

# D-i-Y RADIO



November-December 1992

Volume 2: No 6.

*An Introduction to Amateur Radio - For Beginners of all Ages*



News ♦ ATU Construction ♦ Cheap 2m Receiver ♦ Poster ♦ Pre-amp Project ♦ Tool Kit  
Review ♦ Antennas ♦ Readers' Letters ♦ Competition & Puzzle Page

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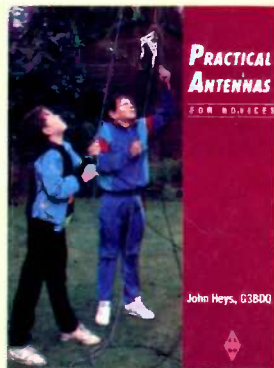


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## Practical Antennas for Novices

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# Martin is Young Amateur of the Year



THE YOUNG Amateur of the Year award was

created four years ago by the RSGB and is sponsored by the Radiocommunications Agency (RA) of the Department of Trade & Industry (DTI).

17-year old Martin Saunders from Broadstone in Dorset is the 1992 Young Amateur of the Year. Martin was presented with his prizes at the RSGB's HF (high frequency) Convention at Windsor on Sunday 27 September. Mr Stephen Spivey presented him with the RA's prize of £250 and an invitation to a guided tour round the Monitoring station at Baldock.

Other prizes included a Sony general coverage receiver from the RSGB; a week's training course at Wray Castle College from the Mobile Radio Users Association MURA; a mo-



VIPs at the Young Amateur of the Year Presentation (l to r): Back - Steven Spivey from the RA, Ian Laybourn of the MRUA, Paul Nicholson of Icom (UK) Ltd, and from Siskin Electronics, Lloyd Arrow. Front - Neil, G7NGM; Martin, G7JCJ; and Neil's brother Ian, 2E1AWE.

dem from Siskin Electronics and the now traditional 'goodie bag' from Icom (UK). This year's runner up is 16-year old Neil Mothew from Essex and he received a digital multimeter from Cirkit Distribution Ltd. Both Martin, callsign G7JCJ, and Neil, G7NGM, are interested in packet radio. This is the term used for the link-up between a home computer and a transmitter for sending and receiving messages. Next

year we will be running a feature on packet radio and how you can use your own home computer for this exciting part of the hobby.

The Radiocommunications Agency announced that they would continue to sponsor the Young Amateur of the Year Award for a further two years. This confirmed their policy of promoting amateur radio to produce the engineers of the future.

## Hurricane Assistance

DURING THE recent hurricane which devastated the Hawaiian Islands in the Pacific Ocean, the University of Surrey's UoSAT OSCAR-22 amateur radio satellite proved how reliable it is in passing on information from radio amateurs. Emergency messages were passed via the satellite to radio amateurs so that they

could reassure people outside the hurricane region that their relatives were safe. This is the first time that this satellite has been used for such a purpose, and proved a very successful operation.

Radio amateurs always respond positively to an emergency, and the assistance they provide is extremely important. In many

cases all normal communications are lost during this kind of disaster, and the amateur network assists in carrying emergency calls outside the affected area to get help.

Many American amateurs helped with communications during hurricane Andrew which struck Florida earlier this year.

● The American Radio Relay League, which does the same job as the RSGB but in the USA, has done a survey of amateurs under the age of 18. It shows that the 2 metre (144MHz) and 10 metre (28MHz) bands are the most popular and speech transmissions using FM and SSB are preferred with Morse and packet (computer communications) coming next. Favourite activities are making long distance contacts (DX), talking with friends, using radio to help others and making new friends. More than 60% spent between one and six hours a week on amateur radio.

● RADIO WAS discovered less than 100 years ago and radio amateurs were among the earliest experimenters. The oldest national radio club is the Wireless Institute of Australia which was started 82 years ago. The Finnish Radio Society, SRAL, had its 70th anniversary last year and the RSGB will be 80 years old in 1993.

● Radio Amateurs help the Royal National Institute for the Blind to look after the tape machines used by its Talking Books Service. Talking Books uses tape recorders and a large library of tapes to help blind people enjoy books and magazines.

● THE RSGB has just published the 1993 edition of its Callbook and Information Directory. This gives the names and addresses of licensed amateurs in the UK and Ireland, plus masses of information to help you enjoy amateur radio.

● 271 CANDIDATES passed the June 1992 Novice Radio Amateurs Examination, a 73.4% pass rate. More candidates sat the examination than ever before and a total of 962 have passed the NRAE in just over a year.

● YEOVIL Amateur Radio Club members taught amateur radio to 14-year-olds at Kilve Court Space Science Course in Somerset at the end of October.

● RETIRED policeman John Goodall recently took the Radio Amateurs Examination whilst still in his hospital bed only two days after having a heart attack - and he passed!

# D-i-Y CONSTRUCTION FEATURE

## D-i-Y Radio Aerial Tuning Unit

Use it with the *Yearling* and most other short wave radios



A RANDOM LENGTH of wire will work as an antenna (aerial) but to get the best results, an antenna tuning unit is required. This matches the **impedance** of your antenna to the input impedance of your radio. Impedance is similar to resistance but applies to radio and audio frequencies. Like resistance, it is measured in ohms ( $\Omega$ ) and you'll find that for most short wave radios the input impedance is  $50\Omega$ . On the other hand, the impedance of an antenna can be anywhere from about  $20\Omega$  to over a thousand, and depends mainly on it's length and height above ground.

But, you may ask, "How do I work out the impedance of my antenna?" Well, the good news is that, in most cases, you don't need to! Just build the *D-i-Y Radio* Antenna Tuning Unit (ATU) described here, and you can provide a good **match** between your antenna and receiver. This means that, in most cases, signals will become clearer with less noise and interference. Also,



stations will often sound louder so you may need to reduce the RF gain control on your receiver, if it has one.

The ATU covers all amateur and broadcast bands from 10 metres (28MHz) to 80 metres (3.5MHz), and is very easy to build.

### SIMPLE CONSTRUCTION

START BY DRILLING two 10.5mm diameter holes in the front of the case - one for the 6-way switch, and one for the tuning capacitor. Next, 8mm diameter holes are needed for the blue, yellow and green sockets on one side of the case, and for red and black sockets on the other.

