Preamp	17.6	0.37	MGF1402
	G4FUF	Own des. preamp	11.8	0.79	ATF10135
1.3GHz	G8VLL	Preamp	17.6	0.98	MGF1402
	G8VLL	Preamp	18.6	4.2	Devices unspecified
	G3WDG	Own des. preamp	13.6	0.54	MGF1402
	G3LTF	Preamp	38.1	1.20	Devices unspecified
2.3GHz	G4CCH	Preamp	14.1	0.56	MGF1402
	G8VLL	Preamp	12.6	2.86	MGF1402
	G8VLL	DJ6PI	18.6	4.18	Devices unspecified
5.6GHz	G4PMK	DJ6EP/DC0DA tvt	22.9	2.24	Birkett 'Black Spot'
	G4EQD	WB5LUA	12.0	3.62	2 x ATF10135

Table 1





A behind-the-dish view of G3HBR/P operating 47GHz on Aston Hill, near Wendover . . . .

gear, perhaps you can persuade a local amateur to either lend you his/her old wideband gear (assuming he/she has gone to narrowband operation - many have) or at least take you along to experience the joys of portable operating!

This year, there will be seven events, lasting from 0900-2100GMT on the following (provisional) dates: 26 April, 24 May, 14 June, 19 July, 16 August, 13 September and 4 October. The last date is coincident with the Region 1 IARU 432 to 24GHz contest which is a 24-hour event on the weekend of 3/4 October.

Full rules will be published elsewhere in RadCom: basically, scoring is on a 1 point per kilometre basis, with cross-band contacts counting for half-points. There will be one table which combines (sums) both wide and narrowband modes. Operators are encouraged to take out equipment for other bands as well as 10GHz; the use of 24GHz is particularly encouraged and can be the subject of a separate table if there are enough entries. There will be the usual awards to the top stations, including the G3RPE Memorial Cup and Plate to the overall winner.

**UK 'FIRSTS' ON 47GHZ?**

ARNOLD, G3HBW (ex-ZS6BMS), is now back permanently in the UK, having retired from his job in the Republic of South Africa. Many older readers will remember Arnold as being a very active VHF/UHF operator and prolific source of some very comprehensive (often novel and always professional) VHF and UHF equipment designs in the 60's and early 70's. This was at the time when solid-state technology was only just starting to take over from 'vacuum tubes' at least in low noise receiver and low power transmitter applications, and before the ubiquitous Japanese 'black-box' monopolised the

amateur market. Do you remember the 'ultimate' micro-miniature valve, the 'Nuvistor' and the first, rather unpredictable and somewhat expensive and delicate J-FETs?

In renewing his longstanding connections and friendship with Brian, G3HBR, Arnold and Brian have commenced operation on the 47GHz (6mm) band with the equipment, described here a couple of years ago, used to set up the first 47GHz contacts in South Africa. This consisted of MA-Com (Microwave Associates) MA 49193 50mW Gunn oscillators, fundamental co-planar waveguide, finline mixers and home-made circulators. Full duplex working was used, with G3HBR/P on 47.178GHz and G3HBW/P on 47.070GHz (nominal 108MHz IF). Both used 420mm metallised fibreglass dishes with small horn/Cassegrain feeds.

On 16 August 1991 'nominal' contacts of 10ft and 100ft were made, in G3HBR's back garden, in order to make sure the equipment was still working correctly after its passage from RSA. A few small problems were cleared up. On 21 August G3HBR set up on Aston Hill (near Wendover) at 750ft ASL whilst G3HBW set up at Slapton Lock, 10.7km to the NNE.



. . . . working G3HBW/P at Stanton Lock, 10.7km distant. Note the Cassegrain dish feed.

Arnold wrote "I set up on the hump-backed bridge, from where I could just see Aston Hill through a jumble of trees and power lines. However, there was not much difficulty in getting a contact, full limiting at G3HBR/P, whilst his signals were a little below that. I gave him S8 (how do you report FM signal levels, anyway?). We chatted on 6mm from 1259 to 1309 and then I moved to the little village of Billington, Beds, about 13km from Aston Hill. Although the path looked much clearer, the signals were somewhat down, Brian being received about S5, peaking S6 at times, whilst my signals were still fully limiting at Aston Hill. We worked from 14.16 to 14.25z. At times there were signs of rapid 'roller'-type QSB, about 2 or 3 per second, quite low amplitude. It was a warm day, about 75°F, sunny and with very little wind. Deficiencies in the circulator and mixer at one end resulted in quite a discrepancy in signal strengths in the two directions. I discovered that G3HBR's deviation was rather low and we had some trouble with drift, due mainly to wind problems, even though it was very light. As a result of this, and one or two other deficiencies, a few further mods will be made before we go out again".

**HIGHER STILL**

LIGHTWAVE COMMUNICATIONS have been the subject of some amateur work over the past couple of years, especially with the advent of low-power solid-state lasers. Although not strictly microwave, it has been the concern of the Microwave Committee to try to define a Code of Practice for such experimental work. This is aimed particularly at the safety aspects of the use of low-powered lasers, for even a few mW from a laser can be unexpectedly bright at unexpectedly large distances!

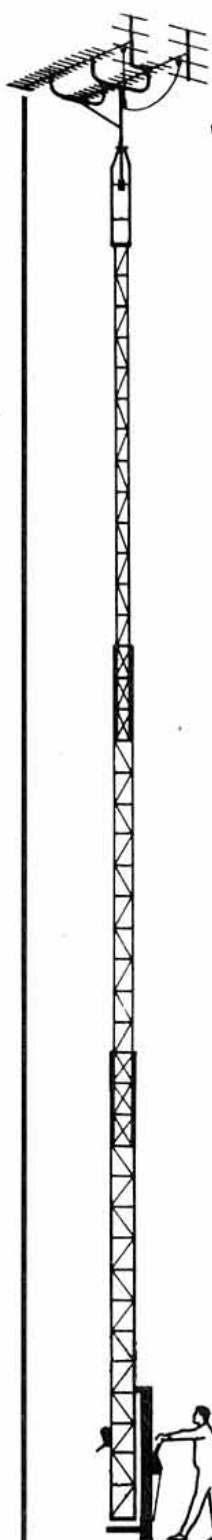
G8AGN produced a draft document at the last Microwave Committee meeting in November 1991, which was approved in principal at that meeting. It is hoped that a final 'word perfect' version, which will include a BASIC microcomputer program to calculate safety limits based on BS7192:1989, will be published later this year in RadCom. If a brief summary is in order at this time it is, simply, "Use common sense at all times". If anyone is seriously interested in lightwave communication and has doubts about the use of lasers as a source, then I would suggest that Dr Barry Chambers, (G8AGN, QTHR), be contacted in the meantime.

Call	QTH	Frequency MHz	Pout (W)	Mode	Ident	(4)	Ant.Gain/Direction	QSL
P16SHF (1)	CM56f	432.637	1	F1	C/Q	50	6dB/S	PA0PLY
P16UHF (2)	CL09b	432.675	1	A1	C/Q	60	Omni	PA0PFW
P16ASD (3)	CM55g	1296.642	1	F1	C/Q	180	Omni	PA0AWP
P17DIJ	DN71a	1296.816	1	F1	C/Q	30	5.5dB/Omni	PA3DIJ
P17QHN	CM53b	1296.917	4	F1	C/Q	36	6dB/Omni	PA0QHN
P17GHG	CL03c	2320.857	4	F1	C/Q	110	20dB/SE	PE1GHG
P17TGA	CL20a	2320.873	1	F1	C/Q	80	10dB/W/NNW	PA0TGA
PA0QHN	CM53b	2320.921	0.2	F1	C/Q	45	6dB/Omni	PA0QHN
P17PLA	DN74?	2320.935	0.07	F1	C/Q	?	6dB/Omni	PA0PLA
PE1BLE	CM55g	10368.160	0.01	F1	C/Q	10	12dB/Omni	PE1BLE
PI1SHY	CL48j	10368.040	0.05	F1	C/Q	16	21dB/NNW	PA0SHY
PA0TGA	CL20a	10368.100	0.05	A1	C/Q	75	16dB/NE	PA0TGA
P17GHG	CL03c	10368.270	0.25	F1	C/Q	60	16dB/N	PE1GHG

Notes: (1) Transponder/beacon 2.3GHz to 432MHz  
 (2) Transponder/beacon 1.3GHz to 432MHz  
 (3) Transponder/beacon 432MHz to 1.3GHz  
 (4) C/Q = callsign/QTH Locator; figures = keying interval, in seconds.  
 \* Antenna direction can be changed on request

Table 2





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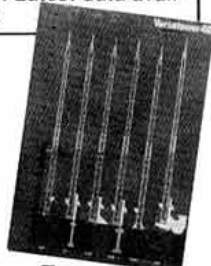
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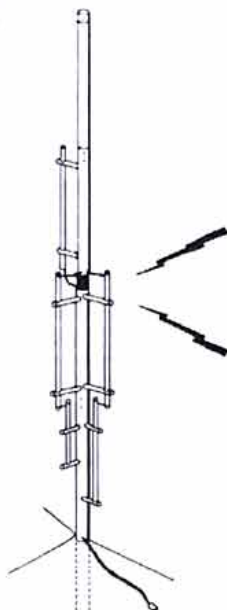
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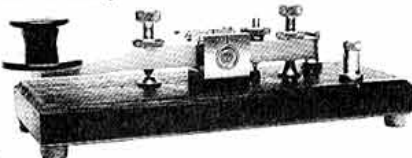


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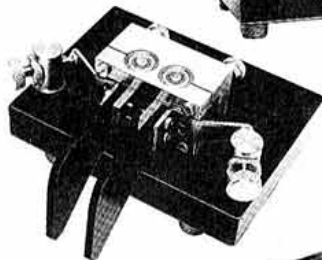
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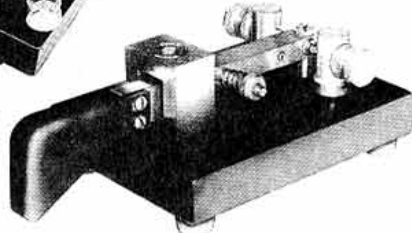
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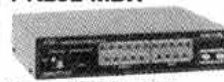
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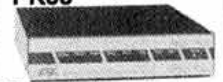


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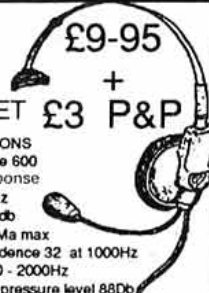
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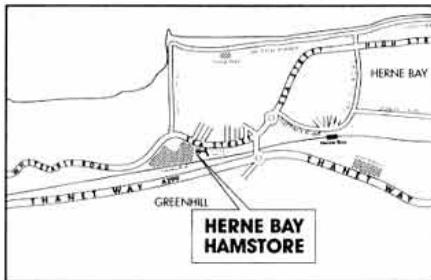
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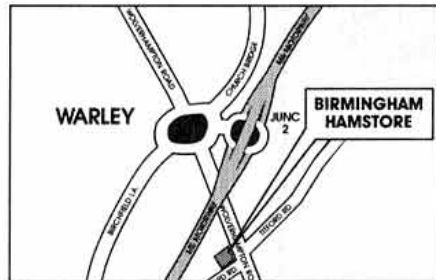
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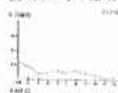
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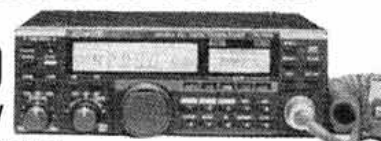
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# CONTENTS NEWS

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

## HF RULES

### COUNTY ROUNDUP CONTEST 1992 - RULES

The General Rules for RSGB HF Contests published in *Radio Communication*, January 1992 will apply.

**1. When:** Section A: 0800 - 1100GMT, 16 May 1992

Section B: 0800 - 1100GMT, 17 May 1992

**2. Sections:** A - SSB, B - CW, single-operator only. Entrants may submit logs for either or both sections.

**3. Frequencies:** 3.5 and 7MHz bands only.

Section A: 3.600 - 3.775MHz and 7.050 - 7.100MHz

Section B: 3.520 - 3.560MHz and 7.010 - 7.040MHz

**4. Exchange:** RS or RST plus serial number commencing with 001 in each section, plus county code as published in the January 1992 edition of *Radio Communication*. NB... some codes have changed recently - please be sure you send the correct one!

**5. Scoring:**  
**(1) Points:** Three points for each completed contact. Points may be claimed for contacts with stations located outside the UK. Stations may be contacted for points once on each band in each section (possible 4 QSOs).

**(2) Multiplier:** One for each UK COUNTY worked on each band. NB - There is no multiplier for overseas COUNTRIES.

Each section is to be scored as if it were a separate contest.

**6. Logs:** Form of logs and address for entries as in General Rules.

**7. Awards:** Certificates of Merit will be awarded to the leading three stations in each section.

too high for this contest and that it might have lost him several places in the table. As the old cliché goes, size isn't everything.

The HFCC would like to thank all the contestants for taking part and for the many comments received.

G0HSD

### UK SECTION:

Poan	Call	QSOs	Pts
1	G4BWP	192	891
2	G3KDB	191	877
3	G3MKJ	172	825
4	G3TBK	173	811
5	G3SUJ	167	800
6	G4BUO	166	798
7	G3OZF	142	721
8	GM3YOR	145	715
9	G3RXP	139	706
10	G3WGV	150	704
11	G3QLB	127	653
12	G3HEJ	125	617
13	G4RFR	117	621
14	G6JNZ	114	581
15	G4HUP	115	579
16	G0RVZ	111	577
17	G3VYI	101	558
18	G4ERW	103	552
19	GM3VEH	126	538
20	G4OGB	92	516
21	G3RSD	96	516
22	G3BPM	94	513
23	G3ULN	89	507
24	G4CZB	89	495
25	G4HLU	83	462
26	G04UOL	93	451
27	GM3UM	75	425
28	G3YMC	74	421
29	G3HKO	67	406
30	GM5Y	69	397
31	G0AFH	67	396
32	G3MCX	65	390
33	G3NKS	63	389
34	G0IDE	65	385
35	G3GMS	62	381
36	G0EBW	86	376
37	G2MJ	77	374
38	GM3CFS	61	373
39	GW3JJ	62	369
40	G3ZBU	60	358
41	G3GMM	61	355
42	G3JJJ	57	346
43	G4EBK	53	339
44	G2AFV	52	326
45	G3WRR	53	324
46	G3KNU	54	322
47	G3FVW	47	301
48	G3ZRZ	32	216

### OVERSEAS SECTION:

1	ON6CW	45	305
2	OK2PRR	50	295
3	LA3JA	49	296
4	OK3TZW	53	284
5	PA3AMA	43	274
5	Y42DA	30	210
7	OK2PWJ	32	198
7	HB9BNB	25	165
8	YL3FW	23	154
10	UA3PTW	19	137
11	OK3TYQ	16	97
12	UC2OT	14	80
13	UC2OV	16	70
14	OK2PBG	11	70

### RECEIVING CONTEST

#### UK SECTION:

No Entries

#### OVERSEAS SECTION:

1	SP4-208	22	121
2	ONL-383	9	71

Checklogs gratefully acknowledged from UA3MIF, UV6LIP.

### 21MHZ CW CONTEST 1991 - RESULTS

The UK ORO entry grew in size this year, and reflects the continuing growth of CW contest activity, with new G0 calls still entering the fold. The Overseas ORO entry also increased, probably as a result of the improved conditions.

There was a major problem with entries from abroad as both *QST* and *CQ Magazine* published incorrect rules showing multipliers as UK prefixes instead of Countries, despite having got it right last year. All the logs which followed these rules were rescinded correctly; a number of entrants failed to record the county code sent them and in these cases every QSO was looked up and given the correct county. This will not happen again next year! As has been stated previously, if a contest sta-

tion sends you some information you can be certain you need to receive it.

Perhaps the best guide to conditions was that most of the leading stations were 100 or so QSOs up over last year, and it was only as darkness fell that the band really collapsed. After a year when HF conditions have been generally awful, it could have been much worse.

The new Multi-operator category was not widely publicised due to the late decision to include it and drew only two entries.

The Overseas Listeners entry grew well, an encouraging sign, but there was no Home support at all. It is clear that in this section BRS1066, now a 'Silent Rx', will be sadly missed.

Congratulations to the award winners and a thankyou to all who submitted entries or checklogs. Let's hope that next year brings a further improvement in conditions.

