

# CB RADIO

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**AUGUST 1982**  
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# CB RADIO

## OVER THE COUNTER

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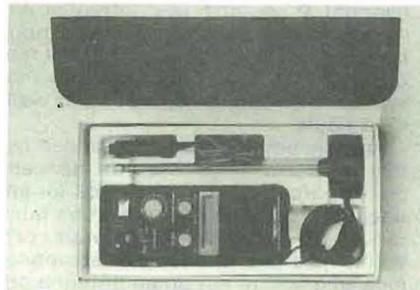


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Editorial ..... J. D. Wynn  
Executive Manager ..... Carol Robinson  
Editor ..... Paul Galt  
Editorial Secretary ..... Margaret Kelly  
Advertising ..... Philip Lewis  
Art Manager ..... Sue Ward  
Photography ..... Colin Davis  
Production Manager ..... Andrew Lawrence  
Production Assistant ..... Steve Evans  
Photo-Editing ..... Alan Brown  
Design ..... Gary Franklin  
Technician .....  
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# Do we deserve more?

Are we likely to get more when we abuse what we've got?

"The main purpose of CB is to provide open channels of communication for use where other methods are either not suitable or available. To make this possible the Government has, in its infinite wisdom, allocated a meagre 40 channels. This is a pitifully small amount of airspace considering the numbers expecting to use it and is a situation worsened by the confined physical area available within these islands.

"These are facts that in our heart of hearts we all know but a few figures will help to show why two of my personal 'pet hates' do all breakers, including perpetrators, less than a favour. "We all know there are 37 channels available (if you discount 9, 14 and 19) for communication. There are 24 hours in every day and somewhere in the region of 250,000 licenced breakers, which means that there is a total of 53,280 channel minutes to be shared by a quarter of a million. If my sums are right, this means 12 seconds each per day!

"Of course, this is a statistic carefully calculated to deceive, realistic figures are better but not by much. They are made better by the fact that a well-installed legal rig will have a range of about 10 miles or in other words cover an area of 314 square miles. This can be divided into the total area of the UK, which is 93,000 square miles and would seem to indicate that the mere 12 seconds can be multiplied by a factor of 296 which sound very much better.

"Now for the bad news. We also have to consider that 60% of our population lives within 10% of our area. A few more sums are called for. I won't bore you with these but they do show that the 60% who live in the major towns and cities have 6½ minutes per day each and the remaining 40% fare somewhat better with about one hour each available.

"With the many variables, where assumptions have to be made these figures are very approximate but they do show what we really have and why wastage of time and airspace is totally irresponsible and very much to the detriment of all CB users.

"What the figures do show gives weight to my argument that the very lack of restrictions placed upon us obscures the need for self discipline on channel. I have said that I have two pet hates, the first being the 'One four for a copy brigade'. You've all heard them, 'One four for a copy' - 'Pick a window' - 'See you there' - SUDDEN CHANGE OF CHANNEL WITHOUT FIRST LISTENING TO SEE IF IT'S CLEAR - 'Copy, copy, crank your

handle' - 'Give us a nine' - (BECAUSE THEY DIDN'T LISTEN ON THE NEW CHANNEL FIRST, THEY GET WALKED OVER BY THE INCUMBENT TO THE ANNOYANCE OF BOTH PARTIES) - 'Roger, what rig are you pushing?' - 'What twig have you got?' - 'What's your 20?' - 'How many candles are you burning?' - USUALLY FOLLOWED BY A COMPLETE DRYING UP OF THE COPY.

"What a waste of airspace and time! It's rather like a person lifting their phone, dialling the first number they think of and expecting a meaningful conversation. The second of my 'hates' are all members of the 'DX with boots on mob'. These are a particular menace, quite apart from acting illegally. They, with complete disregard for others, strive to increase their range. This they might do but only by occupying more than their fair share of that short commodity, airspace. Worse than this, they prevent other breakers from getting their share and frequently cause severe interference to other services. If they really want to experiment they should take up 'ham' radio, if they can pass the test! Definitely CB was not intended for them.

"You will notice I have not said anything of 'wallies' or 'bucket mouths', they are in a different league but I think I have said enough to show that if one of the above caps fit, you are not as good a breaker as you may think.

"We all know we haven't got all we want in terms of CB airspace but for certain such irresponsible behaviour detracts from any efforts to gain more. It could even lead to restrictions being placed upon the use of the band which would be a disaster after all the genuine efforts that have been made in the past to get what we have."

Broken Spring

The above letter would normally be printed in Readers Write but, after reading it, it set me thinking about the CB system that, for better or worse, we've got. Really, it's a bit of a mess. Two systems running in tandem, legal requirements broken left, right and centre, frequent misuse of channels and a public increasingly convinced they are being ripped off by unscrupulous manufacturers and retailers.

Broken Spring makes a good point in saying "the very lack of restrictions placed upon us obscures the need for self discipline on channel". The vast majority have CB for fun. Although there are many social uses for CB, it's inescapable that enjoyment is the main reason for its use and as such it shouldn't have so many restrictions that the fun element is lost. (Heaven knows there are enough restrictions

in this society as it is). But because there are few operating restrictions it places the onus for good and sensible behaviour on the breaker him/herself. This shows misplaced trust in the human race. For every person willing to be reasonable there is at least another one champing at the bit to be unreasonable.

This ties up with my theory that the Government, in not making any commonsense regulations for CB, is intending it to fail. It's up to CB'ers themselves to make the system work, especially as CB is a non-protected radio service, i.e., the authorities will not be taking steps to investigate interference to CB or any associated problems.

This leads on to the next point. As a magazine, we have always supported the monitoring organisations, feeling that they offer a genuine service and help stop CB degenerating into a toy. However, there have been disquieting rumours filtering through to us that some units are less than qualified or equipped. In supporting the monitoring services, we have always given them plenty of editorial space but in the near future we will be presenting the opposite view from a group who are strongly opposed to the current emergency monitors and the use of channel 9. It isn't our intention to 'knock' for the sake of it but as emergencies can literally be a matter of life or death, we are concerned that the system might not be operating as well as it could.

Are you sitting there surrounded by bits of broken rig? Are you desperately searching for a handbook for an unusual rig? Do you need to know how to wire up a power mike for your set? Would you like to speak to someone else who had to set up an antenna on a balcony in a block of flat? Worry no more! Write to CB Service, a new CB Radio Magazine feature. CB Service will be a free listing for short letters and enquiries. We will publish the problem and the writer's name and address for other breakers to reply and help. If it's very basic or obvious, we might answer it ourselves but on the whole it's intended for breakers to help other breakers. Please keep your enquiries short and send them to CB Service, CB Radio Magazine, Tudor Works, Beaconsfield Road, Hayes, Middx. UB4 0FL. As this is a new venture, please don't expect to see your letter immediately and please, please, please remember that it's no good writing in on 15 August and expecting to read the letter in the September issue!

SS

# Come in number one

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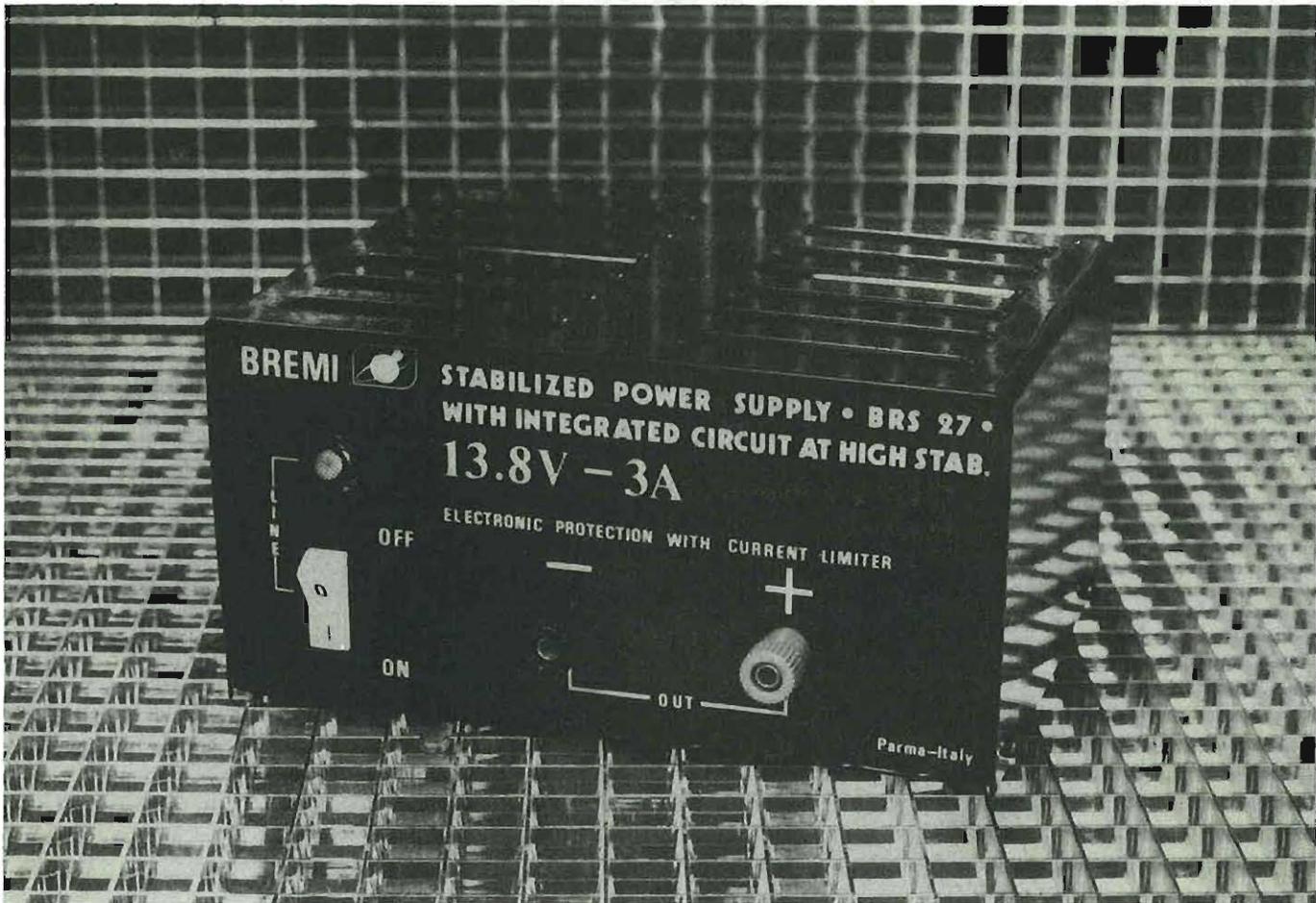
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# OVER THE COUNTER

A guide to 'SAFE' power supplies



With all the publicity of late being given to the fact that there are some potentially dangerous CB power supplies on the British market, we thought it was about time we showed you some of the power supplies that can be used without risking life and limb. We are not saying that these are the only power supplies that exceed British safety regulations, merely a small proportion of the many available.

As a guide to which units are safe and which are not, the following points should be considered.

1. The mains lead should be a three-core colour-coded pvc flex and should be terminated with a three-pin safety plug.

2. If the casing is of metal construction, it must be earthed to prevent it becoming live in the event of impact damage.

3. The transformer must be rated at 240V, not 220V, as this will lead to overheating and/or possible fire.

4. The power output transistor must be mounted on a sufficiently-sized heat sink in order to dissipate heat efficiently.

5. The casing must be sufficiently ventilated to ensure cool running.

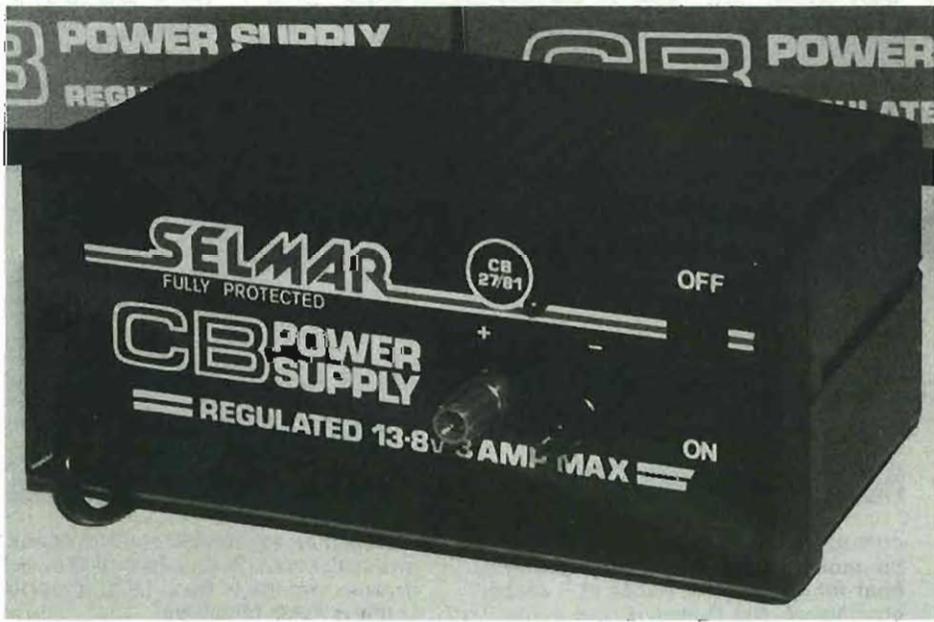
## Bremi BRS 27

The Breml BRS 27 is manufactured in Italy to meet British safety standards. It is rated at 13.8V, 3 amps and is fully stabilized and limited. The metal case is properly earthed using the correct three-core cable and the top of the case is louvred to prevent overheating. Its retail price is £12.00 and it is available at most CB dealers.



**PG Electronics**

PG Electronics, of Italy, market two stabilized power supplies. The AS14.4 is rated at 4 amps and has an output voltage of 13.8V DC. The output terminals are situated on the front panel for convenience as is the main on/off switch. The much larger PS1512 has variable voltage between 10 and 15 volts and has large moving coil type volt and amp meters. Power capacity is rated at 12 amps continuous and LED indicators are provided to show input and output power. Very large heat sinks are situated at the rear of the unit to prevent overheating when handling high power levels. A thermal cut out is also provided to protect against any possible overheating.



**Selmar CB power supply**

Most motorists will recognize this trade name from Selmar's well-known range of car battery chargers. The unit is specifically designed for the UK market and has the following features:

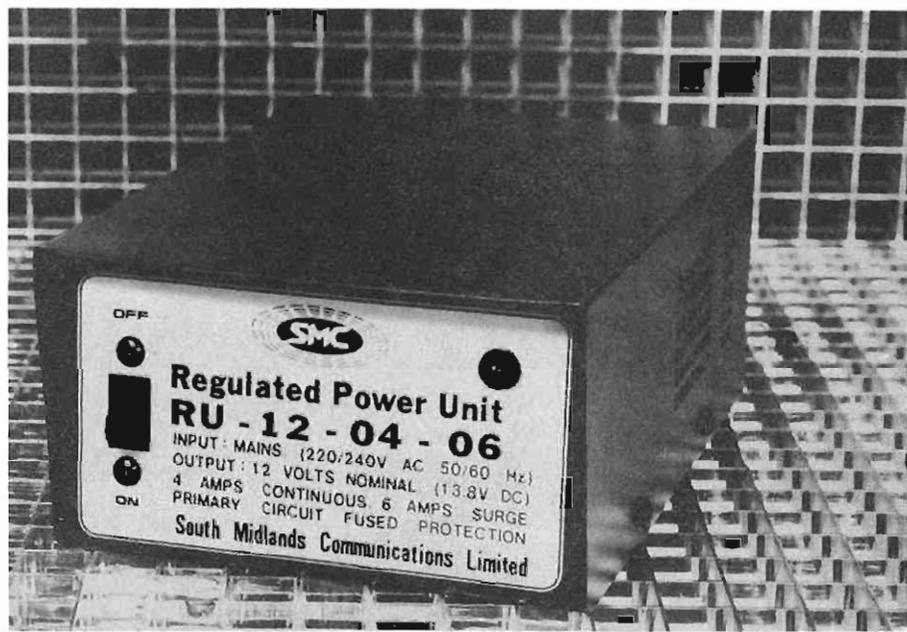
- 13.8V 3-amp rating.
- Double insulation for optimum safety.
- Noise filtration and suppression fitted to guard against outside interference.
- Carefully stabilized to ensure smooth output.

## SMC 12-04-06

South Midlands Communications Ltd., of Southampton, market a regulated power supply with the following features:

- 4 amps continuous load capacity (6 amp surge).
- 220/240V AC input.
- Primary circuit fused protection.
- 13.8V DC output.

The unit retails at £15.00 and is available from most retailers and SMC branches at Grimsby, Stoke-on-Trent, Leeds, Chesterfield and Woodhall Spa. One point worth mentioning with this unit is that it must be isolated from the mains before the primary circuit fuse is inspected.



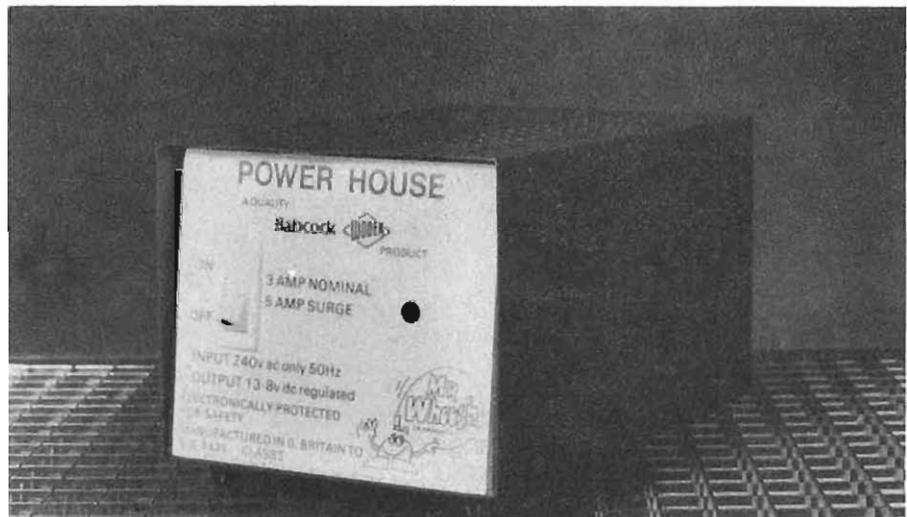
## SHF Electronics

Soon to be launched in the UK is a range of power supplies made in Italy by SHF Electronics. The power supply case has been constructed from a toughened non-conductive material by injection moulding. Five models are available with ratings that range from 2 amps to 12 amps. All models are fully stabilized and protected and available in several colours.

The retail prices are: Slim 200 2-4 amp £11.90; Slim 250 2½-4 amp £12.50; Slim 350 3½-4 amp £13.75; Micro 5 5-7 amp £22.33; Micro 12 12 amp £49.95.

## Mr. Whoosh Power House

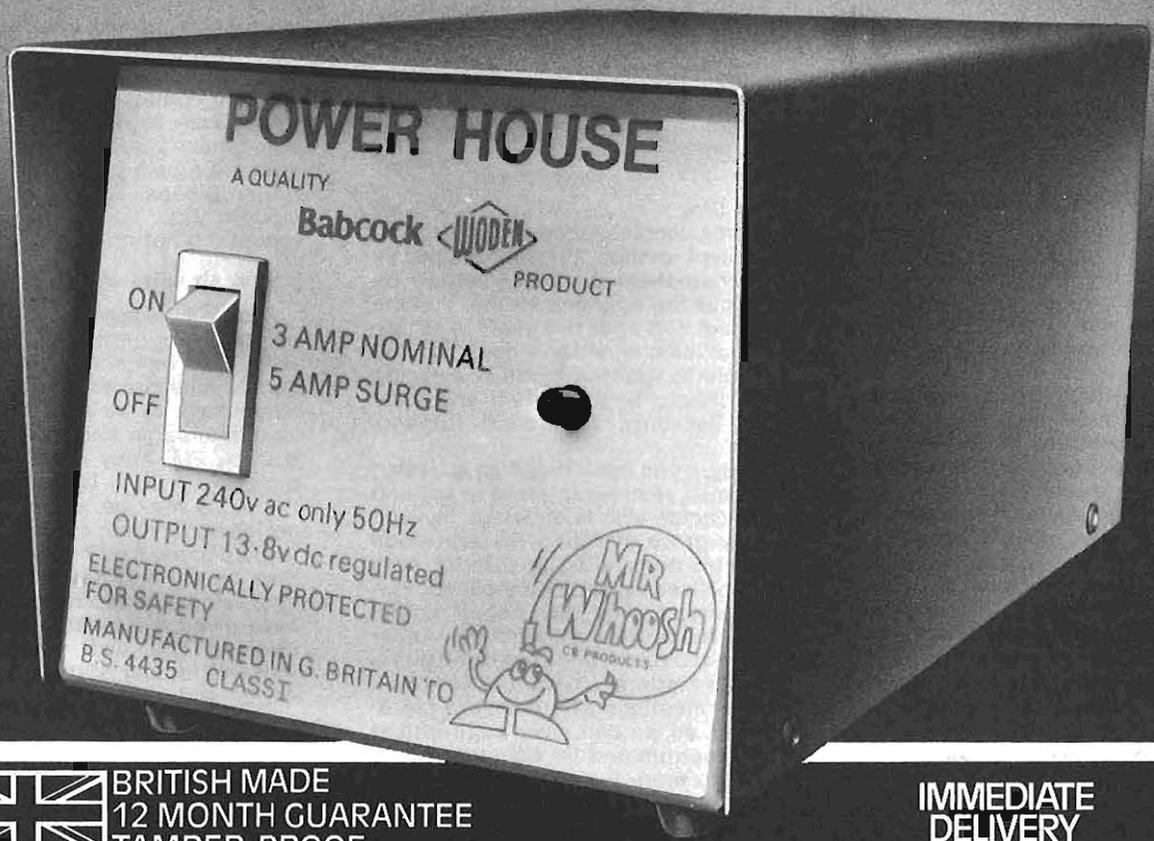
Exclusive to LCL Imports, the Power House power supply is British made by a reputable manufacturer. The unit is fully protected and regulated and conforms to BS 4435. High-quality



components have been used in its manufacture and the unit is guaranteed for 12 months. Rated at 3 amps continuous, the Power House is tam-

per proofed to prevent electric shock. The retail price is £13.95 and the unit is only available from LCL Imports, Dudley, West Midlands.

# Get the best in power



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Guaranteed for 12 months, the Power House is tamper-proof too. And is available in two power ranges: 3-5 amps and 5-7 amps, making it the first choice for any CB set.

LCL also have an extensive range of compatible equipment throughout the full range of CB.

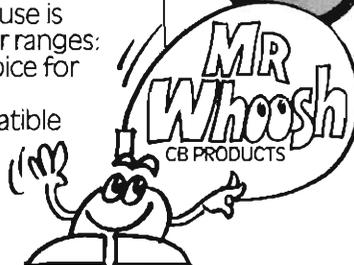
For all your needs contact your LCL stockist where service and satisfaction is guaranteed.



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# Readers Write

Dear Sirs,

Firstly, as a professional electrical engineer, let me congratulate you on a well produced and informative publication. I am particularly impressed by your attempts at an objective assessment of the various transceivers on the market.

However, I have one or two observations to make. There appear to be several magazines publishing performance tests on rigs and it is definitely confusing when one tries to compare results. It is evident from the three publications I have studied that test methods and presentation of results vary with a consequent variation in the conclusions drawn. Also, of course, one may have simple variations in performance within a particular batch of rigs. It would be interesting to know how wide this variation is if it exists.

Rig tests, of course, are very valuable but they only tell half the story and a series of 'twig tests' ought to be carried out to sort out the various merits of the multitude of different twigs being advertised. The K40 is a case in point. How can we prove they are as good as they say they are without carrying out a series of controlled field strength tests.

I am very well aware that there are a vast number of variations possible when one takes into account size of vehicle, base station or mobile, position of antenna on car, position of antenna at base, SWR, etc. But a number of straightforward tests could be carried out to sort out the differences (if any) and to assess the relative importance of mounting features, etc.

Yours faithfully,

D. J. Hamilton  
Pinner, Middx.

*Rig tests are a bone of contention in themselves! Obviously we can't test all the parameters as it would be unnecessary and prohibitively expensive but we test the ones we think are most important to the user. There are bound to be variations in results from magazine to magazine as testing conditions and, as you point out, batches differ. We always try to test production sets, not pre-production or prototype sets.*

*Antennas are extremely difficult to test objectively because of the factors you mention but, as you can see, this month we feature an antenna review by F. C. Judd. His approach is the fairest we have met.*

Dear CPD,

Reading your story about 46MHz certainly gave me, if no one else, a sensation of 'I've been there!'

For it is now past history that NATCOLCIBAR was initially very strongly recommending use of channel 1 of band 1 for CB after early close down of the very few 405-line TV transmitters using that channel for the sake of the few tens or hundreds of viewers still using 405-only, London-only, sets.

We predicted then, as you report now, that frequencies in this region would be excellent for true CB use -

but Government delay allowed the issue to be submerged under the louder demand for 27MHz which now must remain the basic CB band because of its worldwide universality. That band is now more than uncomfortably cluttered and 46MHz would, indeed, be fine for additional channels unaffected by skip.

Yours sincerely,

Ian Leslie  
Chairman, NATCOLCIBAR  
Vice-President,  
European CB Federation

Dear Sirs,

Firstly, congratulations on yet another excellent edition of your magazine. I've tried them all and I settled on yours as the only one for me. You are the best and after two years, I, as one of your most loyal fans, have decided to write to you and break in between Sam (Radio England 404) and Andy from Salisbury, June 1982 Readers Write.

Andy, if you think that Sam is behind the times, read what I have to say and then decide who is obsolete. I will go to my grave shouting for any mode and also demanding 26-28MHz, both channelised and unchannelised. Furthermore, I want NO aerial restrictions, NO power restrictions, in other words, NO restrictions at all and this is only for starters. We want band allocation at meetings where we are represented, so we can have a fair bite at the spectrum and let US organise it.

I have more than 140 channels, all modes, no restrictions on antenna and, above all, no licence fee, yet Andy reckons that 40 channels of open channel, which I prefer to call it, is enough. In a pig's eye it is.

As for FM being technically superior, who says so? Admittedly it is technically simpler but superior is not the word to use when talking about 27MHz FM. I would also add that even when used with an illegal antenna the performance leaves a lot to be desired. I will put my 1/2 watt of AM against 4 watts of FM at any time, anywhere. I would now like to comment on Andy's points:

## 1. AM is dead

I think that Andy's rig is dead or Andy is deaf, after listening to so much noise on the FM band. If my rig made that much noise on AM, I would find out what was wrong with it. As for SSB being dead, I suggest that you try it. I am sure that any illegal wally in your area will let you try his/her rig. Remember, big rigs are also beautiful. Who says that the European standard will be FM? Switch an AM rig on, Andy and you will find that Europe is using 200 channels AM, FM, SSB, TV, CW and RTTY as its own unofficial, as yet standard, on 26-28MHz.

## 2. AM causes more interference

This is rubbish. Operators cause interference and then mostly because affected equipment is slung together to meet a price and not a standard. You may say "How do I know?". Well, I am a technician in the TV trade. I fix them, I have to cure interference and I can say that 90% of the interference can be cured at the site of the affected equipment and very little has to be done to rigs being used properly. I must agree with Andy that burners are a pain in the earhole. So are Roger Bleeps. So are power mikes, modern rigs do not need them, I repeat, do not need them.