Then fit the switch and capacitors as shown in **Fig 1**, making sure that the brass vanes of the capacitor operate smoothly when the spindle is rotated. After this, wire up the inductors, as shown. As you can see, each one is connected to two switch connections, and the other ends go to VC1. The fixed capacitors are then soldered in. There are four of these and one end of each goes to the black (ground) socket. Note that a wire should also be soldered between the green and black

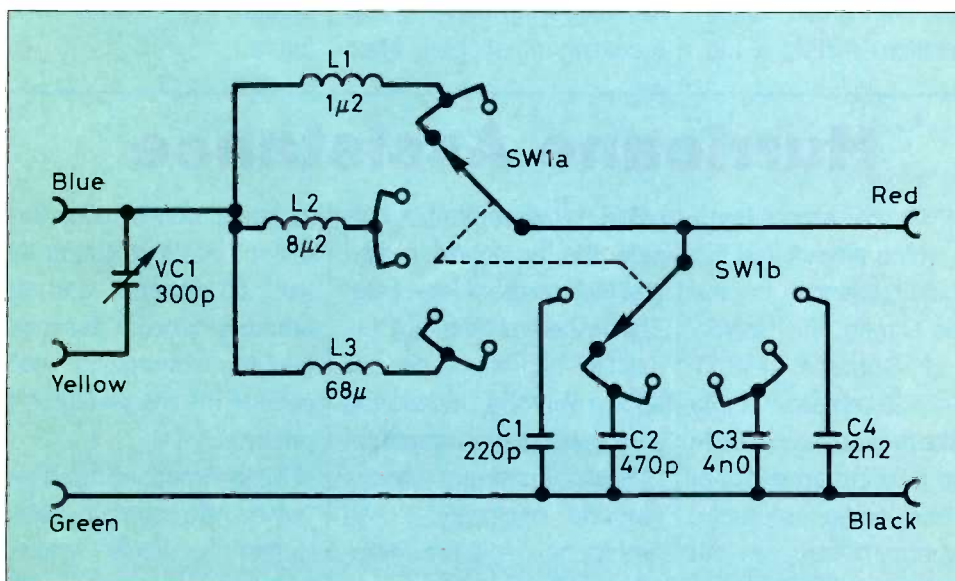


Fig 1: Circuit diagram of the Antenna Tuning Unit, showing the use of a 2-pole, 6-way rotary switch to select inductors (L) and capacitors (C).

sockets. Signal output from the ATU comes from the red socket and this is connected to the two tags at the centre of the switch. Finally connect the blue and yellow sockets to the tuning capacitor as shown, and the ATU construction is complete.

## NOW THE FUN STARTS

THERE ARE SEVERAL ways of connecting your ATU, and the one to use will depend on your antenna. Try each of them and then you can decide which works best! Select each of the switch positions in turn, and slowly rotate the tuning capacitor for best reception.

Fig 2 is a series tuned arrangement. The coil selected by the switch is in series with the tuning capacitor. In this case there is an earth or ground connection, which could be the cold water pipe of your house, or a length of wire buried in the ground. On the other hand you might have

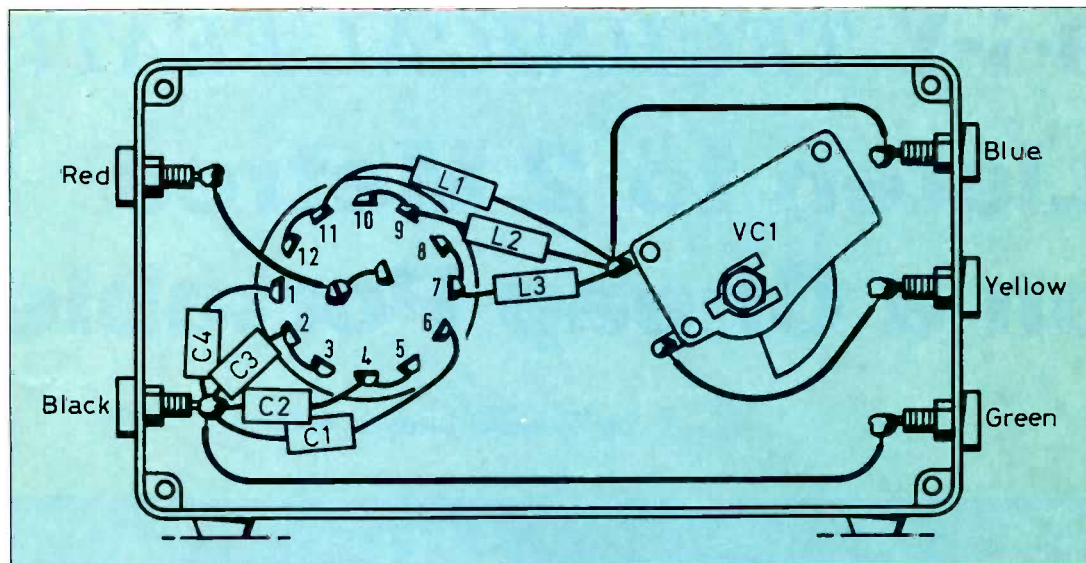


Fig 2: The internal view of the case shows the main tuning capacitor, VC1. This is a solid dielectric type, which has adjustable brass plates.

more luck with the circuit of Fig 3. This one uses parallel tuning, and you will need to connect a wire link from the yellow socket to the green one. An interesting point about this circuit, is that it is also a low-pass filter (see page 12 of the last issue of *D-i-Y Radio*).

## MORE EXPERIMENTS

NOW THE REST is up to you. Try some different antennas, and see what you can hear once you've tuned them in with the ATU.

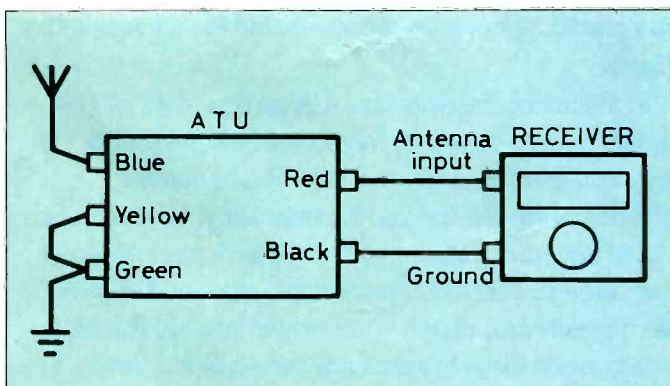


Fig 3: You may find that parallel tuning gives best results with your antenna.

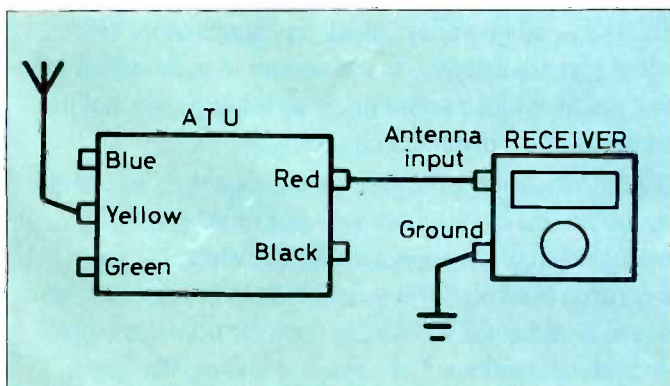


Fig 4: In other cases, series tuning could be the most effective arrangement.