G4BKJ

### UK TRANSMITTING

Poan	Call	QSOs/Mults	Points
1	* GW9GT (M)	690/75	155250
2	* GW2YDX	634/78	148356
3	* G4BWP	602/73	131638
4	* G3VER	563/78	131742
5	* G3KDB	586/74	130082
6	* G3TBK	541/74	120102
7	* G6NAA	551/69	114057
8	* G4BUO	528/72	114048
9	* G5LP	500/74	111000
10	* G3PIA	460/72	99360
11	* G4RFR (M)	452/71	96276
12	* G3QLL	451/67	90651
13	* G3CKP	472/64	90624
14	* G0VZ	425/71	90525
15	* GM3YOR	424/64	81408
16	* G3FXA	400/67	80400
17	* G3BZU	398/67	79596
18	* Q8ZF	535/47	75435
19	* G0UNZ	359/64	68928
20	* GM5SID	369/61	67527
21	* G4ELZ	357/62	66402
22	* G2OT	366/59	65880
23	* G3LHU	366/59	63720
24	* G4IQM	336/60	60480
25	* G3VYI	333/58	57942
26	* G3PIA	327/57	55917
27	* G3MY	288/63	54432
28	* G3NKS	299/57	51129
29	* G4DDV	294/58	51056
30	* G3QLL	294/57	50274
31	* G0EMU/P	321/52	50076
32	* G3PSM	272/57	46512
33	* G0NGV	268/57	45828
34	* G3JJJ	272/56	45696
35	* GM3CIX	273/54	44226
36	* G0CGV	238/59	42126
37	* G0LZL	260/53	41340
38	* G3SWH	254/54	41148
39	* G0IDE	251/50	37850
40	* G2AFV	224/53	34960
41	* GW3HGJ	232/47	32712
42	* G3MPB	210/50	31500
43	* G4RFX	200/49	29400
44	* G3UFY	184/50	27600
45	* G3TXF	173/50	25950
46	* G3HUF	166/46	22908
47	* GM3CFS	177/40	21240
48	* G3BPM	156/41	20828
49	* G3DBJ	147/47	20727
50	* G3AWR	134/43	17286
51	* G6QJ	126/40	15120
52	* G3LJK	103/36	11124
53	* G3GMM	91/37	10374
54	* G3HKO	135/28	10125
55	* G4ZME	67/32	6432
56	* G2BLA	60/31	5580
57	* G2HRD	68/25	5100
58	* GM4WLN	65/22	4290
59	* G4FVK	50/26	3900
60	* G3ZDC	21/15	945

### UK TRANSMITTING (QRP)

1	* G4BUE	261/48	37584
2	* G4ARI	206/42	25956
3	* G2HLU	151/38	17214
4	* G4CZB	150/37	16650
5	* G3RFXH	144/31	13392
6	* G4FDC	106/21	9858
7	* GM4HQF	70/33	8930
8	* G4CMZ	71/29	6177
9	* G4ETJ	75/20	4500
10	* GW3SB	45/20	2700

### OVERSEAS TRANSMITTING

1	* EA6ZY	160/57	27360
2	* RA3XA	161/54	26082
3	* OH6MFN	151/55	24915
4	* UT5AJ	146/52	22776
5	* K3ZO	131/57	22401
6	* HA3OU	140/52	21684
7	* ZD8LI	138/49	20286
8	* NZ4W	142/48	20160
9	* UL7LG	125/50	18750
10	* UB3JA	117/52	18252
11	* UL4LCB	124/48	17856
12	* OH2IW	132/45	17620

13	* SP8TO	117/49	17052
14	* OH2BVM	107/51	16524
15	* UA9HX	137/40	12660
16	* UA9CUA	110/47	15510
17	* UA9KW	107/48	15510
18	* VE3UKZ	111/45	14985
19	* RA4YM	110/45	14850
20	* UA9SIZ	109/44	14388
21	* YU4XA	106/44	13992
22	* OH6RC	98/47	13818
23	* K1JKS	109/42	13734
24	* OK1FQE	95/47	13395
25	* DA7SN	101/44	13332
26	* OK2ON	94/47	13254
27	* LY2PAQ	101/43	13029
28	* UA9YG	103/40	12660
29	* Y0SBAT	74/53	11766
30	* SP5YQ	94/43	11739
31	* OK2PSZ	89/42	11214
32	* OH7NW	81/46	11178
33	* OH1UP	84/43	10836
34	* OH3MC	83/42	10458
35	* OH2EJ	89/39	10413
36	* W4IF	80/43	10320
37	* UA9YC	86/40	10320
38	* OH1XT	78/43	10191
39	* HA6VA	85/39	9944
40	* VE3HK	80/40	9600
41	* HB9JU	78/41	9594
42	* HB9APJ	68/46	9522
43	* TE1T	75/42	9450
44	* DL1OO	76/41	9348
45	* UV6LPY	77/40	9240
46	* UD6DF	88/35	9240
47	* W1DMD	75/39	8775
48	* OK1FSM	73/40	8760
49	* YU7SF	69/40	8280
50	* OK1MNV	74/37	8214
51	* UL7RDZ	75/36	8100
52	* OH7NVU	72/37	7992
53	* OH2YL	69/38	7752
54	* UA3VRP	71/35	7455
55	* LA1IE	69/34	7038
56	* SP8FHJ	60/39	7020
57	* UB5EDX	67/35	7000
58	* Y02DFA	60/36	6480
59	* W3POP	58/34	5916
60	* UA4QK	52/33	5148
61	* EA3GGY	50/31	4650
62	* N0FFZ	48/32	4608
63	* UA3TAM	55/28	4600
64	* JA2THS	48/29	4176
65	* W7LGG	49/28	4116
66	* JG3CQJ	47/29	4089
67	* VE3JK	44/29	3828
68	* JA5APJ	54/25	3800
69	* OH5RZ	45/28	3780
70	* JA3ARM	44/27	3554
71	* JA8CJF	39/28	3276
72	* Y35WF	42/25	3100
73	* LU6EF	28/23	1932
74	* JA9CWJ	29/22	1914
75	* SM3CBR	30/21	1890
76	* JA8AJE	23/18	1242
77	* VK4TT	23/17	1173
78	* ZL2TX	21/18	1134
79	* J1JNC	22/17	1122
80	* DL6JAM	21/15	945
81	* DF3QJ	22/14	924
82	* JA1RK	18/16	864
83	* J170ED	15/13	585
84	* Y41VL	15/11	495
85	* JA1BU	13/10	390
86	* VE3BR	11/11	363
87	* JR4ISK	7/7	147
88	* JA1JLP	5/5	75
89	* N3CZB	4/4	48

### OVERSEAS TRANSMITTING (QRP)

1	* SP4GFG	77/38	8778
2	* EA3DFW	76/37	8436
3	* OK1HR	64/40	7560
4	* DL1RWN	49/36	5292
5	* OK3PAW	50/32	4680
6	* YU4EKK	44/27	3564
7	* JA1JGP	26/22	1716
8	* OH6MIL	16/14	672
9	* SM7CZC	11/9	272

### UK RECEIVING

NO ENTRIES

### OVERSEAS RECEIVING

1	* UA1-143-1	95/38	10944
2	* ONL-383	37/25	2775
3	* DL1RK/SWL	34/24	2448
4	* JA4-4665/1	19/16	912
5	* SP4-208	9/9	243

VHF RULES

RSGB VHF/UHF/SHF CONTESTS 1992

144/432MHZ

7/8 Mar: 1400-1400GMT

General Rules apply.

Sections: S Single operator portable. F Single operator fixed. M Multi operator. L Listeners. FL Single operator fixed (25W PEP output at Tx). SL Single operator portable (25W PEP out at Tx).

Single operators use same call on each band, each band starting at serial 001.

Single band entries will be accepted as long as the 4422 cover sheet is marked '0 points' on the band not used.

Adjudicator: G4KIS, B J Sheepwash, 204 Donore Crescent, Antrim, Northern Ireland.

70MHZ FIXED/SWL

29 Mar: \*NOTE\* 0900-1500GMT

General Rules apply

QRA and QTH information must be exchanged.

Sections: S Single Operator. M Multi operator. L Listeners.

Adjudicator: G4PIQ, Andy Cook, Fishers Farm, Tendring, Clacton-on-Sea, Essex CO16 9AA

50MHZ TROPHY SINGLE/MULTI-OP

5 Apr: 0900-1700GMT

Multi/Others

General Rules apply, especially Rule 16! M Multi-op Fixed or Portable. S Single op Fixed or Portable. L Listeners.

Max score 25 points per QSO.

Country and country multipliers as per Rule 14 apply.

See new county list, as agreed with HF Contest Committee. The Telford Trophy will be awarded to the highest scoring entrant.

Adjudicator: G0FCT, I Pawson 3 Orion, Bracknell, Berks RG12 4YX

1ST 1296MHZ FIXED/SWL

12 Apr: 1600-2200GMT

General Rules apply.

Scoring: 1 point per Kilometre.

Sections: F Fixed Station single operator. M Multi operator fixed. L Listeners.

Adjudicator: G4PIQ, Andy Cook, Fishers Farm, Tendring, Clacton-on-Sea, Essex. CO16 9AA

432MHZ TO 24GHZ AND 70CM TROPHY

2/3 May: 1400-1400GMT

Trophy 1400-2200 on 2 May.

General Rules apply.

Sections: 24 hour. S Single op stations (same call each band). M Multi op. L Listeners. F Single Operator Fixed. P Single Operator Portable. O All Others. T Trophy Listeners.

The 70cm Trophy will run for the first 8 hours, stations can enter both the trophy and the 24h event but please separate copy of log for each entry.

Scoring: Radial ring 432 and 1296, 1pt per kilometre all other bands.

Adjudicator: G4DHF, D Johnson, 65 West Street, Bourne, Lincs PE10 9PA

144MHZ AND SWL, SINGLE/ALL OTHERS

16/17 May: 1400-1400GMT

General Rules apply. Rule 14 applies.

Sections: F Single Operator Fixed. S Single Operator Portable. O Others. L Listener.

Subsection: Single Operator Fixed (SS)

operation for any continuous 6 hour period, (no breaks, continuous 6 hours) starting at any complete hour ie 1400-2000 or 0000 to 0600 not 0823 to 1423!

Adjudicator: G4DEZ, 110 South Avenue, Southend, Essex, SS2 4HU.

70MHZ CW

7 Jun: 0800-1100GMT

General Rules apply.

Full QTH and QRA required to be exchanged. Rule 13.

Scoring radial ring

Sections: S Single Operator Fixed. O All others. L Listeners.

Adjudicator: G4PIQ, A Cook, Fishers Farm, Tendring, Clacton-on-Sea CO16 9AA

50MHZ CW

7 Jun: 1300-1600GMT

General Rules apply.

Maximum points per QSO 25. Radial ring.

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

Adjudicator: G4PIQ, Andy Cook, Fishers Farm, Tendring, Clacton-on-Sea, Essex CO16 9AA

432MHZ FM FIXED AND OPEN

21 June: 1300-1700GMT

General Rules apply.

Sections: F Single Operator Fixed. O All Others. L Listeners.

Adjudicator: G4XUM, QTHR

Notes for all Contests:

All entries must be postmarked at the latest by the 16th day after the end of the contest ie. if contest ends on a Sunday (say the 1st of October) then the entry must be postmarked on or before the 3rd Tuesday after that Sunday (17th October). For VHF Field Day an extra week is allowed, ie 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).

VHF RESULTS

144 MHZ FIXED AND G3V CONTEST RESULTS 1990

This event was held with conditions that favoured the Eastern side of the country to some extent, with a good proportion of European contacts figuring in many logs. Congratulations and certificates to the winners and runners-up in each section and zone.

Adjudicator: G3ZXX

Pos	Group Name	Operators	Score	Zone
1	MARTLESHAM DX & CG	G4SWX, G4PIQ, G4WFR, G4HUP, G6GAU	23948	C
2	COLCHESTER RA	G4TZM, G6GEX, G6NHU, G1OGY, G3FUJ	12061	C
3	SPALDING & DARC	G1OSP, G3TMA, G4DHF, G6JUR, G6NUZ	8793	B
4	DERBYSHIRE HILLS CG	G6APZ, G6ABU, G1ACC	8793	B
5	SUTTON & CHEAM RS	G4KWB, G4OWM, G4CMU, G3WHK, G1HCM	6321	C
6	RUGBY ATS (A)	G1XJO, G8NTD, G7ATB, G4DDW, G8LYB	5897	B
7	SHEPPY WESTERN CG	G0FRE	5050	D
8	SCUNTHORPE ARS	G0NYL, G4FUH, G4EQD, G8XFY, G7IHB	5012	B
9	CHIPPENHAM & DARC	G0GRI, G0HAS, G3VRE, G7GGC, G0HLE	4353	D
10	CHESHAM & DARC	G0KZP, G1GSU, G4TBR	3987	D
11	HARWELL ARS	G4MKF, G0ADH, G0MCR	3917	D
12	SOUTH MANCHESTER RC	G6LCS, G4LIG, G7FWE, G4NTY, G3ZDM	3613	A
13	FARNBOROUGH & DARCS	G8HHI, G0DCI, G0HWL, G1IPO	3585	D
14	RUGBY ATS (B)	G6KKK, G7GAB, G3BFX, G4EPA, G4SSW	3489	B
15	LEICESTER RS	G4AFR, G6KRS, G7DWC, G8FCQ, G0ATR	3316	B
16	AYLESBURY VALE RS	G3MHE, G0GMB, G0MZH, G1VBL, G3XTO	3296	D
17	HEREFORD ARS	G4ASR	3198	B
18	DARLEY ARG	G0FOS, G0MAO, G1VQK	2800	A
19	MANSFIELD CG	G0GAG	2746	B
20	LINCOLN SHORTWAVE CLUB	G4STO, G4HVC, G4XMQ, G1UBP, G8VGF	2505	B
21	VALE OF EVESHAM RAC	G4UXC	2321	B
22	MID-SUSSEX ARS	G3JMB, G7FSX, G0APZ	183	C
23	GUERNSEY ARS	G0UBNS	1805	D
24	BRATS	G1LHD, G0LJD, G1HTA, G6LYW	1765	C
25	SOUTH DEVON RADIO CLUB	G4SSD	1748	D
26	AERIAL RC (LONDON)	G3NLS, G6DWT	1611	C
27	CLIFTON ARS (A)	G3LJZ, G4RFC, G8APV, G0DCG, G0HUZ	1470	C
28	KING EDWARDS SCHOOL	G8ZKE	1199	B
29	REIGATE ATS	G8JXV, G1LNT, G1HLY	1072	C
30	LEEDS & DARS	G8WYR	1042	B
31	BRUNEL UNIV ARS	G3UBR	810	C
32	ASTON & BIRM UNI ARS	G8PGM	724	B
33	NEWPORT ARS	GW4EZW	690	E
34	BROMSGROVE & DARC	G7AQU, G4LRL, G4LJ	583	B
35	WARWICK SCHOOL ARS	G0GNF	554	B
36	RUGBY ATS (C)	G1NPH	282	B
37	CLIFTON ARS (B)	G7BKH, G1LHL	174	C

SINGLE OPERATOR SECTION

Pos	Call Sign	Score	QSO	Locator	Zone	Pwr	Ant	Best DX	km
1	G4PIQ	7108	608	01MU	C	400	2 x 19 + 14	EA1BCB	1143
2	G4WFR	5209	435	01OV	C	170	2 x 15	DK1FG	746
3	G4TZM	4178	375	01NW	C	200	2 x 14	DL5NCA	743
4	G6GEX	3778	378	01IT	C	200	14	DK1FG	776
5	G4ASR	3198	360	81WK	D	400	18	DF9TY	791
6	G4HUP	2966	264	02PD	C	400	18	DK1FG	748
7	G0GAG	2746	331	93JD	B	400	2 x 14	DF9QT	671
8	G4DHF	2742	284	92TS	B	300	4 x 9	DL90BD	628
9	G4WKN	2603	380	92OG	B	300	2 x 9	FC1EZO	646
10	G4UXC	2321	336	92BC	B	250	14	FC1CZS	830
11	G4ARI	2059	345	92IO	B	100	10	F1FH	618
12	G6NHU	2019	260	01NS	C	400	9	DL0WH	582
13	G1OGY	1587	247	01GR	C	80	14	E15FK	624
14	G4HGT	1571	211	93FU	A	400	14	F1FH	745
15	G6JUR	1524	175	92WS	B	300	4 x 9	D86BX	631
16	G0HAS	1503	271	91BN	D	150	13	PA3FJY	571
17	G0GFE	1418	230	90AT	D	80	12	PA3FJY	599
18	G6KRS	1383	205	81WK	D	25	COUX	G4MAFF	639
19	G3YDY	1379	197	01FO	C	60	9	DJ2JA	590
20	G3MEH	1310	237	91OS	D	400	2 x 9	DF9QT	834
21	G8HHI	1260	228	91OH	D	300	15	G4MCMX	56
22	G0APZ	1213	159	90WW	C	25	8 QUAD	DL0WAE	607
23	G6GAU	1175	145	02MB	C	100	14	DF9QT	517