## 3. Only six miles on AM

Andy, I suggest plugging the antenna in or getting out of the mine-shaft. Congratulations are due on getting 20-mile copies on FM, however. I either have to be on a hilltop or put headphones on and call for DX to do that on FM. Andy must know something that I don't to get 20 miles on FM. Andy may be interested to read my log book which contains some fantastic copies, e.g., 2 watts AM to New York on my first day, over two years ago, using a beam. The mobile copies have given the most satisfaction; 50 miles on 1/10 watt, 800 miles on 1/2 watt and regular Stateside on 5 watts. All AM and all mobile.

## 4. Paying for filters

Filtering should be done by TV and audio equipment manufacturers. They must not continue to sling their equipment together but should design it properly. This year's TV's for the UK market still have no filtering against anything, be it CB or Flunke breaking wind in a nearby brown bottle shop. Yes, you did hear me correctly, no filtering. Unbelievable, isn't it? I had the good fortune last year to spend three weeks in Houston, Texas. I got hold of an AM CB and operated it on top of the TV and the stereo and got no interference at all. If America has cracked TVI then so can the UK. Before anyone comments, US TV and videos cost two-thirds of what ours do and wages are higher. The other services that are on 27MHz should not have been there in the first place. I wonder if the turkey that put them there in the first place is a full shilling.

## 5. The superior system

Lucky Andy does not have a superior system but it looks as though he has the definite advantage of superior operations, of which there are not enough on AM, though SSB has the best operators of all. Any system, be it FM, AM or anything, has its fair share of Idiots, as I am sure that licensed radio hams would agree with

*continued . . .*



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**Lucky Numbers**



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# marginplan

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Harvard Good Buddy.....	£56.00	<b>ANTENNAS</b>	
Harvard 400M.....	£69.00	Bullwhip.....	£15.95
DNT M 40 FM.....	£59.95	K40.....	£27.50
Midland 2001.....	£69.95	K40 mag base.....	£10.50
Midland 3001.....	£82.50	1/2 Breed.....	£11.50
Midland 4001.....	£85.00	Dial-A-Match 48In.....	£14.95
Grandstand Hawk.....	£75.00	Mag mount for 1/2 Breed/	
Grandstand Bluebird.....	£83.50	Dial-A-Match.....	£9.95
Grandstand Gemini.....	£120.00	Boot mount for 1/2 Breed/	
Rotel 230.....	£79.00	Dial-A-Match.....	£8.80
Rotel 240.....	£89.95	Silverstar home base antenna	
Atron (similar to Gemini).....	£79.95	(Fully legal, a super twig).....	£17.95
<b>HOME BASE UNITS</b>		Knuckleduster home base.....	£19.95
Harvard Base Station.....	£125.00	GPS 27.....	£26.85
Sirtel 999 Base Station.....	£123.00	Hygain 533.....	£52.00
Grandstand Base Station		Wot Pole.....	£10.95
(The Ultimate).....	£229.95	DX 40 Dial-A-Match	
DNT B 40.....	£100.00	comp mag base.....	£16.00
Atron.....		Big Jim.....	£42.00
(Similar to Grandstand).....	£199.00	Skye Rider.....	£9.95

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Echo Mike.....	£27.00	Maxcom Cordless	
3-5 amp power pack		Telephone.....	£89.00
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(converted mobile to home base).....	£13.95	<b>FULL RANGE OF SHARP, NATIONAL PANASONIC &amp; JVC VIDEO AVAILABLE.</b>	
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(boosts your outgoing signal).....	£22.95	If not completely satisfied, return to us in original condition for exchange or refund!	
50 watt amplifier		All goods are despatched to you, FULLY INSURED, by the fastest available means.	
(boosts your outgoing signal).....	£54.00		
80 watt amplifier.....	£89.00		
160 watt amplifier.....	£91.00		
SWR meters, from.....	£4.95		
Patch leads.....	£1.00		
Ham 4200 base mike.....	£29.00		
Sirtel 601A base mike.....	£22.50		
Sirtel 610A base mike.....	£28.00		
Vega black & white portable			

### HAND-HELD FM TRANSCIEVERS

Harvard 2 chnl (14/30).....	£19.50
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# Readers Write

me. They have had them for years. Andy mentions attenuation. This is an ally and a blessing. Attenuated AM is as good in my area as full-power FM at most times, although I sympathise with Andy on the rubbish that passes as a legal antenna. As for catching up with the times, does Andy's legal system have facilities for the following: 1. Duplex TX/RX? 2. TV (not slow scan rubbish but fast scan, honest to goodness video)? 3. Repeater systems? 4. Transversion to VHF?

As a direct question to Andy: Q. Why no burners on SSB on FCC A channels? A. They are used as distress channels on the Continent, just like channel 9. Q. How much is a CB licence in Norway and how many types of licences are there in Norway? A. There are three types of licence. Basic licence costs £45 for nine channels out of 23 determined by the licence conditions.

Around here, FM is dying of stagnation but AM is alive and kicking hard. I will cut you loose with a challenge to Andy. I will use ½ watt of AM or SSB and run rings around you. My QSL will have foreign stamps on it, Andy's will not. I will cream him, no sweat.

Yours sincerely,

K. Bradford

Ellesmere Port, South Wirral

Dear Sir,

I would like to reply to the letter from Friendly Bear on the matter of THAMES Monitoring and the uniforms worn by the Monitors.

Firstly, the uniform. This uniform was chosen and designed by CCI (Central Control). It was sent away to the Home Office for approval and was passed, so I am afraid, good buddy, there is nothing you can do about it. The uniform, badges, etc. are paid for by the Monitors and no profit is made on any of these items. The service itself is given freely by breakers who care.

With regards to calling for REACT (UK) instead of THAMES then that is for you to choose but I am sure if your life depended on it, you would not care which one turned up to assist you.

If, however, you do need help one day and you call out and it happens to be me who turns up, I can assure you I will be in my uniform so you will have to try and nick me as I can assure you I do not try to impersonate the boys in blue because I have a lot of friends who do your job and I would like to assure you now that I would not like your job for all the tea in China.

If however, you wish to help without getting too involved, contact your nearest THAMES or REACT (UK) controller and help us get rid of the wallies who plague channel 9 or the bucket mouths who hurl abuse at the lady breakers.

Yours,

LB 3505  
SW London

Dear Sir,

I would like to ask if you would be kind enough to publish this letter of thanks to all of those breakers who gave their support to the National Foster Care Association's CB Care Convoy.

Thank you does not seem to be sufficient in expressing the gratitude that the National Foster Care Association wishes to make known to the many thousands of breakers who supported our very special project, the CB Care Convoy.

The project was the most ambitious attempt we at National Foster Care Association have ever undertaken. The idea was conceived in December 1981 but did not really get under way until late February 1982. The basic aim was to secure the support of British breakers in an effort to increase public awareness of the need for more foster parents for the more than 110,000 children in care in the UK and to ask if those same breakers would help us reach our target of £100,000.

During National Foster Care Week, 15-22 May, 12 specially-decorated cars, supplied by Ford dealers, toured the country on different routes. The volunteer teams of drivers, all breakers, visited communities from Aberdeen to Penzance. During the project, they met with CB clubs, foster parents, civic dignitaries and the press. Their message was simply that there is a great need for more families willing to accept a child into their home. They also called for breakers to donate 50p or £1 to NFCA in order that it may continue its work on behalf of children in care.

We know that the project has started to show signs of success because we are now getting reports from as far afield as Bodmin and Newcastle-upon-Tyne that there have been many enquiries by families who have decided that they would like to foster a child.

The project has initiated response from many clubs who wish to continue the work started. Already clubs in the Cumbria, Northumberland, Yorkshire and Lancashire areas are making plans for next year.

Quite apart from the tremendous work done on our behalf, it was often stated that the CB Care Convoy has brought many different CB clubs together. The overall response from all who took part was "it was fantastic", "we're ready to leave tomorrow and start again".

At this time, I would like to thank again all those breakers who gave their support. To those who would like to lend their support - individuals or clubs - please send your donation to: CB Care Convoy, National Foster Care Association, Francis House, Francis Street, London SW1P 1DE.

Tom Dykes  
Special Appeal Project

Dear Sir,

Referring to the article The Sun, News Review, CB Radio Magazine June 1982.

How can anybody be so irresponsible as this so-called CB'er? She gets caught by British Telecom transmitting illegally, is fined and immediately goes back on the air boasting about being caught and says she will carry on transmitting until they confiscate her rig. These sort of people give CB operators a bad name.

For a long time there was a cry for the Government to bring in legal CB. This has been done, albeit FM not AM. However, we got our CB.

I have no pity for people who get caught transmitting on AM or SSB. They spoil the communication between licenced CB operators for whom they apparently have no respect because all AM breakers in the Pontypool district seem to do is to demonstrate their expertise in the use of abusive and obscene language.

OK, I was an AM breaker pre-November 1981 but we were given legal CB and I went out and bought a licence and a legal set - so why can't others?

I hope that if anyone gets caught transmitting illegally they are fined very heavily and their equipment confiscated.

Just remember, CB'ers up and down the country fought for a legal CB frequency. We got it and now the intelligent breakers use it. So, breakers on AM, join the FM group, discard your illegal AM sets and communicate without fear of causing a nuisance to others and without fear of a heavy fine and confiscation.

Worcester Sauce(Trevor)  
Pontypool, Gwent

Dear Sir,

After reading the letter from Pirate in your June issue, I feel I must put pen to paper.

1. AM is *not dead* and as for no frequency being named, I suggest Pirate writes to Timothy Raison as I have and carefully reads Mr. Raison's reply which does state frequencies starting at 26.965MHz.

2. IF used correctly FM does cause less interference. However, not many legal breakers use it correctly, what with large dipoles and Sigma IV's and burners, etc.

3. Pirate obviously has only used a straight 40 rig, on 'high band' AM it was also possible to copy long distances, e.g., 20 miles.

So, I suggest that Pirate should engage in a little EYBBOYM himself.

Yours, a breaker of two years standing and founder of the Uniform Bravo DX Group.

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Uttoxeter, Staffs.

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## Discover the difference

# Rig Test

# BARRACUDA

## Barracuda HB 940

The Barracuda HB 940 is made in Japan for Halfords and it is only available from their own stores. Often seen being used by a butch guy in a yellow vest by the name of Big Hal, the Barracuda HB 940 is only one of many sets available under this brand name.

### GUARANTEE to readers and manufacturers

Any information printed as a review bearing this guarantee will have been carefully obtained and based on facts. The equipment tested will have been inspected to ensure it has not been tampered with or modified to improve its performance in any way. Any faults and/or modifications will be noted and depending on the severity reported on. Equipment for testing that was found to be seriously faulty will not be reported on and the manufacturer will be asked to supply a second item for testing.

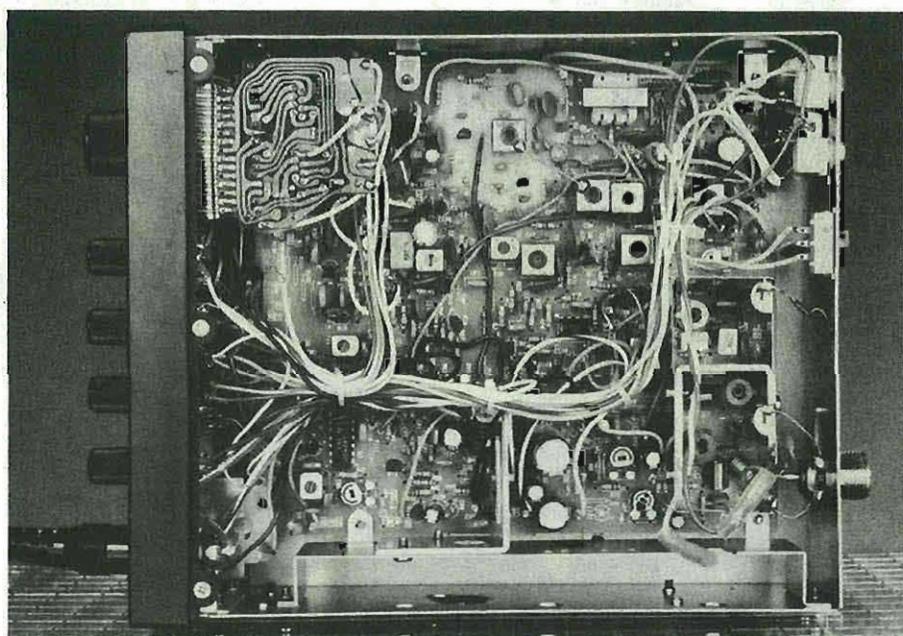
In all instances care will be taken to avoid misprints or errors. However, if a misprint does ever slip by, the following issue will have an update and the correct information.

## Microphone

The microphone supplied with the Barracuda is of a nice, oblong shape and very comfortable to hold. For connection to the rig it uses a five-pin DIN plug instead of the better screw-ring, lockable, four-pin plug. It was found that the plug often came adrift while driving around.

## Construction

The construction is of the standard two-piece (top and bottom) cover like most rigs. It is finished in a hard-wearing, black crackle stove enamel finish and was found to have a high resistance to scratching and chipping. The front panel is made of a moulded black plastic with white silk-screen lettering. The controls are made of black moulded plastic but were found to be rather close together if the operator has large fingers. Also on the front panel is the signal strength-RF power meter which is illuminated but was found to be difficult to read while driving at night. The other controls on the front panel consist of a mic gain for decreasing the sensitivity of the microphone amplifier, RF gain control for reducing the sensitivity of the receiver, which will reduce desense and skip, an on-off volume control, squelch control, TX (orange) lamp, RX (green) lamp and standard seven-segment channel display. Also on the front panel are a row of switches which function as follows: a three-position (high-mid-low) tone control switch for receive audio, a two-position CB PA switch, a two-position switch for dimming the display, a two-position priority switch and a three-position



delta tune switch (clarifier).

Unfortunately, the only switch not found on the front panel is the 10dB attenuator switch which was found on the back of the set.

## Transmitter test

As usual, the standard equipment used for the transmitter test was:

Racal 9081 and 9082 signal generators

Marconi TF 42F distortion meter  
Marconi TF 340 audio power meter  
Racal 9916 frequency meter  
Racal 9101 and Bird 43 power meters

Racal 9009 modulation meter  
Levell TG 150D audio generator  
Solartron AS 1412 power supply.

## Power output

This test is to check that the power output of the rig conforms to Home Office specification MPT 1320 and will also give the user of the set sufficient output power for normal use, over reasonable change in power supply volts in both the low and high power settings.

Power Output and Attenuation			
Attenuation	10.8v	13.2v	14.5v
High	1.9W	3.2W	3.9W
Low	0.09W	0.16W	0.35W

The low and high power results compare favourably with most rigs tested. The only criticism is that the low power could be higher but the difference between the result of .35 watts and the allowed .4 watts would probably not be very noticeable.

## Temperature stability

This test is done to check that the rig stays on the correct frequency for a reasonable change in environment temperature (48°F-68°F).

Temp.	Temperature stability	
	CH1	CH40
48°F	27.60127	27.99128
68°F	27.60100	27.99100
Should be	27.60125	27.99125

It can be seen from the results of this test that the set drifted very little (250 c/s maximum) which is a good result.

## Modulation

These checks are done to test the ability of the set's modulation circuit to give good modulation over a range of different input levels and frequency.

Input Level	Modulation Input Frequency		
	500KHz	11.21KHz	2300KHz
0.5mV	0.49KHz	1.28KHz	0.55KHz
1.0mV	0.70KHz	1.32KHz	0.56KHz
2.0mV	0.73KHz	1.35KHz	0.57KHz
50mV	0.75KHz	1.40KHz	0.58KHz
200mV	0.85KHz	1.50KHz	0.60KHz



From the results in the table, we can see the frequency response is good but the modulation level at maximum (200 m/v) is 30% below the allowed level thus resulting in low modulation.

## Receiver test

### Audio output

To do this test, the loudspeaker is replaced by a Marconi TF 340 audio power meter with a Marconi 42F audio distortion meter.

#### Measured Distortion

1.50 watts	2.1% distortion
2.47 watts	70% distortion
3.60 watts (max)	23% distortion

The results of this test are almost the same as the results taken from most of the rigs we have tested.

### Squelch level

The usable range of the squelch was found to be 0.12 microvolts threshold and 19 microvolts fully muted. It was found that in a built-up area, slight difficulty was experienced in cutting out noise from other stations and noise on channel. This problem would probably not occur in less-densely populated areas.

### Receiver sensitivity

This test is done to check the ability of the set to receive weak signals.

#### Sensitivity

10dB quieting	0.16uV
20dB quieting	0.51uV
30dB quieting	1.60uV

The results of the test show that this set is among the more sensitive sets.

### AM rejection

The AM rejection for this set was

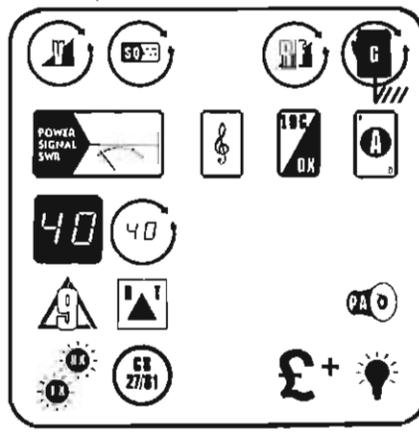
measured at 32dB. This reading is slightly below average but you would not be able to tell any difference without using test equipment.

### Adjacent channel rejection

This checks the set's ability to reject interference from a strong station either one channel higher or lower than the set is tuned to. The result of 246 microvolts for 3dB degradation is an above-average result of rigs tests so far.

## Summary

This is quite a nice set, well up to the standard of most sets in the higher price range. Its construction and packaging are of a good quality. A few items worth considering are the fact that the five-pin mic plug may cause a few problems by coming loose but on the plus side is the fact that this rig is based on the Cybernet chassis, which has been well proven on the CB market.



## Specifications

### General.

Channels: 40, digital PLL synthesised.  
 Frequency range: See page 10.  
 Operating temperature range: -5 degree C to +45 degree C  
 Power source: 10.8 to 15.6 V DC reversible ground (13.2 V nominal)  
 Current drain: (1) Transmit. 1.5 A nominal, (2) Receive. 1.2 A nominal.

### Dimensions:

Width. 181 mm  
 Height. 64 mm  
 Depth. 198 mm

### Transmitter.

Emission: 6F3 (PM)  
 RF power output: 4 W  
 Frequency tolerance: <math>\pm 1.5\text{ kHz}</math>  
 RF power attenuator: > 10 dB (switchable)  
 Frequency response: 500 to 2,500 Hz +4/-12 dB  
 Frequency deviation: >math>\pm 1.5\text{ kHz}</math>  
 @ 1,250 Hz audio  
 Adjacent channel power: < 10 microwatt  
 Spurious emission: (1) < 50 nW within the following frequency bands --  
 80 MHz - 85 MHz  
 87.5 MHz - 118 MHz  
 135 MHz - 136 MHz  
 174 MHz - 230 MHz  
 470 MHz - 862 MHz  
 (2) < 0.25 microwatt at any other frequency.

### Receiver.

Conversion system: Dual conversion superheterodyne  
 IF: 10.7 MHz 1st and 455 kHz 2nd  
 Channel display: Digital 7 segment LED's  
 Audio output power: > 1.5W into 8 ohm  
 Sensitivity: < 1 microvolt @ 20 dB NQ  
 Adjacent channel rejection: > 50 dB  
 Spurious emission: < 20 nW  
 Squelch sensitivity: 1 to 10 microvolt

# FREE RADIO

## DIY radio

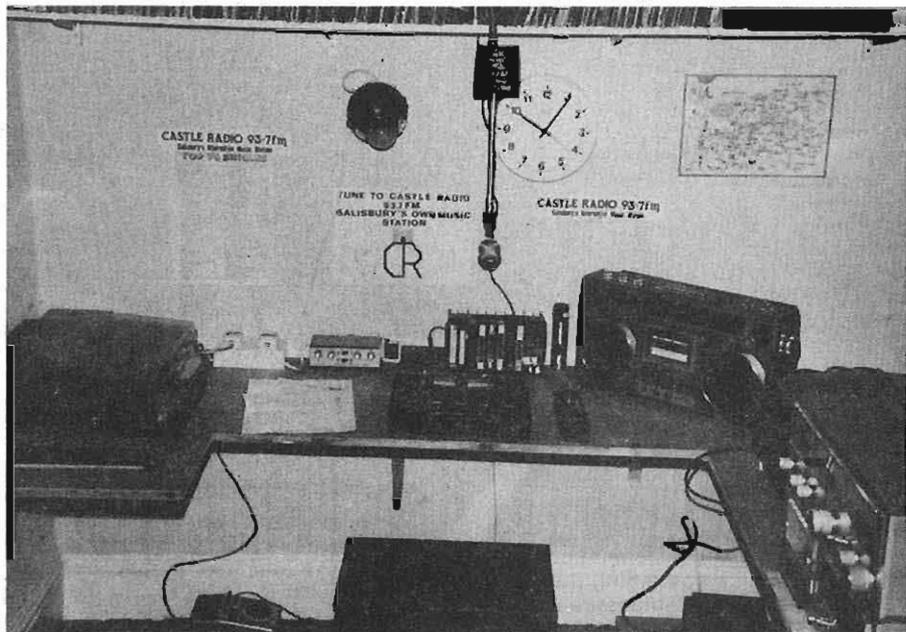
Once again, I have copped out! Not through laziness, although that's usually a good enough reason for me but because others can give a more accurate picture of the free radio scene than an outsider. Last month, Magic Sam gave his personal reasons for getting involved - this month, Andy takes this a stage further and explains the equipment needed and difficulties experienced in actually setting up.

Andy also sent me 'How To Play Pirate Radio' which is reproduced in this article. Although tongue in cheek, many old-time CB'ers will read it with nostalgia as they remember close shaves with the O'Mofis. As a board game, it could sell as well as Monopoly!

SS

How do you do it? What do you need? Where can you get it? To the average person, the setting up of a radio station seems a daunting task. In fact, there is very little to it and anybody wondering how it is done could do worse than follow these guidelines.

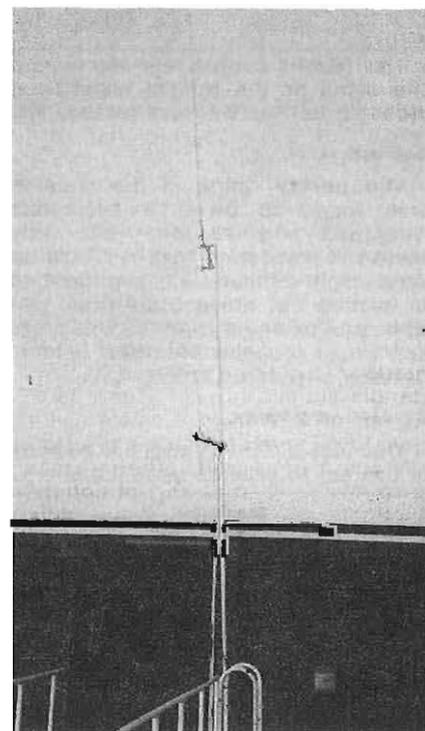
The most important part of a station is, of course, the transmitter. This can be anything from a tiny built-in-five-seconds job that reaches to the end of the road up to a wardrobe-sized two-kilowatt monster lovingly built over a number of months. Some stations - if they are lucky enough to have the know-how - build and maintain their own transmitters, while others buy theirs from one of the specialist 'builders'. Once you have made the momentous decision to start a station, you then have the problem of which frequency to use. Since the mid-70's a large number of new stations have appeared on FM, usually between Radio 2 and Radio 4, because of the advantages that this mode offers: possibility of stereo broadcasts, greater range for the same power, better quality, more compact equipment. There are, of course, some disadvantages: transmitters are more complicated than those used for AM and must be properly tuned up if unwanted signals (known as sprogs) are to be avoided, studio equipment must be fairly good quality to get the best from the signal and the transmission site must be quite high up to cover a larger area, especially if you are running a low power. Medium and short wave stations are still plentiful, especially in and around the Midlands



and almost all, without exception, use valve rigs despite the transistorised technology that has appeared elsewhere in free radio. For the beginner to free radio, medium wave is recommended: the valve transmitters used are easier to tune up, sprogs are less of a problem and rarely appear where they can do some harm and SWR is no problem at all since a valve will run quite happily into anything resembling an aerial without any ill effects. OK, that's the theory but getting hold of the equipment is more difficult. If you are unable to build your own transmitter, you will have to buy it from somebody who can and, in a business where everyone knows everyone else, people tend to regard outsiders with suspicion.

Having obtained the transmitter, the next stage is to construct a studio. A passable broadcast studio can be built for under £150, although most stations spend a bit more than this for obvious reasons! The heart of the studio is the mixer, usually a commercial disco mixer bought from a disco supplier or one of the electronics shops that sell such equipment. A good microphone is a must if you want your voice to be on a par with the music you play and you can expect to fork out about £15 to £30 for a quality one. Apart from talking, you find that people tend to listen to a station for its

Top: A valve transmitter. Middle: Castle Radio's studio set-up and Below: Their transmitting aerial.



music and for this you use a couple of record decks and maybe a cassette deck for tapes/jingles/something to liven up the show. As far as record decks go, they should start fairly quickly since few DJ's want to have to wait an hour or two while the turntable gets up steam! The most popular decks are the BSR series and the Garrard SP25 series (the latter not made anymore) and if you don't want to spend £30 on a deck and haven't a hi-fi to cannibalise then a look around jumble sales and second-hand shops is recommended since you can usually pick up a good deck quite cheaply, the only extra probably being a new cartridge. If you are taking the safer option of broadcasting taped programmes instead of plugging the mixer straight into the rig then you require a tape recorder. This may be an ordinary cassette deck or reel-to-reel depending on how keen you are or how much you can afford and, again, the hi-fi comes in useful.

Once you have sorted out the technical details and are ready to start, you have the problem of what to broadcast. Most DJ's tend to stick to the kind of music that they know best and getting people with different tastes can lead to a varied and creative format. As it is, most of the DJ's on your average pirate do it as a bit of an ego trip. You have to tell the average person that what he is about to say will be heard by umpteen-thousand listeners and he will usually clam up and go weak at the knees. Many, however, once they have recovered from the first few broadcasts, lose the ego side of it and just feel an immense satisfaction at doing something that they regard as bringing pleasure to so many people. Remember to think first before going on. There is nothing worse than a 16-year-old schoolboy ego tripper who sounds like one too.

So you've got a transmitter, built a studio and recorded a programme. The final step is to get a transmission site and broadcast. For FM this site may well be a convenient tower block, hill or house. Medium and short wave, needing larger aerials, often use field sites. You arrive at the location, erect the aerial, check the SWR (a bad SWR can detune an FM rig) and plug everything in. About 10 minutes before the start of the broadcast the rig is switched on to give it time to warm up and allow any problems to come to light. Finally, the tape is started and you are on the air!

Well, that is how you start a radio station. Anybody interested in further details should contact Free The Airwaves at 2 Warwick Crescent, London, W2. There are times when I wonder why I - and many others - do not stop and give some sort of coherent thought about what we are doing, since from an outsider's point of view the whole scene must look absolutely crazy but then you have to be mad to do it in the first place! Free The Airwaves must point out that it is illegal to operate a radio transmitter without a licence and that it is our every intention to encourage such practises!



Radio Krypton's studio set-up. Krypton transmit on short wave and use a wire antenna erected on their field site.

## How to play Pirate Radio

The new improved Pirate Radio stands little chance against such established games as Monopoly and Cluedo but for those of you mad enough to get hooked on it, it provides a considerable source of enjoyment and other stuff of that sort.

The revised rules of the game are very simple (they have to be). To start the game, the player must equip himself with some essential equipment listed below. Having done so, he must then find a suitable place - known as a 'Site' from where to begin his side of the game, the aim of which is to cause as many as possible of the second group of players - known as Listeners - to enjoy his side using a piece of equipment known as a Radio.