## COMPONENTS LIST

### CAPACITORS

All rated at 16V or more

C1	220pF	polystyrene
C2	470pF	polystyrene
C3	1000pF	polystyrene
C4	2200pF	polystyrene
VC1	300pF variable	

### INDUCTORS

L1	1.2 $\mu$ H
L2	8.2 $\mu$ H
L3	68 $\mu$ H

### SWITCH

2-pole 6-way rotary switch

### SOCKETS

4mm type One each red, black, blue, yellow, green

### ADDITIONAL ITEMS

Any small plastic or metal case, eg Maplin type YU54J

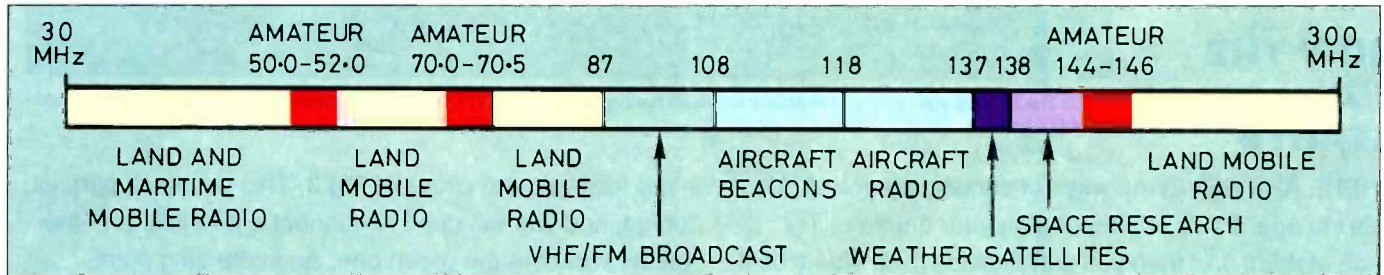
Two large knobs for front panel

# D-i-Y TECHNICAL FEATURES

## Listen to 2 Metres on a Cheap Portable



by Steve Ortmayer, G4RAW



A CHEAP PORTABLE RADIO can often be retuned to receive the 2 metre amateur band. The radio must cover the 'air band' which goes up to a frequency of about 136MHz. Don't try

this with the best kitchen set or top of the range Hi-Fi! This is only for battery portables - **do not try it on a mains set**. Discount shops often have cheap transistor radios with air band - sometimes for less than £10!

Usually, it's easy to re-tune radios like this for the 2m-144MHz amateur band. Carefully take off the back of the plastic case and look for the tuning capacitor, made of clear plastic, about 2cm square behind the tuning knob (Fig 1).

On the tuning capacitor are four small screws, these are the 'trimmers', two for medium wave and two for VHF. You need to locate the VHF trimmer on the oscillator which will change the frequency. Switch the set to VHF and tune a station near the top of the broadcast band, around 105MHz. *Slowly* move each screw in turn with a small screwdriver. If the station you are listening to does *not* change in frequency then carefully return the screw to its original position. When you have found the screw that changes frequency, turn it to open up the trimmer - in other words reduce its capacitance. The station you are listening to will appear to move down the band. Make it move as far down as it will go, so that the trimmer is at its minimum capacitance.

Retune to around 130MHz on the dial and you should find the 2m band. I was able to hear mobile stations working through the repeater GB3NA which is about thirty miles from my QTH (home location). Repeaters are used to boost amateur signals - usually from car mobile and portable stations. On page 7 is an amplifier which will make your re-tuned set even more useful.

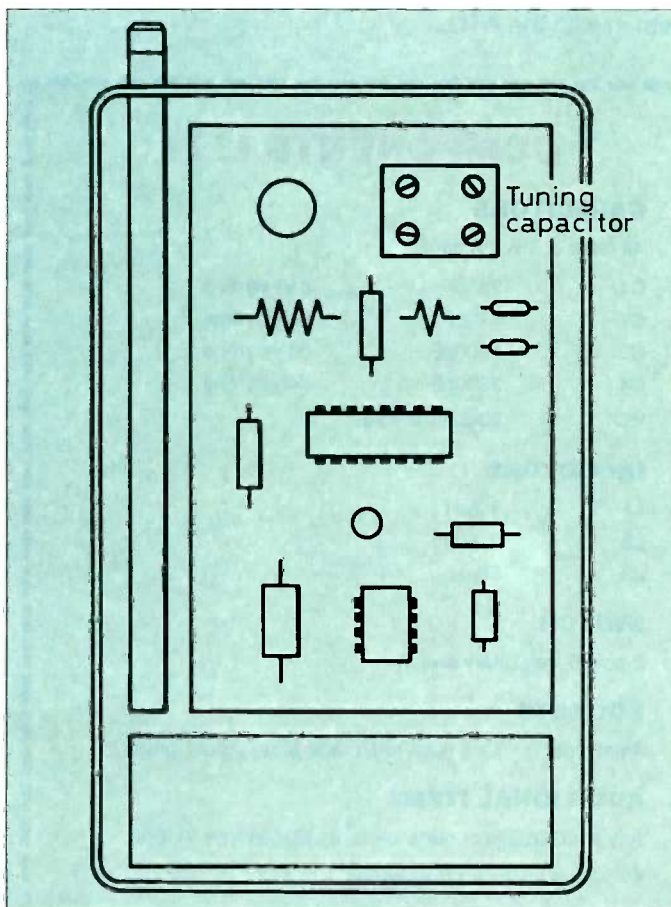


Fig 1: Capacitor is in a plastic box about 2cm across, with four screws showing.

# Improve Reception with our Pre-Amplifier

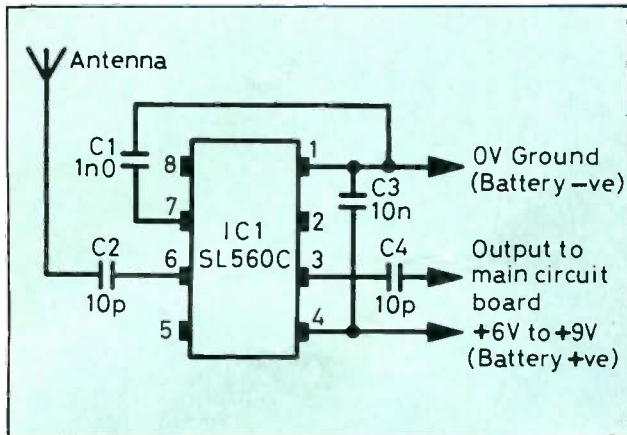


Fig1: The integrated circuit is mounted upside down. Make sure you identify pin 1 which has a small dot next to it.