24	G4EQD	1144	178	93ON	B	100	8	DL0WAE	632
25	G0GMB	1113	202	92NB	D	100	17	DL2CM	607
26	G8XFY	1112	154	93RN	B	25	2 x 15	FL6PE	690
27	G0GCI	1098	168	91OF	C	70	9	DL0WAE	644
28	G8LYB	1042	204	92JI	B	400	16	PA3FJY	515
29	G4STO	1026	164	93PH	B	250	19	DL0WAE	633
30	G8MNY	966	184	91XI	C	200	8 QUAD	PA3FJY	453
31	G4LJG	947	145	83TM	A	160	10	G4MAFF	389
32	G0HWL	912	210	91OG	D	100	9	DL2CM	588
33	G0LJD	898	112	01FJ	C	80	9	DL0WAE	556
34	G4HVC	872	156	93QA	B	100	9	DF9QT	632
35	G6NUZ	858	145	92XW	B	180	16	E15FK	589
36	G8XFR	848	141	92JL	B	100	8	DL7AAF	485
37	G8ZRE	847	145	83NE	A	100	8 XY	G0APZ	298
38	G6KRS	827	172	92KP	B	70	10	D8WVK	584
39	G0JDL	811	113	02UL	C	200	9	G4SSD	431
40	G7FWE	795	147	83TJ	A	100	10	G0MYE	414
41	G6MXL	772	134	80XR	D	180	9	G0FOS	366
42	G1NRM	749	177	91UC	C	80	10 XY	G0MYE	394
43	G4NTY	746	122	83TM	A	200	9	G3EDD	373
44	G3VRE	730	132	81WL	D	25	8	G1VHT	435
45	G3JMB	671	110	91WA	C	10	7	DJ2JA	630
46	G4MAFF	657	44	87VA	G	400	4 x 17	G4CVI	577
47	G0MYE	654	49	70GE	D	400	12	G4SWX	614
48	G0MAO	649	96	93FX	A	80	9	G4CVI	308
49	G8ZOB	635	141	92JL	B	100	8	G14KIS	407
50	G0ADH	596	140	91KO	D	50	6 QUAD	OT2KCS	391
51	G8JXV	581	121	91VE	C	100	9	DJ6LV	489
52	G1YBB	577	100	82PA	B	100	10	G0JDL	305
53	G3ZDM	558	92	83UK	A	200	15	G0APZ	314
54	G3JUZ	507	110	01AJ	C	25	8	G0CLP	340
55	G3FUJ	499	85	01KV	C	10	9	G4SSD	342
56	G0MCR	492	100	91IO	D	80	2 x 5	PE1EWR	334
57	G7GGC	464	89	81XL	D	25	8	G0MAO	?
58	G4SSW	442	112	92IL	B	25	3 QUAD	G7BFK	270
59	G4RFC	403	105	01AL	C	100	9	GW7EXV/P	324
60	G4XMQ	348	67	93SF	B	18	8	PA3FJY	471
61	G7IHB	355	70	93CN	B	60	8	G4CVI	298
62	G0MZH	336	82	91DT	D	90	6 QUAD	G8WVS	281
63	G1HTA	326	64	01HL	C	130	8	G0CLP	262
64	G1VBL	319	84	81KV	D	80	12	G0UBNS	291
65	G1IPO	315	69	91OH	D	100	2 x 5	G0FOS	307
66	G1LNT	288	74	91WK	C	25	9	G0UBNS	266
67	G1NPH	282	77	92IK	B	35	8	G6MXL	196
68	G0HLE	273	51	81WI	D	20	CODX	G0FOS	298
69	G1HCM	267	73	91UJ	C	50	HB9CV	G4SSD	254
70	G6HQI	252	58	01LV	C	50	13	G4HGT	274
71	G1UBP	242	50	93RF	B	10	?	G4CVI	264
72	G6YLW	232	40	01HI	C	130	16	G4HGT	213
73	G8APV	219	61	91XL	C	50	5/8 VER	G6APZ	313
74	G7AQU	218	41	92AH	B	10	8	G4	



# practical 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

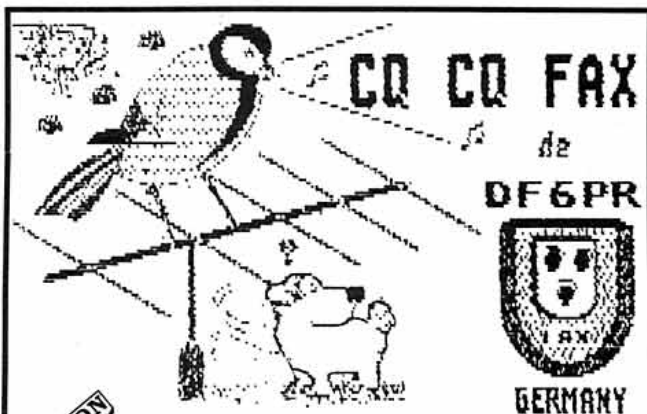
case, they really mean double-beds, not twins! This means that this trip is more suitable for couples, and so we can encourage more husband and wife/or girlfriends to come. I have organised a couple of day excursions for the Friday and Saturday. One trip is to the beautiful Island of Mainau, famous for 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  
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**Hurry... don't miss the Friedrichshafen Hamfest '92 bus!**



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# LONDON

AMATEUR RADIO  
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The New AR3000A is an evolutionary step onward from the highly acclaimed AR3000. Many improvements have been implemented at the requests of enthusiasts. The AR3000A still covers an extraordinarily wide range from 100 kHz - 2036 MHz without gaps and offers ALL MODES: AM, NFM, WFM, USB, LSB & CW. The LCD is larger and the viewing angle has been changed to further improve visibility. SCAN and SEARCH speed has been greatly increased and new programmable DELAY, PAUSE and PRIORITY facilities have been added. The rotary tuning control is 'free running' to increase user friendliness for SSB/CW listening. Memory clear and microprocessor reset are now available from the front panel. RRP £765

The WA5000 is a new ultra-wide range receiving aerial designed for areas where space is a problem and provides coverage from VLF to SHF. A MOS power FET amplifier is utilised to provide superior performance in the HF 30 kHz - 30 MHz range. The usable coverage of the aerial is 30 kHz - 2 GHz. The total length of the WA5000 is 1.3m and fed via an SO239 connector located in the aerial base. Approximately 15m of terminated coaxial cable is provided ready to plug in and start using. The aerial is powered by 12V DC @ 100 mA (mains power supply provided), this being fed up the coaxial cable. A small interface box is included for connection to the power supply and receiver, this is fitted with a BNC patch lead. RRP £150  
For full details please send a S.S.A.E. - *thankyou.*



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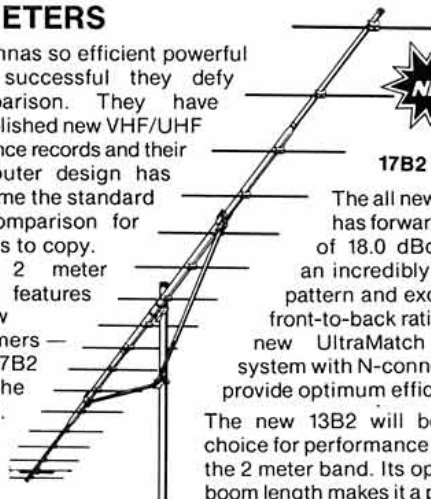
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The all new 17B2 has forward gain of 18.0 dB with an incredibly clean pattern and excellent front-to-back ratio. The new UltraMatch feed system with N-connectors provide optimum efficiency. The new 13B2 will be your choice for performance across the 2 meter band. Its optimum boom length makes it a popular antenna that fits just about anywhere for Sideband, Packet or FM mode.

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UR76, 5mm dia, 50 ohm, stranded centre.....	25p/m
RG58CU, 5mm dia, 50 ohm, stranded centre.....	25p/m
RG174U, 2.3mm, 50 ohm, miniature coax.....	30p/m
UR95, 2.3mm, 50 ohm, mini nylon coax.....	30p/m
UR111, 2.3mm, 75 ohm PTFE mini coax.....	40p/m
UR57, 10.3mm, 75 ohm low loss coax.....	70p/m
UR70, 6mm dia, 75 ohm transmitting coax.....	30p/m
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300 ohm standard ribbon.....	18p/m
RG62AU, 6mm dia, 95 ohm coax.....	50p/m
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3 core mains, 5 amp, cable.....	20p/m
5 core rotator cable, medium duty.....	30p/m
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## CONNECTORS

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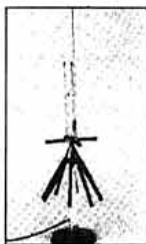
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### SKY SCAN Desk Top Antenna Model Desk 1300

Built and designed for use with scanners. Coverage: 25 to 1300MHz Total height — 36ins — 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted. Ideal indoor — high performance antenna and can also be used as a car antenna when your car is static.

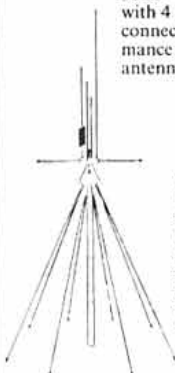
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### SKY SCAN V1300 Antenna

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# Members' Advertisements

RSGB Members wishing to place an advertisement in this section must use the official form incorporated on the label carrier of Radio Communication. This will prove membership and must be for the current month. No acknowledgment will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due. An advertisement longer than 60 words will be charged pro rata. Trade or business ads, even from members, will not be accepted. Traders who wish to use this facility must send a signed declaration that the items for sale are part of, or intended for, their own personal amateur station. The RSGB reserves the right to refuse ads, and accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Ads for CB equipment will not be accepted. Each advertisement must be accompanied by the correct remittance, as a

credit card payment, cheque or postal order made payable to the Radio Society of Great Britain. Please note that because this is a subsidised service to members, no correspondence can be entered into. Licensed members are asked to use their call sign and QTH, provided their address in the current edition of the RSGB Amateur Callbook is correct. RS members will have to provide their name and address or telephone number. Please include your town and phone number in the free boxes provided to assist readers.

**Warning:** Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid.

## FOR SALE

**VINTAGE** WW2 receiver, MCR 1 with coils, AC/DC power pack, working. Also Goldtone (Woolworth) 1920 crystal set together, £100. RAF key type D, excellent condition: £30. MM 70MHz transistor, modified for 50MHz, working: £50. G3CGQ QTHR. (Luton) 0582 25519.

**6M DX**, buy my Yaesu FT726R all mode transceiver with 2m and 6m bands, mains, or 12V mike, manual in mint condition + 3ele 6m Yagi: £595. No offers or time wasters. Please contact Alec GOFIG. (Shoreham By Sea) 0273 462696

**70CMS** Hand Held, Kenwood TR3600E, with charger, spare battery pack and soft case; £1600. Wanted PK88 or similar TNC. (Part Exchange?). (East Yorks) 0759 318408.

**930S**, immaculate, auto tuning unit, H/D PSU fan fitted, non-smoker: £950.00. GW3DIX QTHR. (Amiwhch) 0407 830710.

**COLLECTORS**. Soviet transceiver from T72 tank Gulf War. Late export model, English face settings with transformer and power link. Offers. (Bridport) 0308 897313.

**COMMODORE** C64 (RF spressed) plus MPS 802 printer with tape drive (spare ribbons) and 1541 disk drive. Lots of amateur radio software including MBA-TOR (AMTOR/RTTY/CW) and packet terminal progs. 1541 is for 110V (bought USA) rest 240V. All: £200 plus postage or buyer collects. (Huntingdon) (H) 0480 86693 or (Wk) 071 218 7235.

**COMPLETE** receiving station consisting Trio R600 receiver, PK232, AT-1000, Commodore MPS 1230+ £300 software. All boxed with manuals: £1200.00. Or part exchange for good HF solid state base station transceiver. (Maidstone) 0622 717321.

**COMPUTER** MTC PC clone 12MHz 286 PC AT, 640K RAM, 31meg ST251 hard disk, 1.2M 5.25 floppy, 1.4M 3.5 floppy, 1 parallel + 2 serial ports, 13" EGA colour screen, DOS 5, windows 3, Norton 4, XTREE gold, ++ software: £400. Segate 31meg ST251 hard disk + leads: £80. G8ZGK QTHR. (High Wycombe) 0494 448030.

**DISPOSAL** through illness, all reasonable offers considered but buyers must collect. Trio 4000A hand and mobile mics. Scope 551B, CT471 multimeter, KW204 transceiver, KW1000 linear, BC221, VLF converter. Two magmounts. G3ADZ QTHR. (Rugby) 0788 815222.

**FT101B** tcvr, 160-10M, good condition, fan fitted, built in 240 and 12 volt PSU. G4OAC QTHR. (Rochdale) 0706 50174.

**FT726R** VHF base station. Fitted with 2m, 6m and 500kHz narrow filter. Late model, excellent condition: £740. Dave GOMRF. (Hounslow) 081 570 9595.

**FT747** with FM, used twice: £500. FT102 plus WCW filter: £480. FTDX400: £55. FRDX400: £55. Both: £100. G4MH mini beam: £75. All items mint condition and ono, can deliver. G3WNT, phone Bob Limehouse (work) 0256 763911 ext. 264. (Home) 0635 299146.

**ICOM** 451E 70cms, all mode transceiver, plus FT480R 2m all mode mobile transceiver, both radios in excellent condition, mikes, manuals, boxed, plus Yashica 35mm camera outfit with extra lenses. Exchange all for FT726R base with 2m, 6.7, 70cms + sat board. Also have Icom 551 50MHz rig, mint, boxed, manual, mike for FT757 GX. Ian G7HXL. (Stalham) 0692 580201 anytime.

**FT767GX** all modules fitted: £1250. FT102, mint, boxed: £500. FT101E with FM and 2m transverter, speaker, valves, handbook: £375. Icom IC2E complete with accessories: £125. Trio 21E, boxed: £115. Trio 2300, complete: £125. HC150 ATU: £75/veg. HC200 ATU: £110 boxed. AOR2002, Aircastle, interface, 288 laptop, one of best computer/scanner combinations on the market: £475. For details please ring after 6pm. (Leeds) 0532 360773.

**FT902** DM just serviced. New valves fitted. SP102 external speaker. Excellent condition: £495.00. G4XLG. 0525 220174.

**ICOM** R7IE GCRX: £475. ICS fax-1 RTTY/Fax decoder: £165. Telegquipment D66 oscilloscope: £65. Keithley 169 digital multimeter: £25. Altal 13.8V 3A Reg PSU: £12. N-E PMA-1 1024 chan multichannel analyser: £350. (Guildford) 0483 575870.

**ISOLATION** transformer. 240V, 4KVA: £30. Quantity test gear, old but good meters, SIG GEN, scope: £5-£25 each. Boxful old valves 100 for: £25. Metal trolleys, instrument trolleys, workbench frames: £5-£10. Scope tubes from: £1. Resistors (10,000) assorted values: £20. Copper earthing braid, 8 and 12KV capacitors 47-220pF, 807s, KT88s, GZ32/34, 2A3 (pair, new) 6L6, 6B4G, UY41, ECC81/2/3, ECL82/3/4/5/6, ECC807 vintage valves, 74LS ICS. (Birmingham) 021 472 3688.

**KENWOOD** TS520S, good condition, plus AT-200: £375. Yaesu FRT-7700 RX ATU: £35. HAL RTTY/CW DS2000KSR: £50. Cash "ovno". G3OJI QTHR. (Nr Rugby) 0926 812621.

**NEC** CQ110 HF transceiver, 10-160m, 180W output, some spares available: £275.00. Pyy 60MHz frequency meter, mains or 12VDC, offers. GOFXD David. Please phone after 5.30pm w/days and at wk/ends. (High Wycombe) 0494 718563.

**REDUNDANT?** Too old to get a job? Have you thought of the tourist industry? House with B&B facilities and two self-catering flats for sale in Devon for: £150,000. Good site for ham operation. The Old Manse, Mary Street. (Bovey Tracey) 0626 833367.

**SOUTHERN FRANCE**. Beautiful QTH, close canal Midi, fully modernised, tastefully decorated, large area for antennas, caravan, boat, etc. No immediate neighbours. 3 double bedrooms, 2 bathrooms, big kitchen, utility, 2 walk-in pantries, separate dining room, lounge with fireplace, sunroom, storeroom, Grenier garage. Well stocked walled garden. Ready early occupation. Local area vines and fruit trees with mountain views: £85,000. F/G3WLX QTHR. (Nr Narbonne) 68 93 60 47.

**SPECTRUM** Analyser- superb Texscan unit. Solid state. Model AL-60B 1MHz-3GHz. Seen working, VGC, bargain at £995. NO faults. Eddystone 1650, immaculate condition, current model, professional HF receiver: £2200. Digital voice changer, fits any telephone, superb speech quality. Model TVM4000, 15 different voices: £72. (Pinner) 081 866 3300.

**TOKYO** High power 6m linear HL86V. Rated 10/85W receive preamp hi/lo, instruction book, boxed as new: £125. (Northants) 0604 881971.