Once the game has started, it is the job of the third group of players - known as GPO or other expletives - to try and stop it. To do this, they employ a considerable range of equipment, usually painted yellow and sometimes call in another group known as The Law. Having established the location of the first player's Site, they employ a technique known as a Raid where the object is to catch the first player and his equipment and hence eliminate the second group of Listeners.

In an attempt at preventing this from happening, the first player chooses a Site with a View so that he can see the third group coming, at which point he must Scarper or run away so as not to be caught by them. Usually this means the loss of some of the equipment, regarded as a temporary setback. However, capture of the first group by the third group results in the player receiving penalty points causing undue hardship to himself and the second group of Listeners who then cease to exist until he starts again. More penalty points are given for subsequent captures.

The game ends when a player has been given a considerable number of penalties or when Raids by the third group mean that he must give up playing. Non-participation by the second group may also influence this decision.

### Equipment supplied

- First group: Transmitter, Aerial, Tape Recorder, Running Shoes.
- Second group: Radio, Writing Material.
- Third Group: Detector Vans (yellow with budgie motif), Search Warrants, The Law, considerable Manpower.

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# ALFRA

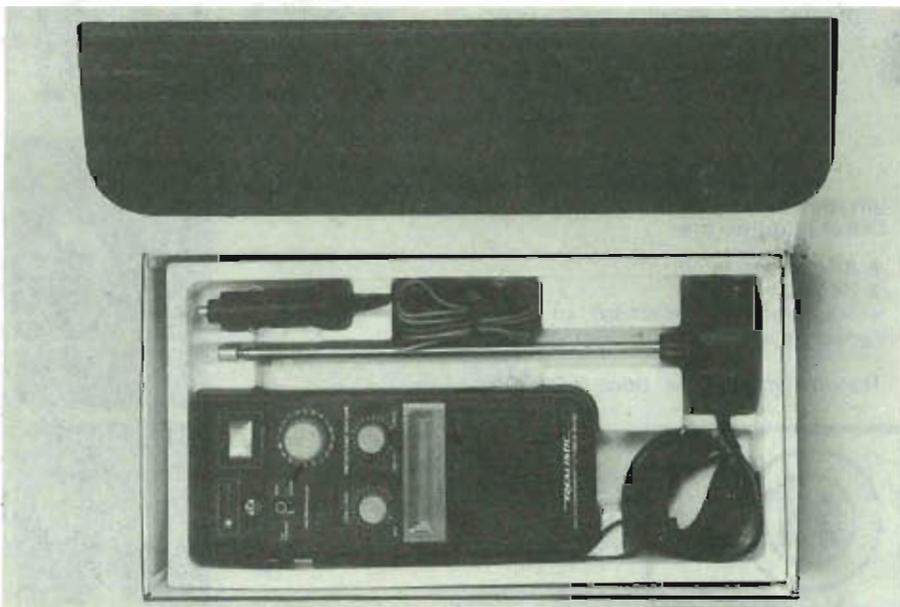


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Ever broken down at midnight out in the wilds and needed more positive help than a nearly-empty tool box and an out-of-date membership to the AA? Hopefully there's no problem if you have CB but not everyone wants CB in the usual sense of having one installed in a car. However, whether or not someone sees themselves as a 'CB type' they could find themselves in need of an emergency communication system. Recently appearing on the market is a range of emergency or SOS units from several of the major manufacturers designed to be put under a car seat, in a boot or swapped from car to car. Ideal as an admittedly expensive present for the motorist, they could also be used by the more active breaker for camping, boating, walking and climbing.



### Realistic TRC 1004

The Realistic Emergency Mobile Unit packs neatly into a carrying case which will fit under a car seat as well as in the boot. Similar in appearance to some of the other units available, it also operates from a 12V DC power supply and can be installed in a car via a cigarette lighter socket. Other features are:

- ★ 40 channels
- ★ Mag mount telescopic antenna
- ★ Squelch
- ★ Built-in automatic modulation control
- ★ Built-in automatic noise-limiting circuit

- ★ External antenna jack
- ★ RF output power switch

and, of course, the TRC 1004 has the usual channel select, channel display, on/off volume and an 'on air' light. Recommended retail price £79.95 and available from Tandy branches throughout the country.

# HELP! HEL



## Harvard SOS

This case is clearly marked Help! to leave the user in no doubt as to its purpose. The Harvard range has always strongly featured walkie-talkies so this was a natural move for them. The case supplied with the unit is watertight and has clear and concise instructions. It is also very flexible with its power source as the handheld will run on batteries, re-chargeable batteries and ni-cads, power supply or through the supplied cigar lighter adaptor. It also has a low-battery warning light which could be very useful indeed. Although the set has 4 watts power, it only features channels 9, 14 and 30 and it could be argued that's all that's needed for its

intended application.  
Other features are:

- ★ Attenuator
- ★ Squelch
- ★ Mag mount (included) or unit antenna (telescopic or rubber duck).

Recommended retail price is £49.95.



## Maxcom 7E

The Maxcom will use either batteries, a power supply or the car battery through the supplied cigarette lighter adaptor and has a very low current drain - important in an emergency. The 7E has 40 channels, with channel 9 centrally positioned and clearly marked and has a full 4 watts output.

The handset has a telescopic aerial which can also be used in a mag mount, a separate carrying case and strap and attenuator. It fits inside a protective case with its accessories: mag mount and cable, power lead with cigar lighter adaptor, case and strap.

Although not listed here, the technical specification that accompanied Maxcom's information looked good.

Expected to retail at under £65.00.



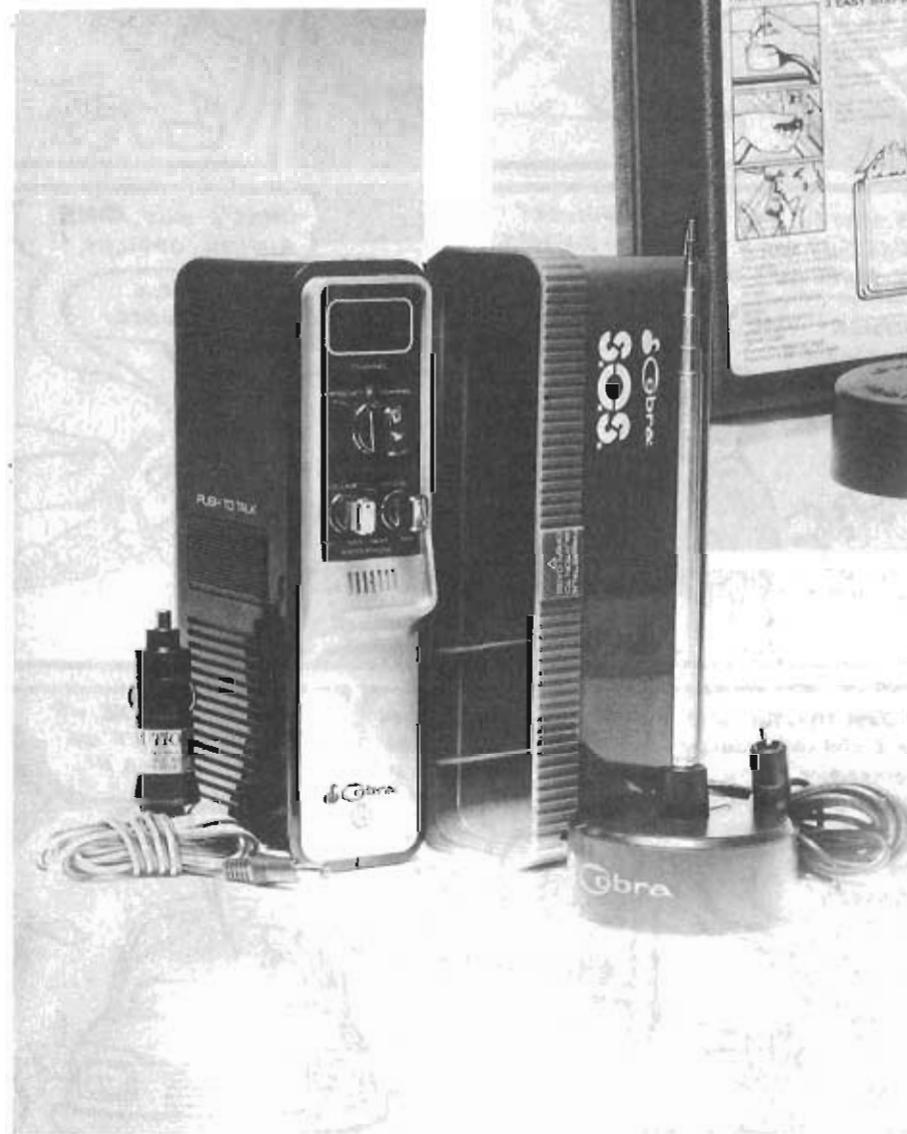
# P! HELP! HELP!

## Cobra SOS

Introduced by Sirtel, the Cobra SOS unit is designed specifically for the UK market. The set is incorporated into a small, plastic case. Half the case holds the transceiver (a slightly unusual design), the other houses a telescopic mag mount aerial and a power lead with cigar-lighter connector. Dimensions are very small (8in. x 9in. x 2in.) and would easily fit a glove compartment or dashboard.

Other features are:

- ★ Built-in mike
  - ★ Channel selector with channel 9 indicator
  - ★ An RF gain control (marked Near-Far)
  - ★ 4 watts, 40 channels.
- Retail price not yet available.



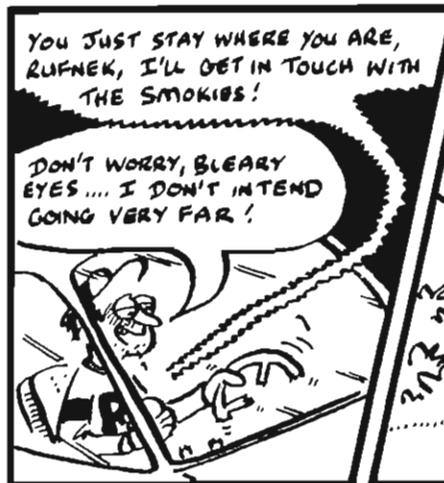
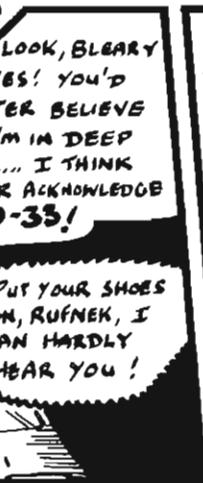
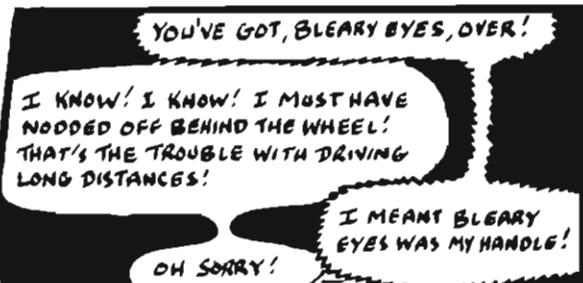
## Midland 77-810

Midland call this a Ready Rescue Unit and again everything fits snugly into a high-impact plastic carry case. It has clear instructions on how to use the set on the front of the case. The set is removable from the case, as are most of this type of unit and is 4 watts and 40 channels. The hand-held also has a separate connector for a plug-in mike (although it has a built-in mike and PTT bar) and a telescopic antenna which can either be used on the set itself or put in the mag mount included. The power lead also has a cigarette-lighter adaptor.

Features Include:

- ★ Squelch control
- ★ TX light
- ★ Priority marking for channel 9 and 19.

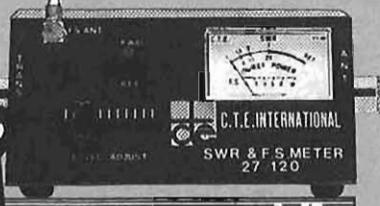
Available at a suggested retail price of £59.95.



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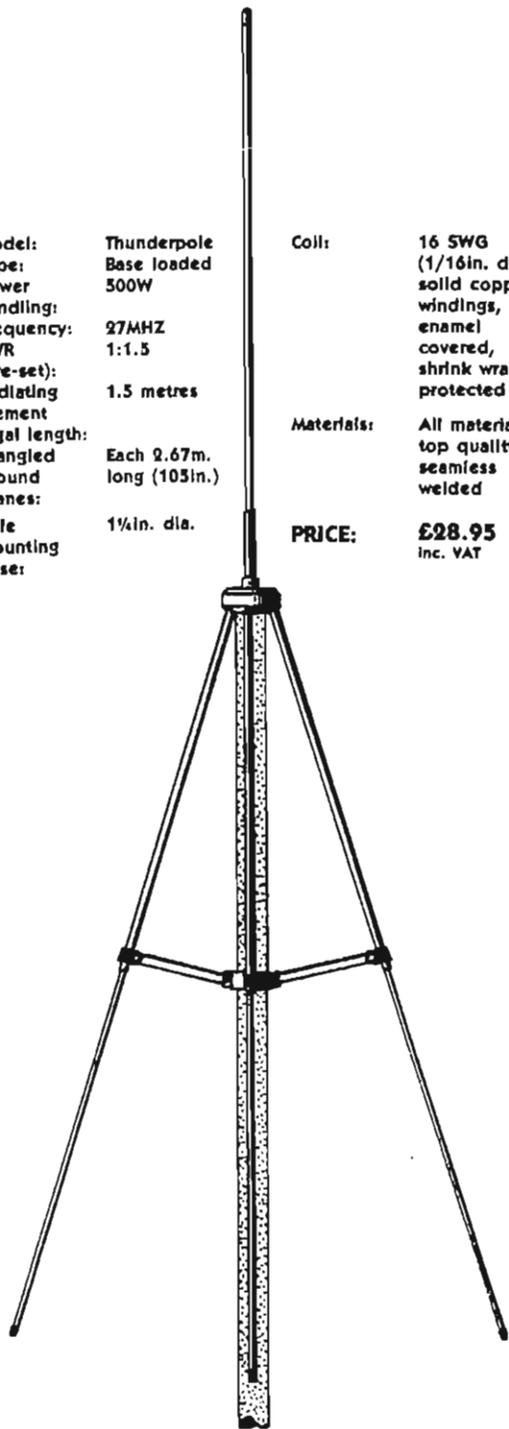
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# NEWS REVIEW



## Better news all round

Publicity for CB radio seems to have been much better this month than it was last. Although the usual amount of coverage has been given to complaints of interference, coverage of charity events has been far greater. Emergency monitoring groups are also gaining their fair share of publicity with praise being given to their prompt reporting of road traffic accidents.

## Western Mail

### CB blocked fire calls

A breaker whose broadcasts jammed calls from fire engines to their Cardiff base was fined £400 by the city's Stipendiary Magistrate.

Robert Havard-Gary blocked radio messages from firemen to their base for six hours on 15 March, using equipment 50 times more powerful than is permitted by the Home Office. He admitted installing and using radio equipment without a licence and said he would not do it again. He was fined £200 on each offence and ordered to pay £50 costs. The equipment was confiscated.

## The Journal

### Chair gift to Keith will help another

A handicapped girl is likely to benefit by the present neighbours made to a young spina bifida victim who died recently.

CB fanatic Keith Philpot saw a dream come true when his kind-hearted neighbours presented him with his own special pair of wheels but sadly his dream was short lived. The 16-year-old spina bifida victim, who died recently, had longed for an electric wheelchair to give him his first real taste of freedom and independence but the neighbours' year-long fund-raising efforts to buy the £1,500 wheelchair will not have been in vain. They will help to make a little girl's life a lot easier.

Keith's mother said that she had always intended to use the money left over to start a fund for a little girl in Newcastle who used to go to the same school as Keith and that if the neighbours didn't mind she would like to give the wheelchair to her.

Messages of sympathy have poured



## Dragging in cash

Charity nights are a Drag members of Salt City Breakaways CB Club, who hope to raise enough money in a year to buy a kidney machine for Leighton Hospital, Crewe. The Winsford breakers are pictured here on a Drag pub crawl which raised money for the Children's Heart Foundation and the Children's ward at Leighton.

East. Kelth's mother said that since Keith received his CB set, the last few months have been the happiest of his life.

## Eastern Daily Press

### CB group may get use of office

A bunch of CB enthusiasts who lend a helping hand to West Norfolk's emergency services may soon have a place of their own.

Members of REACT (UK) monitor CB radio 18 hours a day and pass on news of missing persons, traffic problems, stolen vehicles and so on to the local police. The outfit consists of 40 people who operate from home. They are hoping to extend their coverage to 24 hours a day.

Officers at King's Lynn and West Norfolk Borough Council have recommended that REACT (UK) should be allowed the use of an office for six months at a nominal rent of £1.

The office is in a building that is allocated for use by community groups. The recommendation will be considered at the next meeting of the council's lands and estates committee.

## East Anglian Daily Times

### Police channels blocked by CB outlaws

Outlawed CB'ers have been blamed for inane chatter that blocked emergency police communications for 20 minutes in Suffolk last month.

The incident was one of many causing 'fairly serious interference' to the county's radio network. Superintendent Jim Gauke blamed the communications breakdown on CB enthusiasts still using the illegal AM sets even though FM sets can be used legally. He said they have had several serious examples of interference to the extent that they lost one channel for 20 minutes.

Because of this inane chatter, he also said that in another example they thought they had sent a police car to an incident but it turned out to be a CB'er who pretended to acknowledge. This incident could have been very serious.

The Superintendent warned of high penalties that would be imposed on illegal CB'ers. In a recent case an Ips-

which man was fined £450. As well as illegal AM sets, Mr. Gauke cited home-based units that operate at high power levels on FM, transmitting close to police transmitters and repeaters.

Apart from these complaints, he also praised CB groups that operate emergency systems in conjunction with the Suffolk police.

## The Times

### CB group criticizes radio rules

Home Office departments have been criticized for using their technical expertise to confuse successive ministers and prevent them from adopting policies to enable British industry to enjoy the benefits of radio systems available for years in developed countries.

The complaint came in a letter to Mr. Whitelaw from CBA Secretary James Bryant. The CBA is calling for a review of the Home Office radio regulatory division and the directorate of radio technology. Mr. Bryant has told Mr. Whitelaw that he is sure the departments are suffering from spending cuts. The letter says that the regulatory department is unwilling to open new frequencies for the private mobile radio industry which represents a substantial loss to the UK economy.

Mr. Bryant also said that the CB standard laid down was a disaster and that it was chosen to punish the CB movement for their success in gaining political support, rather than a desire to specify a system with advantages over the one used already in 55 other countries.

### Treacleton two hitch on to £1,000

THE FERRET and The Rainbow Warrior are on the road to raising £1,000 to buy and train a guide dog for a blind person — members of the Treacleton Breakers — a Macclesfield CB radio club — have just completed a sponsored hitchhike from John O'Grada's to Land's End and back to raise the cash.

But their five days on the road have taken their toll. The Rainbow Warrior — alias Ian Grindley, aged 17 — was exhausted for the best part of 24 hours, and then concentrated on nursing his blisters after the round Britain tour.

The Ferret, 18-year-old Paul Bailey, however, said he was fit enough to do the whole thing over again — despite a 130-mile trek on foot through the Scottish

Highlands when no lifts were available. Paul, of Vincent Street, and Ian, of Kingston Avenue, Macclesfield, got round their set course with a total of 23 lifts — but they came unstocked by attempting the hike at holiday time.

Paul confessed: "Most of the drivers who passed us seemed to be on their holidays and their cars were loaded up with children and luggage. And that meant a lot of walking to fill in the miles between lifts."

The round Britain tour was a marathon in more ways than one. For four days and four nights the pair kept going without sleep to help pain their target — and Paul added: "I'm sure we won't have any difficulty raising the money."

## East Anglian Daily Times

### CB Service actions helps police

Quick action by members of the Suffolk EARS allowed police to be at the scene of a lorry crash within minutes. The Suffolk Emergency Action Radio Service was told at its recent annual meeting that police arrived at the scene of an accident on the A45 within six minutes following their action.

President Dr. Andy Mason said police

# FEAR ON THE AIR FOR CB FAMILY

## Mother tells of death threat by a mystery man

By MARTYN SHARPE  
A CITIZENS BAND radio freak with a sick mind is terrorising a mother and her two young children.

He has threatened to kill 32-year-old Ann Parrot, warned he will sexually attack her daughter Amanda 11, and mimicked a speech impediment of her son Sean, 12.

Now the family—Country Girl, Bright Eyes and the Black Eye Kid to other CB breakers at Doncaster, Yorks — are afraid to go on the air.

The trouble started six months ago after the Post Office shut down the family's illegal AM set and they started transmitting with a new £120 FM set.

### Message

Ann. of Armthorpe,



Country Girl Ann... "in fear"

Doncaster, said yesterday: "We can only think this man believes we gave away our illegal breakers and is determined to make our lives a misery."

In recent weeks, the mystery breaker has also:

**SABOTAGED** the family's aerial four times  
**DAUBED** hate slogans on their garage door. And  
**OFFERED** other breakers £20 to put the

family off the air for good.

Worried Ann said: "It has got to the point where I haven't even put out a message over the air because I know I'm going to be mocked and abused. We live in fear that the children will be attacked. He has even told them to go and play on the motorway."

Police are studying a tape the family made of the man on the air.

ice had thanked Suffolk EARS for their prompt action. The emergency group was started early this year to monitor the A45 and has now expanded to cover Bury, Beyton, Woolpit and Stowmarket.

## Northern Echo

### Marathon goes on — thanks to CB

Taxi driver David Shotton is now back behind the wheel of his cab after collapsing from heat and exhaustion on a 100-mile charity walk. The 31-year-old suddenly passed out on a lonely roadside as he tackled the walk from Richmond to Blackpool. His back-up team were, however, able to call for medical help on a CB radio walkie-talkie.

His wife said that it was worth its weight in gold and that when an emergency crops up, you realise that CB is not just a toy.

Using the CB, they managed to contact a doctor at Lancaster Hospital who kept in touch for the next 3½ hours whilst David slept.

He had been walking with fellow taxi driver Dick Springthorpe, while his 11-year-old son, Simon, joined Army medic Philip Webber as the back-up crew.

David was determined to finish the walk — even against medical advice. His wife said, "He's a bit pig headed but he did pull round from it very well. He was determined to make it to Blackpool — even with sunstroke." David and Dick hope to raise £350 for the Welburn School at Kirkbymoorside.

# Radio direction finding on 27 MHz

## Construction of a DF antenna for 27MHz Part 2 by F. C. Judd

The first part of this article (last month) dealt with different forms of direction finding loop antennas, how they function and the method of obtaining a bearing with such antennas on the position of a transmitter. This article deals entirely with the construction of a small diameter DF loop made from generally available materials and components. For completeness the basic circuit of the loop is given once again in Fig. 1. The function of the loop is such that it is first matched to a 50-ohm cable by a short section of transmission line which forms what is known as a 'gamma match'. The earthed point of the loop, at its base, is at zero impedance and the loop itself is tuned to resonance, i.e., to the frequency of operation by the 100pFd variable capacitor at the top of the loop.

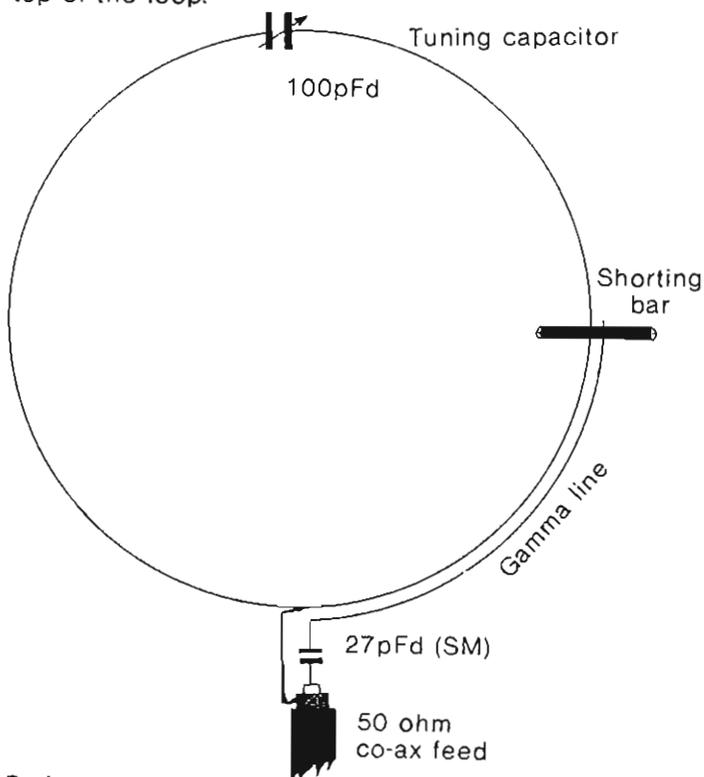


Fig. 1.  
The basic circuit of the loop antenna constructional project dealt with in this article.

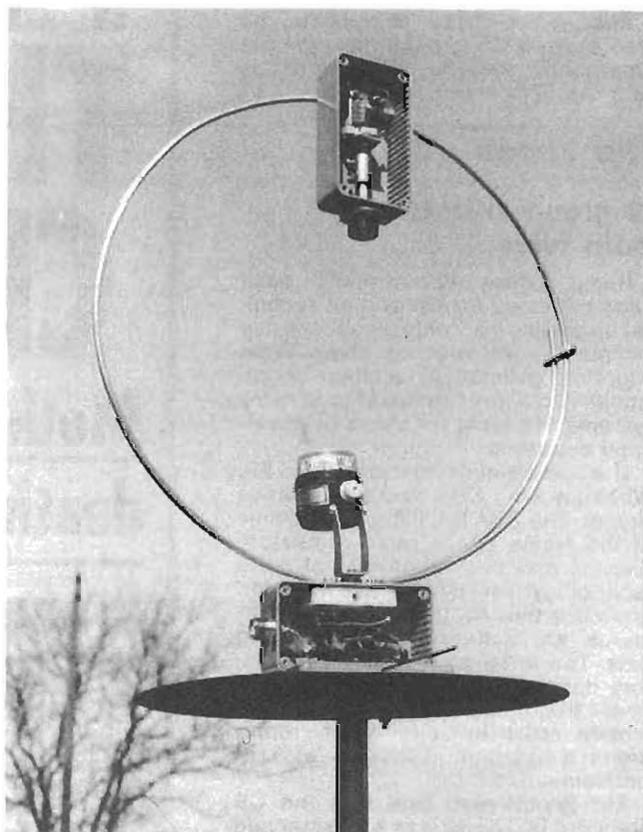


Photo shows detail of the finished loop antenna with upper and lower box lids removed. Note small potentiometer visible in lower box is not used (see text).

Although the gamma match is not an ideal method of obtaining a low impedance connection to a small loop antenna, the system does still allow a fairly accurate figure-of-eight field pattern to be obtained as explained in Part 1. Most of the small commercially-available DF loop antennas for 27MHz employ this principle.

### Construction

Main details for construction of the loop itself are illustrated in Fig. 2, the two halves of the loop being made from aluminium rod approximately 4.7m. or 3/16in. diameter. Formation of the two half circles is not difficult and can be easily done by hand with a little care. The inset in Fig. 2 gives details for making the shorting bar that connects the end of the gamma line to one side of the loop.

A more general view of construction is given in Fig. 3. Two ABS plastic boxes are used with the lower one containing the SO239 co-axial cable output socket, the connections to the loop base and to the gamma line via the short length of 50-ohm co-ax cable and 27pFd capacitor. The box also serves as the base support for the whole loop. The box at the top contains the 100pFd tuning capacitor which links the upper ends of the loop for tuning. Note the solder tags needed for connections to the capacitor.