**YOUR MODIFIED AIRBAND RECEIVER**, or one which covers 144MHz already like the one pictured opposite, can be improved (made more **sensitive**)

by adding a **pre-amplifier** (pre-amp). This little circuit uses a GEC - Plessey SL560C integrated circuit. **Fig 1** shows how to connect the circuit to your radio. It can be built on a small piece of prototype board, with the IC mounted upside down and glued to the board. Make sure you make a note of the pin numbers before you glue the IC. The positive and negative connections from the pre-amplifier are made to the same place on the radio's printed circuit board (PCB) as the power connector.

Unsolder the lead from the telescopic antenna, and connect it to one end of capacitor C4 as shown. Then connect another lead from the antenna to capacitor C2. If the pre-amp board is built small enough, it can be tucked away inside the case, and secured with sticky tape. Be careful that it doesn't short-circuit any other components when you fit the back on the radio again. If you find there's not enough room inside the radio, it is possible to build the circuit in a small plastic box with its own battery and antenna.

The pre-amp not only improves reception on the 2 metre amateur band, but often gives better VHF/FM broadcast reception as well.



The pre-amplifier gives improved sensitivity to this air-band radio.

## COMPONENTS LIST

### INTEGRATED CIRCUIT

GEC-Plessey SL560C

### CAPACITORS

Each rated at 16 volts or more

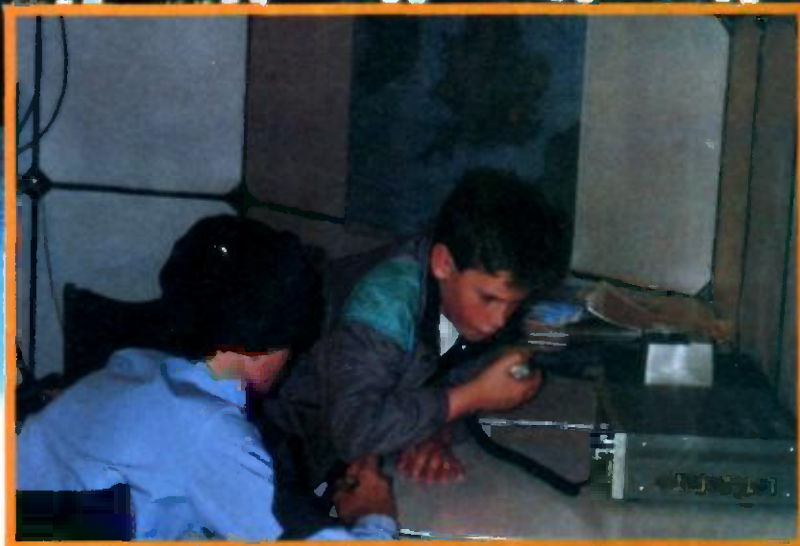
C1	1n0	Ceramic
C2,C4	10pF	Ceramic
C3	10n	Ceramic

### ADDITIONAL ITEM

Perforated board approximately 25x25mm

A kit of the above components costs just £3.95 (inc p&p), from J A B Electronic Components, The Industrial Estate, 1180 Aldridge Rd, Great Barr, Birmingham B44 8PE.

# Amateur Radio & The Royal Tournament



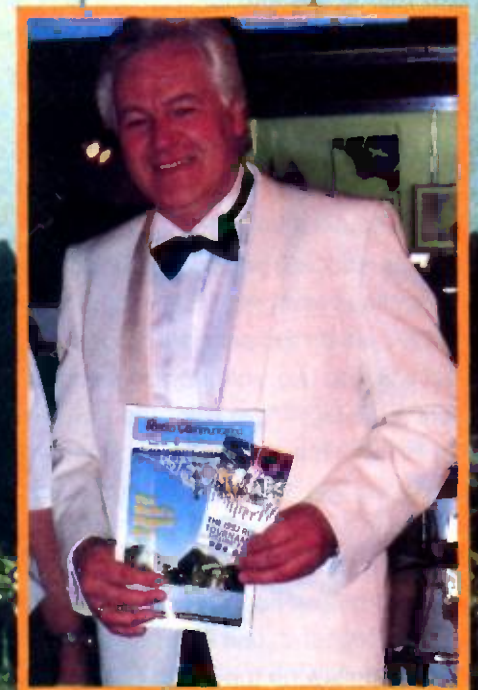
D-i-Y Radio reader Paul enjoyed himself talking to an Air Cadet who was using a hand held radio inside Earls Court to keep in touch with The Royal Tournament radio station on an ATC frequency.



A few of the many volunteers who helped to operate the amateur radio station. From left: Peter Burchett G0LMG, Danny Burchett, Nigel Robertshaw G0NHM, and Alan Butcher G3FSN.



The spectacular Royal Tournament has been an annual event at Earls Court in London for many years, and is the public showcase for the British Army, Navy and Airforce. The best parts are usually shown on television. For the last two years the ATC (Air Training Corps) has operated a special amateur radio station using aerials 30m (100ft) above the arena. An even better station is planned for next year's show.



German radio amateur Dieter DK2PU, contacted the ATC station last year and was so impressed decided to visit the Tournament on holiday in Britain.

The special QSL card used by the ATC for contacts made from the Royal Tournament. These will be sent to the 2350 stations contacted by the station.





# D-i-Y NEWS FEATURE

## Anyone for a Brisk Walk?



THE *D-i-Y Radio* team has just returned from a press briefing for the Pentland South Pole Expedition by Sir Ranulph Fiennes and Dr Michael Stroud. From the top of the Trade Tower in Battersea they practised how to deal with crevasses hundreds of feet deep. In November they will attempt to walk 2,200 miles across the Antarctic without any motorized support or animals, such as huskies, helping them. Each will pull a sled weighing 181kg (400lbs) containing all their camping gear, medical supplies, food, clothing and radio transceivers.

Be-Well has prepared a high protein, high carbohydrate diet to keep them fit and well, and to reduce the estimated 14kg (30lb) weight loss per person. Each day starts with porridge, then, during the day a large flask of hot soup, together with four chocolate bars each, keeps them going until the evening. Evening meal is quick to prepare with the addition of boiling water. Shepherds pie, macaroni cheese, spaghetti bolognese or chicken savoury in rotation, together with 113g (.25lb) of butter each per day make up their very nutritious diet. Besides tea and coffee they will have the luxury of one chocolate drink each day! Special pills will keep up their essential vitamin intake.