**TOWERS**. Lattice telescopic tiltovers galvanised 30ft to 100ft, prices from £350. (Allford) 0507 463561.

**TRIO** 830S HF transceiver as new, boxed, manual, superb: £700. Also TRIO 9130 2m rig, as new, CW mobile mount: £390. Also AMT2 RTTY etc with BBC Eprom: £65. G0WFO QTHR, Alex. (Swansea) 0831 444450.

**TS530S** with mic, H/book, good condition: £375. R1000 general coverage receiver, good condition: £175. Trio 7500 2m mobile FM synthesised 10W: £50. Fibreglass 2m colinear: £20. SX200 scanner, excellent condition: £150. Evening calls only. G3VUS QTHR. (Barrow In Furness) 0229 825728.

**TS690S** inc Auto ATU, HF plus general coverage rx + fm, 2 months old. Pristine condx, original wrapping. Unwanted gift: £1100. Tel David: 12-1pm 6-7pm (Lincolns) 0778 425367.

**TS940S** auto ATU filters fitted, mint: £1385 might PX WHY. TS680: £699. Ring Malcolm G0HOG. (Ruislip) 0895 676919.

**YAESU** 767GX with 2mtrs, 6mtrs and 70cms. Yaesu FL7000 HF linear. Diamond SX-1000 SWR power meter (brand new) unused. Yaesu FIF-232C cat interface. FEX736R-12A, 1.2GHz unit for FT736R. Remote antenna selector FAS-1-4R. All equipment, pristine condition or brand new, silent key sale. (Preston) 0772 814200.

**YAESU** FC102 9-band ATU (Rated at 1.3KW). Faulty metering but tuner is 100% OK, all bands: £1200.00. Wanted TNC for packet, PK88 or similar. (East Yorks) 0759 318408 anytime.

**YAESU** FT230R 25W FM mobile V600D condition: £150. Kenpro KR400 rotor, boxed, never used: £110. Jaybeam PBM14/2M 14 element parabeam, boxed, never used: £30. Jaybeam LR1/2M colinear, boxed, never used: £30. Kenwood SW100A SWR/power meter 1.8- 150MHz: £10. (Luton) 0582 576811.

**YAESU** FT726R complete with 2m 70cm 6m and satellite modules. Mic MHI-B8 included, purchased brand new from S.M.C. All items absolutely mint/boxed with instructions. 2m and 6m modules professionally modified to provide additional I.F. stage and increased performance. Total list price including mods: £1268. SALE: £875. No offers and no splits please. G2FZU QTHR. (Notts) 0636 813847.

**YAESU** FT726R fitted 2m/6m/70cm and sat., with brand new boxed HF21-28MHz unit. Matching SP.102 spkr. Operating manual plus service manual. Mint unmarked condition, little use: £970. (Northants) 0604 881971.

**YAESU** FT77 100W HF transceiver, 8 bands. FM board, CW filter, mic, boxed, excellent condition: £350. FL110 HF linear (10W input). G4ENA 160m SSB mobile transceiver, Peter Braville, G3XJS QTHR. (High Wycombe) 0494 712344.

**YAESU** FV901R V/U transverter: £200. (Baroldswick) 0282 812288.

**3 BED TERRACE** with planning for 40 foot mast. Close to M63/56 motorways and rail. Long garden, kitchen and bathroom, 2 storey extension ideal for family or professionals. Reduced by £4000 for quick sale to £53,950. Contact Steve on 061 969 5103 (Sale, Cheshire) or The Halifax Property Services on 061 973 8315 for more details. Gas CH throughout. Quote ref: 4 Somerset Place.

**80486/33MHz** unused ISA Motherboard mini AT, max 64MB Simm Ram on board 64K cache exp. 256K AmIBios Manual only: £550. 1MBx9/80Sec Sipp: £25. Colour hand scanner and IF card: £180. Would exchange for HP test equipment HP8640B or HP 435/436 and cash - G0KSW. Karl Barth, 30 Bedhampton Way, Havant, Hants PO9 2DP. (day, office) 0705 674551.

**A13 Rotary**, BC221, Larkspur equipment, ATU No7, rotary PSU for C11/R210, various control boxes etc, STR18 equipment, R19/TRC1, WW2 gun camera (US Navy), other items, offers invited. G0JNT QTHR. (Grimsby) 0472 752794.

**ALIGN** your Racal RX/TX. For sale - CT501 wobulator/scope made to do this. Haggled around: £80. E Fielding. (Beccles) 0502 715537.

**ANTENNAS AND MASTS**; most items as new with packaging. Clarkmast type-21 full military specification 12-metre 75kg Headload, single man assembly, complete with all winches, support legs, tool kit: £250. Racal 9-metre fibreglass mast kit, all tools guys: £45. Rotators new, (less control boxes, with circuits) KR500 elevation: £45. KR600 Azimuth: £50. Mounting brackets: £5. S/hand assembly: £80. Jaybeam log-periodic 17 element, 68-500MHz, 50ohm, type-7084: £40. 12 element Yagi, 450MHz: £20. New Melcher switchmode PSU, modules, mains 12V 4A: £10. 15-80VDC, input 12V2.5A: £2.50. Ex-equipment PSUs, variable 0-50Volts, 5amps: £25. Dual 12-15B1A: £5. VHF ferrite circulators, about 330MHz (Have one for fun!): £2.50. Rotary drawing machine (Rotring type): £20. Trippe rail PSU, 5V9A, 12-15V 2A: £10. G8JEM QTHR, Eric. Please phone after 19.30. (Bognor Regis) 0243 861916.

**B40D**: £50. Redifon TT10, TT20 teleprinter terminals: £10 and £30. Siemens teleprinter interface unit: £20. Saisho SW5000 World Band receiver: £45. Kenwood 1kw LPF: £15. Test oscillator No2: £10. RT-7/APN-1, W546, early crystal set, offers. G0JNT QTHR. (Grimsby) 0472 752794.

**BACK ISSUES** RadCom 1942-1991: £10 per year, will haggle, exchange WHY. Also lots of valves. State your needs! (Middlesbrough) 0642 318237.

**BBC** Master 128, hi-res colour monitor, 40/80 track, disk drive, software, books: £450. Trio TS780: £600. Datong UC1 upconverter: £75. Jaybeam Q4/2m quad unused: £20. Enclosed rack cabinet 6": £10. Alan Watson G4DZS QTHR. (Chandlers Ford) 0703 261638.

**BBC** master with 3.5" drive (for master compact ADFS format) and 5.25" drive (for BBC 80-track DFS format): £195. G4ASB QTHR. (Ipswich) 0473 36212.

**BBC-B** computer, CW ATPL sideways ROM-board, 32K RAMcard, Acorn data recorder, dual self-powered 40/80T diskdrive, view and many other ROMs, Hires colour monitor, glare screen, many programmes on disk and cassette, user guide and books: £200. Also AEA Pakratt PK232MBX multimode data controller, CW, manual, and documentation: £250. Post paid, G3RDG QTHR. (NW London) 081 455 8851.

**BBC-B** series 7, twin floppies, plinth, keyboard, Philips 7502 monitor, sideways RAM, AMX Superat, mouse, speech module, many ROMs, enigma, view, printmaster, etc. Masses tapes, disks, books magazines: £325. Epson RX80 printer: £70. Philips CM8833 colour colour monitor: £170. PSION organiser, data-pak, commlink, spellcheck, mains adaptor: £100. Philips PM3330 scope: £50. AVO valve tester: £20. AVO-8: £30. Carriage extra, could possibly deliver. (York) 0904 87779.

**BUTTERNUT** HV6 VX. Antenna: £110. 9" green monitor: £25. Sanyo CCTV camera: £25. Warlike utility receiver: £25. (Kidderminster) 0562 745628.

**CAPCO** AMA3 loop antenna, new, never used, no XYL planning permission, cost £306 will sell for: £200.00. Dragon 32 computer with diskdrive, 8MK TU BMK RTTY Packet Amptor CW set up for Packet cables for FT480 and IC751: £60.00. G4YPN QTHR. (Rainham) 0402 723487.

**CAPCO** SP300D HF ATU, new Oct 91, mint: £225. AEA AT300 HF ATU: £125 mint, minimal usage, boxes, manuals: GW4RLP QTHR. (Caernarfon) 0286 5264 (eves).

**CELESTRON** C8 telescope, wedge, tripod, dual axis drivers, four eye pieces, off axis guidance, 80mm finder, telescope polar scope: £650. (Woking) 0932 346727.

**CLEARANCE!** FTDX401: £185. Tranzmatch: £45. G3DYM dipole: £25. Shure 444: £20. Katsumi keyer: £50. 2mtr transverter QQVO-640: £25. FDK750 expander + PSU: £200. TR2500 U/S LCD has mic and battery: £120.



## MEMBERS' ADVERTISEMENTS

TH41E 14 element jr boomer: £30. Silver 70: £20. call Nick. (Luton) 0582 668865.

**CODAR AT5:** £35. Heath RA1: £65. Heath HW101: £60. KW vespa II: £60. Geemark portable phone plus handbooks. Post extra. G3MDQ. (Sutton Coldfield) 021 354 9972.

**COLLECTORS** Nostalgia. National HRO RX, coil, overhauled, Fs and Cs replaced. 9 GC coils, Original mains and 6VDC PSUs: £100ono. Buyer collects. G3ISD QTHR. (Sittingbourne) 0795 477431.

**COLLINS** 07SL amplifier 10 ths 80. Yaesu FT23R 2m handheld. Heathkit Scope. Yeasu FU901 DM external VFO. magnetic loop 40.80.160. for sale or part exchange. I require a dedicated word processor, or lap top PC with printer and word processing. (Scarbrick) 0704 880345.

**COLLINS KVM2A** 516F2: £450ono. Buyer inspects, tests, collects. G2ACZ QTHR. (Maple Thorpe) 0507 473233.

**COMMODORE** LC10C dot matrix printer, as new: £80. PSU linear 30A plus, fully protected and metered. (No post on PSU): £100. (Essex) 0375 390268.

**COMMODORE PLUS 4** computer with diskdrive, cassette, printer, joystick, PSU, scriptplus, cables, packet terminal, software. No split. Offers?. Also Commodore PET 2001, slight fault, offers?. FDK mult 750E: £100. Wanted Amstrad PCECD colour display. G3NPF QTHR. (Horsham) 0403 66290.

**COMMUNICATIONS** terminal comm telereader CT678 complete AMTOR RTTY/CW modem - VDU with qwerty keyboard and built in mini printer. Little used: £150ono. (Cophthorne) 0342 714402.

**COMPLETE** 70CM DX station, Icom 471H allmode, 10-75W, two 7ele with phase splitter, LDF450 cable, gold plated N-plugs, excellent condition: £750. Yaesu FT77 HF/Allmode, 100W, solidstate: £375. Moseley 3cm/3 bander HF/beam: £75. Maxcom 70cm-FM, 5W hand portable, working 433-050: £85. Icom IC-735, HF/All mode, 100W general coverage, under 12 months old, immaculate: £750. Pye pocketone 70, working, extra battery, desk charger, soft case: £85ono. Cruscraft 6m vertical, new: £25. (Norfolk) 0328 710641.

**COMPLETE** closing down sale, including TS850S fitted many extras, TM731E and TH46E all immaculate boxed. Station accessories including Daiwa 30A PSU, speakers, headphones, masts, antennas. Please send SASE to G0EOL QTHR or phone for details. All good gear at fair prices. (Cheshire) 0606 554857.

**COMPLETE** HF station, FT101ZD inc HF, YD844 mic, SP901 WARC, £350. Heathkit SB200 linear: £250. Moseley TA33JR tribander: £75. (Congleton) 0260 274026.

**COMPLETE** station HF/VHF FT101 mint, Europa B transverter, antenna coupler/VSWR, manuals. Only: £250. Expanding family forces sale! (Twyford) 0734 410296.

**CRYSTAL FILTER**, Ten Tec type 219, 250Hz for Argosy: £30. GM3MXN QTHR. (Lanarkshire) 0698 887176.

**DATONG** D70 Morse tutor: £35 including postage. Plessey PR1551 communications receiver, Ex GCHQ: £225, buyer collects. Both VGC. G0NNP QTHR. (Rye) 0797 280285.

**DRAGON** 64 computer: £30. Dragon 32: £15. All GWO with box, leads and PSU. Dragon twin d/drive with DDOS controller: £50. Eprom eraser: £35. AEA PK80 VHF packet TNC: £80. Jim G4WPI. (Amesbury) 0980 622158 after 6pm.

**DUAL BAND HANDIE**. Alinco DJ560E, 2m/70cm, full duplex, 5 watts, Ext RX 130-170MHz, 400-520MHz. Excellent condition, boxed, manual, charger: £249ono. Peter. (Sunbury on Thames) 0932 787628.

**ERA+** microreader, Morse reader, Morse tutor, RTTY reader: £120. (Manchester) 061 973 0395.

**ELECTROLYTICS** 400 ufd, 325V wkg. Use 10 for 3000V, suppl 20 for better regulation: £10 post paid: £15 for 20. G3FNJ QTHR. (Harrow) 081 866 4680.

**FM240 25W 2M FM** mobile: £120. BNOS 6M 100W linear/preamp: £180. HB433DX 3 ele 10/15/20/40 metre beam: £100. G4GED QTHR. (Greenford) 081 578 4484.

**FOR SALE:** Computer, Sharp MZ711 with built in printer and tape. Lots of software etc. Cost £200. Unused: £40. (Banbury) 0295 87749.

**FRG-7** excellent all mode HF RX, VGC: £420. DNT 10m FM with repeater shift and 50W amp: £50ono. (Solihull) 021 743 6701.

**FT101** with G3LLH clipper: £275. 10ft x 4 triangular tower sections £100. LC10FM with cables and manuals: £25. G3SLH QTHR. (Nr Chester) 0829 260361.

**FT101** with operating handbook, leads and microphone. In QTH: £180, buyer collects. G4LUF/G6VJ QTHR. (Devon) 054 882442.

**FT101B**, good condition: £200. Collect (Burley) 0425 32275.

**FT101ZD** 9-bands CW filter fan, FL2100B linear amplifier L/pass filter SWR meter, microphone etc. No split buyer collects: £500ono. (Malvern) 0684 564044.

**FT102** with AM/FM: £425. FV102DM transmits the FT102 rare: £200. FC102 dedicated ATU: £175. SP102 speaker: £45. G0JFU. (Gloucester) 0452 862773.

**FT208R**, case, helical, 2 nicads, manual, VGC: £140. NC-8 base PSU charger, battery adaptor: £30. YM-24A speaker mic: £14. All three: £160. Regency MX-7000 scanner PSU, manual, covers 25-550MHz and 800-1300MHz, excellent condition: £225. Phone after 7pm. G6AQC QTHR. (Oxford) 0865 243634.

**FT290R** immaculate condition with case, nicads and charger also Mutek pre amp, must be seen as hardly used: £240ono. G4FRH. (Derby) 0509 672734.

**FT707** 100W solid state, WARC, No mods, FV707DM VFO/memory unit, near mint: £420. FC700 ATU: £100. Datong ASP: £35. Jim. (Bournemouth) 0202 557631.

**FT77** tcvr with FM, FP700 power supply, FC700 antenna tuner, FTV700, 2m transverter, FV707DM digital VFO: £625. G0NDO QTHR. (Peterborough) 0733 263728.

**FT901DM** transceiver. 100W, 6 band, CW, SSB, AM, FM, FSK modes, WWW memory unit, digital and analog readout Receiver features: Reject variable, IF and APF tuning. Built in keyer but I.C faulty: £400ono. (London) 081 804 4771.

**FT980** transceiver, FC102 tuner, MD1 B8 microphone: £1000. No split. Exchange modern Cat. system Rx plus cash Adj. GW3UWQ QTHR. (Kilmarnock) 0563 40730.

**G3TSO** type rig with counter, peak notch filter, good RX, op low on HF bands. Spare PA, transistors, 24 plessey communications chips, some new, all good, IC tester, various PCBs. Bargain for the home brewer, £150. MWM ASCI/CW converter, OFFERS!. (Bolton) 061 790 2338.

**H.P.5** De-luxe headphones: £25. GOGY7. 071 263 2983.

**HF 225** as new with D-225 detector option completes FM reception and synchronous AM. Mr R Parrie, 35 College Avenue, Harrow Weald, Middx, HA3 6EY.

**HF** linear inc 2x813 separate PSU, all home brew: £80ono. G4FAS QTHR. (Stockport) 061 437 7784.

**HF6V** antenna, good condition. 2m beam and rotator, Tonna 6m aerial, new boxed. G0HJA Ken. (Horsham) 0403 52023.

**HRO 500**, excellent condition, performance: £350. Eddystone 940, vgc: £150. FRG.7: £100. FRG 8800 FRV-8800 antenna, boxed: £450. (Middx) 081 571 5759.

**IC275E** Icom 2m multimode, in mint condition, less than a year old: £800ono. Call John. (Horsham) 0403 53051.

**IC701** CW, PSU, desk mic, ICRM3 remote, immaculate. TS770E 2m/70cm base station. CW, mic, service manual: £450 each. (Yeovil) 0935 23873.