The lower box is mounted on a small wooden platform with a handle attached beneath which enables the loop to be hand turned through 360°. The loop could also be mounted on a suitable tripod as will be seen in photographs with this article. Further details concerned with the connections from the cable con-

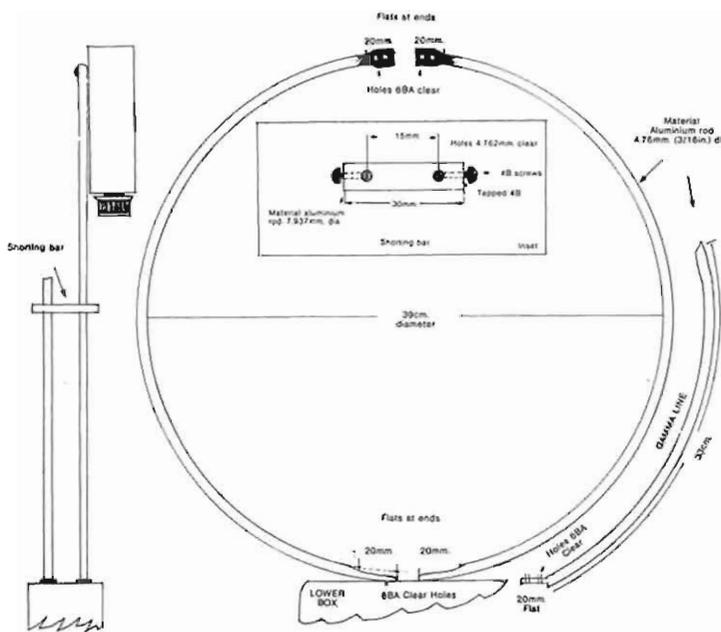


Fig. 2. Details for making the loop and gamma line section and a side view of the loop showing the position and spacing of the gamma line section. See also Fig. 3 and photo. Other details given in text. INSET. Details for making the shorting bar.

necting socket to the loop and the gamma line, within the lower box, are shown in Fig. 4. Note: The small fixed capacitor that connects to the gamma line is a silver mica type (27pFd). The block at the top through which the fixing screws that hold the loop are taken, may be of hardwood or, better still, of perspex or similar insulating material. Much the same

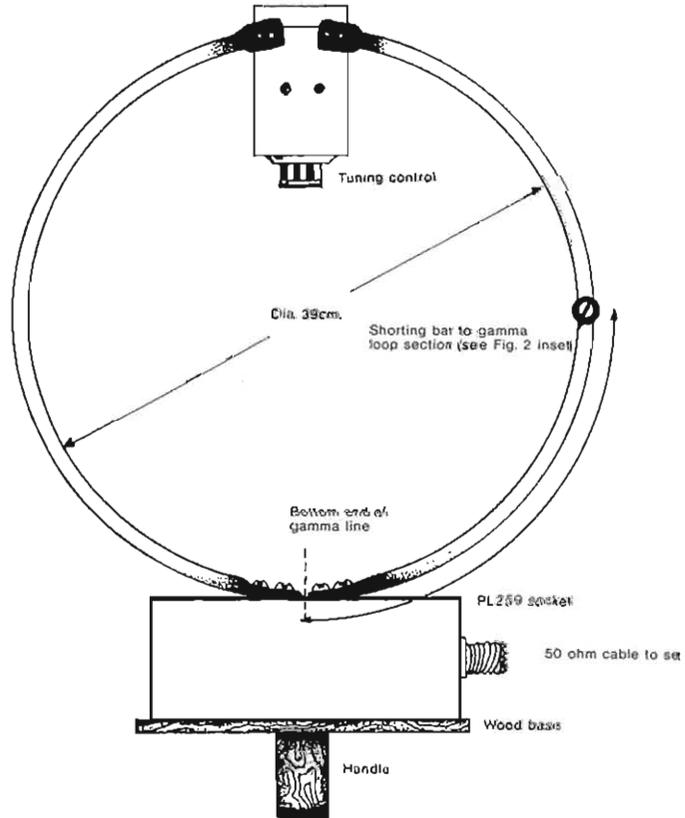


Fig. 3. Illustration showing how the assembled loop can be mounted on a platform with handle attached.

applies to the block in the upper box through which the fixing screws of the upper ends of the loop are passed but again this should preferably be of perspex or similar good insulating material. Solder tags are fitted under the nuts as shown for making the necessary connections to the tuning capacitor (see Fig. 5).

A view looking down on the lower box and wooden platform is shown in Fig. 6. The spacing between the gamma line section and the loop is 15mm. centre to centre and which complies with the spacing of the holes in the shorting bar through which these sections are passed. The ends of each half of the loop and also the lower end of the gamma line are hammered flat and wide enough for drilling holes for clearance of the 6BA fixing screws as can be seen in Fig. 2.

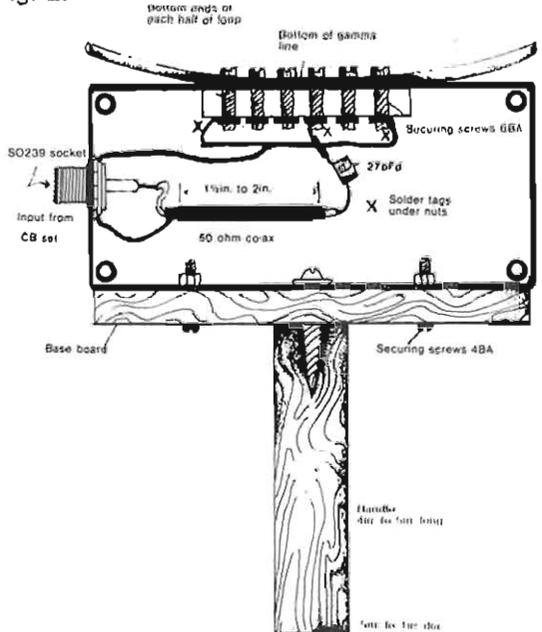


Fig. 4. Connections within the lower box. Each bottom end of the two halves of the loop are connected together and thence to earth via the co-axial socket.

The photograph shows the loop with the lids removed from the upper and lower boxes. Note, however, that the small potentiometer, probably visible in the lower box, is not used and therefore does not appear in any of the constructional diagrams. This was originally included as a means of reducing the signal from the loop when carrying out certain tests on its performance.

The final diagram, Fig. 7, illustrates a method of mounting a small compass above the lower box, i.e., close to the base of the loop. The platform must be of non-magnetic material, e.g., brass, copper or aluminium. Do not use thin mild steel or tinplate which would produce errors in the compass. Alignment of a compass mounted on a loop antenna will be dealt with in the final part (Part 3) of this article and which will also explain the operational technique of direction finding with a loop antenna, the use of ordnance survey maps, etc. and the value of team working when attempting to locate a transmitter quickly.

### Initial checking of the finished DF loop

The co-axial cable between the loop and the CB set should be as near as possible 2½m. In length. Find a channel on which there is a fairly strong signal or get a nearby CB colleague to transmit a signal for you. With the loop connected to the set, tune the capacitor in the top box for the strongest signal by

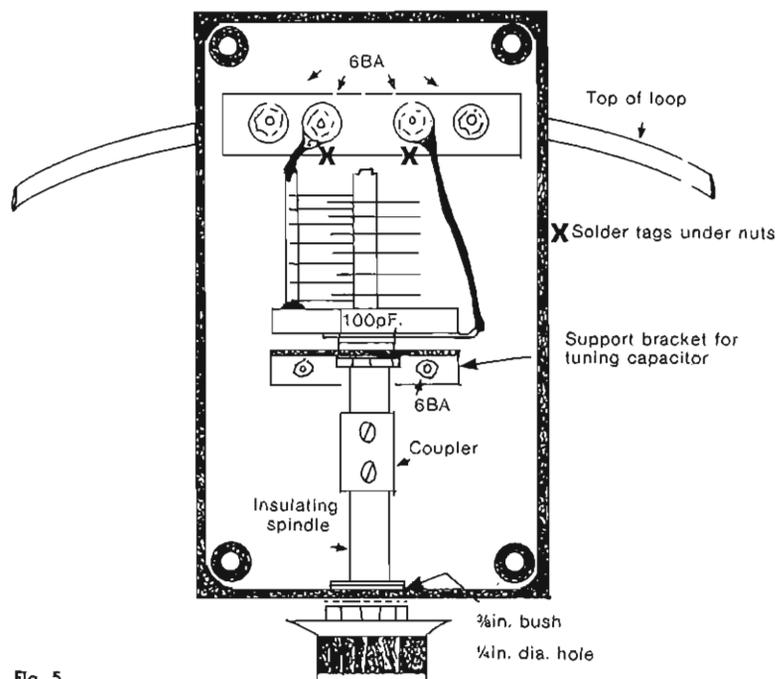


Fig. 5. Connections for the top of the loop and the 100pFd tuning capacitor. Note the extension spindle on the capacitor to prevent hand capacity effect when tuning the loop.

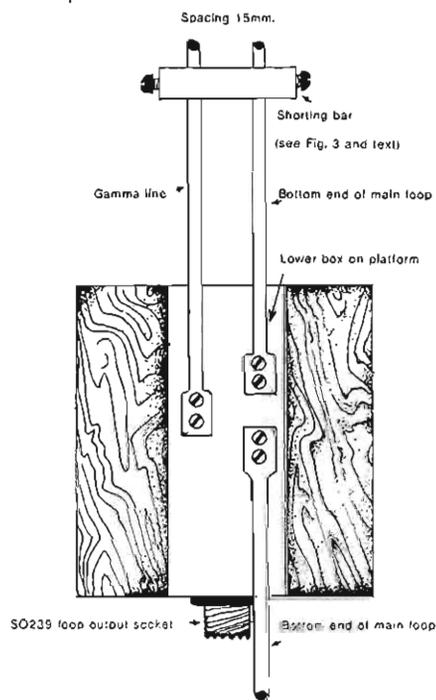


Fig. 6. View looking down onto the base portion of the loop and the lower box and platform. Note spacing of 15mm. between the loop and the gamma line. The position of the shorting bar may need to be adjusted to a point about 1in. nearer to the base of the loop. See text and photo.

watching the signal strength meter. The tuning will be quite sharp. Carry out the same test again but this time on a low channel, e.g., channel 1, to make sure that the loop tunes to this end of the band and then repeat the process this time on the highest channel to make sure the loop is properly tuning over the whole of the CB band. You will not get the loop to 'null' fully on a station very close to you and the field pattern could be very distorted, i.e., the two nulls that are obtainable as illustrated in Fig. 1 will not be very definable if the loop is operated near other conductors, e.g., your own normal transmitting antenna or if indoors by the effect of waterpipes and electric light wiring, etc. In fact, any conductive material will cause reflections of signals you are rec-

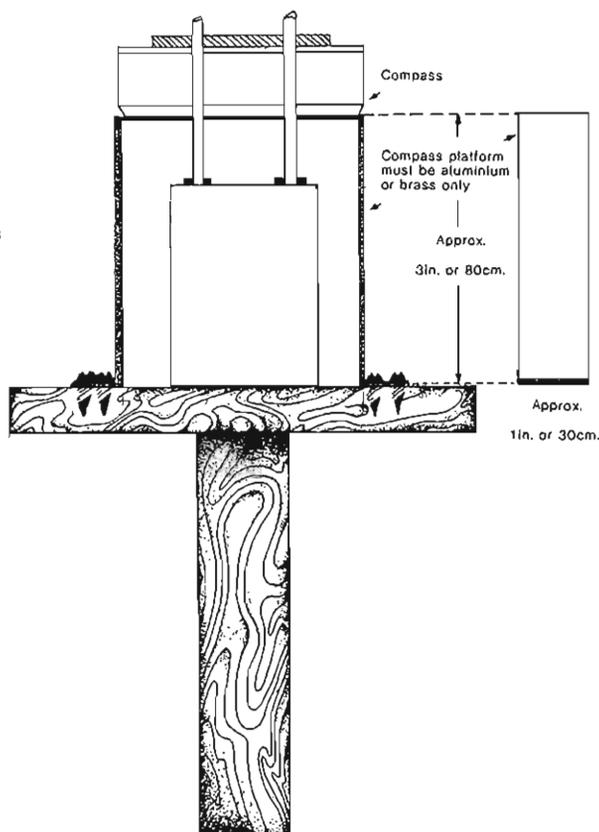


Fig. 7. Suggested method of mounting a compass just above the lower box and in line with the centre of the loop. Note that the compass platform must be made of non-magnetic material.

eiving which are in turn picked up by the loop and which will, therefore, cause the field pattern to have undefinable nulls. The best way of checking any DF loop antenna of this nature for accuracy is out in the open away from buildings and particularly from overhead wires such as mains cable and telephone lines. Remember also that *small loops of this nature will only respond to vertically polarized groundwave signals* and are not directive, at least not with any reliability, on short skip or other signals from a great distance reflected by the ionosphere. This also applies to any of the commercially-available loops such as those mentioned in Part 1 and shown in one or two of the photographs.

## COMPONENTS LIST

- 2 off ABS plastic boxes with lids. 120 x 65 x 40mm. Bi-Pak No. 143.
- 1 off Jackson type 100pFd air-spaced variable capacitor Bi-Pak No. 336.
- 1 off Control knob for tuning capacitor. Bi-Pak No. 1102.
- 1 off SO239 co-axial socket chassis mounting type. Bi-Pak No. 1717.

Above available from Bi-Pak Electronics, PO Box 6, 63A High Street, Ware, Herts. SG12 9AD. Also required 27pFd silver mica capacitor, aluminium rod as specified, 6BA screws, nuts and solder tags, etc., plus other materials as mentioned in diagrams and text.

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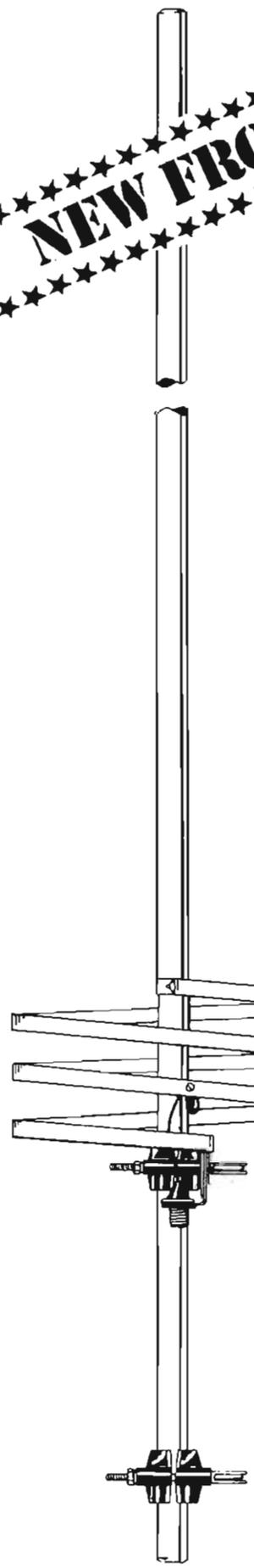
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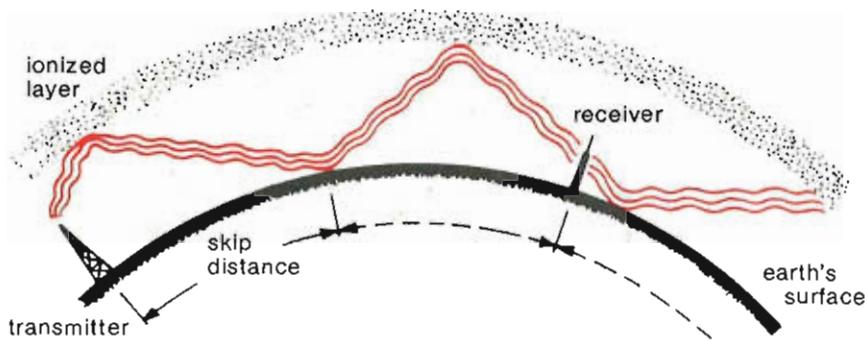
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# LONG DISTANCE



## Scotland comes over loud and clear

**MYSTIFIED** Suffolk CB users are puzzling over the sound of Scottish voices on the airwaves.

For the last two days the county's breakers have been picking up the sound of the Highlands on their sets, and managing to snatch brief conversations.

The voices were first heard at Tuesday lunchtime and

that evening breakers claiming to be as far away as Aberdeen were coming through loud and clear.

Yesterday a spokesman from the meteorological office at RAF Honington said it would be possible for people to be contacted in Scotland — if there were the right freak weather conditions.

"It is normal for the air to lose temperature the higher it gets, but sometimes it increases, and this is called a marked inversion," he explained.

Although a marked inversion itself was not very rare, it would be a freak occurrence for people in Suffolk to be able to talk to Scottish CB users, he said.

At the end of May and the beginning of June, we received lots of phone calls and letters from delighted but bemused breakers who had been getting unexpectedly long distance copies with just 4 watts FM. Although originally convinced they were the victim of a 'wind up', phone calls and QSL cards have confirmed their contacts.

Although delighted by these copies, the breakers concerned were surprised as they believed, like the majority of breakers, that "FM doesn't skip". Indeed, this was one of the major objections to the introduction of FM and was thought to be the main reason the Government had chosen it. But they were apparently getting 300-600 mile copies when the rules said it shouldn't happen.

There are several misconceptions in this accepted rule.

★ Given the correct conditions, 4W FM will short skip the same as 4W AM.

★ Propagation patterns for FM and AM are the same although influencing conditions change.

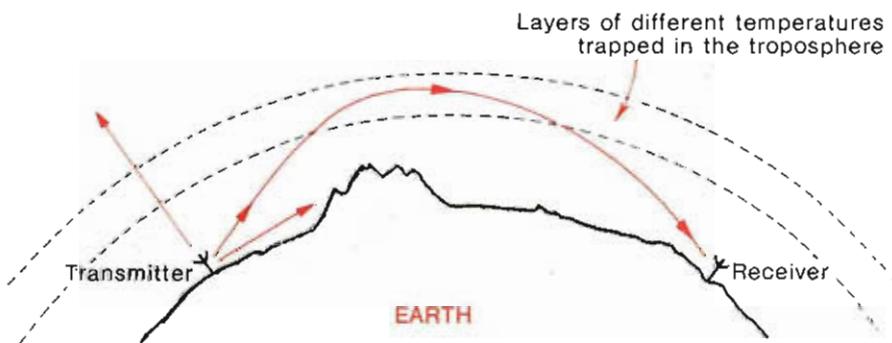
★ The results breakers have been getting are not due to skip in the usual CB sense.

The correct name for the phenomenon is tropospheric propagation, which sounds a mouthful but is easily explained.

### How it works

Many of our readers will be familiar with skip and how it happens. For the benefit of breakers who are not familiar, here's a short explanation. Skip works by the transmitted radio signal being reflected off the ionosphere which forms part of the Earth's atmosphere. The ionosphere is a layer of atmospheric gases about 30 miles above the Earth's surface. These gases become electrically charged by the sun's rays, either as a result of changing atmospheric conditions or sunspot activity in the sunspot cycle. Radio waves, up to about 30MHz, can be reflected by these ionised layers and returned to Earth. (Wavelengths shorter than this penetrate the layers and continue on into outer space). If conditions are good, this reflecting process can take place again and again from Earth to ionosphere and back. The illustration shows clearly how it works.

Tropospheric propagation or 'ducting' works by refraction, bending of the radio waves through a shallow angle. (This is like looking at an object in water — the light waves bend and the object seems displaced). This works by changes in the atmosphere at a height of a kilometre or so. These changes are due to a combination of high temperature and humidity resulting in temperature gradients. In these conditions layers of different tempera-



This Page.

Top.

Diagram showing how 'skip' bounces from the ionised layer back to Earth and vastly increases the usual reception distance.

Middle.

Cutting from the East Anglian Daily Times. The unusual conditions caused almost universal surprise amongst breakers.

Bottom.

Diagram illustrating the way tropospheric propagation works. The radio signal is bent through a shallow angle and refracted back to Earth.

Opposite page.

A selection of QSL cards confirming long distance contacts. Many breakers swapped phone numbers to get immediate confirmation. All cards received by Skaterman of Slough.

## LONG DISTANCE

# E INFORMATION

tures of air become trapped in a sort of sandwich and it is through these layers that refraction takes place.

The bad news is that this lasts a very short space of time. Although skip or skywave propagation can last for considerable periods as the cycle progresses, tropospheric waves last possibly a day or two and return maybe a week or two years later. Although we may well have hot weather again this summer (although that's debatable!) the conditions may not be exactly right to repeat earlier results. It doesn't follow that it will occur regularly during summer months or that hot weather will immediately open up the band. In fact, Fred Judd, our technical editor, says he hasn't known this level of activity since working with 27MHz during the Second World War as an experimental radar frequency!

The last piece of news will be a disappointment to the many breakers who suddenly had a new area of radio opened up to them.

Skaterman, of Slough, describes the scene.

"There I was, sitting on top of Winter Hill overlooking Marlow, South Buckinghamshire in my little yellow VW. The sun was shining and the water-skiers were dashing about 500ft. below me. The rig was on (a Binatone 5 Star), the K40 twig was warm with FM and the Turner JM+2U was close to my mouth. Stocking Tops, Minnie, Father Goose and Michelin Man were joining in the conversation.

"Suddenly there it was . . . 'Skaterman, Skaterman, do you copy Aquarius from North Aberdeen?'

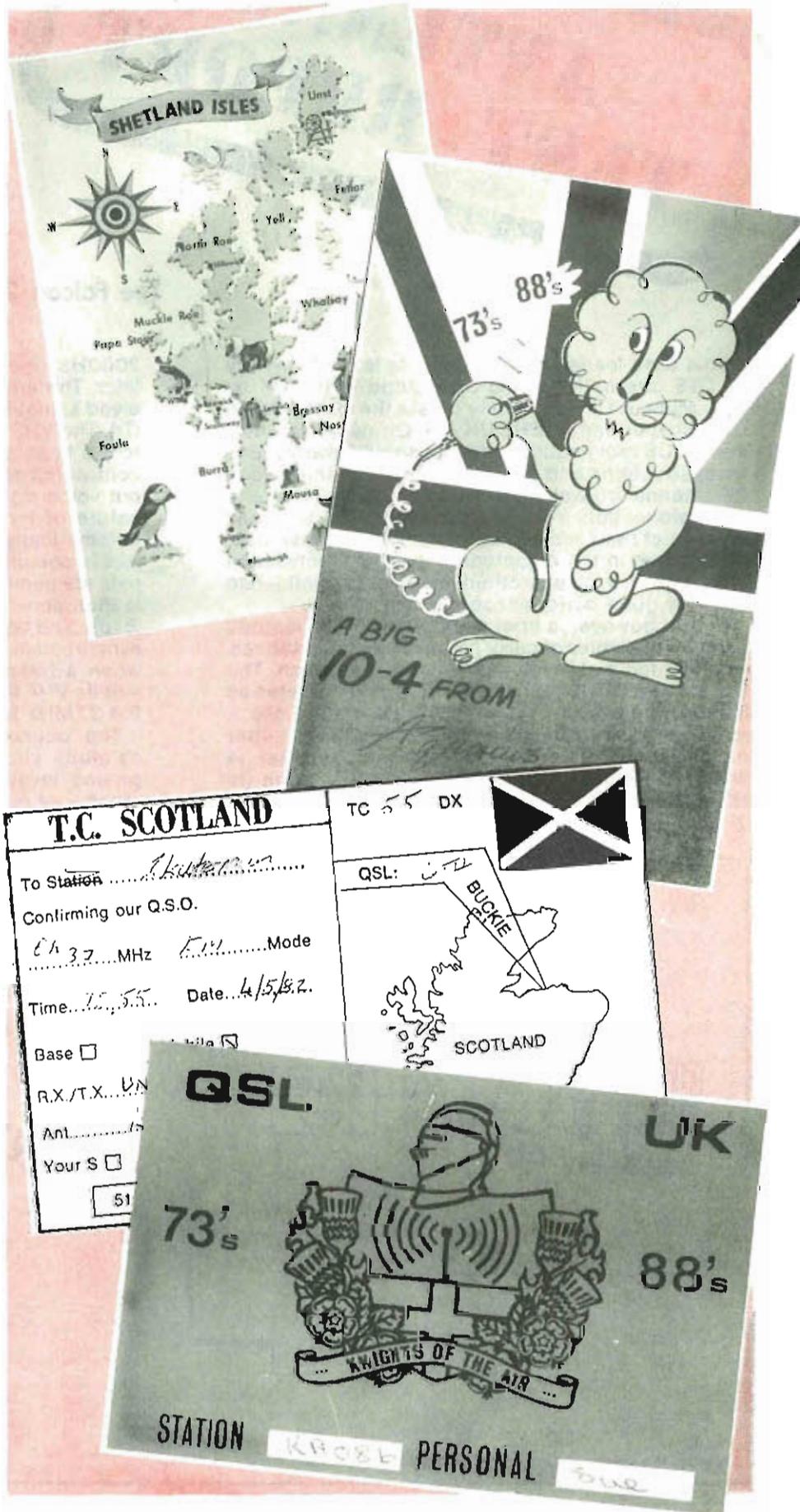
"My needle was showing eight pounds and it was blocking out my other copies. 'Wind up' I shouted down the mike. 'No, it's not,' she pleaded. Father Goose came on and confirmed it was true. For the next 20 minutes, I had a whale of a time copying Aquarius, Sunshine in Aberdeen, TC55 and SI32 Shetland Isles and Travelling Man in Burghhead."

Some of Skaterman's copies have exceeded 650 miles - all mobile and none of the parties using specialist equipment. Aquarius has collected over 50 QSL cards to confirm her contacts but many breakers are swopping phone numbers so they can convince themselves without waiting for the post.

Other breakers have contacted us with news of copies from the Channel Isles to Scotland, copies getting on for 800-1,000 miles and a THAMES coordinator has contacted Milan in Italy and West Germany.

Although this has been exciting for the CB scene, it may never happen again in the foreseeable future. So make the most of it.

SS



# ANTENNA TEST REPORT

## The Falcon 27 mobile antenna by F. C. Judd

This base-loaded mobile antenna is made in Italy by CTE International and distributed in the UK by R. V. Mann & Co. Ltd. It fully meets the Home Office specification for 27MHz UK CB. On using any new item of CB radio equipment, one should always read the instructions and those included with the Falcon 27 antenna are well illustrated and give all the relevant information. You will, however, need to speak or, at least read, Italian fluently unless the manufacturers have in the meantime provided a translation into English. In no way otherwise does this influence the very good performance of the antenna.

Firstly, however, a brief description of the method used by the writer of carrying out tests on antennas, whether for mobile or base-station operation. The system as a whole is shown in Fig. 1 and operates as follows. The antenna under test (a) is, in this case, a mobile type which may be either magnetic or gutter mounted. Signals from the mobile transmitter (4 watts) are received by a base-station antenna (to HO specification) mounted 21ft. above ground. The 27MHz received carrier signal is converted to a

2000Hz tone by means of a voltage-controlled oscillator. The amplitude of the tone varies with the received signal level and is recorded on magnetic tape (Tr). The VHF radio link using the mobile antenna (c) to the base-station VHF antenna (d) is also used to control the recording system and at the same time put voice signals onto the tape. Distance, location, nature of terrain, etc., can, therefore, be recorded automatically during the whole test run. When the test is complete the tape is re-run and the tone signals are converted to signal level (DC voltage) which is then pen-chart recorded to an accuracy of within  $\pm 1$  dB. The voice information recorded is replayed in synchronism. The process can be reversed, e.g., when a base-station antenna is being tested. The mobile VHF link can also be used to remotely switch the 27MHz base-station transmitter on or off.