Radio contact will be kept throughout the expedition via HF communications. RSGB member Morag Howell, GM0MUV, will be the sole radio operator in direct contact with the two walkers and with her husband, Lawrence, GM4DMA, in Aberdeen. She will be based at Patriot Hill which is 80°south 80° west, and will be operating the special event callsign used in the last Polar expedition in 1990, GB4MSS/VP8. This callsign is for the Multiple Sclerosis Society and it is the expedition's aim to raise two million pounds towards further expansion of the special research unit created at the University of Cambridge following the North Pole 90 expedition by Sir Ranulph and Dr Stroud. Morag will be using her amateur



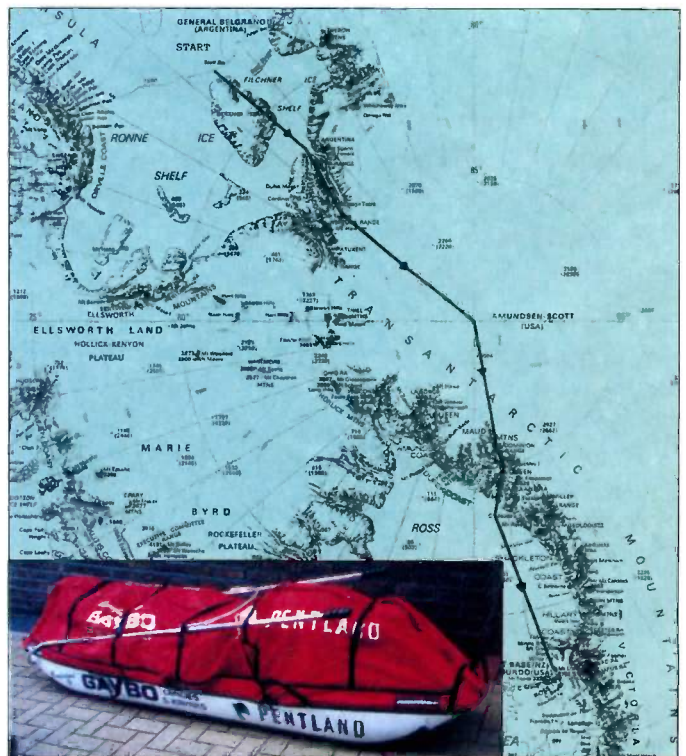
Sir Ranulph (left) and Dr Stroud getting ready to go.

radio rig to make contact with other amateurs, and she will be sending out QSL cards. As the RSGB is one of the sponsors for this expedition, we will give you regular progress reports.

Morag and Laurence were featured on our Polar Expedition Poster in the August/September 1991 *D-i-Y Radio* and is used to the extremely cold conditions. It will be Summer in the Antarctic and

temperatures will range between -10° and -35°. Morag and Lawrence have accompanied the two explorers on earlier expeditions.

Sir Ranulph and Dr Stroud must reach the pick-up point by 6am on 15 February 1993. If they arrive at 8am the inflatable rubber dinghy picking them up will have gone.



The route Sir Ranulph and Dr Stroud will be taking across the Antarctic. The inset shows one of the sleds they will be pulling.



# D-i-Y EQUIPMENT REVIEW

## The Maplin Range of Tool Kits



MAPLIN SUPPLY A NUMBER of tool kits for electronic projects and two of them have been looked at in some detail. One was the SK01B which retails at £24.95 (plus £2.00 p&p), which had the basic tools wrapped in a canvas roll-up bag which made it easier to take back and forth to class, and was generally more compact. The SK01B kit contains:

- 1 x flat bladed screwdriver
- 1 x crosshead screwdriver
- Pointed nose pliers
- Wire cutters
- Soldering iron and stand
- Supply of solder (18 gauge)
- Desoldering pump
- Canvas tool bag with pockets for all the above tools.

However, the other kit, the SK02C at £29.95 (plus £3.05 p&p), contained more tools and was housed in a sturdy plastic toolbox, with plenty of room to gradually add to your tool collection and keep everything tidy in one box. So, if you are likely to want to increase your collection of tools as your experience in constructing improves, then this would be a better basic starter kit. The SK02C kit contains:

- 2 x flat bladed screwdrivers
- 3 x crosshead screwdrivers
- Pointed pliers
- Wire cutters
- Soldering iron and stand
- Supply of solder (18 gauge)
- Desoldering pump
- Automatic wire stripper and cutter
- Large plastic tool box with separate pull out tray



We found that the tools were fine for a beginner's needs. The only comment we would make is that having used both the iron in the kit, and another one which had a pointed bit fitted it was found that the pointed bit was easier to use, but this may have been a personal preference. Others of you may prefer the flat-angled bit fitted to the soldering iron in the kit. The solder included in the kit is very useful, but a little too thick for delicate electronic circuitry - 22 gauge (22 SWG) solder would have been better.

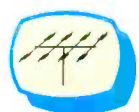
To sum up the SK01B priced at around £25 is a good starter kit and later on when the situation arises, more specialist tools can be added. You might say that tools can be bought more cheaply at market stalls, autojumbles and rallies, but absolute beginners might not know which tools to look for, or which would give the best value for money. Beginners would probably prefer to buy a complete basic kit, so they could start building electronic circuits straight away.



# D-i-Y TECHNICAL FEATURE

## Antennas for Amateur Radio

Jim Smith, G3HJF, looks at receiving antennas



FOR ANY RADIO RECEIVER to work well it must have some form of antenna. Sometimes the word 'aerial' is used instead of antenna, but it means the same.

In almost all domestic transistor radios the antenna is built into the set, either in the form of a rod of 'ferrite' which looks like a piece of dark grey metal, onto which is wound a coil of wire, or a chromium-plated telescopic metal rod. Many transistor radios have both forms of antenna. The ferrite one is used to pick up medium and long wave broadcasts whilst the metal rod is for FM.

Neither of these antennas is perfect. But they both serve the purpose well enough for a transistor radio which is meant to be carried around easily and a large antenna would not be possible. In fact, this is not really necessary because the stations which broadcast entertainment programmes are very powerful and often quite close.

### FAR AND WIDE

FOR SHORT WAVE RECEPTION of distant stations, perhaps in another country, a better radio receiver is needed and a much better antenna than the ones fitted to ordinary transistor radios. This is because the signals

in this case are much weaker than those from nearby stations. Also, in the case of amateur radio stations the transmitters are far less powerful than for commercial broadcasting stations. To get a good signal from these stations a much larger and higher antenna is needed, far away from anything likely to prevent weak signals reaching it, such as buildings or trees, or anything which causes interference.