**IC725**, brand new, unwanted gift, offers over: £650. Also FT101, mint, offers over: £230. (Dunstable) 0582 606173.

**ICOM 02E** 2m H/H inc. battery packs, HS10 headset, HS-10SB switch box, IC-CP1 DC lead charger, case, all boxed: £150ono. (Selby) 0757 228415.

**ICOM 229H** 50W transceiver. Used once, latest model. Includes programmable tone encoder unit. Suite new buyer, boxed: £247. (Northampton) 0604 881971.

**ICOM 275E** 2m multimode, mains base station: £650. HX240 2m-HF transverter with 12V PSU: £220 vgc. £800 the pair. G0PQC. (Hemel Hempstead) 0227 361255.

**ICOM 751A** TX/RX. New plug 1991, nice rig, going QRP, offers near: £1100 cost £1700 new. Mike (day). (Farnborough) 0252 518009.

**ICOM** IC-SP3 external speaker, mint: £33. Datong SRB-2 Woodpecker blander, mint, boxed with instructions: £39. A real bargain. (South Glamorgan) 0222 465463.

**ICOM** IC28H 50W transceiver. Little use, as new, boxed: £197. Complete with mike etc. (Northampton) 0604 881971.

**ICOM IC745**, immaculate condition. FL44 filter, mic, manual, boxed: £715. IC SM6 mic: £25. Marconi 2GHz to 12GHz, ATTN 20dB cal. certificate. Type 6534.4 unused. Offers! (Exmouth) 0395 273090.

**ICOM** IC745, still boxed and absolutely mint: £750. Hallicrafters SX 110 Rx: £100. BC221: £30. Eddystone EC10 Rx: £50. G4EDJ/G4MBA. (Bedford) 02302 2232.

**ICOM** ICR-1 handheld receiver, new: £295ono. Jupiter II handheld receiver, nicads: £180ono. AOR AR-2001 in MX-8000 case, s meter, tuning knob: £170ono. Amstrad PC 1512 PC-MM, mono, twin drive, 640K RAM, 20Mb hard card: £225ono. Amstrad PCW 8256, single drive, 640K RAM, ext serial/parallel port, local script 2: £225ono. Sinclair Z88 laptop, 128K RAM: £150ono. PSION organiser XP, comms

link: £70ono. Most items in original packing. Martin 6-10pm. (Southampton) 0703 262246.

**KENT BRASS** Morse key, Tonna 19le 70cm beam, radiospares 12V 5A switched mode PSU, 15m UR67 coax. G4DIC. (Fakenham) 0328 711784.

**KENWOOD** TL922 HF line: £1200. SAGRA 600 twin 2CX250B 2m linear: £615. Both items brand new, unused. Kenwood SM220/BS8 monitor (mint): £295. Icom 575H (100W) 28/50MHz, TX/RX (mint): £735. 30 metres Andrews LDF450 heliax (new): £90. Connector (new) M/F: £11 each. Panasonic KXP 1081 dot matrix printer (new): £80. Paul G4XHF QTHR, anytime. (Crawley) 0293 515201.

**KENWOOD** TS850S immaculate condition: £1000 ono. 500Hz CW filter for above: £35. Yaesu FT736R 2m/70cm m/mode base station, CW, MH1-C8, mic, immaculate: £1000ono. Yaesu FT650 6m/10m/12m 100W base station, superb performer: £900ono. President HR2600 (Uniden 2830) 10m all mode: £160. MM 28 2m transverter MkII, vgc: £95. Pye M294 high band PMR set: £50. Zetagi B300P amp 1-30MHz 200W: £55ono. DAIWA CNW419 1.8-30MHz ATU, immaculate: £120. GM0BRJ QTHR. After 6pm please. (Kilsyth) 0236 824167.

**KENWOOD** TS850S with internal ATU plus PSU: £1100. Station monitor SM230: £600. Digital processor DSP 100: £350. Microphone MC 85: £80. All new, used twice only. Drake R8 receiver, bought May 91, hardly used: £835. Alinco FM TX/RX DR112 5/35 watts: £200. All items subject to offers or swap for m/spec receiver - Rascal or Eddystone. Phone anytime. G3ENB QTHR. (Scarborough) 0723 365093.

**KENWOOD** TS930S HF transceiver, mint condition, very little use, manual. Buyer collects: £850. G0GUP. (Manchester) 061 793 1291.

**KENWOOD** TS940 with MC60 desk mic and LPF, all mint condition: £1150. FT290R with Tokyo 30W linear: £230. PK232 MBX: £175. Drae 20A PSU: £55. Contact Tony G0LUB. (Grantham) 0476 77453.

**KW77** amateur bandsread receiver with data, working: £40. KW viceroy Mk4 SSB transmitter, complete: £50. Rolleiflex F3.5 xenar, excellent: £100. Exchanges welcome, wanted: Solid state general coverage HF receiver; HRO any condition, HRO coils, bits. G3GTJ. (Somerset) 0963 24319.

**MAG-LOOP** Capco AMA3, good condition with control box: £175. (Hucknall) 0602 640522.

**MET-2** satellite receiving system for IBM-PC, Amiga or Atari. Includes PC interface card, pre amp, 3 metre 5S element Yagi ant. 20m coax, receiver demodulator, mains PSU, software documentation, all working on IBM-PC: £350 the lot (worth £750). G3AVE QTHR. (Birmingham) 021 378 5623 or 3826180.

**MICROWAVE** modules 432.28S receive converter, never used, boxed: £13. Mutek BBA 500U wide band preamp, unused: £15. (Northants) 0604 881971.

**MMT** 432/28-5 transverter. Never used apart from test. Believed perfect working order. Dual frequency range version: £120ono. G3VVY QTHR. (Preston) 0772 600234.

**MORSE** KEY type J 36 by Lionel, clean condition, sensible offers to G3TA QTHR. (Bushey Heath) 081 950 1762.

**NAVICO** AMR 1000 2m tcvr 25W FM: £130. (Pontypridd) 0443 400616.

**NEVADA** TM1000 transmatch ATU: £100. BNOS 12/25 25 amp PSU: £100. Both in excellent condition. David G4JLU QTHR. (Harrow) 081 954 9180.

**NICAD** battery pack. 6V 7AH, new, sealed case, shaped to fit hip + 2 belt loops. Integral fuse + 200mm output lead: £25. (Stockport) 0663 762707.

**NRD** 535 fitted ECSS unit, practically unused, (save £350) offers around: £975. AR2800 scanner: £250. Details (Northampton) 718707 STD 0604.

P.40 triangular section telescopic tower with winches, transmission lines, rotator and control unit: £300ono. Property of late G3GIM. Contact G8BJP QTHR. (Westgate) 0843 31069.

**P32** Versatorow head unit bearing stub mast KR400 rotator. TA33 junior: £350. TS830S 500Hz filter: £400. G3WBM QTHR. (Colchester) 0206 344227.

**PSION** MC400 laptop computer, power supply, nicad and empty battery packs, spare disks, manuals, as new: £275. G4NEK QTHR. (Bedford) 0234 852885.

**PSION** organiser LZ64 extra 32K RAM comms link, manuals, original boxes: £100 the lot. (Sutton Coldfield) 021 354 9972.

**PSU** Coutant 10 amp V/ri limiting two available can pair to give 20amps or will split as required. Contact Chris G0HRX. (Birmingham) 021 784 6413.

**PYE** Olympic HiBand: £25. Microwave high precision wavemeter, built 1950s, Marconi

collectors item: £50ono. Kenwood twins RT599, pristine: £400. G3SIP. (Horncastle) 0507 527086.

**RA117** in Rascal desk top case, RA218 independent sideband adaptor: £250. Ma79 SSB drive unit with MA150 synthesizer: £200, manuals and production test procedures for each, well maintained, will accept: £400 together. HP 1331C storage display X-Y monitor: £100. Ex-HP computer rack cabinet 5ft, castors, rails, fill panels: £40. HP680 chart recorder, variable speed and sensitivity: £100. Can deliver 50 miles. (Rickmansworth) 0923 779103 eves.

**RACAL** multimeter set, electronic CT569 (Airmec Division type 314A/S). Manual, spare valves, teleguide scope D54, needs some attention, manual. Offers!. (York) 0759 305355.

**RACAL** RA17L VGC + H/Book, spare valves: £199. Contact Peter G4VUN after 6pm (Pref buyer collects). (Nr Ripon) 0677 60302.

**RECEIVERS:** Philips PCR with internal L/S; PSU: £50. Pye PCR 2 plus two PSUs: £50. BC348: £40. G3KXB QTHR. (Whitstable) 0227 792340.

**S.E.M** VHF converter, new: £35. Sagent 14Mc/S Windom, still wrapped: £35. Rotator 400RC plus controller and cables: £100. G3OAZ QTHR. (Basingstoke).

**SAIKO** scanner, 12V FM, 16ch, 78/476m, mobile brackets, telex aerial, brand new, unwanted gift, boxed: £60. G3JHKV QTHR. (Guernsey) 0481 42728.

**SCANNER** BEARC AT100, 29-54, 117-174, 406-512: £115. Colour TV (needs attention): £25. Dragon 64 with monitor (green): £25. Commodore 16: £15. Lots of junk including computer boards, relays, power supplies, monitor, tank loading coil, linear chassis, Hi-Fi, cathode ray tubes. Any offers considered. Trio R1000 general coverage receiver, 0-30MHz 12/240V operated, built in timer: £210. Could post. (Whitby) 0947 810263.

**SILENT KEY SALE** (G2HKF), FT101ZD/ATU/desk mic: £450. Bremi BRL20 power attenuator: £10. SEM QRM eliminator: £50. Elan 2el 10/15 CW Decca balun: £100. Rotator and controller: £50. Teleguide mast: £50. The lot: £600 or offers please. G3IYV QTHR. (Rushden) 0933 53075 or 56580 eves.

**SILENT KEY SALE:** HF transceiver, Icom 751: £300. FT101Mk2 HF transceiver: £250 + DC/DC converter. Heathkit linear 400W: £200. Alden 5000 FM 2m: £180. Yaesu FT226RA 2m FM: £80. Icom 240 2m FM: £80. SMC 10m mobile trans: £40. 2 home brew ATU. Heathkit valve grid dip, 2 power supplies abt 10amps freq meter noise pondage 5 band portable - P120 electric speaker (12") - AD1600 telephone memory dialer - 2 meter mag mount + whips. Various test meters, lots of bits and pieces - caps, res, chokes etc. (Amlwch) 0407 832197.

**SMALLHOLDING** just under two acres, fully renovated and modernised 2 bedroomed house (room to extend), with 33ftx11ftx8ft conservatory. Beautiful view of Snowdonia, 10 miles between Betws-Y-Coed. Must be the driest, warmest cottage in Wales. Workshop, outbuildings and paddock. Excellent potential for TV/video repairs and Ham Radio (1,150ft Asl) Only £98,000. First time advertised BE QUICK! Immediate sale or required (no chain). 0490 82672 9am-9pm. Or write for full details: Rick, 23 Russell Avenue, Colwyn Bay, Clwyd, LL29 7TR.

**SONY** Trinitron colour monitor KX-14CP1 VID/ANAL/DIG RGB/RVB with touch screen: £590. IBM PS2 model 30 PC 20MB/3.5" drives, video adaptor, keyboard, monitor. High quality machine, vgc, boxed: £485. QUME terminal ldsplay and keyboard (RS232): £55. Amstrad PCW9512 word processor system CW widepage printer. PSU fault hence only: £75. OKI192 dor matrix printer CW handbook: £55. Microm moderm 3012 (V21/V23): £35. OFFERS?. Kevin G4BUW. (Bracknell) 0344 862874.

**STAR** master key MK11 with benchr paddle key as new: £70. Commodore 64 with 2 programs, locator/ogbook: £70. G0KOG QTHR. (Northampton) 0604 751928.

**TELETRONIX** oscilloscope 10MHz with manuals, probes and trolley, good condition: £500ono. Contact Paul. (Abingdon) 0235 530940.

**TELETYPE** Printer Trend 800, gvo: £50ono. G7CQX. (Bishops Cleeve) 0279 659017.

**TEN TEC** Argosy II 5/50 watt QRP rig, very good condition: £300ono. Carriage extra. Stuart G0MCAQ G-QRP 6348. (Maccuduff) 0261 33298.

**TEN YEARS** of RadCom 1980-1990 complete but few missing. Unsurpassed modern technical library. Two large boxes, so buyer collects. Offers. (Northampton) 0327 843826.

**TENTEC** corsair S60 CW matching PSU mic, 500Hz and 250Hz, optional filters, all handbooks: £599. G4AFU. (Penrith) 09312 514.

**TOKYO** high power 2m/70cm dual band HL725D 60W gaslet pre-amps, ideal for FT726. As new, boxed, mobile bracket: £200. (Northants) 0604 881971.

**TOWER** 40ft telescopic tiltover. Buyer inspects and collects: £250. (Aylesbury) 0296 668166.

**TR2600E** 2m FM H/held, SMC-31 spkr-mic, ST-2 base charger/PSU. All mint condition, boxed: £185. Icom FL63A, 250Hz CW filter (suit IC735) used DXpedition UA0&9L only: £30. Yaesu SP55 speaker: £12. YHA-15 flexi Helical for FT290 MK1: £7. All surplus. Call Paul GOKPH QTHR. (Leamington Spa) 0926 429719.

**TRIO** 120V, HF, 10/15W man: £260. TR9000 2m, m/mode, m/mount, manual, boxed: £260. Both excellent condition. G1LCl QTHR. 0628 22352.

**TRIO** 215/E 2m handheld with SMC30 speaker mic, charger, lighter cord, leather case, belt, hook, excellent working order: £170. (Halifax) 0274 673116.

**TRIO** 2600 E, 2m handheld with speaker mike, std antenna, 1/2 wave antenna, 2 std battery packs plus six cell 1-2 A/H pack: £175. Heathkit Mohican HF receiver: £50. Katsumi EK150 keyer: £60. Digital 50MHz frequency counter, handheld: £30. Dressler D200 2m linear amplifier plus spare valves, faulty: £750. Nigel G4NRR. (Solihull) 021 744 8672.

**TRIO** 9RS9DS: £30. Oscilloscope 13A: £20. labgear PSU 0-20V: £20. cambridge instruments variable capacitors, calibrated: £5. BC221: £5. Bush Bakelite radio: £20. 2M slrmjm: £4. 100W audio amp: £40. Open to offers. (Stratford upon Avon) 0789 740108.

**TRIO** R600 rx, as new: £150. Diamond CP4 vertical, as new: £70. Codemaster CW/RTTY decoder, as new: £40. G4WNG QTHR. (Northumberland) 0670 822172.

**TRIO TR2300**. Basically working, TX needs some attention. 2 Watt mod. reverse repeater mod.: £55 or £65 with mains PSU. (Reading) 0734 500498.

**TRIO TS180S** solid state 160-10 four memories. Can work split frequency: £350. No offers, buyer inspects and collects. (Peterborough) 0733 232211.

**TRIO** TS430S narrow SSB + AM filters, SP430, Heil MM5 mike: £5750. Yaesu FT77 FM+marker boards: £3750. Both boxed. TS430S, immaculate. F177, VGC. (St Helens) 0744 893034.

**TRIO** TS510 HF transceiver: £100. Yaesu FT202R, 6channel 2m handheld: £55. Pentax A110 miniature SLR with telephoto and flash: £60. Sinclair 48K computer: £25. Sony HVC2000P video camera: £30. Digital multimeter: £10. Analogue 30k ohm/V multimeter: £10. All carriage extra. (Preston) 0772 743098.

**TS130S** with matching AT 130 ATU. PS 30 PSU. MC 50 microphone. DFC230 frequency control plus 18AVQ vertical antenna. Original boxes, manuals: £550. (Milton Keynes) 0908 510570.

**TS140S** used on receive only, mint condition, boxed: £625 including Securicor delivery. G6EHM QTHR. (Norfolk) 0603 429269.

**TS430S** in immaculate condition. Fitted with AM, FM boards and CW filter. Recently professionally aligned and tested. CW mic: £500.00. GW3KAJ. Tel (Llanidloes) 3511.

**TS520SE HF-tcvt**, immaculate, boxed, hardly used. CW filter, mic, handbook: £300. FT290R mic, case, handbook, mobile mount, excellent condition: £200. SEM Z-Match ATU: £50. Memotech MTX500 basic computer, PSU: £40. G4HOR. (Solihull) 021 745 2680.

**TS830S** in very good condition. Complete with both 500Hz CW filters fitted, VFO 120 and MC 50 microphone: £750.00. Yaesu FL2100Z 9 band, little used: £500.00. All with original packing and manuals. Call Peter Hicks, G4DVP. (Weston Super Mare) 0934 516605.