The 'course' over which such tests are made is carefully chosen so as to include high and low ground levels, built-up areas and heavily wooded areas - all of which can effect 27MHz ground-wave transmission. The writer has two special Home

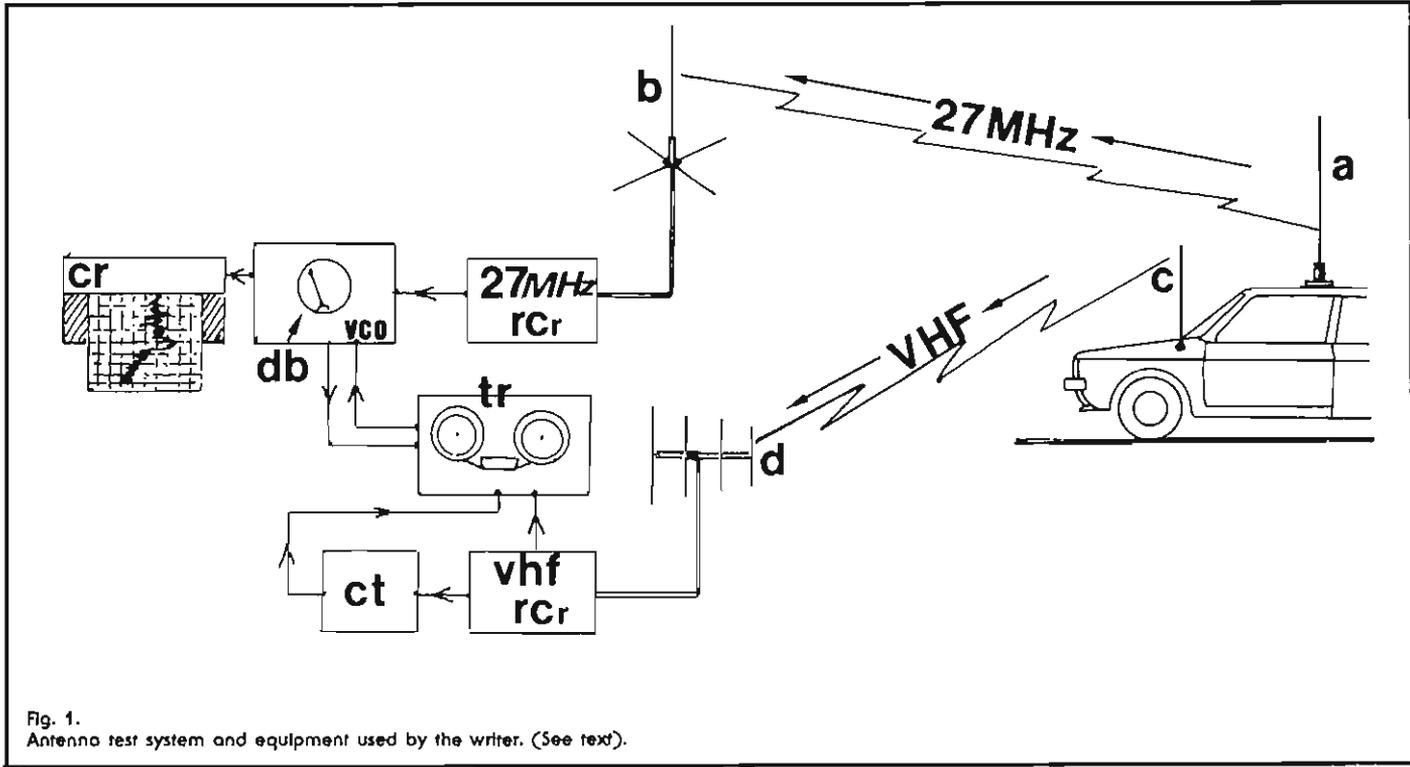


Fig. 1. Antenna test system and equipment used by the writer. (See text).

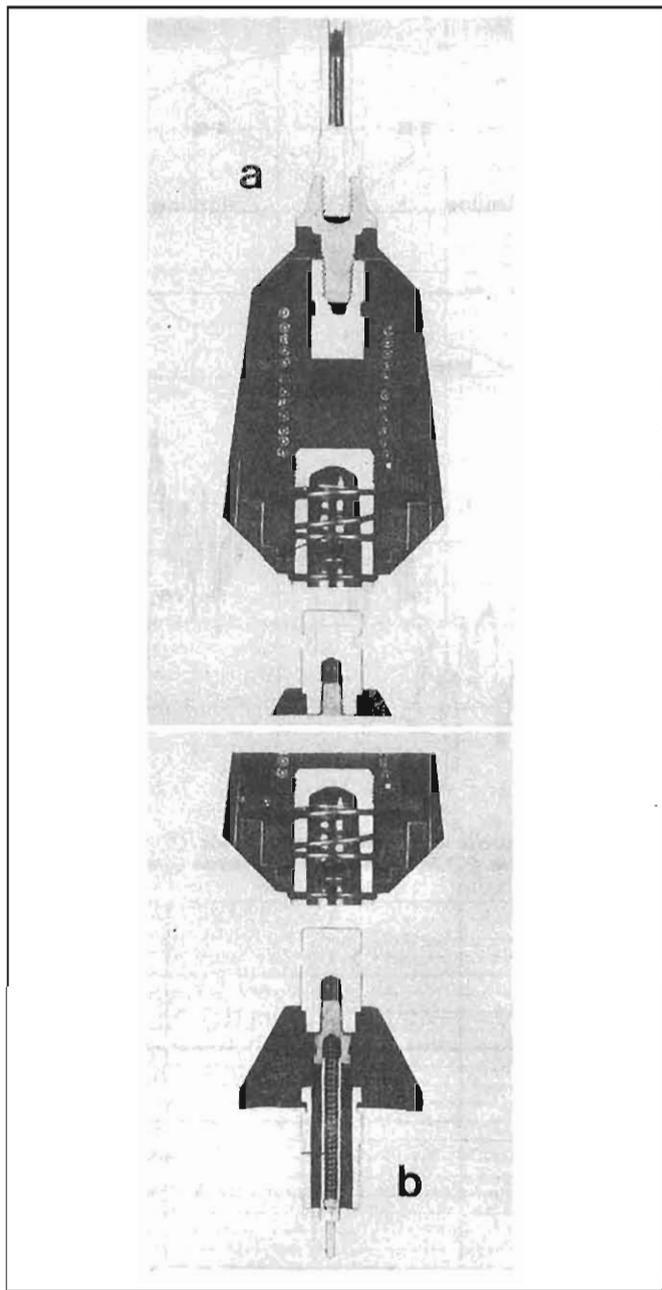


Fig. 2. Internal construction of the Falcon 27MHz mobile antenna. (a) Base coil. (b) Release and mounting units.

Office licences for this work which cover the 27MHz UK FM band and various VHF channels up to and beyond 934MHz issued with the call signs G9BTN and G9BTM.

### The Falcon 27 antenna

Construction of the Falcon 27 antenna is shown in Figs. 2 and 3. It is fitted with a fairly large diameter high 'Q' loading coil at the base to ensure maximum possible efficiency and features a quick-release system which the diagrams (Fig. 3) illustrate well enough. The base connection unit is designed so that it may be mounted on a magnetic base or gutter mount or it can be hole fitted directly onto a car body. (Not usable on fibreglass-bodied vehicles). The radiating section, 1.5 metres in length, is enclosed in fibreglass which provides sufficient flexibility to obviate the possibility of breakage due to overhanging trees or low-roof entries. The base unit is fully weather protected by a moulded plastic outer shell. The antenna is supplied complete with approximately 5 metres of 50-ohm co-axial cable

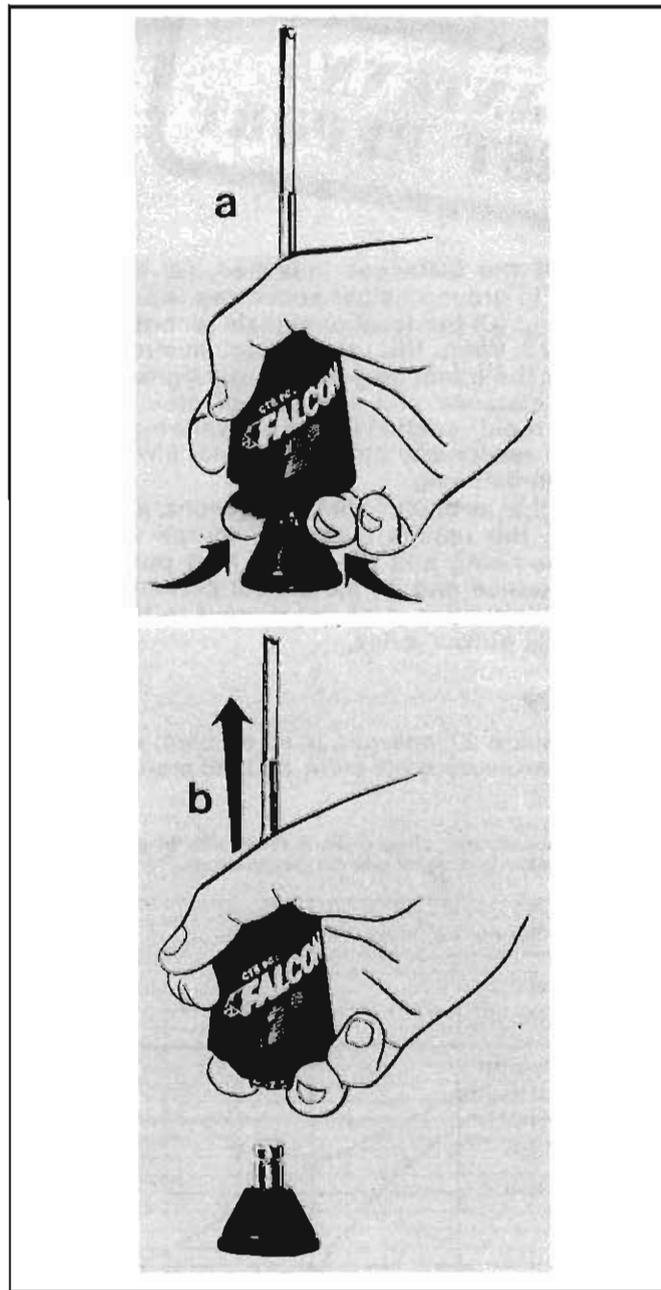


Fig. 3. (a) Pressure under base and (b) loading coil and antenna are lifted clear.

fitted at one end with a plug for connection to the base of the antenna. The only other requirements would be a suitable magnetic or gutter mount unit and a PL259 plug for connection to the set.

### Performance

Adjustment of VSWR can be accomplished by trimming a few millimetres off the top of the radiating element after first removing a small protective plastic ferrule. Obviously care is necessary here so as not to cut off too much and therefore it is advisable to use an accurate VSWR meter. The VSWR readout over the normal 27MHz UK CB FM band and obtained with a Bird ThruLine RF directional wattmeter is shown in Fig. 4 and which could hardly be bettered.

Several test trials over different courses were carried out mobile with the Falcon 27 antenna gutter mounted and the results are shown in Figs. 5 and 6. Ground height contour as well as distance and nature are taken into account and a selected but average example is shown in Fig. 5 in which (A)

# ANTENNA TEST REPORT

station at the distances indicated, (B) shows the variation in ground height above sea level over the course and (C) the level of signals recorded by the pen chart. What this chart also illustrates, very clearly, is the effect on ground-wave signals caused by both distance and variation of ground height. Note the rapid variation in signal level which the pen chart will respond to but which is not always apparent when listening.

The signal strength v distance graphs, as in Fig. 6, show (a) the results over one course where the ground is rising and reaches a high point at four miles distance and (b) the almost perfect textbook rate of attenuation over flat ground to the limit of readability at four miles.

## Summary

The Falcon 27 antenna is as efficient as the HO design parameters will allow and the manufacturers

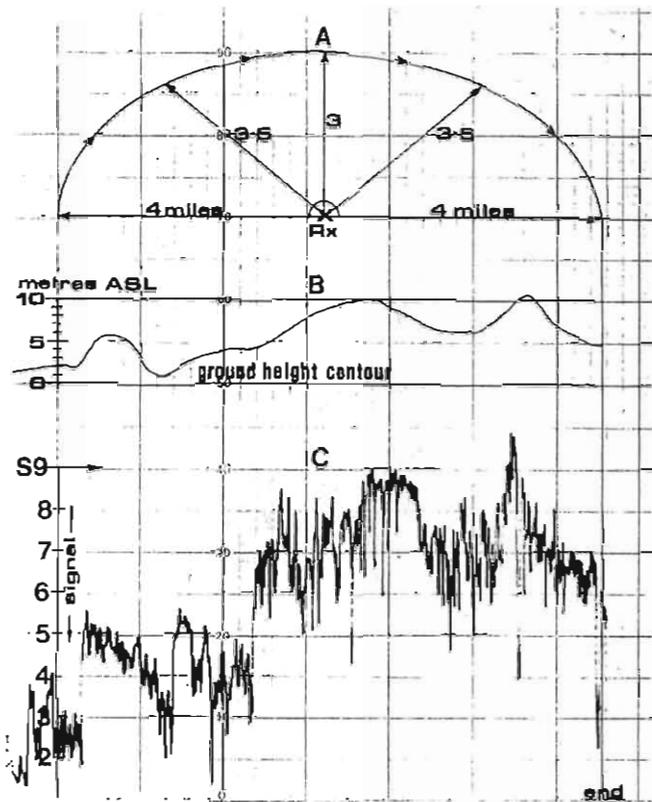
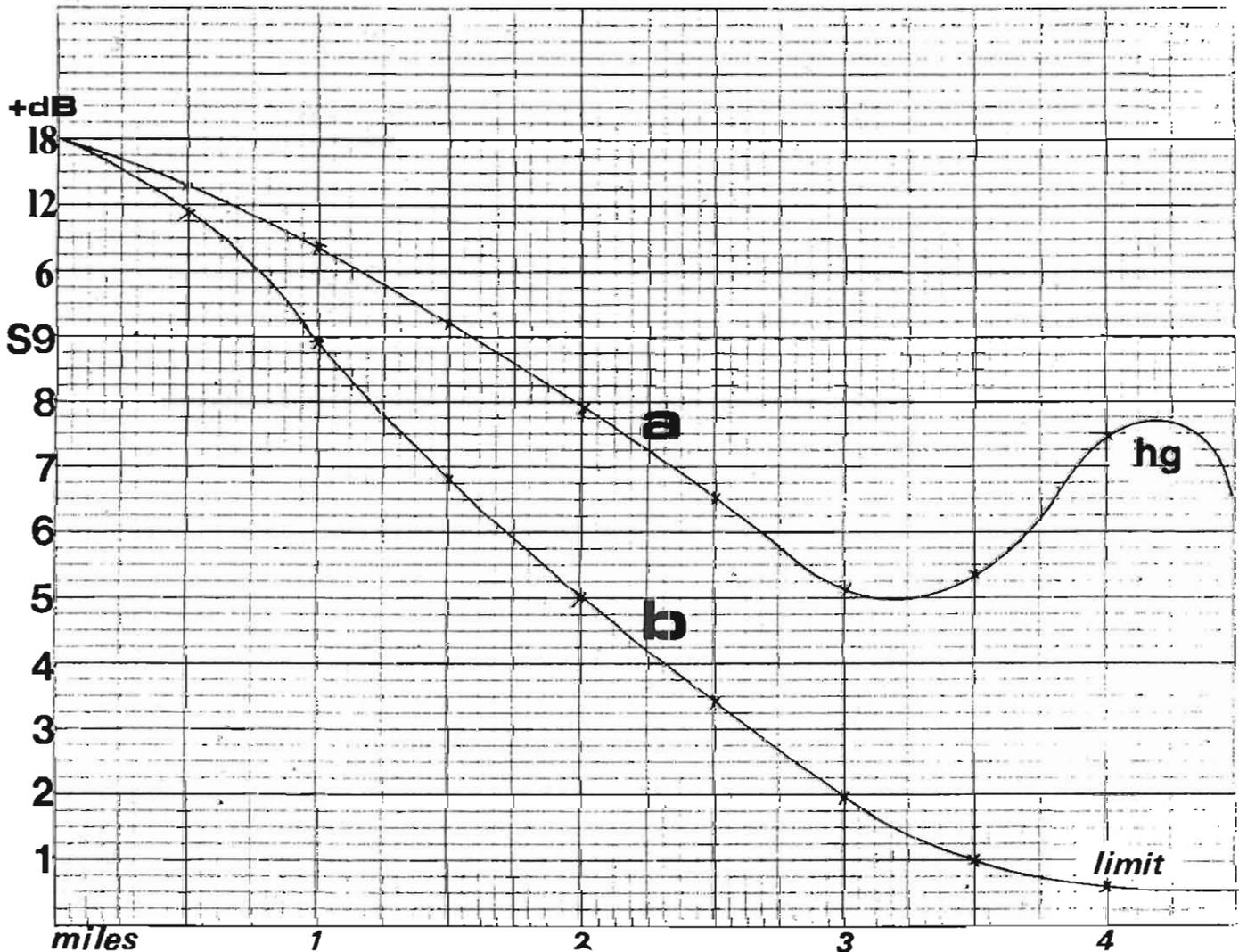


Fig. 5. (A) Elliptical test course with Rx or point of reception. (B) Ground height contour over course. (C) Signal variation over course (pen chart).

Fig. 6. (a) Range and variation of signal along course with rising ground. (b) Range and variation of signal over flat ground course.

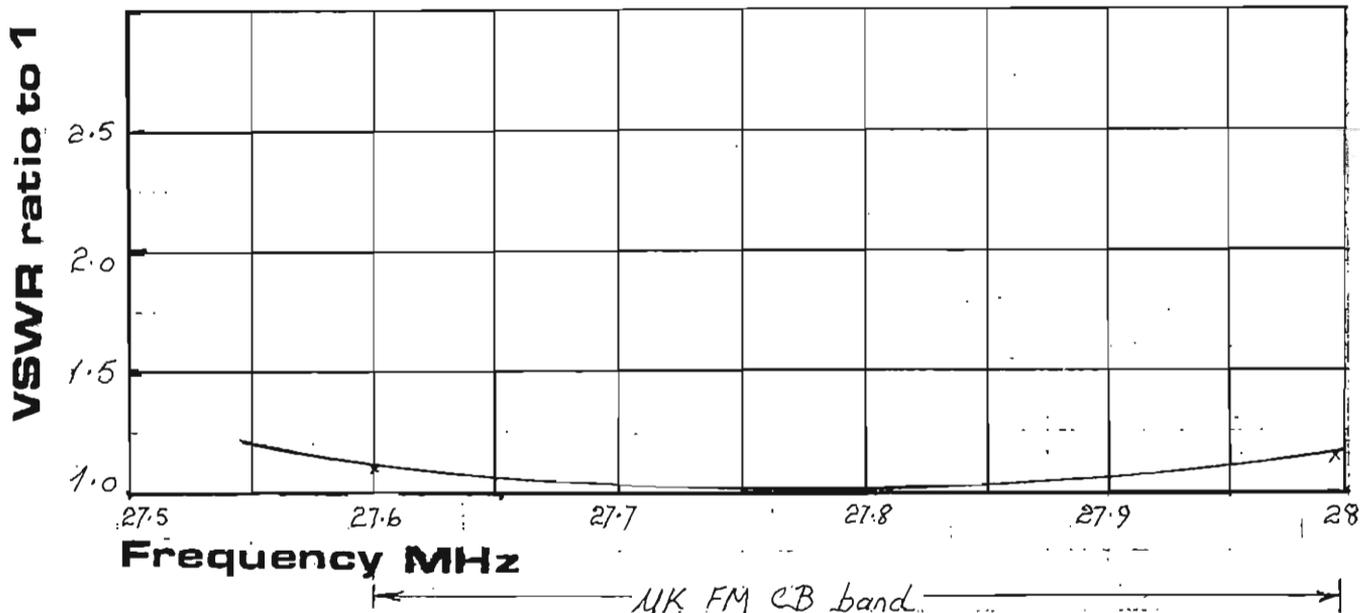


have been wise to use a high 'Q' base-loading Inductance. The estimated radiation efficiency is in the region of 40% when compared with a full-length half-wave dipole. The performance obtained by the user will, of course, depend on where the antenna is mounted. Rooftop is best, which will not distort the normal omni-directional radiation pattern. Wingside mounting does distort the radiation pattern and the lower height can also reduce average working

range. It is important, as with all antennas directly mounted on a metal car body, to ensure a *paint-free* connection. Many overlook the fact that poor earthing can cause considerable loss of both radiated power and strength of received signals.

The Falcon 27 mobile antenna has a recommended retail price of £23.80, although it is available on special offer at a price of approximately £20.00.

Fig. 4.  
VSWR read out of the Falcon 27 antenna.



## LOWER PRICES FROM

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Leson 4200 base mic.....	£28.00	Harvard ext. speaker.....	£3.75
12In. Brackets.....	£7.50	Rama ext. speaker.....	£5.95
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RG58 thin co-ax.....	15p/m	Slide mounts.....	£4.50
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# Round Up



## EAR, EAR

The EARS Club, of Bracknell, Berks., has raised funds to purchase a rig for the local Church Hill House Hospital. The hospital is home to many handicapped and retarded patients and the hospital's entertainment officer, Mr. Neil Charlton, said he knew the patients

would get much benefit from this new approach to community relations.

The presentation of the rig, complete with power pack, antenna and co-ax was made at one of the regular Friday EARS Club meetings. The local radio station (Radio 210 Thames Valley) and local press covered the event. (Photo courtesy of Collin Mutlow).



## Round Britain for LCL

Two LCL 2740 rigs did the round Britain trip in 78 hours 31 minutes in June. Not on their own, I hasten to add but fitted in Triumph Acclains on the Hagley and District Round Table

attempt to get into the Guinness Book of Records.

In fact, they improved on the record, beating it by 5 hours 34 minutes. CB proved a vital link in co-ordinating fuel stops and contacting the support car and operated faultlessly during the 3,664-mile trip.

## Two CB Jamborees

The Great Northern CB Eyeball Extravaganza is being held in the Beehive Centre, Darlington on Saturday, 21 August. The Extravaganza will include a CB exhibition with all the current equipment and an outside area to cater for a family day out. The Centre will be open from 10.00am to 11.30pm.

In addition to the CB exhibition there will be a local country and western band and a DJ (from BBC Radio Cleveland). Competitions, prizes, disco's, ox roasting, balloon races, children's fair, evening dance and licensed bars will also add plenty of interest to the day. More information from Alex Shakespeare on Darlington (0325) 480342.

The second Jamboree is in Basingstoke on 7 August at the grounds of Donnrange House on the A30. It is being organised by the Local Emergency Services Team (the local channel 9 monitors) and runs from 10.00am to 6.00pm. As well as CB stalls there will be the Radio Luxembourg DJ Tony Prince and Road Show, a charity fete, fun fair and mass eyeball for attending clubs. Funds raised will go towards a local children's home and to helping those bereaved by the Falklands Crisis. For more details contact Basingstoke (0256) 55869.

VIDEO  
INVADER  
IN  
170 Enstone  
Skelmersdale



## Game or gain?

There has been a worrying development within the CB DX scene recently. We have received two separate letters from separate areas of the country complaining that they have received chain QSL letters. Although presented as a 'game', they involve sending money with QSL cards to 20 QSL contacts. The letter sent refers to the player receiving almost 8,000 QSL cards from all over the world and more than \$7,000 and further refers to the game being for serious QSL'ers.

Although not as unpleasant, with velle threats, as some chain letters were a few years ago, it is probably illegal to send this type of letter.

As one correspondent, Video Invader, points out, people interested in QSL'ing can always obtain plenty of cards from all over the world and with more fun than resorting to this type of thing. Video Invader is also worried that younger CB'ers will get involved and they, more than anyone else, can ill afford the £10 or so needed to keep the 'game' going. Really, CB can do without this sort of thing.

## Confessions of a CB enthusiast

Part 6 from Videostar  
(Raymond E. Orr)

Last month, you may remember, I became a channel 9 monitor and fell foul of my local District Planning Officer. The latter is still causing great amusement to all concerned as the erection of certain aerials come under the *Development Acts* and not Town and Country, so with plenty of room for educated discussions, the aerial is still *in situ* and the Planning Office is reeling under the weight of polite correspondence from this end! I'm not sure how it will end, after all £20 for planning permission is almost a third the cost of a new rig! Various loopholes are still being exploited and, if successful, I'll tell you how to go about it in a future edition. One word of warning to breakers who are tenants in council property, be careful! Some areas don't mind (send a nice letter to the Director of Housing at the Town Hall) and others do. I've heard of one chap who told the council when they complained that he'll put whatever he likes on his chimney. He then received by return of post a Recorded Delivery letter giving him notice to quit the property! A bit drastic, you'll agree but don't get thrown out of your home just because the CB bug has got in your veins!

If, like me, you like CB for the sheer joy of communicating by radio without being bothered by having to keep a record of your transmissions (like radio amateurs), you'll know that everyone from schoolkids to pensioners uses CB to great advantage. Even the emergency and social services are grateful for the opportunity for 'instant' communication in the case of an accident or missing person. Now the whole 'community radio' aspect of CB is being threatened by a number of irresponsible people who are trying to start up an 'anti-channel 9 campaign'. Basically this means these people are *against* the use of channel 9 for emergencies and assistance, etc. and say that they've only got 39 channels to work with and if they don't do something they'll lose channel 9 as a general channel.

In some areas it has got quite bad with a new non-official organisation called HARM (standing for Hunt A REACT Monitor) spreading like a cancerous growth. No matter how they have been pleaded with, channel 9 has been effectively blocked and a great number of genuine 10-33 calls have been lost. In Scotland, up in the Glasgow area, these HARM people are even putting out fake emergency calls to monitors and at least three members of REACT (UK) have had their homes and cars threatened. This

is a far cry from the 'We want CB' days when all AM and potential breakers were urging the Government to legalise any system, as long as the UK citizen was able to talk freely to whoever he wanted to, over CB radio. The latest 'anti-monitor' trick is to find out the CB handle of the monitor and any time he tries to modulate, 'good' buddies key the mike all over his transmission. I do hope that common sense prevails and we do not lose what is an excellent public-spirited bunch of folk willing to give up their time for others.

If you are guilty of transmitting on channel 9, think about it . . . it's the only channel that someone will be able to hear and assist you on and, less importantly, manufacturers put channel 9 switches on rigs to enable users to get there with the minimal delay so that if you need help it's easy to obtain. Don't forget, even if you're not on FM, the FCC channels 63 and 64 clash, so even if you're not a member of a monitoring organisation, if you hear someone on the channel, ask politely that they move up or down one. There may be a breaker out there who's life depends on this channel being clear. One day, it might be yours.

Off the soapbox, Videostar? Yes . . . to continue! I've been taken to task for saying last month I've got a 'legal' Silver Rod. It seems there's no such thing! We all know of the 19ft. or so monster with the three small radials at the base. Well, it seems that I've got an Alcom DPA 11 UK, so my apologies to all concerned! Is there a CB club in your area? One opened up in my neighbourhood recently and among the events arranged have been five-a-side football, a snooker competition, knockout darts, etc. It seemed so like an ordinary youth club, I couldn't really see where the CB bit of the CB club came in. Are all clubs like this? If your club has an action-packed programme, let me know here, c/o CB Radio Magazine, we may be able to save a number of clubs closing down due to lack of interest!