The antenna is usually connected to the receiver by a cable. A good example of this is a TV antenna. Those people lucky enough to live close to the TV station can use a simple antenna close to the set or on top of it. Most people, however, are not so fortunate and they need a TV antenna on the roof or chimney. This raises it above most of the nearby buildings and receives a good clear signal from the TV station. The signal it picks up is taken to the TV set by a cable which plugs into a socket on the back.

### PRACTICAL ANTENNAS

TO GET GOOD RECEPTION of weak short wave signals, especially from amateur stations a good antenna is essential. What is a 'good antenna'? One of the simplest is the **Long Wire** antenna (see Fig 1). This is

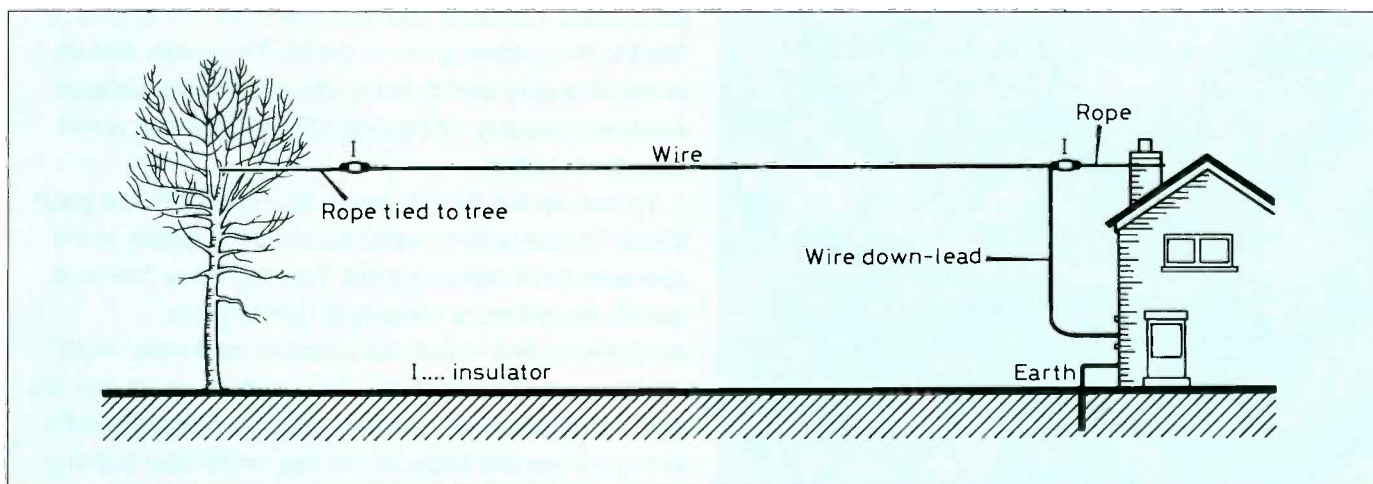


Fig 1: A tree at the bottom of the garden can provide a useful antenna support. Insulators can usually be obtained from Tandy stores or TV aerial suppliers.

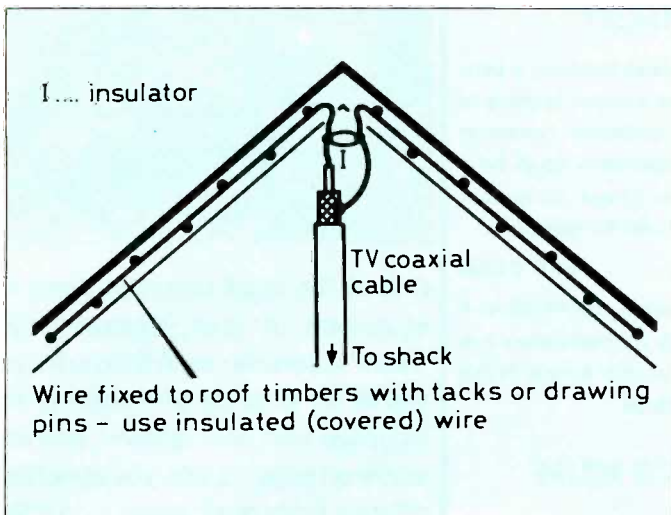


Fig 2: An indoor antenna should be mounted as high as possible.

quite literally a long piece of wire usually going from a chimney stack to a tree or pole at the end of the garden. The longer it is the better. The wire is brought through a window, into the room where the radio receiver is situated and connected to the antenna terminal on the back of the set.

The long wire is a very versatile antenna, but to reduce the amount of interference pick-up it is best to use an Antenna Tuning Unit (ATU), such as the one described on page 4 of this issue. One of the great advantages of the long wire is that it can be used on a wide range of frequency bands.

## MORE ADVANCED ANTENNAS

ANOTHER SIMPLE BUT very effective antenna is the **Dipole**, consisting of a wire suspended between two supports just like the long wire. However the dipole uses TV type cable (called **Coaxial Cable**) to connect it to the receiver just as with a TV set. The antenna is connected to the cable by cutting the antenna wire at its centre and joining one cut end to the centre wire in the cable and the other to the cable's copper braid (see Fig 2). In this way signals captured by the wire 'element' of the antenna travel through the cable to the receiver. Dipoles are mounted outside for best results, but if this is not possible they may be fixed inside the roof as shown in Fig 2.

The length of the wire section of the antenna should ideally be one half of the wavelength being received. For example a 'half-wave' dipole for the 20 metre amateur band should have a length of about 10 metres. An ordinary dipole will work on one band only. A special type of dipole which can be used on several different bands is called a **Trapped Dipole** and has coils and capacitors at certain points along its length.

## INDOOR ANTENNAS

BUT IF YOU LIVE in a block of flats, or where an outdoor antenna is not possible, indoor antennas can be successful if they are carefully positioned. You might like to experiment with the antenna in Fig 2 or one of the loops shown in Fig 3. Amateurs using antennas like these have had contacts all over the world.

Possibly some sort of antenna in the same room as the receiver might be possible. The wires of a short dipole can sometimes be tucked behind a picture rail or pelmet with the downlead cable concealed behind curtains. When connected to a good short wave receiver, they give their owners a great deal of listening pleasure.

Putting up an outdoor antenna can sometimes be a bit tricky. If you have little experience then it's usually best to get some help and advice before you start. Your local radio club could be a good place to begin. The RSGB's magazine *Radio Communication* regularly publishes articles on antennas which you can build yourself.