**TS830S**, pristine condition with manual, boxed: £650. G0IUD QTHR. (Nr Bristol) 0454 318539.

**TWO PHILLIPS** VCR 1700, one gwo, one without head plus 40 cassettes. Offers! G3LOA. (Bucks) 0494 438843.

**UNIDEN** 2830 10m multimode transceiver, digital readout, 30W O/P scanning mike, box and instructions. Immaculate condition: £240.00. (Solihull) 021 745 8222.

**VALVES** Ex BBC tested OK. 4-400B: £38. QQVO7-50: £18, post paid. H.T. transformer 240V PRI secs at 320V, 3930V 4180V at approx 320V, 3930V 4180V at approx 1amp, weight 125lbs: £40. carriage. Marconi vacuum tube voltmeter: £20. Marconi RF power meter, 50ohm, 10W and 25W: £20. Post paid. GW4UZL QTHR. (Fishguard) 0348 881346.

**YAESU** FRDX400 receiver with 2m and 6m mod, good condition: £100.00. (Llandudno) 0492 875433.

**YAESU** FRG7700 transceiver with ATU and VHF converter, manuals, VGC: £350. Buyer collects. Silent Key sale. (Orpington) 0689 826951.

**YAESU** FRG7700, FRT7700, VGC: £275. FC902: £100. FV101DM: £130. Both mint condition. All CW manuals. Contact Les G3NFP eves. (Chippenhams) 0380 850586.

**YAESU** FT101Z HF transceiver with fan, CW filters, desk mic, two spare 6146B: £300. Set new valves 12BY7A plus 2x6146B: £25. Trio TR2500 2m transceiver with rubber duck and charge stand: £100. Kenwood SW 100A SWRV Power meter 1.8-150MHz: £30. All GWO. G0PJI. (Plymouth) 0752 775375.

**YAESU** FT101ZD Mk III, GWO: £400. Siemens printer 100: £10. SEM transmatch ATU: £65. Vertical HF antenna with ground plane: £25. Pcw9512 Amstrad Word processor/computer: £315. Collect or carriage extra. Tony. (Northampton) 0604 767754.

**YAESU** FT102 AM/FM fitted new relays MH-188 mic. Yaesu FC102 ATU, good condition, manuals, boxed, all leads included: £600. No split, carriage extra. Bob after 6pm. (Workington) 0900 672226.

**YAESU** FT230R 2m mobile, 25W twin VFOs, 10 memories, excellent condition. G3ABA QTHR. (Southampton) 0703 732997.

**YAESU** FT230R 2m mobile, 5/25W, M/bracket, mobile mic/fist mic, manual, no box: £180. FRG 7700 HF receiver, FRT 7700 ATU: £240, no split. IBM compat computer, MSDOS 2.1 WP database original supercalc, can be used for packet etc. Twin 8 inch 1.44mb intelligent disk drives 250 disks. Its quite big and heavy, so buyer must collect: £1000.00. GM6HYG QTHR. (Helensburgh) 0436 72364.

**YAESU** FT290R MkII nicads charger. 25W amplifier, boxed, never used. Complete as new: £325. (Northants) 0604 881971.

**YAESU** FT290R MkII: £275. MML432 10/50 linear: £150. MML144 3/30: £100. Olivetti PC, twin disk, ham software: £275. BBC masters 31/2"+51/4" disk: £250. (Wallasey) 051 638 6755.

**YAESU** FT290R nicads case: £185. Yaesu FT727R case charger: £225. Cushcraft R5, boxed: £200. No offers. Peter. (Portsmouth) 0705 596087.

**YAESU** FT707 FL700 mobile bracket, service manual, all band G-whip towbar mount: £475. GOLGJ. Mark, will drive 100 miles. (Dereham) 0362 691099.

**YAESU** FT726R 2m clean unmarked set of the highest quality. A sought after set: £475.00. Will pay carriage. (Preston) 0772 683098.

**YAESU** FT73R with PA6 car adaptor. FNB10 battery pack, MH18 speaker mike and NC28C battery charger: £195. G0NRO QTHR. (Aldershot) 0252 373257.

**YAESU** FT747GX FP700, FC700 bought new 8/90 limited use during long illness. Condition as new with filters. Offers please. G3FK QTHR. (Ferndown) 0202 873175.

**YAESU** hand held, unused FT76 70cm paging tcvt, very small with charger has everything, only: £180 boxed. (Banbury) 029587 749

## WANTED

**AP1086** issue one 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/T cells, T.W.T's, photo multipliers, microwave and CV types. Required static or rotary converter AC or DC input with output of 80V or 115V. 1500 to 2000 cycles also R/X type R1355 unmodified. (London) 071 511 4786 or 071 790 2846.

**ATU** for A13 radio. T1154, R1155 loop antenna. Receivers, R3515, R3516. Transmitters, T3191, T3159. Pwr unit types, 224, 280. Control panel type 5. Junction boxes, type 83 and 222. "W" type, plugs sockets and leads. Valves, 6SN7-GT, 6SJ-GT, 6H6-GT, 6SL7-GT. Scrap or incomplete indicator type 162, 163 or similar. Always looking for WW2 radar items, WHY. G0JNT QTHR. (Grimsby) 0472 752794.

**FT101** TSXXX ant tcvt, not working is OK, scrap even better. Postage or courier paid WHY. Jim GMOOFM. (Ladybank) 0337 30477.

**POWER SUPPLY** 20amp+ for Icom 735. All considered, but Icom dedicated preferred. Also SEM QRM eliminator only pristine please. G0OPG. (Wilmslow) 0625 531154.

**TIMER CHIP**. RS components number 307-991. Now obsolete, would anyone have one available. Any offers appreciated. (Guernsey) 0481 723485.

**AZDEN** PCZ 2800 remote control cable ie between front panel control unit and main tx. G3LOA. (Bucks) 0494 438843.

**BS8** pan display unit for Kenwood SM 220 scope. T Smithers, 9 Pennine Close, Melksham, Wilts, SN12 7RX.

**CHEAP HF** linear and 2m mobile rig, good HF tribander. G0HET QTHR. (Charmouth) 0297 60556.

**CIRCUIT DIAGRAMS** for Knight signal generator KG686 and Knight sweep generator KG687. Also DST100 receiver or parts for DST100 repairs. (Nr Norwich) 0508 20657.

**DRAKE** CW75 keyer. L75 linear. RR3 receiver. M57 Marconi Atlanta meter unit 1362A. Hutton tracker. Racal 1772 1772 any condition. G3YFK. (Shrewsbury) 0743 884858.

**EDDYSTONE** EA12 for good home + manual/circuit diagram please. Also KW valiant, vanguard TX. WHY? (Ipswich) 0473 31165 after 7pm.

**EDDYSTONE** EC10 transistorised general coverage RX wanted for use with noise bridge, therefore accurate calibration essential. G3TKN QTHR. (Waterlooville) 0705 265101.

**ELECTRO** mechanical device from 1970s: sixpence placed in "hand" on top of box, coin then slowly withdrawn, before a trap door finally and sharply engulfs it! Also, electric shock machine, boxed hand-cranked type preferred. G1FAZ. (Birmingham) 021 471 1860.

**FDK** expander 430 for use with FDK multi 750E. GWO GC. G4PZT QTHR. (Preston) 0772 736355.

**FERROGRAPH** reel to reel tape recorder (series 4, 5, 6, 7) good condition preferred. Will collect. (also E.M.I. TR90 studio recorder any condition). (Sheffield) 0742 308374.

**FOR NATIONAL** Wireless Museum. Galaxy xcvt, Pilot rcvt, Lissen valves, "Radio Times", "Wireless World", "London Calling" books, maps. Douglas G3KPO/GB3WM. (Ryde) 0983 67665.

**FRV7700** VHF converter. DC-DC converter for FT101Z/D. (St Albans) 0727 868439.

**GERMAN TAPE** for OH1BR radio amateurs con. guide also linguaphone German Course. G3LLL. (Blackburn) 0254 59595(day) 0254 240762(eves).

**HANDBOOK**, manual, circuit etc for Hammarlund HQ170 RX. Will copy and return, expenses paid. Stuart G4MIB QTHR. (South London) 081 674 6452.

**ICOM** IC201 WKG or faulty. Also workshop manual. LCR bridge. GM4GUF. (Edinburgh) 0968 74070.

**ICOM** IC202S SSB/CW 144MHz Tx/Rx. Must be unmodified. Also wanted: mount, PSU etc. (Richard) G8ITB. (Bromley) 0689 852177.

**ICOM** SM5 desk mike also G4OGP open wire feeder spreaders. Valve QRO linear for 4m. (Nr Edinburgh) 0875 33291.

**INSTRUCTIONS** and valve charts for Taylor 45c valve tester wanted on loan for copying. Expenses refunded. G0IIL QTHR. (Stockton-On-Tees) 0642 559845.

**KENWOOD** AT940 ATU YK88C-1 YG455C-1 filters. MC80 mic. G3NNI QTHR. (Harlow) 0279 793155.

**LDF-450** coax and connectors, continuous lengths over 40 metres. Clarke mobile pump-up mast suitable for Land-Rover. Any old high band VHF duplexers, cavities, combiners etc. Wish to sell 6/4 metre dual band 4ele Yagi, as new (Jaybeam): £50. evenings 6-8pm. (Cams) 0354 741168.

**PRIVATE COLLECTOR**, restorer seeks 22 set, 19 set or 18 set and their accessories in any condition. BC348 wanted, preferably complete and unmodified. Also need highish voltage capacitors .01µF 400V or thereabouts. Please phone Jim G4XWD QTHR. (Kidderminster) 0562 823674 anytime.

**ROTATOR** controller Daiwa DC-7001A. My rotator is OK but needs good controller. Eddie G4KHG QTHR. Help appreciated. (Merseyside) 0925 225927.

**SP102** must be in mint condition, please phone between 5.30 and 6.30 in the evening. (Wolverhampton) 0902 771909.

**SPECTRUM** 48K interface, one microdrive printer plus D Disc-Drive wanted cheap. Mr R Williams E17AF. San Martineus, Mountain Road, Clonmel, Co Tipperary, Eire.

**TR-CVR** FT440/680, also trio, 120V or similar. Also small 10m/15m beam. Any QRP gear.

Will collect. G2CYN QTHR. (London) 071 935 7119 days.

**TRIO** TX310 TX to match RX310. (Upper Tean) 0538 723564.

**UL1A** valve for old radio. Reasonable price paid. Richard G3ZOE. Not QTHR. (Petersfield) 0730 68900 eves.

**WANTED** NR0 515 memory unit, optional filters and loud speaker unit. Contact at QTH: G1POJ. (Bristol).

**WANTED URGENTLY**: Charge controller Z9/6110 99-109 7971, date June 71, Ser. No. 053. Abbey electronics and automation Ltd. Offers to G3MCW QTHR. Anspohne. (Brentwood) 0277 220936.

**WANTED**: valves type TT21 and top cap connectors. G3JUG QTHR. (Cheltenham) 0242 862445.

**WORKSHOP** Manual for FDK multi 750XX also interested in finding FDK430X expander for same. G0HKQ QTHR. (Colchester) 0787 223356.

## EXCHANGE

**FT480R** 2m, m/mode, boxed, mobile mount, mike, 10W out plus Hitachi video camera, 200m, plus Sharp portable video recorder, all VGC, exchange Icom IC251E with Mutek. Also Yashica TL electro 35mm camera outfit, extra lenses includes pentagon 4/300mm, all VGC, exchange BNO5 2m and 70cms amps. Ian G7HXI. (Stalham) 0692 580201.

**HAVE** Trio TS711E 2m multimode base/fitted VS1 voice board, 25W output, mains or pwr supply leads, DCS system 40MEMS about: £200. Will haggle or WHY. (Stakeford) 0670 855953 anytime.

**MICROREADER** MK II, new box, warranty. Will exchange for five or four band HF vertical antenna. Write to: Barisov RA6LL, 102 Fordhook Avenue, Ealing, London, W5 3LR.

**YAESU** FRG770 with ATU and manual for FT290 Mk1 or any reasonable 2m multimode. (Runcorn) 0928 561341.

**RN** electronics 2m to 6m transverter. As new: £1150.00 or exchange for good rotator G400 or similar or good handheld 2m rig. (Litchamton) 0903 773457.

## OUR NEW STYLE 2 ADVERT

**THIS IS** our new style 2 advertisement. It comprises a line of white space with a rule, top and bottom of the advertisement. The cost of choosing this advert is an extra £2. If you would like your advertisement to look like this, tick the appropriate box on the form when filling it in.

The above example represents a style 2 advertisement. The cost is £2 above the price of the ordinary (style 1) advert. If you would like your advertisement to look like this, tick the appropriate box when filling in the advert form.



## CLUB NEWS

**DEADLINE** - Items for inclusion in the May 1992 issue must be sent to HQ marked 'Club News - DIARY', to be received by 20 March 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 - 5, PC computer workshop with Barry, GOCFM, 12, construction night with Dave, G4ZBT; Apr 2, construction night. Details 0272 721744.

CITY OF BRISTOL GROUP - 30, Use of Bristol Group's Test Gear with G8KGH. Details 0275 855123.

SOUTH BRISTOL ARC - 4, talk 'PC Software - Share With Your Friends' by G4WRW; 18, talk 'Beginners in Packet Radio' by G4WRW. Details Whichurch 832222 on a Wednesday evening.

THORNURBY & DARC - 4, Grand junk sale; 18, technical topic - TBA. Details Thornbury 411096.

## BEDFORDSHIRE

DUNSTABLE DOWNS RC - 'VENUE' The Old Mill, West Street, Dunstable, 6, official opening evening of new premises; 20, RF Test Equipment evening. Details 0582 451057.

## BERKSHIRE

BRACKNELL ARC - 'NEW SECRETARY' Mr S J Baugh, G4AUC, 70 Madingley, Bracknell, Berks RG12 7TF, tel: 0344 420577. Club meets 2nd Wednesday of month at Coopers Hill Centre, Bagshot Road, Bracknell, 8pm.

BURNHAM BEECHES RC - 2, Annual General Meeting + Whinell and nibbles; 16, talk '10GHz' by G3VCT; Apr 6, talk 'LF DX' by G3XTT. Details 0628 25720.

MAIDENHEAD & DARC - 5, quiz at home against Reading ARC; 17, Annual General Meeting. Details 0628 25952.

READING & DARC - 5, club quiz at Maidenhead ARC; 12, talk 'British WW2 Radio Design' by Charles Boville & Russell Rixon, G8ORE; 26, Spring junk sale; Apr 9, talk 'Understanding Transceiver Specs' by Gary Clark, G0BRK.

## BUCKINGHAMSHIRE

AYLESBURY VALE RS - 4, talk and demonstration 'AKD Products'; 18, Annual General Meeting; Apr 1, talk 'Aspects of VHF Aerials' by Roger Piper, G3MEH. Details 0296 81097.

CHESHAM & DARC - 11, talk 'Check your Linear is Linear' by GOKZP; 25, quiz against Aylesbury ARS at home. Details 0923 283911.

MILTON KEYNES & DARS - 9, talk 'Radiocommunications Agency - How the Department Works'; Apr 13, junk sale. Details 0908 611005.

## CAMBRIDGESHIRE

CAMBRIDGE & DARC - 6, talk and demonstration 'AMTOR' by Murray, ZL1BPU/G0PFG; 13, constructors night; 20, RSGB videos; 27, Annual General Meeting. All members asked to attend. Details 0763 243570.

## CLWYD

CONWAY VALLEY ARC - 5, visit by Dragon ARC 'Return Debate'; Apr 2, talk and demo '24cm Amateur TV' by John Lawrence, GW3JGA. Details 0492 530725.

RHYL & DARC - 2, viewing video of club activities. Details 0745 338276.

WREXHAM ARS - 3, talk 'Beattie and Her Radio Ancestors'; 17, Annual General Meeting. Details 0978 266887.

## CORNWALL

CORNISH RAC - 5, talk 'Aerials' by David Blackford, G8NFB; Apr 2, AGM. Details 0209 820836.

## DERBYSHIRE

BUXTON RA - 'SECRETARY' Derek Carson, G4IHO, 21 Harris Road, Harpur Hill, Buxton, Derbyshire SK17 9JS, tel: 0298 25506. 10, surplus equipment sale; 24, annual nosh; Apr 14, aerial topics. Details 0298 25506.

DERBY & DARS - 4, junk sale; 11, talk by Rob Mannion, G3XFD of Practical Wireless; 18, Annual General Meeting; 25, technical topics; Apr 1, foolish junk sale; 8, talk 'AMTOR - What it is and how it works' by Alan, G3XOF. Details 0773 852475.

## DORSET

POOLE RAS - 13, talk 'Introduction to Satellites' by Peter Biggs, G7AZP; Apr 10, AGM. Details 0202 760231.

SOUTH DORSET RS - 3, bring & buy sale; Apr 7, AGM and construction competition. Details 0305 781164.