It's nice to see that Britain is getting its own CB lingo without having to resort to our American forebears. Heard recently on air was "One-four for a Charlie Oscar pair-a-Y-fronts" and one young chap (obviously a new breaker) breathlessly calling out for a 'Breaker in America, come back!' I wonder if he got one or if his rig went back to the shop because it didn't have the rangel!



## CB Challenge Trophy

The Papa Doc Challenge Trophy is a new event in the citizens' band users' calendar and is open to the four CB clubs in the Folkestone area, the FAMB, the Folkestone Breakers Association, the DX Club and the FM Club. The trophy is to commemorate Stan (Papa Doc), a well-known Folkestone breaker who died early this year.

The trophy will be contested for every three months and the last challenge was a 50-mile car rally. This was won by the FAMB Club. The money raised is to go to the St John Ambulance Brigade.

## Welcome, Angel

Members of the Dragnet Club, Hayes and the Lakeside Club welcomed Angel to Britain for her extended holiday, courtesy of the two clubs. As readers of Round Up will know, Angel suffers from multiple sclerosis and is blind. She is in the country for 10 weeks before returning to Springfield, Ohio.



# CLUB SPOT

## Swansea Bay Breakers Club

Our membership numbers some 250 and our venue is the Cape Horn, Fablan Way, St. Thomas, Swansea. Meetings are held every Monday at 7.30pm. The club has been established for 12 months and new members over 18 years of age are welcome.

Enquiries can be made to the Secretary, PO Box 80, Swansea SA1 1WN.  
Pearly Queen (Secretary)

## The Ham International Owners' Club

I'd be grateful if you would mention the club which we're starting. It's the Ham International Owners' Club and anyone (AM/FM/SSB) using Ham equipment is welcome. The membership isn't finalised yet as some of the cards and artwork are still under press. But it's hoped to keep it down to about £3.00 which will include Membership No. and card, 10 club QSL's and use of the PO Box which is under application at the moment. We will forward QSL's, etc., on receipt of a sae or stamps.

Embroidered patches, rubber stamps and many more club goodies will be available shortly.

If any members let us know of anything interesting, QSO's, antenna constructions, mods, etc., we will be able to produce a newsletter.

Enquiries and applications should be sent to me at 112 Leeds Road, Murfield, West Yorks WF14 0JE with sae or 18p in stamps.

Martyn Bolt (26 HI 01)

## Worlds End Breakers Club

We are a newly-formed breakers' club in Wendover. We eyeball at the Shoulder of Mutton Hotel every Monday at 8.00pm. At present we have a membership of 170, all of whom operate on FM.

When the weather improves, we intend holding several outdoor activities. At the moment, we are organising a darts team and any other club that would like a match some time should contact us.

We endeavour to have some form of entertainment every other week for the members, i.e., disco, buffet, talks, etc. Any breakers passing by are welcome to call in for an eyeball.

Keep up the good work.

Sooty (I. G. Nelson)

## The Eden Valley Breakers' Club

I would like to mention our local CB club in your Club Spot in your magazine.

It is called The Eden Valley Breakers' Club and meets every three weeks at The Grapes Inn, The Sands,

Appleby.

The main object of the club is to raise money for local charities. Membership is £5.00 but anyone coming to an eyeball can get in free (no fee to come in and see what we get up to but £5.00 for membership).

If you come and join you get a keyring and eyeball badge free and later on in the year we will be organising foxhunts, which are great fun.

I'll give you all the high numbers for now.

88's and all that jazz.

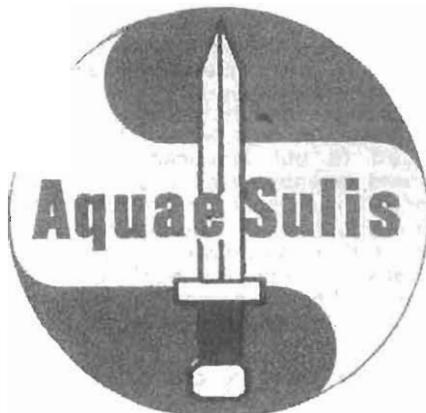
Firebird (S. Norgrove)  
(Hon. Secretary)

## Citizens' Band Radio Club Bath, Avon

This is to let everybody out there know the Aquae Sulis Club is still going strong down here in the West Country. We have been in existence for almost two years and the club supports all types of CB. Our membership stands at 1,070 and we break on 14 and 19 for the truckers and we also have two excellent information channels both on 03 FM/AM and these are manned throughout the day until midnight.

The main club meets every other Tuesday at Tiffanys in Bath, 8.00pm-1.00am. The Juniors also meet at Tiffanys but every Saturday, 11.00am-1.00pm, where a great time is had by all including the seniors, which gives the mums and dads a chance to do the shopping by themselves.

As far as fund raising, we find this brings together all sorts of people. So far we have collected £400 for our local hospital baby unit, £240 for Stoke Mandeville Hospital and £130 for the local hospital Ward 9 Cancer Appeal. We also have, through whip rounds and small fund-raising events, put two children on the air. These children are both sufferers from spina bifida and the response to these two



appeals was so great that there was enough money to kit them out completely and still have some left over for further use.

Our social side is very good and with

having a superb venue in Tiffanys we are able to stage quite a lot including live bands, comedians, etc. Fairly recently we staged an OTT-style evening which broke all records and through this we can arrange a show which can visit any club and entertain them. That's if they have a few people game for a laugh. By the way, this includes the Inflataballs, Bath's answer to the Balloon Dance.

We do all the usual things, convoys, turkey hunts, football, cricket, rugby matches, etc. Amongst our membership we have a racing driver, sorry, Formula Ford Champion, who we give a great deal of support to by turning to what is always a good day's motor sport whenever he competes.

Our club address is B. Gower (Sec.), 12 Morford Street, Bath, Avon.  
S. Phillips (PRO)

## East Coast Breakers Association

Just a line to give you the revised details of the East Coast Breakers Association, as we've had a few changes lately.

We used to meet at The Tartan House but for various reasons had to find a change of venue and we now meet at The Red Lion Inn, The Green, Gt. Bentley, nr. Colchester, Essex. This is also our mailing address.

We meet on the first Sunday of every month and although we are limiting our membership we always welcome guests along.

I would be grateful if you could include this information in any future lists of clubs, etc. Many thanks.

Silver Streak (Jill) (Secretary)

## K19 Club

We hold our meetings every second Tuesday in the Charleston, Kilmarnock. We are an AM-FM social club. In the first half of our meeting CB is discussed and we have a social event in the second half.

We play darts and dominoes and hold Game For A Laugh-type things (A good laugh, know what I mean?). Anyway, if you're passing through, come along. You'll be made welcome.

Trigger (PRO)

## Oldham Breakers' Social Club

I wish to inform your magazine of some changes in our club. First, we have changed our eyeball night from Wednesday to Thursday night.

Our membership is now 299 and still growing.

We also have a rescue group in the Oldham area called Base 13. They monitor channel 9 AM and hope soon to start on FM.

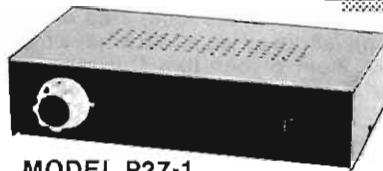
Rifleman (Secretary)

continued . . .

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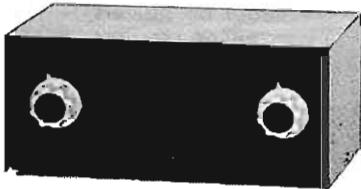
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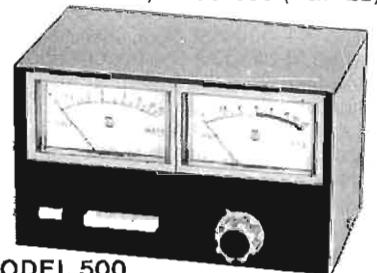
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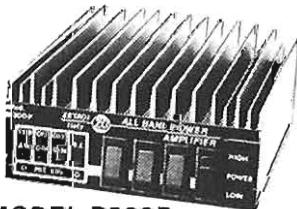
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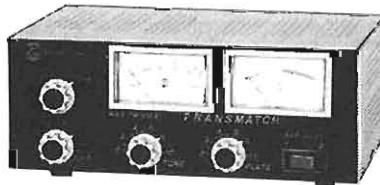
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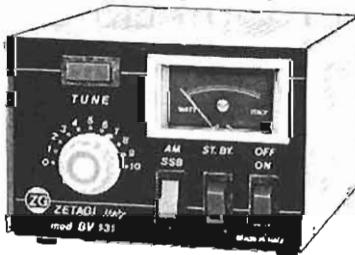


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# CLUB SPOT

## Sierra Hotel DX Club, Rossington

I am writing to tell you of the newly-formed club listed above. The club meets in the Station Hotel (the '125') in Polo Town, that is Rossington, at 8.15pm on Wednesdays and we have a good club meeting AND social night each time.

Since the club was formed, we have increased our membership though because of the limits of space we will have to close the membership at around 50/75. The club is called the Sierra Hotel DX Club for obvious reasons and there is a small membership and attendance fee paid by all club members.

All members are given a club card (numbered) and we issue a certificate to all members who qualify for them in obtaining the required number of DX copies, e.g., 10 copies, 20 copies, 30 copies, over the club month and year use of club PO Box.

We use 41 hi-band as a club channel and 50 hi-band as the DX breaking channel. Also we have trips planned to the coast and this, together with a projected monthly social night and a buffet disco dance, means that the social and family side of things is not being neglected.

Anyone who is interested in joining is more than welcome to turn up at the club meeting night (with regard to space and limit on final numbers) and we do accept a few visitors on club night, too.

A final word and that is the club is NOT limited to the local area only for its members as we already have members from places like Owston Ferry and Pontefract, with enquiries from Rotherham and Sheffield too.

The address to write to for information (please include a sae) is The Secretary, 20 Grangefield Avenue, Rossington, South Yorkshire DN11 0LS or phone (0302) 868291.

## Wobbly Breakers Club (Newquay)

The WBC has been formed because we felt there was a need for an AM club in our area. Although some members use the 'Legal(?) UK FM', we are all genuine AM breakers.

We are not interested in the AM-FM war, we fight for the recognition of the 'Worldwide accepted frequencies'.

Each member is a member of the 'Thames 9' monitoring service and the Newquay area will be monitored for 10-33's. So, remember, we welcome all breakers to our area. If you have an

emergency, call for a Thames 9 monitor and if you need information or just a ratchet, don't call 1-4 for a copy, shout for a Wobbly Breaker.

10-10, wobble-wobble, we gone.

The Preacher (Secretary)

## Bandtown Breakers Club

Bandtown Breakers Club (Brig-house, West Yorkshire) was formed over a year ago and breakers have met regularly since at the Grove Inn Motel, Elland Road on a Tuesday night. Membership is relatively small but active and the club and elected members meet once a month.

The original idea of the club was to provide legal aid to breakers, should a member be busted. Fortunately, this was never required since we try to sort out any problems ourselves - without the aid of Busby. Legalisation has changed the ideas and the club is now open to both AM and FM breakers. We intend to be more socially based while continuing with charity work which has been very successful in the past.

Anyone interested in joining should shout for Peacemaker, Lady C or Rugby Special or just come to the eyeball - there's no charge, only for the beer. We'll be happy to see you.

Rugby Special (Secretary)

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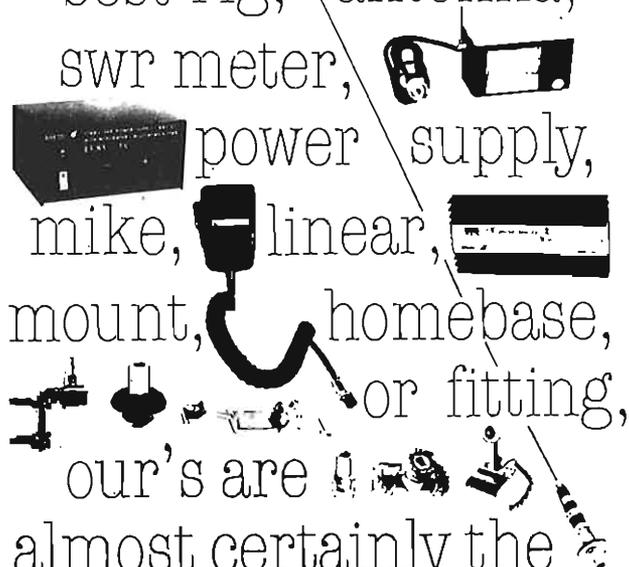
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# A worthy prize for Stickinsect

## A new rig for 'Golf Whiskey Hotel'

When the 1982 CB Show advance ticket number prizewinners were drawn, we had no idea that the first prize had been awarded to such a worthy winner. The prizewinner turned out to be 12-year-old Stephen Pratt, from Bloxham in Oxfordshire. Stephen is one of 20 children, from difficult situations, who stay at Godswell House children's centre, under the supervision of Rod Smallman. Rod, who is better known as Childminder, brought Stickinsect (Stephen) and a mini bus full of the other children down to the Wembley Show for an Easter outing. The children have been using CB radio since 2 November last year when it was legalised, utilising the station handle Golf Whiskey Hotel to retain their anonymity.

### A valuable asset

Stephen is a quiet, shy young lad. His interest in CB radio has started to bring him out of his shell, so much so in fact that during the extreme weather conditions earlier this year, Stephen was at the centre of a network relaying valuable information on road and weather conditions to motorists snowbound in the nearby villages.

Stephen's help was so valuable in this instance that the local newspaper caught wind of it and published the story.

Stephen has proved to be a valuable asset to the CB community and it is fitting that he should be presented with a rig of his own. It was with great pleasure, therefore, that we pres-

ented Stephen with a Maxcom 4E transceiver and a box of CB goodies such as T-shirts, patches, hats, diaries and, of course, back copies of CB Radio Magazine. To complement our presentation, Sparky, from Banbury CB Centre, presented Stephen with a power supply, which with the antenna hastily put up by Childminder the day before completed his home-base set up.

It is only left for us to wish Stephen many years of well-deserved happiness from his CB radio and to ask breakers in the Banbury area to give Stickinsect and his friends, Charlie Brown, Snail, Lookalike (I and II), Smasher, Fishmonger, Winkle Picker, Swindon Cowboy and Lipstick, a call at Golf Whiskey Hotel.

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# Electricity made easy

## Understanding rectifier circuits by Spotty Dog

Last month's article showed that there were big advantages to using AC electricity in the National Grid system. That's OK so far as it goes but electronic equipment won't run on AC. The flow of electricity round transistor circuits has to be a steady one-way DC flow, just like the current from a battery.

So, apart from dropping the mains voltage down to a reasonable level for a rig by using a transformer, a power supply unit has to change this AC electricity into DC. There are other times when it helps to change AC to DC, like when you need to separate the radio signal from the modulation in a receiver or when a meter needs to measure an AC voltage. The electronic circuits and parts used in all these cases are very similar and are called rectifier circuits.

### Valves

The flow of electricity round a circuit is very like the flow of water in pipes. DC electricity is a straightforward, steady flow one way round the circuit. AC electricity is a back and forwards 'sloshing' of electricity in the wires. Obviously, what is needed to turn AC into DC is a non-return valve, like you sometimes get in central heating systems. Fig. 1 shows the sort of simple flap-valve that is used to stop back-flow in water pipes.

During the first half of this century, the only sort of electronic component that could do this with electricity was

a valve. That is where the name came from. Except for special jobs where a lot of power has to be handled, valves are almost never seen nowadays because of the invention of silicon diodes. Even so, it's worth studying valves for a bit because it shows up an interesting mistake that the scientists have made.

### Blunder

A valve is a glass bottle with no air in it, containing a hot wire and a metal plate a few millimetres apart. (That's about  $\frac{1}{16}$  in. in English). The wire is kept hot by passing an electric current through it. This heater current has nothing to do with the way that the valve works electrically, it's just a handy way of keeping the wire hot.

Scientists knew that when something gets hot it sprays off bits of sub-atomic stuff called electrons, so it ought to be possible to collect them on the plate. This idea worked and it turned out that the electrons were what made an electric current. BUT, the current was going the wrong way. The electric current seems to go from the plate to the hot wire according to the rule "Electricity flows from positive to negative". When they discovered that the real flow was electrons going from negative to positive,

there were a lot of red faces.

The real mistake had been made years before in deciding which end of a battery to call positive. The wrong end had been picked. It's too late to change everything now, so it's been left the wrong way round in all the books and will probably stay like that for ever. It doesn't make much difference, anyway, except in very special cases. Just remember that although we always show electricity going from positive to negative in diagrams, it really goes the other way.

### Silicon diodes

Because these electrons can only move from the hot wire to the plate but not the other way, the valve will only let electricity go through it one way. In this sort of simple valve there are two electrodes (the hot wire and the plate) so it is called a diode (di = two).

The name 'diode' has stuck so that we call any sort of one-way electronic component a diode. That's a pity, it ought to be called a valve but the glass bottle things got called valves even though they weren't all one-way diodes.

A silicon diode is usually a little black cylinder, about  $\frac{1}{16}$  in. to 1 in. long. It has a white ring round it at one end and a wire sticking out at both ends. Electricity can go in at the plain end and out at the end with the ring round it but it can't go the other way. (Fig. 2a).

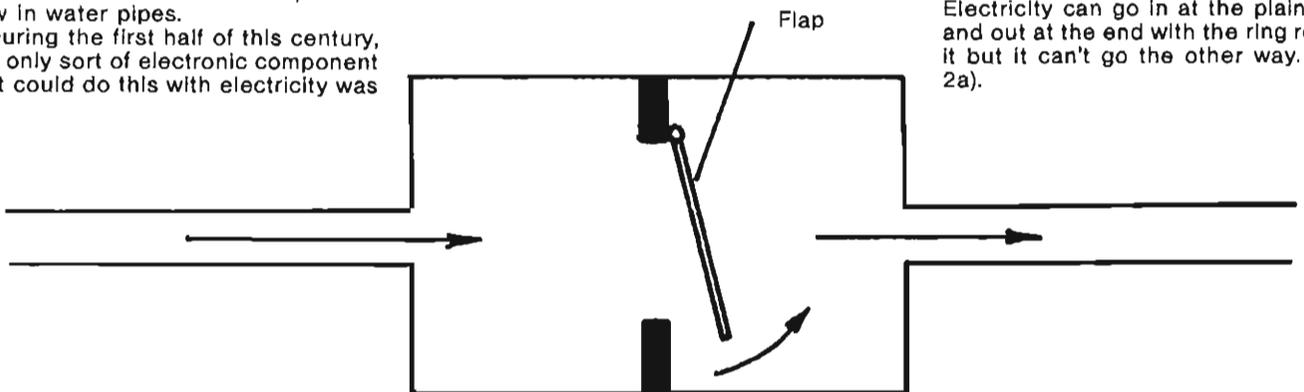


Fig. 1. One-way water valve.

Sticking a diode in an electric circuit will stop the backward part of an alternating current and just let the forward part through. The electrical symbol for a diode is an arrow head showing the direction of flow with a bar to show that electricity can't go back the other way. (Fig. 2b).

That's all there is to it. Different sizes of diode are made that can handle more or less current or stand different amounts of back pressure without breaking down. Most of them are marked with a series of numbers and letters to identify the particular type. For example, type 1N4004 can take one amp of current or stand a reverse voltage of 400V before burning out.

Apart from the black plastic tube kinds, there are glass ones and a few other odd shapes that you might meet occasionally.

If you want to know how a diode 'really' works, how the electrons move in the silicon crystal, etc., you'll have to look it up in a book. It's a complicated business and there isn't room to go into it here. Anyway, it doesn't matter. You don't have to understand the dynamic properties of steel and rubber composite structures to change a tyre. The same is true of electronics.

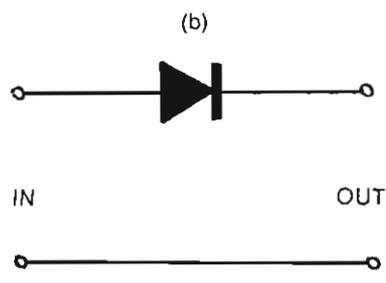
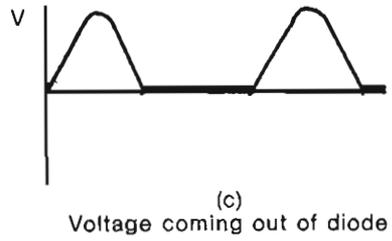
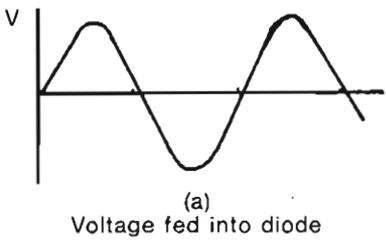


Fig. 3. Half-wave rectifier.

**The chop**

Suppose there is an electric circuit being fed with AC electricity from the mains. The voltage at the input to the circuit will be swinging up and down 50 times a second like in Fig. 3a. If a diode is put into the circuit (Fig. 3b) the voltage after the diode will only swing up and down as in Fig. 3c. The bottom half of the 'wave' is cut off because the electricity can't flow backwards. This sort of rectifier circuit is called a half-wave rectifier.

All rectifier circuits give a jerky output that has to be smoothed out before it can be used but the half-wave rectifier is the worst. That means a complicated smoothing circuit has to follow it and takes up a lot of room. A better sort of modern rectifier is the full-wave bridge circuit.

To understand how the bridge circuit works, it will help to examine Fig. 4a. Imagine that the AC input voltage is on the first part of its cycle, so that the electricity is being pushed into wire A and sucked out of wire B.

The electric current goes along to the top of the diamond-shaped arrangement of diodes where it finds a

choice of two paths. One of the paths is blocked, though, because the diode in the wire is the wrong way round. The electricity has no choice at all, it has to go to wire D. Then it has to travel along wire D because the only other route is blocked again. After it has gone through the rest of the circuits in the rig, the current comes back along wire E to the diamond. It has a choice to go into wire A or wire B through the two other diodes but, because wire B is the one being sucked, that's the way it goes.

Now look at Fig. 4b. The situation in the second half of the cycle is different. The electricity is being pushed into wire B instead of A but, when it gets to the diamond, it can only go through one of the diodes and finds itself going out ALONG WIRE D AGAIN. No matter which way the electricity goes into the diamond, it always goes out along D and back along E.

A full wave bridge circuit takes the backward going part of the AC cycle and turns it round to go forwards. The result is a lot less lumpy than the half-wave rectifier output.

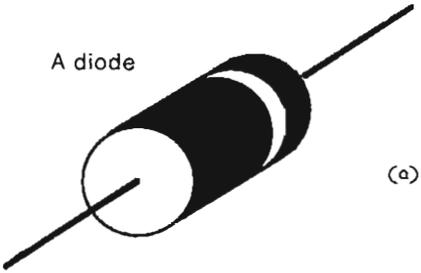
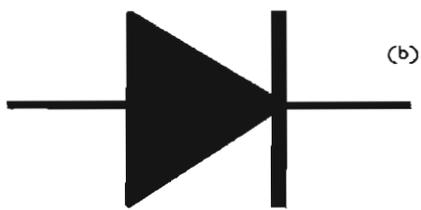
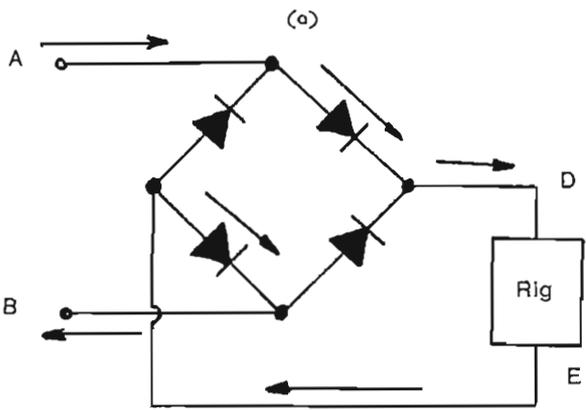


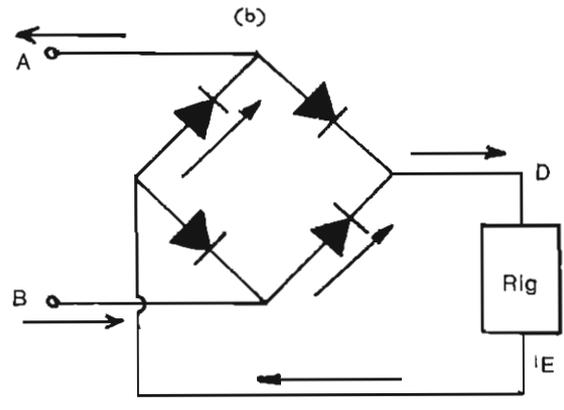
Fig. 2.



Electrical symbol for a diode



Electricity going forwards



Electricity going backwards

Fig. 4. Full-wave bridge rectifier.

# DX QSL

# INTERNATIONAL

# CLUB SPOT



## A European roundup

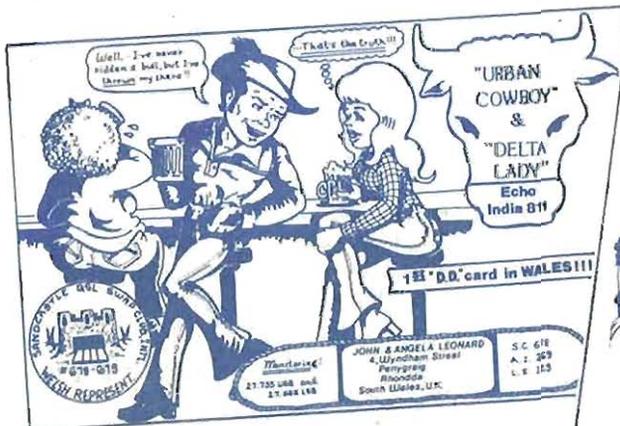
Hallo everybody, how're you doing? OK?

If you care to read past this Introduction, you'll see that this month's reports are predominantly UK and European. I'll explain the reason behind this further on.

First off, let's talk frequencies. Just exactly what is meant by "Club standby channel is..." or "Club X monitors frequency..." and so on?

The idea is quite a simple and sometimes a very workable one. The theory is that if club members fire up on the specified frequency it is hoped that they will hook up with other members of the same club, either locally or internationally. Some clubs, in fact, not only specify a particular frequency but even the best days to give it a whirl!

An example of this is the India Bravo Group of Borlaenge, Sweden. The IB Group uses 26.605, 805, 905, 27.505, 706 and 805 USB as club standby frequencies with the emphasis on Saturday and Sunday operating. As I say, the theory is fine but does it work in practice? Well, of course it will but like everything else concerning 11-metre DX, it will only work if you make it work. What is meant by work? Well, immediately springing into mind are the standards of call sign, courtesy and technique. If you are thinking about working a recognized DX club frequency, always use the club call sign and unit no. allocated to yourself and be courteous to other users on the frequency. Remember, when all is said and done, no club can lay claim to a frequency and last but not least, when you are using your club call sign, try to keep your radio technique up to scratch. After all, if you think well enough of your club to use their call sign, try and be a credit to the group, not a discredit. Which brings us back once again to the \$64,000 question "But does it really work?". Using the India Bravo club as an example again, between the middle of November 1981 and the middle of March 1982, Club President ULF 11B1 has to my knowledge recorded more than 20 QSO's with his UK pal, Vic 11 IB4 of Plymouth, courtesy of club frequencies. Pretty good going and proof, I think, that club frequencies used correctly can and do work. To



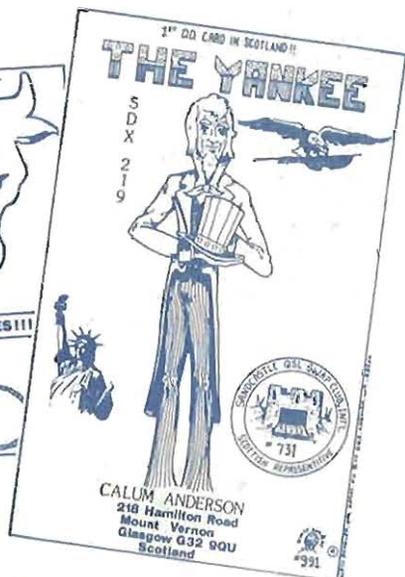
give you a chance at working some of the more regular club frequencies, I'll list a few each month, starting from NOW!