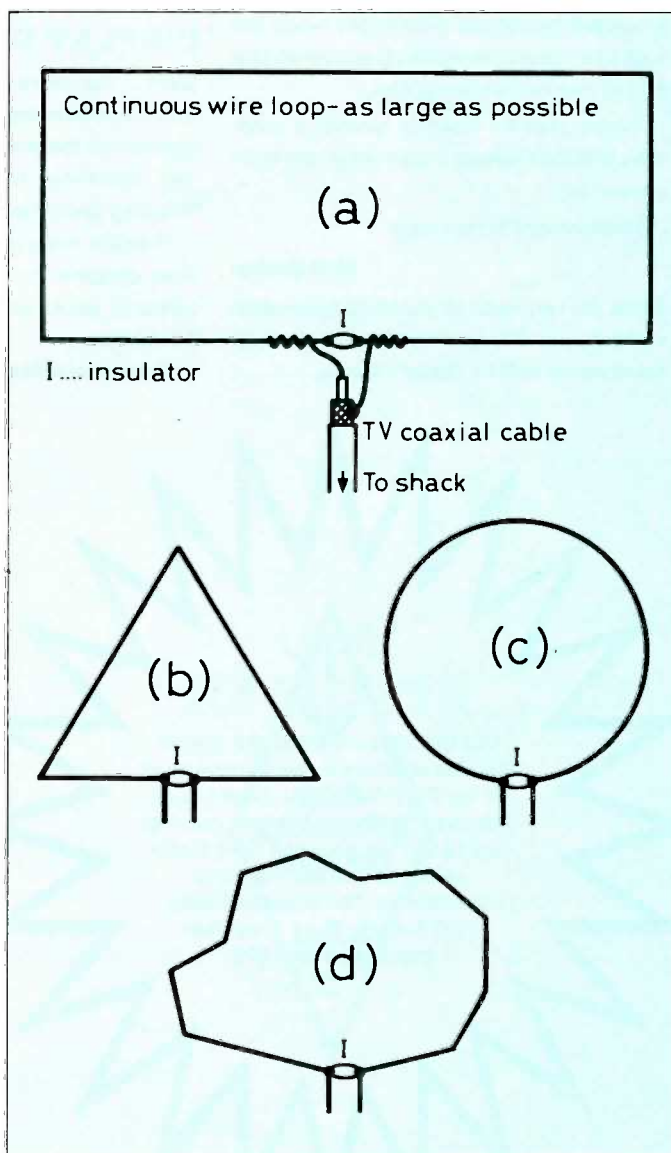


Fig 3: Try different shapes of loop antenna to see which works best.

# Readers' Letters

Keep sending your letters and photographs to the Editor, D-i-Y Radio, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts, EN6 3JE, and we will send a pen to the sender of each letter published.

## A SHORT WAVE RECEIVER PLEASE

I have been a *D-i-Y Radio* subscriber now for a few months and I find your magazines very enjoyable to read. I was wondering if you might be printing in your magazine in the future a short-wave broadcast receiver project. Since I listen to shortwave broadcasts quite a lot I would find such a project very interesting to build and I think a lot of your readers would also.

Having built the Yearling receiver a short-wave broadcast receiver project would very much complement it.

I look forward to your reply

**Mr S Corbett**

Thank you very much for your suggestion which we have passed to our Technical Editor. Watch future issues of *D-i-Y Radio*! - Marcia.

## NOVICE REQUEST

Could you advise me about obtaining a transmitter, which is legal for a novice licensee to transmit on, as I have full confidence of receiving a Novice Licence in December - could be a record breaker at 79 years of age. So my dear keep up the good format with the magazine.

**Mr R C Cole**

We suggest that you speak to your RSGB Novice Instructor about this, or you could take a look at some of the advertisements for kits in this month's *D-i-Y Radio* - Marcia.

## SUBSCRIBER'S MUM WRITES

I'm Robin's mum and have just started a radio amateur B licence course. I have had no previous experience and just want to say I find your publication really helpful and interesting, especially your 'technical feature'.

**Ann Hoffman, Surrey**

## DISPLAY POSTERS

Some of the centre-folds of *D-i-Y Radio* would make an interesting display at demonstration stations and the like. We have in mind particularly 'Space Age Hobby', 'Polar Exploration', 'Scouting' and others.

However, many of us like to keep our magazines complete to build up a library and the collection would be spoilt by the removal of these pages.

Those of us without access to professional facilities have a hard time in producing a good display at public events, especially for the youngsters, and we have to make use of every source available. As you will appreciate, there is little available outside amateur radio publications.

**Jack Tootill, G4IFF,**  
**President and**  
**Licence Holder,**  
**Ipswich Radio Club**

If anyone else would like to have permanent re-useable posters from *D-i-Y Radio*, we can have these produced by laminating them for you. The cost would be £2 each plus 50p post & packing - Marcia.



One of the most important items of equipment in your amateur radio 'shack' is the antenna. A good antenna makes an amazing difference to the reception from your receiver, and our article on page 12 tells you about the different kinds of antennas available.

This will help you to decide what sort of antenna to use and, if you build our Antenna Tuning Unit shown on pages 4 and 5 you will be able to make sure that you get the maximum reception available from the antenna you choose. If you want to know more about antennas the RSGB has recently produced a new book called *Practical Antennas for Novices*; for more information on this excellent new publication see page 2.

Another publication you will find extremely useful is the *1992 Call Book and Information Directory*, published by the RSGB, which lists the callsigns of most licensees in the UK, and gives a great deal of information on amateur radio, how to get planning permission, local club addresses and a great deal more - a must for the new and experienced radio amateur. See page 3 for more details.

Either of these books would make very useful Christmas presents. As the next issue will be the January-February 1993 edition, the *D-i-Y Radio* team would all like to wish you a very merry Christmas and a happy New Year.

**Marcia Brimson - Editor**

## NOV-DEC 1992 CALENDAR

**7 December:** Novice Radio Amateur's Examination

## ATU KIT OFFER

Use one of your subscribers' special 50p offer vouchers to buy a complete kit for the *D-i-Y Radio* ATU. Send £16.00 plus one voucher (inc post and packing) or £16.50 if you are not a *D-i-Y Radio* subscriber, to JAB Electronic Components, The Industrial Estate, 1180 Aldridge Road, Great Barr, Birmingham B44 8PE.

**OFFER CLOSES**  
**31 DEC 1992**

# DI-DI-DAH-DAH-DI-DIT

## Win an ICON Receiver

Win an ICON Airband Broadcast Receiver modified to cover amateur radio bands; **Two second prizes:** free size tee shirt; **two third prizes:** Kodak drink holders.