## ESSEX

CHELMSFORD ARS - 3, talk 'Marine Radio Equipment' by Eric Lawley, G8ADX. Details 0245 260831.

HARWICH RIG - 'NEW SECRETARY' Mr A J Free, G4EYE, Homeric, Main Road, Lt Oakley, Harwich, Essex CO12 5JF, tel: 0255 886065. Group meets 2nd Wednesday of month at The Park Pavilion, Barrack Lane, Harwich.

VANGE ARS - 5, junk sale; 12, talk 'EMC' by G3JWI; 19, film 'The Catch That Nobody Wants' presented by G3ASH. (Refers to fishing trawlers catching undersea cables). Details 0268 762496.

## FIFE

DUNFERMLINE RS - 12, talk 'Royal National Lifeboat Institute' by Tom Robertson; Apr 2, visitors/open night including a slide presentation on portable operating from Scottish Mountains. Details 031 331 4340.

GLENROTHES & DARC - 11, talk 'The Work of the Ordnance Survey' by Mr Alan Ayre of the Glenrothes branch of the Ordnance Survey. Everyone welcome at Provosts Land, Leslie, Fife. Details 0592 742763.

## GLOUCESTERSHIRE

GLOUCESTER ARS - 4, talk 'Kites' by G4HAQ; 11, homebrew clinic; 18, packet self-help group; 25, construction group. Details 528533, extn 2733.

## GRAMPIAN

ABERDEEN ARS - 6, junk sale. Details 0224 780519.

## GREATER LONDON

ACTON, BRENTFORD & CHISWICK ARC - 17, discussion 'Preparation for QRP/NFD'. Details 071-938 2561.

BROMLEY & DARS - 17, talk 'Cycling in the Himalayas'. Details 081-462 2689.

CLIFTON ARS - 6, packet radio demonstration by S Fletcher, G4RF; 20, Scanning Receiver demonstration. Details 081 691 2341.

COULSDON ATS - 9, talk 'The UFO Phenomena' by Lesley Baker, G8JIC. Details 081 684 0610.

CRAY VALLEY - 6, construction contest; 20, Tony Hancock 'Radio Amateur' video; Apr 3, talk 'Mayan Adventure' by G3DCC. Details 081-850 1386.

CRYSTAL PALACE & DARC - 21, talk 'Amateur TV - The Easy Way' by Bob Brooker, G4WGW. Details 081-699 6940.

GRAFTON RS - 'NEW VENUE' Holy Trinity Club Hall, rear of Holy Trinity Church, Granville Road, London N4, 2nd and 4th Wednesday of month. Details 081-368 8154.

HAVING & DARC - 'NEW OFFICER - CHAIRMAN & ACTING SECRETARY' Mr Dudley St J Gray, G0BOL, 'Chepstow' 58 Dumont Avenue, Point Clear, St Osyth, Essex CO16 8JP, tel: 0255 821554. - 4, talk and video 'A Solent Tide Mill and other matters' by Roy Harris, G4KTN; 18, junk sale. Details 0265 821554.

SOUTHGATE ARC - 26, club brief after the LAR&C Show - videos, photos etc; Apr 9, surplus equipment sale. Details 081-360 2453.

SUTTON & CHEAM RS - 19, constructional contest. Details 081 644 9945.

WIMBLEDON & DARS - 27, surplus equipment sale. Details 081-397 9427.

## GREATER MANCHESTER

SOUTH MANCHESTER RC - 6, talk 'Romanian Convoy Communications' by G3SVW; 13, talk 'RF Pre-Amplifiers' by G4HOW; 20, surplus equipment sale; 27, Equinox DF. Details 061-969-1964.

STOCKPORT RS - 11, visit by G3ZOM of Jandek Kits; 25, surplus equipment sale. Details 061-439 3831.

## GWYNEDD

DRAGON ARC - 2, talk 'The Great Welsh Wireless Station' by Dr David Last, GW3MY; Apr 2, talk 'The Work of the Rotary' by Mr Andrew Laing. Details 0248 600963.

## HAMPSHIRE

HORNDEAN & DARC - 5, junk sale; Apr 2, Brains Trust. Details 0705 472846.

THREE COUNTIES ARC - 11, talk 'Cellular Telephones and Personal Communications' by Ian Lamb, G8KQW; 25, demonstration of Packet Radio; Apr 8, talk 'Long Distance Microwaves' by Ian Lamb, G8KQW. Details 0420 83091.

## HEREFORD &amp; WORCESTER

BROMSGROVE & DARC - 13, Annual General Meeting. Details 021 477 7447.

HEREFORD ARS - 6, talk 'Civil Emergency Planning' by Geoff Haskell, County Emergency Planning Officer; 20, preparation for NFD. Details 0432 355297.

## HERTFORDSHIRE

CESHUNT & DARC - 7/8, London ARS Show club stand; 11, RIS videos; 25, club quiz. Details 0992 464795.

STEVENAGE & DARS - 3, talk 'DF Techniques' by Dave, G8MKV; 10, Satellite Sampler by Tony, GOOVO; 17, Annual General Meeting; 24, talk 'VHF Packet Primer' by Peter, G0GTE; 31, Construction consultation by Ralph, G7HFD; Apr 7, video evening 'Safety in the Shack'. Details 0438 724991.

VERULAM ARC - 24, G3PAO Memorial Lecture by Mr Peter Blair, G3LTF on 'EME (Earth-Moon-Earth) Techniques'. Visitors welcome. Details 0923 262180.

## HUMBERSIDE

GOOLE R&ES - 13, talk 'European Radio' by Andy, G8ZCS; 20, shack re-fit evening; 27, social evening. Details 769130.

HORNSEA ARC - 11, talk 'Air Experience' by Duncan, G3TLI; 18, EMC Forum with David, G0MXI, Apr 1, talk 'Microwaves' by Ted, G8AZA.

## KENT

DARENTH VALLEY RS - 11, video 'Slow Scan TV' by Ivor Harwood; 25, visit to Dulwich Wireless Museum (provisional); Apr 8, construction project. Details 0689 986733.

WEST KENT ARS - 20, talk 'British Telecom Communication (Wide Area Radio Paging) by Bob Fairbairn. Details G3OHV, QTHR.

## LANCASHIRE

ECCLES & DARS - 3, demonstration 'Measuring SWR' by GOKLF; Apr 7, talk 'Rugby Football' by GOKFP. Details 061-773 7899.

ROCHDALE & DARS - 2, theory night; 16, talk 'Hams and Libraries' 23, construction night; 30, EGM - elect a new committee. Details 061-653 8316.

THORNTON CLEVELEYS ARS - 2, talk 'Whip Antennas' by Ian, G3ZRZ; 9, final preparations for Northbreck Rally; 23, talk 'China' by Pete, G4BVW; Apr 6, construction evening. Details from G4BFH, QTHR.

## LEICESTERSHIRE

LEICESTER RS - 2, quarterly progress, open meeting; 6, talk 'Planning the Shack' by John, G4GVG; Apr 6, constructors competition. Details Leicester 762241.

LOUGHBOROUGH & DARC - 3, talk 'Video Camera' by B Senior; 17, open forum; 23, talk and slides 'Walking With my Camera' by Val Williams. 50p entry. All welcome. Club meets every Tuesday. Details 0509 218259.

## MERSEYSIDE

LIVERPOOL & DARC - 17, talk 'Contest Operating' by G4CVZ; 24, quiz night; 31, surplus sale. Details from Gordon, G4VYR.

## NORFOLK

NORFOLK ARC - 4, talk 'Simple HF Antennas and ATUs' by Stuart Line, G3XYO; 22, surplus equipment sale/bring & buy (doors open 10am); 25, talk 'Weather Satellites' by Richard Gedge; Apr 1, AGM; 8, talk 'Radar' by Officer from RAF Neatishead. Details 0603 747992.

## NORTHAMPTONSHIRE

KETTERING ARS - 17, talk and demonstration 'Hokes Communications' by David Howes, G4KQH. Details 0536 514544.

## NORTH YORKSHIRE

HAMBLETON ARS - 9, visit to RAF Leeming Weather Centre; 23, talk 'Model Engineering' by Frank Sunley, G0LEL. Details 0609 776608.

## NOTTINGHAMSHIRE

AMATEUR RC OF NOTTINGHAM - 12, talk 'Packet Radio for Beginners by a Beginner' by Mike, G2SP; 19, exhibition of home-constructed equipment and competition for the Constructors Cup; 26, talk 'Short Wave Listening' by Martin, G6ABU; Apr 2, AGM. Details 0602 733740.

MANSFIELD ARS - 5, talk 'RADAR' by Dennis, G0KIU. Details 0623 755288.

## POWYS

SOUTH POWYS ARC - 3, talk 'Simple Valve Circuits' by GW3ECH. Details 0874 84266.

## SOMERSET

YEOVIL ARC - 5, talk 'How a Valve Works' by G3MYM; 12, construction evening; 19, constructors' contest - adjudication; 26, construction evening; Apr 2, talk 'How to DX' by G3NOF. Details from G0HJD, QTHR.

## SOUTH GLAMORGAN

BARRY ARS - 'NEW VENUE' The Committee Room, Barry Leisure Centre. Details 0446 781261.

## STAFFORDSHIRE

STAFFORD & DARS - 3, Annual General Meeting; 17, talk 'The Use of Test Gear, Including Oscilloscopes' by G4DYA and G3EHM; 24, construction evening. Details from Bernard, tel: 0785 662350.

## STRATHCLYDE

CUNNINGHAME & DARC - 'NEW SECRETARY' R Kay, 17 Kilmarnock Road, Dundonald, KA2 9DR.

WEST OF SCOTLAND ARS - 13, debate 'Does Our Present Band Plan Scheme Work or Require Change'; 27, talk 'Radio Astronomy - Decoding Signals from Space' by Dr G K Fox; Apr 10, talk 'Electronic Developments in WX Predicting' by Angus, GM4JYZ. Details 041 776 4181.

## SUFFOLK

FELIXSTOWE & DARS - 9, talk 'The Latest Expedition' by Andy Cook, G4PIQ; 23, Annual General Meeting; Apr 6, visit to Schlumberger,

details to follow. Details 0473 642595 (daytime).

LOWESTOFT DISTRICT & PYE ARC - 12, illustrated talk 'Voyage to the Sun' and 'Electricity from the Wind' by G2UK, 26, talk 'Data Communications' by G6MCS; Apr 9, talk 'The Work of an RSGB Liaison Officer' by G3MR. Details G4KDL, QTHR.

## SURREY

ECHELFORD ARS - 12, talk 'When the Balloon Goes Up' by Ian Jackson, G8RWH (Raynet); 26, bring & buy sale; Apr 9, AGM. Details 0344 843472.

## TAYSIDE

DUNDEE ARC - 10, mini lectures by members; 24, talk 'Visit to Russia' by Paul Rudd, GM0CCL. Details from GM4FSB, QTHR.

PERTH & DARG - 'NEW SECRETARY' Trevor S Goody, GM0MXZ, Lambs' Park, Forgandenny, Perth PH2 9HS, tel: 0738 812479.

## WARWICKSHIRE

STRATFORD-UPON-AVON RS - 23, talk 'Pacific Crossing on Operation Raleigh' by John Layton, G4AAL; Apr 13, AGM and surplus sale. Details 060 882 495.

## WEST MIDLANDS

STOURBRIDGE & DARC - 16, Annual General Meeting. Details from G0HTJ, QTHR.

## WEST SUSSEX

HORSHAM ARC - 5, surplus equipment sale; Apr 2, homebrew evening. Details 073784 2150.

## WEST YORKSHIRE

DENBY DALE & DARS - 4, talk 'Concept in Design' by Denis Mott; 18, rig test night; Apr 1, talk 'Worked All Britain' by Brian, G0BFJ.

HALIFAX & DARS - 17, talk 'QRP' by G. Dobbs, G3RJV.

KEIGHLEY ARS - 26, talk 'Introduction to Satellites' by G7HJT; Apr 9, junk sale. Details from Kathy, tel: 0274 496222.

NORTHERN HEIGHTS AR&ES - Apr 2, AGM. Details 0274 673116.

SPEN VALLEY ARC - 5, talk and demo 'ATV by ET' group; 19, talk 'Amateur Radio Construction' by Rev G Dobbs, G3RJV; Apr 2, AGM. Details 0274 875066.

## WILTSHIRE

TROWBRIDGE & DARC - 4, talk by G3RZP, Zone 'D' Council Member. Details 0380 830383.

## 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 call-sign and telephone numbers direct to HQ and marked 'Rally News - DIARY'.

## 1 MARCH

TRAFFORD Rally - G-Mex. The Greater Manchester Exhibition & Events Centre, City Centre, Manchester. Doors open 10.30 (with disabled visitors' priority queue). All usual traders. RSGB stand, Bring & Buy and new traders. Morse Tests (apply via RSGB HQ). Free cash draw, licensed bar, refreshments, ample car parking. Admission £1.50, 2m talk-in on S22 via GB1GMX. Details from Graham Oldfield, G1IJK, tel: 061-748 9804.

## 7/8 MARCH

LONDON AR Show - Picketts Lock Centre, Picketts Lock Lane, Edmonton, London W9. Details from B Godfrey, Secretary, 0923 678770.

## 14 MARCH

LAGAN VALLEY ARS Radio Hamfest - Lagan Valley Hospital Recreation Centre, Lagan Valley Hospital, Hillsborough Road, Lisburn. Doors open 12pm. Talk-in on S22. Details Colin Tail, G17CML, tel: 0846 664433.

RSGB VHF CONVENTION - Sandown Park Exhibition Centre. Stand booking to Les Hawkward, G5HD, tel: 040-928 342. Details from Geoff Stone, G3FLZ, tel: 081-699 6940. Please note this is on a Saturday this year.

## 15 MARCH

NORBRECK ARE&C Exhibition - Norbreck Castle Exhibition Centre, Blackpool. Details from Peter Denton, G6GCF, tel: 051-630 5790.

TIVERTON SOUTH WEST RC Mid Devon Rally - Pannier Market, Tiverton. Minutes from Jnct 27 on the M5. Doors open 10am. Trade stands, bring & buy stall, mobile snack bar. Free parking. Further displays and full refreshment facilities in the Club Room bar. Talk-in on S22. Details from G4TSW, Mid Devon Rally, PO Box 3, Tiverton, Devon.

WYTHALL RC Rally - Wythall Park, Silver St, Wythall, (near Birmingham), on the A435 2 miles from Jnct 3 on M42. Doors open 11am. Usual traders in three halls; bar and refreshment facilities. Bring & Buy stall run by the club. Talk-

in on S22. Admission 50p. Details from G0EYO, 021-430 7267.

**22 MARCH**

**MAGNUM Radio Computer Rally** (Cunningham & DARC) - Magnum Leisure Centre, Irvine, Ayrshire. Doors open 11am (10.30 for disabled visitors). Trade stands, Bring & Buy, Raffle, Lucky-programme prize. Details from Peter, GM0FCI, 0294 72253.  
**PONTEFRACCT & DARS Annual Components Fair and Springtime Rally** - Carleton Community Centre, Carleton, Nr Pontefract. 11am to 4.30pm. Admission by prize programme, 3 prizes plus free prize draw for lady visitors. Traders, bring & buy, bookstall, licensed bar, hot & cold snacks. 2m talk-in. Car boot spaces available. Details from G0NQE, 0977-677006 or G0AAO, 0977-643101.

**29 MARCH**

**BOURNEMOUTH RS Annual Amateur Radio, Electronics & Computer Sale** - Kinson Community Centre, Pelhams, Millhams Road, Kinson, Bournemouth. Doors open 11am. Admission 50p including prize draw ticket. Talk-in on S22 (G2BRS). Details of table bookings etc G4PTC, 0202 516593 (after 6pm).

**5 APRIL**

**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, G6COO, 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 G6GAU 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 Motorcity Museum, Bickenhill, near the NEC Jctc 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 Birthday Exhibition Transmitting Station GB3WM** - Wireless Museum, Puckpool Park, Seaview, Isle of Wight. Special showing of early Marconi photography and valves, crystal-sets with cats-whiskers, and early TV receivers. It will be recalled that Marconi built the first wireless transmitting station in the world 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, 061-762 9308.

**MARSKE-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 ANGL0-SCOTTISH Rally** - Tait Hall, Kels0. Details from Bruce, GM4UJB, 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 G8MJW, 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 Burrige, G3CQR, QTHR.

**16 MAY**

**SWINDON & DARC Radio Rally** - Oasis Leisure Centre, Swindon. Details from G0LTP, tel: 0793 852855.

**17 MAY**

**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 GIOOND (QTH G1YGS) 0762 851179.  
**RIPON & DARS 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 of Hockstone Wood Road. Details Mike, G0MCK, 0423 564353/507653.