### DX/QSL club monitoring frequencies

Born Free QSL/SSB Club World Wide, Athol Springs, NY, USA. 27.405 USB.  
Echo Charlie Int. DX Group, Fredericia, Denmark. 27.525 LSB.  
Long Island Skip Shooters, Selden, NY State, USA. 27.635 LSB.  
Snowmans Club, Reykjavik, Iceland. 27.385, 795, 985 LSB.  
Sierra Delta Sideband Club, California, USA. 27.605 LSB.

Speaking of frequencies, I must give you an update on the ILLEGAL FREQUENCY OPERATORS of Gadsden, Alabama. I had a nice chat with Randall IFO 1 a wee while back and he gave me the latest on the group.

First off, the group is no longer known as Illegal Frequency Operators but as INTERNATIONAL Freq. Op. There are several reasons for this. Firstly, so many international operators have requested unit numbers that it seemed appropriate to change the name to Int. and last but not least, Uncle Charlie just didn't take kindly to the name Illegal Freq. Op. Seems like the FCC turns a blind eye to a lot of illegal frequency operations but when you actually come out in the open and begin flaunting the fact that you're an illegal freq. op. via a call sign, well, Uncle draws the line there. A friendly word soon warned Randall that he was walking on dangerous territory via the club name, so sadly it had to be changed. Luckily, Int. Freq. Op. seems very appropriate and it does sort of imply the same idea without actually stating it and, most important, the call sign stays the same. The name is not the only thing to change, the club it-



The first Scottish and Welsh Dirty Doodler cards - potential collectors' items.

self has changed. In order to accommodate the new members' requests, Randall has made available rosters (\$5.00), patches (\$1.50), rubber stamps (\$6.00), cap (\$7.00) and QSL cards (\$25.00 per 1,000). As you can see, IFO has joined the ranks of the big-time DX clubs. Thankfully, though, Randall and the rest of the working committee are still the same old bunch of great blokes with the same ideas on radio use. Kindness, courtesy, friendliness and good operating procedures. Randall is always keen to hear from other radio operators, you'll still catch him at PO Box 77, Gadsden, Alabama 35902.

It seems that the gap between amateurs and CB'ers is still as wide as ever. The other month, Station Golf Lima, operating out of Co. Tyrone, N. Ireland, was having a fine QSO on the 28MHz band with a radio amateur out on the Gulf of Mexico. Everything was going fine until Golf Lima disclosed his CB status. Sadly, the inevitable happened. Mexico pulled the plug and went QRT!

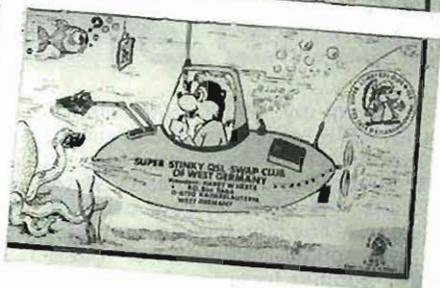
There's some fine new DX clubs popping up just recently. If you live around the Chesterfield area, look in at the Spital Hotel on alternate Sundays, i.e., 11 July, 25 July, 8 August, etc. The Delta November Int. DX Club will be holding their regular fortnightly meeting and you'll be made welcome. It's a good night out, making a nice change from washing up the Sunday

tea things. If you can't make it but would like further details, drop a line to PO Box 13, Alfreton, Derby or, alternatively, give a shout on club frequencies 27.495 USB, 27.495 LSB or 27.075 LSB requesting a QSO with a Delta November operator. I'm sure it won't take you long to find one. Incidentally, use of the post box is not restricted to club members only. Cost to members for use of PO Box is £2.50 per annum, non members pay £3.00. A nice gesture by the club and it could well prove the answer to your DX AD problem.

Good news now from the Whiskey Delta Charlie Int. DX Club of Wakefield. A new addition to the club package is a DX log book. Although not on the application form, the log book is now sent out to every new member with his club package. A very nice extra.

Something of interest now for Dirty Doodler collectors. The first Scottish and Welsh DD cards are now ready and willing to go out into the big, bad world, courtesy of Calum 'The Yankee' Anderson and John and Angela 'Urban Cowboy and Delta Lady' Leonard. Check out the QSL list for their full AD's. Although they are black 'n' white cards, this in no way detracts from their desirability nor the undeniable fact that they are firsts and thus very important collectors' cards. I must also thank John for info regarding the DD four-parter card which I mentioned last time around. John very kindly phoned me with the necessary info regarding DD 952, 953 and 954. Thanks very much, I'm really grateful for your help. Speaking of Dirty Doodler, what do you reckon to the new Cooky QSL's? In my opinion, they are the only UK cards which can begin to be compared with DD and Sundown collectors cards. They really are good, especially the new and exciting colour photo series. I was all set the other month to have a photo series card done but decided at the last minute to spend the money on my ill-fated Colonel FR360. In retrospect, I wish I had gone in for the cards. At least I would still have something to show for my money! As it happens, I'll be featuring Papa Bravo Group some time in the future. However, I can't pass PB by without saying that Andy 'Edbanger' Cookson and Ken 'The Red Lion' Wheeler work 100% for the club. If you ever come across a Papa Bravo application, read it and you'll see a very good club package. In fact, a good club to join.

News from Norway Amateurs is always worth listening to. At long last, NAC has decided upon a club frequency or as Andy (NAC Pres.) calls it, a house channel. NAC'ers can now (with a wee bit of luck) hook up with each other on 27.485 USB. Actually anybody can hook up with anybody on 27.485 USB. No one owns the airwaves but it's nice to know the possibilities of meeting fellow NAC'ers are increased by using the club frequency. Another way in which NAC'ers can chat to each other is via the NAC Cassette Club. NAC'ers interested in exchanging cassette letters are advised



The Dirty Doodler 'four parter' for the Sandcastle QSL Swap Club, 'Keep In Touch' QSL Club, Super Stinky QSL Swap Club and the Kia Ora QSL Club.

to get in touch with Andy for registration. Don't forget to mention which language(s).

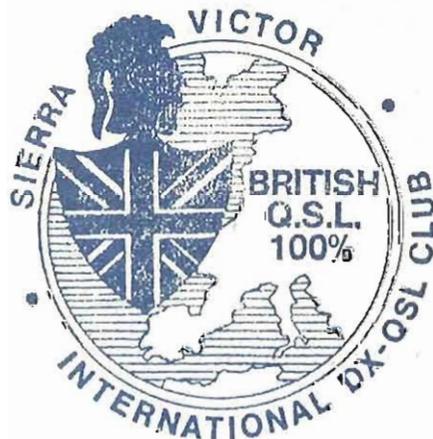
OK, here's a little bit of an update on Outlaw Int. Unit No. 8998 was issued recently to James in Queenstown, Republic of South Africa. There are now 416 Outlaws in the UK (not counting XYL's). It's getting bigger 'n' better all the time, folks. Incidentally, Richard and Sharon will be visiting the UK, hopefully in June 1983. I don't know if they'll manage it but they're hoping to meet as many Outlaws as possible. They've promised to drop in and see me, that's something I'm looking forward to very much. For the benefit of all UK Outlaws, here's a personal message from Richard: "Tell everyone in the UK, Turtle in Rocket City, Huntsville, Alabama said 'Hi and to keep on fighting for the freedom of the air on that 11-metre band'. Also a special hallo and thanks for the great QSO's to Dave in Bucks and Eric in Oxfordshire. Until next time, best wishes to you all from a Rebel in the Heart of Dixie but we're all just Yanks to you."

What a smashing bloke, I'm certainly looking forward to my lightning Hello and Goodbye next year! Last word from Richard refers to the old DX'ing saying "Keep him in the air". I knew the saying well, I loved the sound of it but I was always in the dark as to its meaning. Among several explanations offered by Richard, the one I like best is the following. "When CB really took off Stateside, especially 11-metre DX, word spread around the American amateur radio networks that they (the amateurs) were going to 'bury' us (the CB'ers), and that we would not last because we knew nothing about radio. Well, between them, the amateurs and the FCC have indeed tried to bury the 11-metre DX'er but there's no way that we'll lie down. We'll keep on fighting for the right of free air for everyone, no matter how far it goes. In fact, till the day we die, which is the only way that they'll ever bury us and even then we'll not lie down! So the saying came about 'keep him (the CB'er) in the air

(waves)'. The stamp which commemorates the saying is ACE. It sums it all up 100%.

Jim and Marian (Duke and Duchess) Glavin, President and Vice-President of Big Ben DX Club, must have hearts as big as Big Ben itself. After several false starts and disappointments regarding a regular meeting place for Big Beners, Jim and Marian decided that the only thing to do was to throw open their doors to club members. With over 750 members, it could prove to be quite hectic. Not content with issuing the invitation to members, the invitation was extended to members' families. The main topic under discussion was a regular and reliable meeting place. For the sake of Jim and Marian's floorboards, I hope a reliable venue was found.

How much importance do you attach to club rubber stamps? To a certain extent, they are the initial contact with DX/QSL clubs and should, therefore, be if not interesting at least eye-catching. Sierra Victor Int. DX/QSL Club stamp certainly comes into this category. How? By virtue of the sheer size of it, that's how! It's one of the biggest club stamps I've ever seen.



Initially formed as a breakaway club within the Soar Valley Breakers Club at the back end of 1981, Sierra Victor Int. was very quickly able to stand on its own feet and be recognized as

# DX QSL

# INTERNATIONAL

# CLUB SPOT

such. Run by Peter (Sidewinder) Breed, QTH of Sierra Victor is 43 Greedon Rise, Sibley, Leicester LE12 7TE. Membership fee of Sierra Victor is £6.00 plus 10-15 of your personal QSL cards. The club package contains an interesting selection of good-quality goodies including the wonderful stamp, club QSL cards, ID card and a blank cassette tape. The first 25 members also received a special gift. Seeing as I'm unit 012C, I happily qualified for this item. The gift turned out to be a Charlie and Di Wedding Crown, which I thought was rather nice. Available as an extra item is the club newspaper. Subscription to the four times a year newsletter is £2.00. Also available on the interesting extra items list are T-shirts, cassette tapes, car stickers, rubber stamps and so on. Perhaps the most interesting item available is the discount which Peter can arrange on a holiday in Cornwall. For full details of this you'll have to get in touch with Peter yourself. All in all a genuine club run in an efficient manner by SV001 - Peter Breed. So if a stamp that will fill up half your card in one go is what you're looking for, give a thought to Sierra Victor and their Goliath stamp!

Well, that just about gets me to the end of this month's bits and pieces. One last piece of earth-shattering news. I am no longer PRO for EIDX. No arguments, animosity or nastiness brought this about, just sheer pressure of work. I had to cut various things out of my routine and, unfortunately, EIDX was one of them. Naturally, I will still answer queries or pass them over to Lez but I am no longer associated in any official capacity.

So, why a predominance of European and UK reporting, you're saying to yourself. The reason is, next month I want to devote the greater part of my article to a particular club and may not, therefore, have room for any UK reporting. Hence the large amount of it this time around. The next question I can hear you asking is 'What club?'. A special treat is in store for you, I promise. One of the world's greatest DX/QSL characters and his club, Tom Sowden and Keep in Touch Club of New York. KIT is one of the world's supreme clubs.

The club's name alone sums up just what DX/QSL'ing is all about. Tom, by the way, is the originator of perhaps the most famous DX/QSL saying of all time:

"If you can't use the mic, use the mail".

KIT also has a thriving UK chapter but full information next time around.

Till next time, take care and my best regards to you all. Just thought on, plenty of DX info kits left for anybody that wants them.

Ta, ta, Charlie Hotel Echo India 25 clear.

"Keep him in the air."

News, views, comments, QSL swaps and requests to Charlie Hotel, 3 West Street, Tyne and Wear SR3 1EU.

## Charlie Hotel Echo India 25

### 1-4-1 QSL List

Bob Toreaux 32 Byron Street Sulimba Queensland 4171 Australia	Kees - Kosmokat PO Box 2137 5600 CA Eindhoven Netherlands (Highly recommended sci-fi card)	Peter SC625 PO Box 16 A 1023 Vienna Austria	Ken Jasmine CB148 (Superman) PO Box 619 Francistown Botswana
Helen M. Griffiths (Black Phantom Lady) CCBR PO Box 4095 Station D Hamilton Ontario L8V 4L5 (Trades souvenir spoons 1-4-1)	Gerard Laird (The Tyrone Tiger) 20 Loughview Gardens Coalisland Co. Tyrone N. Ireland	Ferg Eddy SC506 42 Merritt Street Whakalane New Zealand	Abed (Superman) PO Box 113-5535 Beirut Lebanon
Calum Anderson (The Yankee) 218 Hamilton Road Mount Vernon Glasgow Scotland G32 9QU (First DD card in Scotland DD 991)	John & Angela Leonard (Urban Cowboy & Dalte Lady) 4 Wyndham Street Penygraig Rhondda South Wales (First DD card in Wales DD 1016)	John Brown SC664 42 Owen Street Newtown Wellington New Zealand	Tom AC007 PO Box 350 Tai Po NT Hong Kong
Dirty Doodler 4-parter No. 951 Ian Schrader Sandcastle QSL Club PO Box 167 Pacific Beach Washington 98571 USA	No. 952 Abdul Reibudden Kia Ora QSL Club PO Box 38579 Petone New Zealand	Phillippe (Coyote 72) Box 193 2035 Corcella Switzerland	Manola (Mecca) PO Box 151 Mellia Morocco North Africa
No. 953 Tom Sowden Keep in Touch PO Box 61 Richmond Hill New York 11419 USA	No. 954 Harry W. Hertz Super Stinky QSL Club PO Box 2864 D 6750 Kaiserlautern West Germany	Gianni (Zapata) PO Box 20 40011 Anzola E Bologna Italy	Aron (Snowman #5) PO Box 9104 129 Reykjavik Iceland
		Miguel Sanchez Apdo Postal 52-731 Mexico 15, DF Mexico	Alain (Sierra Charlie 662) PO Box 4 17600 Medis France
		Edgardo Sarmiento PO Box 151059 Bogota DE Colombia South America	Hiroshi Yamada 25E35 856 Nishishimojo Kofu 400 Japan
		Randy Unit 109 PO Box 122 Wartburton Vic. 3799 Australia	Jon (Sierra Charlie 671) Box 40 Eyrarbakka 820 Iceland
		Don Chapman PO Box 279 Portland Vic. Australia 3306	Jon Tomczyk PO Box 270 Woodville 5011 South Australia
		Ken Pettke Unit 921 PO Box 289 Oak Lawn Ill. 60454	Ralf Wienzek PO Box 45 La Nucla Spain
		Bill Ollerenshaw (Bigfoot) 266 Waterloo Road Lower Hutt Wellington New Zealand	Julio Avaroa Estanislao Zeballos 4 148 3874 V. Dominico Buenos Aires Argentina

### Worldwide DX'ers

Well, always glad to hear from readers of this column. Let me know how the DX has been, what countries you've been hearing and what kind of QSL returns you've been getting. My own experiences with QSL'ing have been good. The hardest countries to get returns from have been Mexico, Central America and South America. All of my contacts say they QSL but only one out of every 10 do. I hope that Humphry over in St. Johnston and Martin AC35 in Ballymena, Ireland will send me their QSL cards to confirm contact. Anyone wanting some QSL cards or information on QSL'ing, send me an International Reply Coupon and your card to Ian Shrader, PO Box 167, Pacific Beach Wash. 98571, USA.

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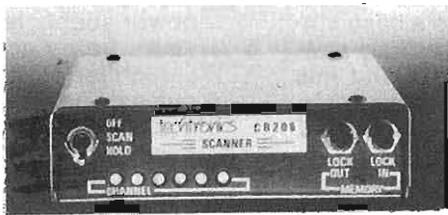
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# FM FEEDBACK

# FM FEEDBACK

Part 2 by E. A. Rule

It had been the writer's intention this month to compare the test results of typical power supplies available for use with CB mobile equipment when used as a base station. During the tests some very alarming results came to light and this report is, as a result of those tests, very different from the one intended.

When one buys a piece of equipment it is reasonable to expect it to fully meet its published specification under all normal conditions of use. Where power supplies are concerned, if one is rated at, say, 13.8 volts at 3 amps it is reasonable to assume that it will, in fact, deliver 13.8 volts when loaded to 3 amps and that it will continue to do so continuously. Regretfully, this has not been found to be the case. Two typical power supplies were obtained for testing, both are commonly available and retail for around £12 to £16. Now one does not expect a silk purse from a sow's ear but one does expect complete honesty from the manufacturer regarding the specification given to the item in question. As the importers of the power supplies tested have been informed of the results and one is making all haste to put things right, no names will be given at the present time. However, this may not always be the case.

Power supply No. 1 is of Continental manufacture and is rated at 13.8 volts and 3 amps. It is manufactured to pass the British Standards safety test. As far as the BS tests were concerned, the writer has been informed that it does meet the standard required and from its construction has no reason to doubt this. In fact, it is a very well-engineered power supply but, regretfully, it has a serious design defect regarding its electronics. Referring to Fig. 1, the output from the bridge rectifier is connected to capacitor C1 and this has the *unregulated* voltage across it which then passes to the regulator IC1. In the case of the power supply under test, the voltage output from the bridge rectifier is 31 volts (under no load conditions) but the capacitor is only rated at 25 volts *working*, an overload in voltage of 24%! This means that even with a rig connected it would be overloaded most of the time as in the receive condi-

tion most rigs draw very little current. Under these conditions the capacitor could fail but would most likely only blow the mains fuse fitted to the power supply. A more serious condition exists when the power supply is loaded to its full rated current of 3 amps. Referring to Fig. 2, this shows the output from a rectifier which consists of a series of halfwave pulses. The capacitor smooths these out by holding a charge. It becomes charged up on the voltage peaks and discharges between the halfwave pulses. The fluctuation in voltage causes a current to flow through the capacitor and in the case of the bridge rectifier circuit used here will be almost equal to the load current. In other words, the 'ripple current' through the capacitor will be about 3 amps. This current causes the capacitor to heat up and it is very important that the component used is suitable for the job.

In the power supply under test, the component fitted was not suitable and from its size was judged to have a ripple current rating of around 1 amp. This was proved to be the case because when the power supply was run at 3 amps load current this component became very, very hot indeed after a short time. There is absolutely no doubt in the writer's mind that the capacitor would have blown up after a short time. The writer has had experience of the results of this type of blow up. It can range from a mild spraying of electrolyte onto nearby components causing possible corrosion to a very loud explosion capable of buckling a 14-gauge steel panel! Checking further it was found that this was not a case of a 'one off' mistake and, in fact, the 10-amp power supplies by the same manufacturer had the same problem, although in this case the voltage was 38 volts across a 30-volt capacitor and 10 amps ripple with a component of around 2.5 amps rating. In fact, two of the 10-amp power supplies did blow up. However, in fairness, these 10-amp supplies have been withdrawn but the 3-amp one is readily available.

Apart from this one component, the power supply is very well constructed and the importers have been informed of the problem and are making haste to get things put right. Once this has been done it should be a very reliable power supply.

The second power supply tested has more serious design problems and so far the importer has not commented on the test results. In this case the first thing that came to light was that the mains transformer is rated at only 220 volt *and this is marked on the front panel*, so buyer, beware, it is not suitable for the UK market! Its output is rated at 13.8 volts and 5 amps. Because of the 220-volt transformer running on 240-volt mains the output from the transformer is higher by about 9% and this causes the unregulated supply to be 28 volts across a capacitor rated at 25 volts. Two small-size capacitors are used and at full load current (5 amps) these get hot. However, there is a much more serious defect. The heat-sink used for the regulator pass transistor is far too small and at 5 amps load current reached about

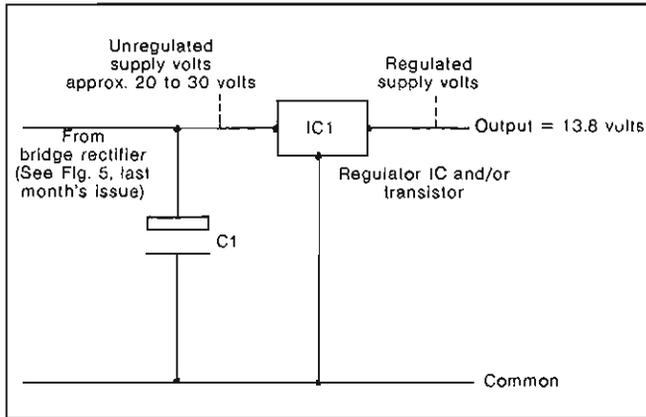
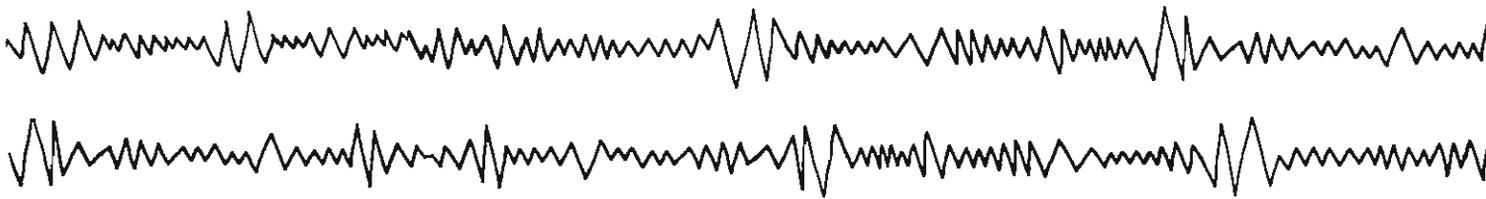


Fig. 1.

Showing how the voltage from the bridge rectifier appears across the main smoothing capacitor, C1. This capacitor MUST have a higher working voltage rating than the actual voltage present, under 'worse case' conditions. It must also have a suitable 'ripple current' rating, see text. If the regulator IC or transistor fails (due to incorrect heat sink, for example) it could allow the FULL unregulated voltage supply to appear at the output with fatal results for the rig, see text.

120°C in only five minutes and was still rising rapidly. This could (and almost certainly would) result in the destruction of the transistor which could put the full unregulated supply onto the rig. In other words, instead of 13.8 volts being fed to your rig, you would get 28 volts! Could be expensive. Further to all this, this particular design would never get approval by the British Standards and would need a complete redesign.

Now you may be asking why one never hears about these failures. The fact of the matter is that when used with a legal CB set these power supplies are *never* anywhere near fully loaded. Even when transmitting the current is only around 1.5 to 2 amps and then only for short periods of time, so the power supply is never loaded for long enough to heat it up to danger point. However, you should expect absolute honesty in published specifications and the Trade Description Act was brought into being to ensure just that. If the specification says 13.8 volts at 3 amps, you are entitled to get just that, without the unit breaking down. The writer suspects that some manufacturers have fallen foul of the numbers game, trying to claim better figures than the competition, a situation that happens in other countries without any restrictions but in the UK *it is illegal to make false claims*. But unless you complain about these misleading specifications you will continue to get them. It's up to you, the CB'er, to complain loud and clear if goods don't meet their published specifications. BUT, do be sure of your facts, often the item of equipment is perfectly OK and with an honest specification but simply unsuitable. Even so, *if you were told it was suitable*, the same Trade Description Act applies.

Coming back to the two power supplies tested, the first is almost certainly a simple design error and will be put right, the second is just not suitable for the UK market.

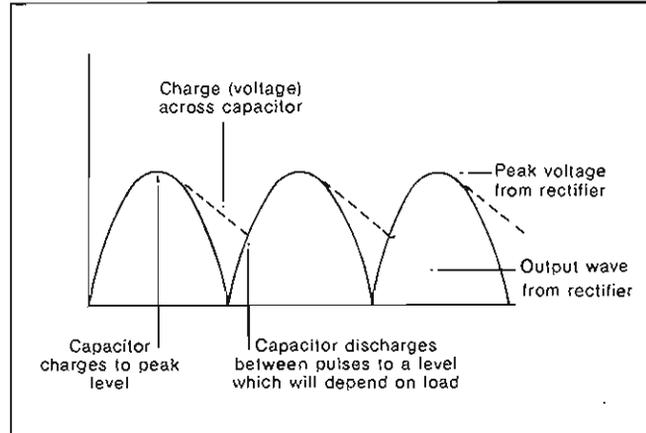


Fig. 2.

This shows how the main smoothing capacitor will charge up to the PEAK voltage output from the rectifier and discharge between pulses. The excess rectifier voltage over the actual voltage present across the capacitor produces the 'ripple current' through the capacitor and is in proportion to the load current. With a Bridge rectifier circuit the ripple current is approximately equal to the load current.

So what do we look for in a power supply? First ask to see *INSIDE* and note the following as a rough guide. The capacitor value in MFD will be marked on the side of the component somewhere and should be around 1000 MFD for each amp of rated load current. It should also be of large size. A typical 3-amp supply would have a 3300 MFD rated at 30 volts and its size about 50mm long by 25mm dia. If it's smaller than this it may not be man enough for the job if used on continuous full load. Look for a large-size heatsink for the regulator. A regulator may have to get rid of about 40 watts of heat on full load and assuming a safe maximum temperature for the device, the heat sink will be large not a thin piece of aluminium tucked up in one corner. The heatsink should take up most of the surface available. The above relates to power supplies designed for continuous loads. For intermittent use the size (but not the capacity or voltage) of the smoothing capacitor and heat sinks may be considerably smaller. Expect to pay more for a good power supply. A well-designed 3-amp power supply suitable for continuous loads may be as high as £45 to £50 or more. If that surprises you, take a look at the power supplies advertised for amateur radio equipment, one in front of the writer now is advertised at £64.

The important thing is that whatever you pay, you should expect the published specification to be fully met. If you want real quality CB, you must expect to pay for it, cheap initial expense may well be dearer in the long term. There are good buys about but go to a dealer who values his reputation and consider his advice.

Finally, this month, we shall take a look at heat sinks and their ratings. The heat sink is a very important part of any equipment that uses power devices and has the job of removing the heat generated in the device (transistor, etc.) and transferring it to the surrounding air. Like all components, heat sinks

# FM FEEDBACK

have a specification and are, in fact, rated in °C per watt. A typical rating might be 2.7°C/W. This simply means that for every watt of power dissipated the temperature will rise 2.7°C. Now this rise in temperature is the rise *above ambient*. For example, suppose we have a regulator IC working from a 30-volt unregulated supply and providing 13.8 regulated volt output at 3 amps (typical power supply specification). Now the difference between the input voltage and the output voltage will appear across the IC  $30 - 13.8$  volts = 16.2 volts. The current flowing is 3 amps. Using Ohms Law, we get watts = current x voltage; i.e.,  $16.2 \times 3 = 48.6$  watts. If we use a heat sink which has a rating of 2.7°C/W, it will rise in temperature 2.7°C for each watt, which gives us a final temperature *above ambient* of  $2.7 \times 48.6 = 131.22$ °C. Add the ambient temperature (normally taken as 20°C) and we get a final working temperature of 151.22°C! No wonder some of the cheap power supplies run hot. Take a look at Fig. 3 and compare the size of the 2.7°C/W heat sink with the one fitted in your power supply.