Answer the questions with a word connected with radio and you will find that the third letter of each answer will make up two words concerned with *D-i-Y Radio*:

A beam of sun light .....

How often? .....

Separates GB from Europe .....

Another word for antenna .....

Used in old-fashioned radios .....

Unpleasant sound .....

Group of musicians .....

Opposite of positive .....

Compass will help you find this

Cause of noisy reception .....

Black and white British mammal .....

For turning on your radio .....

An airband receiver from .....

Insert the third letter from each answer:

When you have the answer to the puzzle, write it on a postcard or letter and send it to The Editor, D-i-Y Radio, Radio Society of Great Britain, Cranborne Road, Potters Bar, Herts EN6 3JE. Entries must arrive by Friday 27 November.

Managing Editor: Mike Dennison; Editor: Marcia Brimson; Production Ed: Sid Clark; Tech Ed: Paul Lovell; Draughtsman: Derek Cole; Secretary: Erica Fry; Typist: Belinda Gannon. *D-i-Y RADIO* is published six times a year by the Radio Society of Great Britain, Lambda House, Cranborne Road, Potters Bar, Herts. Filmset by JJ Typographics Ltd. Printed by Southernprint (Web Offset) Ltd. © Radio Society of Great Britain, 1992. All rights reserved. No part of this publication may be



### CODED MESSAGE

Decode this message by using the Morse code on your subscribers' card.

di-dah-dah di-di-di-dit dah-di-dah-dah dah-dit dah-dah-dah dah di-di-dit dit dah-dit dah-di-dit dah-dah dit di-dah di-di-dit dit dah-di-dah-dit di-dah-dit dit dah dah-dah dit di-di-dit di-di-dit di-dah dah-dah-dit dit di-di-dah-dit dah-dah-dah di-dah-dit di-dah dah-di-dah-dit di-di-dit di-dah dah-dit dah-dah-dit dit di-dah-dah-di-dit



### Become a Regular D-i-Y'er

Get the next six editions of *D-i-Y Radio* PLUS a bag of goodies for the special price of £9 (overseas prices on application). Send cheque or postal order to:

**RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE**

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## C.M.HOWES COMMUNICATIONS

The new **HOWES "SperiBoards"** are general purpose PCBs that should prove to be very handy for Novice training and general prototyping. These boards are designed to be much more suitable for RF use than the "strip board" type. Two styles have their solder pads surrounded with a ground plane, so a short earth connection is always to hand! Size: 160 by 100mm. Keep a few "SperiBoards" handy in the workshop!

**NEW!**

Type	Description	Price
SF01S	.4 by .5 inch pads with two supply rails.	£2-90 each 4 for £9-90
SF02S	.2 by .4 inch pads with supply rail and ground plane.	
SF03S	.2 by .3 inch pads with provision for four ICs.	
SF04S	.2 by .3 inch pads, two ICs and ground plane.	

**SperiBoard™**

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Tel: 0327 60178

**Some HOWES KITS for the Novice**

Kit	Assembled PCB	
DcRx80	SSB and CW receiver for 80M band (also 20 & 40M versions)	£15.90 £22.70
DXR10	Three band SSB and CW receiver for 10, 12 & 15M	£26.60 £39.90
TRF3	Shortwave Broadcast TRF receiver (AM plus SSB/CW)	£15.50 £21.70
CTX80	80M CW Transmitter up to 5W adjustable	£14.80 £21.80
AT160	AM/DSB/CW Transmitter for 80 & 160M, super quality signal	£39.90 £61.80
ST2	CW Side-tone and Morse practice oscillator with sine-wave note.	£8.90 £14.30
CTU30	Antenna Tuning Unit (covers all bands, 160 to 6M)	£31.50 £38.40

**PLEASE ADD £1-20 P&P for boards, kits or assembled modules.**

We have lots of other kits in our range! Kits can be combined to form a transceiver. Our transceiver "hardware packs" have pre-finished front panels and look superb.

All HOWES KITS contain a good quality PCB with printed parts location, full instructions and all board mounted components. Send an SAE for free catalogue. Sales and technical advice are available by phone during office hours. Delivery is normally within 7 days. **73 de Dave, G4KQH**

**Novice Transceiver**

## Become a regular D-i-Y'er

Get **D-i-Y Radio** for the next year\* plus

- \* A "Can't wait for my Novice Licence" badge
- \* A plastic wallet so you can keep your issues of **D-i-Y Radio** Safe
- \* An RSGB Map of Western Europe (900mm wide and 1200mm high)
- \* An RSGB pen
- \* A D-i-Y Club card
- \* Money-off vouchers

**..... all for the special introductory price of only £9!**

*RSGB Members see RadCom for details of special offer  
Overseas Subscribers write for prices.*

Please let us know your age or the age of the person for whom you are buying **D-i-Y Radio** and where you saw this copy.

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

Send cheques or postal orders, made payable to:



**RSGB, Lambda House, Cranborne Road,  
Potters Bar, Herts, EN6 3JE.**

## Amateur Radio for Beginners

Find out all about Amateur Radio — this new book by Victor Brand, G3JNB, explains:

- ✓ how to build a crystal set
- ✓ how to listen to radio amateurs
- ✓ how to understand morse code
- ✓ how to choose equipment
- ✓ how to get a transmitting licence



Available from the Radio Society of Great Britain.

Members price: **£3.88** (inc. post & packing)

Non-members price: **£4.56** (inc. post & packing)

Send to:

**Radio Society of Great Britain**

Lambda House, Cranborne Road, Potters Bar,  
Herts. EN6 3JE

# Amateur Radio and the RSGB

RADIO AMATEURS are qualified radio operators who are licensed to talk to other operators, often in distant countries, from their own homes. Amateur radio is a hobby for all ages but it is different from CB radio because a very wide variety of frequencies (wavelengths) can be used, and contacts can be in different 'modes'; by Morse code or teleprinter, between computers or even television. Many amateurs build all or part of their station equipment.

The Radio Society of Great Britain (RSGB) is the national society for all radio amateurs (transmitters and listeners) in this country. It has 35,000 members, including many in overseas countries.

The Society looks after the radio amateur by arranging better licence conditions with the Government. It is through these talks with the Government's Radiocommunications Agency that the Novice Licence has come about. The RSGB is keen to encourage young people to learn about electronics and radio. We are having lots of fun with our hobby and want you all to join in. Who knows, it may lead to a fascinating and well-paid job in the future.

If you require more information on the RSGB or the Novice Licence, write to Sylvia Manco for an Information Pack, enclosing a large stamped self-addressed envelope, at:



**RSGB, Lambda House, Cranborne Road, Potters Bar, Herts. EN6 3JE.**