**24 MAY**

**EAST SUFFOLK Wireless Revival** (organised jointly by Ipswich RC and Martlesham RS) - Maidenhall Sports Centre, Maidenhall 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**

**NORTHAMPTON RC Radio Computer & Electronics Rally** - Red Lion public house (500 yds from Jct 16 of M1). Details from G0HWC, 0327 41267.  
**SPALDING ARS Annual Rally** - Springfields Exhibition Centre, Spalding. Details G4TWR, 0775 722940.

**14 JUNE**

**ELVASTON CASTLE Mobile Rally**. Details from John, G4PZY, tel: 0332 767994; trade enquiries Peter, G3WFL, tel: 0332 700265 (evenings).  
**RNARS Annual Mobile Rally**. Details from Cliff Harper, G4UJR, 0703 557469.

**21 JUNE**

**DENBY DALE & DARS Annual Mobile Rally** - Sandalene Nook High School, Huddersfield. Details from Philip, G4FSQ, 0484 644827.  
**NEWBURY & DARS Annual Car Boot Sale**. Details from N Jaques, G0HFU, 0635 63310.  
**NORFOLK RAYNET Rally & Car Boot Sale** - OS Map 144, Ref TG 113078. Details from G0IYD QTHR 0692 404593.

**27 JUNE**

**BRENTWOOD INTERNATIONAL AR & Computer Rally** (run in conjunction with Southend ARC) - Brentwood International Centre, Dodinghurst Road, Brentwood, Essex. 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. Details from Dave Edwards, G4ZWR, 0527 546075.  
**LONGLEAT AR Rally**. Details from Shaun, G8VPG, QTHR, tel: 0225 873 098.

**5 JULY**

**KINGS LYNN ARC Rally** - Corn Exchange, Kings Lynn Tuesday Market Place. Details from G0MQL 0553 841189.  
**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, G8VE, QTHR, 0903 763978.

**19 JULY**

**COLCHESTER RA Radio & Computer Rally**. Details from G3FJU, QTHR, 0206 851189.  
**9TH McMICHAEL Rally & Car Boot Sale** - Haymill 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.

**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 G0API, 0202 691649.

**23 AUGUST**

**WEST MANCHESTER RC "Red Rose" Rally** - Bolton Sports & Exhibition Centre. Details from Dave, G1IOO, 0204 24104.

**30 AUGUST**

**TORBAV 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 Eamshaw, 0772 718175.  
**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.  
**LINCOLN SWC Hamfest**. Details from Sue Middleton, 0522 531788 or QTH G8VGF.

**GB CALLS**

The list below shows all special event stations licensed for operation during this month and up to 28 February. It was taken from the HQ computer on 31 January. These callsigns are valid for use from the date given but the period of operation may vary from 1-28 days.

**1 MARCH**

GB0LFC Liverpool Football Club  
 GB1LFC Liverpool Football Club  
 GB2LFC Liverpool Football Club  
 GB2SDD Saint David's Day  
 GB4LFC Liverpool Football Club  
 GB4LON London Amateur Radio Show

**2 MARCH**

GB8MS Multiple Sclerosis

**6 MARCH**

GB4STD St Dunstan's  
 GB4XXX 'X' Net DX-pedition

**7 MARCH**

GB2NOV GB Novice

**14 MARCH**

GB2NRS Northern Radio Societies

**18 MARCH**

GB1GJS Gladstone Junior School

**21 MARCH**

GB5MB Montford Bridge  
 GB5OMB Operations Montford Bridge

**24 MARCH**

GB4CS Colkirk School

**27 MARCH**

GB2FUN Scout Fun Weekend

**28 MARCH**

GB0DX Long Distance Radio Comm



**WE HAVE BEEN** advised of the deaths of the following radio amateurs:

**Alan Taylor, G3DME**

Alan joined the Propagation Studies Committee in 1964 to work on projects concerned with the 28MHz band. He quickly conceived the idea of a system of beacon stations around the world to enable observers to record the signals, and from the results the propagation predictions could improve for that band. To say the least, it was a most imaginative plan. First he sold the idea to IARU who appointed him their International Beacon Project Co-ordinator, an appointment he held until his death on 9 Jan.

He installed the first beacon, GB3SX, at his home in Crowborough. Once this started to operate, he encouraged other groups and societies to co-operate.

It is said that to see further you need to stand on the shoulders of a giant and to say the least, we all stood on Alan's shoulders; he has bequeathed us a world-wide beacon system that benefits us all. Not only have I lost a very good friend, but we have all lost a very dedicated and true amateur. Somehow when there is a breach in the wall we all close up and someone steps into the breach to take over, but in Alan's case that is not going to be an easy task.

Charlie Newton G2FKZ.



G0FTV	Mr J Gallant	10.01.92
G0GBM	Mr E Durham	15.11.91
G0GLR	Mr R J Barnes	13.01.92
G0KXS	Mr W G Bernard	14.01.92
G1HXX	Mr F J L Johnston	01.11.91
G1KYY	Mr F Tregunna	02.07.91
G1NOF	Mr G Trella	
G2CKM	Mr M N Salmon	11.12.91
G2CLS	Mr C E D McLean	07.01.92
G2XP	Mr J F Payne	17.11.91
G2YI	Mr R Horsnell	08.8.91
G3DME	Mr A Taylor	09.01.92
G3FKH	Mr D Roberts	28.04.91
G3PM	Mr K Gooding	
G4AGZ	Mr W D Hutchinson	
G4DTX	Mr E Reeves	17.11.91
G4MKO	Mr D Grinnell	
G4OFH	Mr L H D Lewis	19.12.91
G4OPG	Mr S Foulds	
G4PNA	Mr L Hum	12.01.92
G4XMN	Mr R B Hardy	15.11.91
G4ZYB	Mr T M Scrivenor	
G5YU	Mr C F Scruby	11.12.91
G6MSM	Mr L S P Hill	27.11.91
G6NFO	Mr F J Franklin	01.01.92
G6PYC	Mr W A Furniss	23.12.91
G6XRR	Mrs J E Johnson	12.12.91
G8AJR	Mr D Blatch	12.02.91
G8IO	Mr K North	05.01.92
G8NN	Mr G B Neale	20.12.91
G10CJI	Mr F Maguire	21.01.92
GJ6JXV	Mr L Jarron	June 91
GM3FOW	Mr A H Sinclair	Oct 91
GM4HRQ	Mr J Malcolm	11.12.91
GW0GQB	Mr E B Morgan	12.01.92
GW3DEZ	Mr T C Carpenter	03.01.92
GW3KHD	Mr A Macro	
GW3JUI	Mr W J Williams	03.12.91
GW9KRO	Mr S P Webster	10.12.91
HB9MQ	Mr F Suter	27.11.91
RS26945	Major A B S Sutton	07.12.91
RS29805	Mr E W Cross	
RS39610	Mr J P Formstone	23.12.91
RS45085	Mr G D Morrod	14.01.92
RS91853	Mrs P M Fulker	May 91



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continued on next column

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This new issue features: how to construct an electronic metronome, a reader's review of Cirkit's 80 metre Direct Conversion Receiver, report on the visit to meet HRH Prince Philip, A3 1992 Events Calendar, IATC feature, introduction to Microwaves, all about resistors, readers letters, competition (win an Antex Soldering Station), special offer (450 assorted components for £2.50, 850 resistors for £7.50) and more.



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Doors open 11.00h.

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★ Talk-in on S22 and GB3LA (RBB) ★

★ Extensive FREE parking ★

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Tony, G4DXA, P O Box 73, LEEDS. LS1 5AR

G3BRS BURY RADIO SOCIETY G6BRS

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Sunday 26 April 1992

Castle Leisure Centre, Bolton St, Bury

- ✓ Only 1 Mile from M66 Exit No 2
- ✓ Spacious ground floor venue
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- ✓ Facilities for disabled
- ✓ Free cash draw

Entrance £1 by programme

Talk in on S22, Doors open 11 am, 10.30 for disabled

Details and booking G4KLT 061.762.9308

# The Last Word

## SOURCE OR DRAIN

I am writing to you about the G3T50 linear (*RadCom*, Jan 92). The RF power transistors are in short supply but I have tried to source them and limited stocks are available at £29.00 each.

The article says that they are available from the States on credit card, but with the credit card charge plus foreign currency charge the cost per device is likely to work out a lot dearer than the above price.

F Powell, FJP Kits & Components.

## DISAPPOINTMENT

It was 1000 hours on 23 January 1992. The dog went mad, my wife said "Bet that's the postman", and to be sure, in the porch lay a large pile of mail. The junk I binned, the bills I hid and with the *RadCom* and a coffee I sat down for a good read. *but* alas, what a disappointment.

The pages in my edition are numbered as follows; 1 to 26, then back to 19 OK to 26 again, then jumps to 35 OK to 50, then jumps again to 59 OK to 66, then back again to 59 then through the Ads to 82 and the back cover. It's a bit disjointed to say the least. On reflection, that 'Quacker' on the front cover does have a funny look in his eye!

W H Wells G3HVX

[Unfortunately, a small number of badly collated copies escaped from the printers last month. Apologies for this. Replacements have been sent on request - Ed]

## THE JOHN IS SILENT

When I go on the air I am invariably called John by my contacts. When I go down to the club I'm called 'John', or maybe 'John GAR', if there are more than one of us. And that's how everyone knows me.

But when my key falls silent, in *RadCom* I become Mr J H Cook, which seems a pity because no-one thinks of me in those terms. Can we not be recorded in our departure as we were known in our days of activity?

J H Cook (John to you) G4GAR

[We will do this if specifically requested by the next of kin - Ed]

## RSGB SLOW MORSE SERVICE

I felt it incumbent on me to write and express my appreciation of the assistance we aspiring G0 members are obtaining from this RSGB service. We in the North West are fortunate in benefiting from a most helpful and able group of four operators who are always willing to assist whenever possible.

Although it is perhaps invidious to single out individuals, I must mention particularly John, G4XQI, who despite considerable personal difficulties was willing to transmit two extra Slow Morse sessions over the Christmas/New Year period. This was very much appreciated, I'm sure, by many other stations beside myself, who value the continuity of this service and who feel that any breaks from regular practice sessions would have an adverse effect.

This service, alone, makes our subscriptions well worthwhile.

Ken Hughes G7KOZ

## CURE FOR 'OLD AGE'!

Black box owners beware! Just have a look over the multiplicity of controls on your modern marvel, and consider and count the number you haven't used for ages. Then take heed of the following:

Over the last two years I have been aware of a gradual but finally major loss of performance on the receive side of my five-year-old TS930S. The loss of sensitivity and increased background noise led me to blame old age, or bad conditions, in spite of Cycle 21.

Prowling around the rig one day, I came across a forgotten switch at the rear, which transfers the antenna from the internal receiver to a coax socket also on the rear, to which can be connected a separate receiver. This switch had never been used in its five years in my shack, but when I operated it a few times, my dear old '930 burst into life just as of old, so much so that I felt that I had acquired a new rig! Treatment with a switch-cleaning fluid completed the job, to my very great delight.

So, spend a few moments every now and then jiggling those forgotten controls - who knows, you might be just as lucky as me.

George Twist G3LWH

## £1,000 FOR CHILDREN

May I thank everyone involved in the GB4CIN (Children in Need) stations organised and operated by the Tor Amateur Radio Association from Matlock. Our club's has only 25 members, but this is the first time I have seen *everyone* involved in doing something to help. The stations made 402 contacts, a remarkable effort given the SID on 22 November which made any HF band above 3.5MHz useless for about ten hours.

Special mention must be made of the management and staff at Lowe Electronics in Matlock. Our presence must have disrupted the normal working of the showroom but their entry into the spirit of the event undoubtedly made our effort a success. They also speedily made an additional HF station available when computer hash made contacts difficult and we are very grateful for their efforts on our behalf.

We also had assistance from our neighbouring clubs at Derby and South Normanton. In particular, Richard Buckley, G3VWG, of the Derby and Dist ARS gave us a great deal of assistance in publicity for the station.

To date I have banked nearly £500 towards the appeal, and we have not even started to count the money raised on our behalf by all of the radio clubs of Derbyshire and the branches of Lowe Electronics. Tor ARA and Children in Need owe them a very big debt of gratitude. I hope our final total will be close to £1,000. I am very proud to have been involved in this event. All of our club members can feel very happy in their achievement.

Vince Shirley, G0ORC

## SLOOP LOOP

Mr A J Henk, G4XVF, writes further (*The Last Word*, Jan92) on the inefficiency of small loop antennas. While I cannot comment on his calculations as I have not made any measurements, as a user of an AEA IsoLoop for mobile operations, I must take exception to the final paragraph of his letter relating to the performance that can be expected.

This antenna was purchased at the RSGB National Convention last year and is installed on a short pole on the cabin of my boat some 14ft above river level. During four months of use, mainly at weekends, over 100 different countries have been contacted. Operation from a 12V battery limits the transmitter power to around 50W, but even so the antenna has been competitive.

Activity has mostly been on 14MHz, but the IsoLoop has performed well on all five HF bands from 14 to 28MHz. Included in the country total are contacts with some of the heavily contested DXpeditions. Small loops may be inefficient and expensive, but the IsoLoop is easy and convenient to use and has proved to be effective.

Ron Glaisher G6LX

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.

## CONGRATULATIONS TERRY

On behalf of the committee and members of Bangor and District Amateur Radio Society, G13XRQ, may I please be allowed to place on record our congratulations to, and appreciation of, Terry Barnes, G13U5S, who was elected to the Presidency of the RSGB on 11 January, 1992.

I'm quite sure the Council and membership of the Society are fully aware of the work Terry has done for the amateur radio movement throughout the UK; certainly we in GI are deeply appreciative of the time and effort he has devoted to the hobby on our behalf.

What may not be so widely known however, is the fact that Terry has been treasurer of the Bangor club for twenty-two of its twenty-five years and has played no small part in the development of our club - his relentless efforts to extract subscriptions from 'forgetful' members is legendary!

We all wish Terry a successful and enjoyable year as the new President of the RSGB - it's an honour not only for Terry and the RSGB, but for all of us in Bangor, County Down and in Northern Ireland.

Stewart Mackay G14OCK,  
Chairman, Bangor & District ARS

## PERFECT PREDICTIONS

The large size Propagation Predictions chart is *ideal* and if you could add the colour of the November 1991 chart it would be perfect. *RadCom* is improving all the time, which is appreciated.

John G0KCA

Just to say grateful thanks for the improved Propagation Prediction Tables. I do make regular use of these tables and the very small print has been most inconvenient in recent years. At last I can put aside my straight edge and reading-glass.

Wilfred Dunell, G3BYW

## COLOUR-FULL

In the November *RadCom* you say (p44): "It also permitted the use of full-colour." Is there such a thing as 'half colour'?

M D Bass G3OJE

[In printing, all colours can be simulated by a combination of four: Cyan (blue), Magenta (red), Yellow and Black. Full colour refers to the use of all of these, on photographs for instance. 'Half colour' is known as 'spot colour' which usually uses only one colour to brighten up a page - Ed]

## WAY OF THE DODO

T E O'Neill, GM4PRO, in his letter (*The Last Word*, Feb 92), says the Novice scheme "trivialised our hobby for the sake of quantity rather than quality". What a condemnation of all these keen youngsters - the future of our hobby and possibly future Council Members etc. I sincerely hope he is one of a tiny minority in our hobby. It is not an exclusive club. Changes have to be made otherwise amateur radio is doomed to head the way of the dodo.

The Society has my support in its efforts to try and keep amateur radio alive. Youngsters these days have so many wonderful opportunities and attractions, that radio may well seem a bit staid. Any well-organised and well-run attempt to breathe the spark of radio into the youth of today must lay a good seed for the future.

G D Pople G4AVJ

## DID YOU VOTE?

We often see letters in the amateur radio press complaining about the RSGB. At the last Council election, there were four vacancies for Ordinary Members. If we deduct, from a total of 13,518 votes cast, the invalid ones and those used on the Zone C election, and if we assume that each ballot paper used its four votes, then we find that around 3,300 members of RSGB were prepared to take the trouble to vote.

That is something like 10% of the membership. Thus we may say 90% of the membership can't be bothered to vote. By extrapolation, 90% of the moans one hears as an RLO or when on the RSGB stand at a rally must come from people who *didn't* vote at the AGM despite being given all the data, the form and the return envelope! In future, whenever this RLO receives a query, he is going to start by asking whether the person voted at the last election.

E P Essery GW3KFE, RLO Powys



## CLASSIFIED ADVERTISEMENTS

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- 3) Serial number of equipment.

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The display advertisement copy date for our May 1992 (NEC) issue will be 13th March 1992



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Transmit Range:	160-10 Meters.
Power Output:	Adjustable Up To 200 Watts (50 Watts AM Carrier).
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Power Consumption:	95 VA (Receiver), 1050 VA (Transmit).
Sensitivity:	SSB/CW <0.25V For 10dB S/N, 1.8-30MHz.
Dynamic Range (Typical):	108dB @ 500Hz BW, (Preampl off).
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Audio Output Impedance:	4-8 Ohms.
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