A piece of aluminium of 16 gauge measuring 110 x 110mm. will have a rating of approximately 5°C/W. In our example above, this would give a final temperature above ambient of  $5 \times 48.6 = 243$ °C, yet many of the CB power supplies have a *smaller* heat sink fitted!

Not mentioned so far is the maximum temperature rating of the regulator device used. Semiconductors can only work up to a maximum temperature of around 200°C and at this temperature their power dissipating **MUST** be zero. Power rating for semiconductors are given for a device case temperature of 25°C and they must be derated at temperatures above this. Taking a typical power transistor used in power supplies, the 2N3055, this has a power dissipation rating of 115 watts at a case temperature of 25°C. Now coming back to our example above, if we are dissipating 48.6 watts in the device, the 2N3055 must be derated to around 125°C maximum case temperature, **INCLUDING** ambient. Now on a hot summer's day the ambient temperature can reach 30°C or more. So, taking 30°C as a maximum figure, we deduct this from the maximum working temperature of the device;  $125 - 30$  leaves us 95°C maximum permissible temperature rise of the actual case. Now we know that the dissipation is 48.6 watts. The maximum temperature is 95°C;  $95 \div 48.6 = 1.955$ . Therefore, we need a heat sink which is

rated at less than 1.95°C/W. Take a look again at Fig. 3, only heat sinks No. 2 and 4 are suitable (remember the lower the °C/W figure the better the heat sink) and this is only for a 3-amp power supply! True, it would be, for continuous service at maximum current but the argument does show how some of the power supplies on the market cannot possibly meet their published specifications. How does the size of the heat sink fitted in your power supply compare?

Coming back now to the No. 2 power supply under test, its heat sink measures only 120 x 50mm. and is of 18-gauge aluminium. This gives a rating of around 12°C/W. On its full rated load of 5 amps, the unregulated supply voltage was 22 volts;  $22 - 13.8 = 8.2$  volts. The current flowing is 5 amps, so  $5 \times 8.2 = 41$  watts;  $41$  watts x  $12$ °C/W = 492°C! **PLUS AMBIENT** = 512°C final temperature. Case regarding possible failure proved, the device would fail long before the final temperature could be reached!

Taking the other power supply, this had a heat sink measuring 165 x 70mm. and was 3mm. thick aluminium giving a rating of around 4°C/W. On its full load of 3 amps the unregulated supply voltage was 21 volts;  $21 - 13.8 = 7.2$  volts across the regulator at 3 amps which equals 21.6 watts;  $21.6 \times 4$ °C/W = 86.4°C rise above ambient. Even allowing for a hot summer's day at 30°C this only gives a final working temperature of 116.4°C. The power transistor is a BD142 rated at 117 watts at 25°C and at a case temperature of 116.4°C can dissipate up to 55 watts, so it is running well inside its maximum ratings. As stated before, this particular power supply would be excellent but for the design error concerning its capacitor voltage and ripple current ratings.

From all this it can be seen that a power supply is *not* the simple thing that most people think it is. It calls for design expertise just as much as the most complicated rig and that is why, like everything else, a good one costs more. By way of a final comment, even if the No. 2 power supply had been rated only at 2 amps, the final working temperature would have been 216°C, still far too high, so you can see how important the heat sink is with regards to a reliable product. All the figures given assume a completely free flow of air across the heat sink. If it is tucked inside the power supply case without ventilation slots the situation could be far worse. Never cover any ventilation slots with books, etc. Always ensure the maximum air flow around equipment, particularly if mounted under or between shelves, etc.

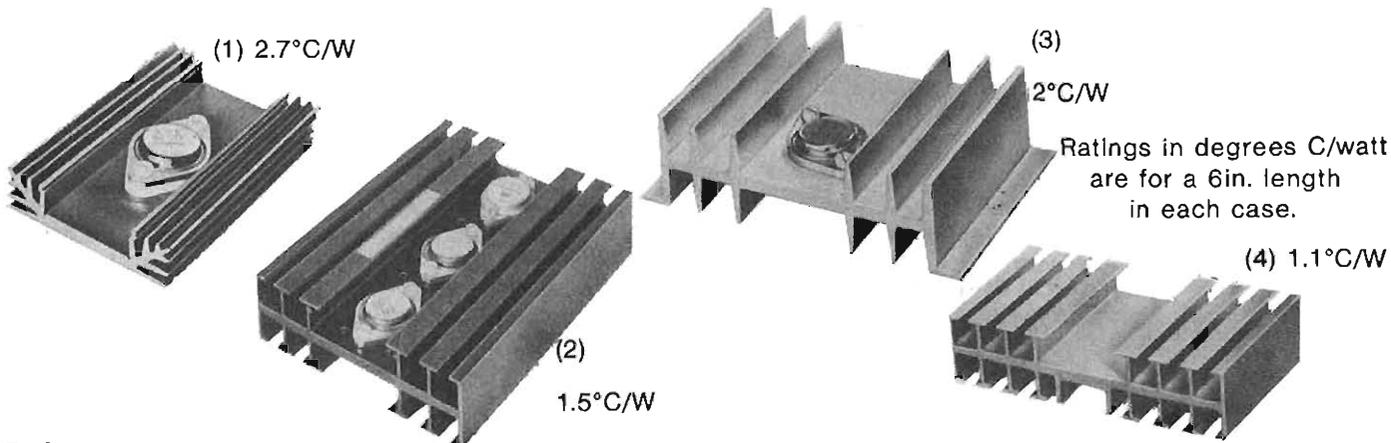


Fig. 3. Typical well-designed heatsinks of the type that should be found in power

supplies suitable for continuous use at maximum rating. These are not often found in the cheaper CB power supplies, see text.

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# Rig Test

# AUDIOLINE

## Audioline 340

The Audioline 340 transceiver is made for Harry Moss International Ltd. In Hong Kong and is one of the smaller CB sets available at the moment. Harry Moss International imports and manufactures a wide range of in-car entertainment equipment and has a good reputation for quality products. Whilst the 340 has obvious links with other makes, it is good to know that there is somewhere to take it to should it go wrong.

### GUARANTEE to readers and manufacturers

Any information printed as a review bearing this guarantee will have been carefully obtained and based on facts.

The equipment tested will have been inspected to ensure it has not been tampered with or modified to improve its performance in any way. Any faults and/or modifications will be noted and depending on the severity reported on. Equipment for testing that was found to be seriously faulty will not be reported on and the manufacturer will be asked to supply a second item for testing.

In all instances care will be taken to avoid misprints or errors. However, if a misprint does ever slip by, the following issue will have an update and the correct information.

## Microphone

The microphone is of the well-known coffin style as supplied with the majority of mobile rigs. It connects to the rig with a four-pin screw ring lockable plug.

## Construction

This set is not as large as most sets which makes it very easy to mount in cars with very little space. The case of the rig is of standard two-piece (top and bottom) construction, finished in fine grain black crackle stove enamel, which has a very high resistance to scratching and chipping. The front panel is made of chromium-plated moulding with brushed chrome escutcheon. Being one of the low-priced sets, it has limited controls which consist of an on-off volume control, a squelch control, a pushbutton 10dB switch (marked power 4 watts, 0.4 watts) and a high-low tone pushbutton switch for varying the tone of the receiver audio. Also on the front panel, highlighted by a black plastic escutcheon, are the power/signal strength meter, a seven-segment red channel indicator and a large chrome channel change knob and a red TX indicator. The only other facility not often found on lower price range rigs is the extension speaker socket located on the rear panel next to the power socket.

## Transmitter tests

As usual, the standard equipment

used for the transmitter test was:

Racal 9081 and 9082 signal generators

Marconi TF 42F distortion meter  
Marconi TF 340 audio power meter  
Racal 9916 frequency meter  
Racal 9101 and Bird 43 power meters

Racal 9009 modulation meter  
Level TG 150D audio generator  
Solartron AS 1412 power supply.

## Power output

This test is done to ensure the power output of the set remains usable over the full voltage range that a set will encounter while in mobile or home use. These tests are done at minimum, normal and maximum voltage in the low and high power position.

### Power Output and Attenuation

Atten.	10.8v	13.2v	14.5v
High	2.3W	3.3W	4.0W
Low	Zero	0.17W	0.32W

The results of this test reflected the results of most of the sets we have tested and the only comment is that if the low power was set to exactly 10dB at 14.5 volts the result at 10.8 volts may have been better.

## Frequency

This test is done to check the frequency stability of the rig with changes of temperature. The tests are done at 48°F and then repeated at 68°F.

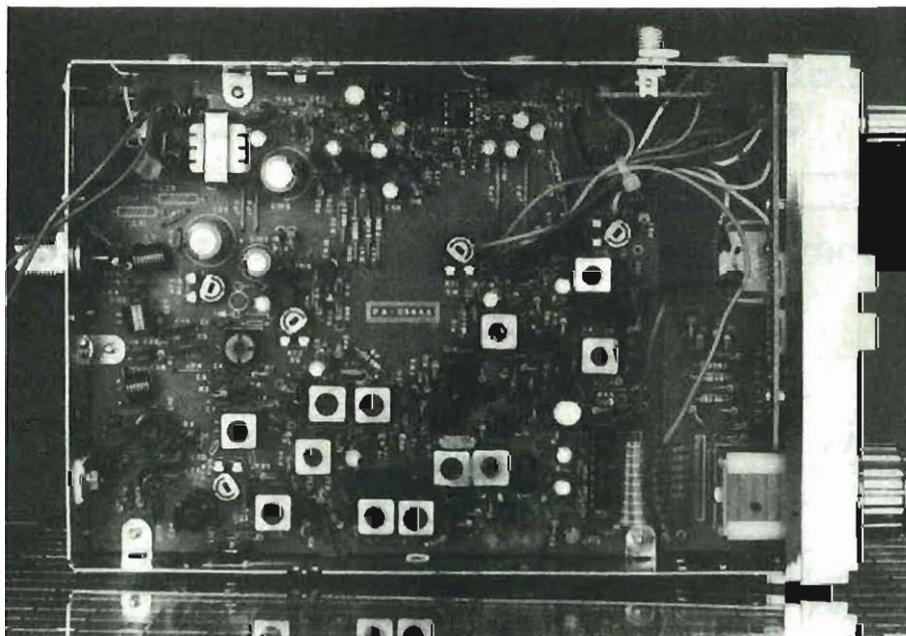
### Temperature stability

Temp.	CH1	CH40
48°F	27.60152	27.99153
68°F	27.60147	27.99148
Should be	27.60125	27.99125

Over the temperature ranges that the set was tested the set drifted a maximum of 280 cycles in frequency. This is not a bad result and would not be noticeable under normal use.

## Modulation

The modulation tests are to check the ability of the modulation circuit to give a good modulation level over a range of different input levels and frequencies.



Input	Modulation		
	Input Frequency		
Level	500Hz	1125Hz	2500Hz
0.5mV	0.31KHz	0.49KHz	0.21KHz
1.0mV	0.65KHz	1.10KHz	0.30KHz
2.0mV	1.21KHz	1.49KHz	0.52KHz
50mV	2.00KHz	1.54KHz	0.63KHz
200mV	2.20KHz	1.55KHz	0.64KHz

We can see from this table that the modulation circuit in the set is very biased towards the bass frequencies and unless the microphone has a tailored response to compensate for this to the station receiving the modulation it will sound very bassy and woolly.

## Receiver tests

### Audio output

This test is done to check the speech quality given out of the rig's receive audio stage. To do this test, we feed into the antenna socket a carrier modulated by a 1,000-cycle tone, using a Racal 9002 RF synthesized signal generator.

Measured Distortion	
1.50 watts	3.4% distortion
2.10 watts	10% distortion
2.49 watts	18% distortion

The results we got were of average values except at maximum setting where the reading was slightly better than average.

### Squelch level

The threshold of the squelch was found to be .28 microvolts, which is slightly higher than some sets tested and fully muted was 260 microvolts. When the rig was fitted in a mobile installation, no problem was found in the operation of the squelch.

### Receiver sensitivity

This test is done to check the sensitivity (the ability of the rig to pull in weak stations) of the receiver.

Sensitivity	
10dB quieting	0.21uV
20dB quieting	0.69uV
30dB quieting	2.31uV

From the figures in the table, we can see that the results are about average of the sets we have tested and, therefore, will give a fair reception of weak signals.

### AM rejection

The AM rejection on this set was found to be 37dB, which is an average result of all the rigs tested so far.

### Adjacent channel rejection

The adjacent channel rejection was measured at 176 microvolts for 3dB degradation. This is an average result compared to all the sets we have tested.

## Summary

The results of most of the tests were average. The front panel and presentation of the set makes this set look



## SPECIFICATION:

### GENERAL:

Frequency Control	Phase Locked Loop (PLL) Synthesized Circuit.
Frequency Coverage	.CH 1-40 27.60125 to 27.99125 MHz
Microphone	Plug-in Dynamic Type, 600 ohm.
Operation Voltage	13.2V DC Nominal (Positive or Negative ground).
Semiconductors	19 Transistors. 18 Diodes. 5 I/C's.
Speaker Impedance	8 ohm
Size	140mm(W) x 40mm(H) x 205mm(D)

### TRANSMITTER:

RF Output	4W (HI) 0.4W (LOW)
Modulation	FM
Emission Type	F3
Frequency Tolerance	±0.002% Nominal
Output Impedance	50 ohm, Unbalanced

### RECEIVER:

Sensitivity for 20 dB S/N	0.7 uV Nominal
Selectivity	6 dB at 6 KHz, 60 dB at 10 KHz
Intermediate Frequency	Double Conversion: 1st 10.695 MHz 2nd 455 KHz
IF and Image Rejection	70 dB Nominal
Audio Output (Nominal)	1.8W at 10% T.H.D.

### WARNING:

Before Installation of your transceiver ensure that the instructions are read carefully, as operation of the unit in the transmit mode without a suitable aerial may result in damage to internal electronic components.

### Description:

The 340 is an all transistor 2-way radio transceiver suitable for mobile operation. A frequency synthesizer circuit provides 40 crystal controlled PLL transmit and receive channels in the 27 MHz band, engineered for trouble free performance.

Current drain on 12 volts D.C. is exceptionally low and operation over long periods is feasible even with your engine turned off.

### Receiver:

The receiver is a sensitive and highly selective dual-conversion superheterodyne type, providing crystal controlled PLL operation on all 40 C.B. channels. The circuit incorporates a number of features designed to provide optimum reception. A ceramic filter provides sharp selectivity and high adjacent channel rejection. As a result, transmissions on adjacent channels cause minimum interference.

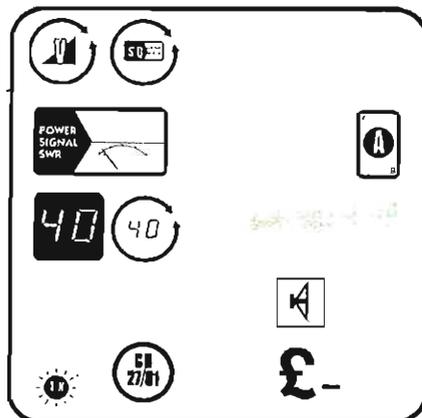
A variable squelch control is incorporated to silence the receiver when no signals are received.

### Transmitter:

The transmitter offers crystal-controlled operation on all 40 C.B. channels, 4 watt of R.F. power is available which is the legal limit of power for the Citizens Band Service.

### Licensing Conditions:

The model 340 is designed to operate under Home Office rules and regulations. Operation of this unit is not permitted until you have obtained the necessary licence to allow use on the permitted 27 MHz C.B. frequencies.



very attractive and for the price is a very good buy. Its size is a great advantage for people without very much room in their cars to mount a set.

# Parliamentary Review



## A new report from the Mobile Radio Committee

Parliamentary activity relating to CB has been fairly quiet this month, with the exception of one very pertinent question and its associated answer concerning the very important subject of frequency allocation for private mobile radio – a subject which has caused much concern amongst members of the British communications industry for some considerable time.

### Complaints

**Mr. Freud** asked the Secretary of State for the Home Department (1) how many complaints about interference from illegal citizens' band radio have been received in the area covered by the Isle of Ely constituency; (2) how many summonses have been taken out against the users of allegedly illegal citizens' band radios in the area covered by the Isle of Ely constituency.

**Mr. Raison:** Separate figures are not available for the Isle of Ely. Figures for the Cambridge telephone area, which includes the Isle of Ely, are:

	<i>Complaints</i>	<i>Summonses</i>
1981	573	6
1 January-25 May, 1982	330	7

### Advisory Committee on Radio Interference

**Sir Patrick Wall** asked the Secretary of State for the Home Department when his advisory committee on radio interference last met; and when it is intended to meet again.

**Mr. Raison:** The committee last met on 10 September, 1981 to consider draft regulations on the control of interference from citizens' band radio apparatus. It completed its consideration of the regulations at that meeting and there are no plans to hold a further meeting.

### A full reply

**Dr. Edmund Marshall** asked the Secretary of State for the Home Department when a full reply will be sent to the letter dated 8 March from the hon. Member for Goole to the Minister of State, the right hon. Member for Aylesbury (Mr. Raison) about a complaint concerning the use of citizens' band radio.

**Mr. Raison:** After receiving a report from the radio interference service of British Telecom I have today written to the hon. Member.

### Land mobile services (frequency requirements)

**Mr. Wheeler** asked the Secretary of State for the Home Department if he will make a statement about the report of the mobile radio committee on the frequency requirements of the land mobile services.

**Mr. Whitelaw:** The report of the mobile radio committee is being published tomorrow and copies will be placed in the Library of the House.

The committee recommended that additional dual frequency channels should be provided for the land mobile services as soon as possible to relieve the present congestion; and work on this is in hand. As to provision for growth of the land mobile services, a detailed inter-departmental study of the whole of the range 30-960MHz, which was initiated some time ago, has disclosed no means by which this need can be met within the existing framework of allocation of frequencies unless, as the committee hoped, TV bands I and III are made available for the land mobile services when the 405-line services occupying these bands have been closed down. These bands remain internationally allocated to broadcasting on a primary basis, and, even if it were decided to re-allocate all or part of them for land mobile radio in the United Kingdom, it would be some time before they could be brought into such use. The band 854-960MHz should in due course yield a significant amount of spectrum for civil land mobile use but it is in general less attractive for land mobile services under existing technology.

The Government are anxious to ensure that every effort is made to meet the requirements of the land mobile services and I therefore propose to set up an independent review of the spectrum from 30-960MHz. The task of the review will be to examine the existing pattern of occupancy in this range and against this background to examine the present and future requirements for spectrum, including those identified by the mobile radio committee and the scope for meeting them. The opportunity will also be taken to review the existing arrangements for consultation with interests outside Government about the use of the frequency spectrum and for the assignment of frequencies, with a view to ensuring that there is public confidence in the system. I am pleased to be able to announce that Dr. J. H. H. Merriman, C.B., O.B.E., F.Eng., has agreed to chair the review; I propose to appoint some additional members whose names I will announce as soon as possible.

The review will be asked to report by June next. In view of the urgency of the situation I shall ask for an interim report from the review team by September of

this year as to the future use of bands I and III, taking account, not only of the need to provide for expansion of the land mobile services but also for various possibilities for the continued use of these bands for broadcasting. The terms of reference of the review will be as follows:

1. To help Ministers to formulate a view on the long-term problems foreseen in the radio frequency spectrum between 30 and 960MHz and specifically to assist in taking a decision on the future use of TV bands I and III when the present 405-line TV services are withdrawn; there is to be an independent review of the radio frequency spectrum in this range. The review is to:

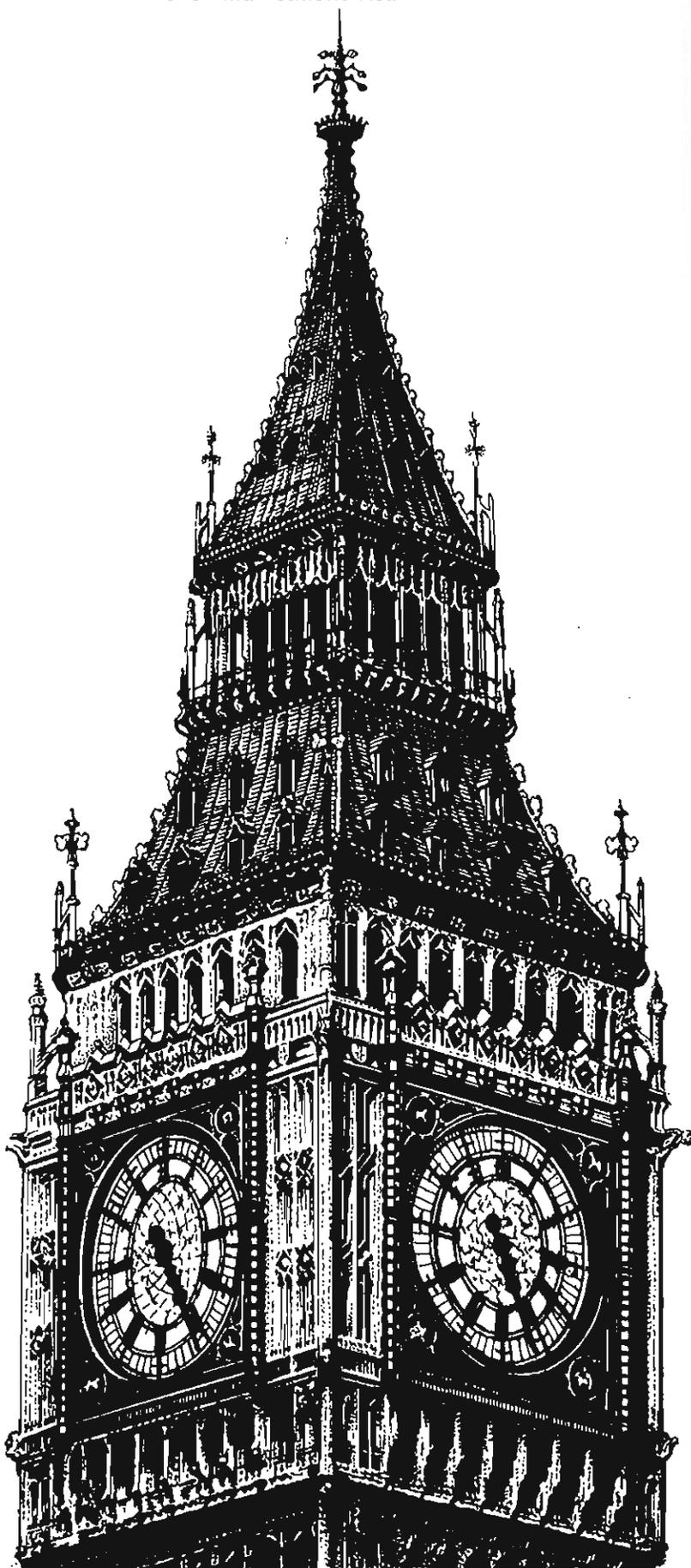
- (a) examine the present pattern of spectrum occupancy in this range taking into account:
  - (i) the international commitments and constraints arising from the international radio regulations and from membership of the United Kingdom of such bodies as NATO, ICAO, IMCO, etc.; and
  - (ii) the desirability of aligning spectrum usage as far as possible with that of neighbouring Administrations;
- (b) investigate the likely continuation of the upsurge in additional requirements for accommodation in this part of the spectrum and consider how they might be satisfied within the available spectrum and by innovative technological developments;
- (c) identify and quantify those requirements that cannot be accommodated by these means and examine what scope there is for meeting them in some other way;
- (d) make recommendations for consideration by Ministers as to changes that may be required to meet the situation and specifically in respect of the future use of TV bands I and III;
- (e) consider the adequacy of the existing machinery:
  - (i) for consultation regarding the use of the frequency spectrum; and
  - (ii) for the assignment of frequencies,and to recommend any changes that might be made in the interest of public confidence in the system.

2. The review is to cover the time scale up to the end of the century and any foreseen improvements in technology are to be taken into account. The economic resource and operational consequences of any recommended changes in spectrum occupancy are also to be considered; and any cases of inefficient use of the spectrum – having regard to the operational characteristics and other constraints on the users – are to be brought to light, together with any recommendations for improvement.

3. The review body is to submit its final report by 1 June, 1983 and an interim report as to the future use of bands I and III by 1 September, 1982 at the latest.

In the meantime, the Government are anxious to facilitate an early and substantial expansion of radio-telephone services. The demand for these services is so great and the time required to design, develop and install these new and very complex high-capacity systems is so long that we feel that they should be given priority, provided that this can be done without prejudice to the interests of other mobile radio users. The re-planning of the 854-960MHz band is not yet complete and access to it for civil purposes will have to develop over a period of some years but I am provisionally allocating

30MHz of spectrum in that band to radio-telephone services on the understanding that a final decision in this matter will be taken as soon as I have the advice of the review team as to the future use of bands I and III. My right hon. Friend the Secretary of State for Industry will be making a separate statement about the Government's intentions concerning the future of radio-telephone services under the British Telecommunications Act.



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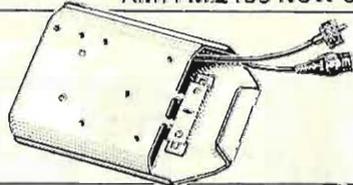


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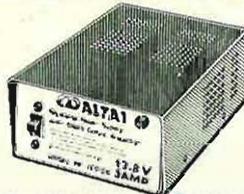
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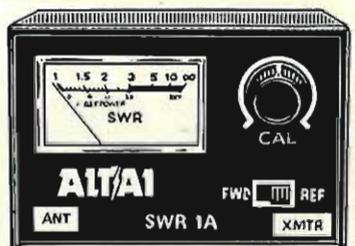


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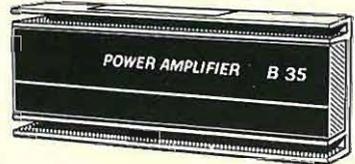
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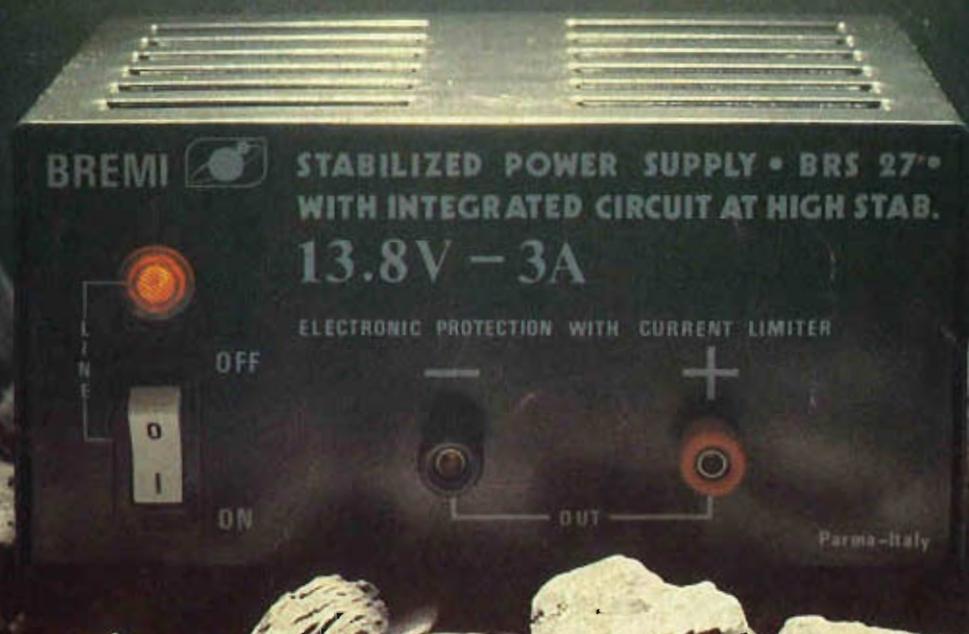
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