

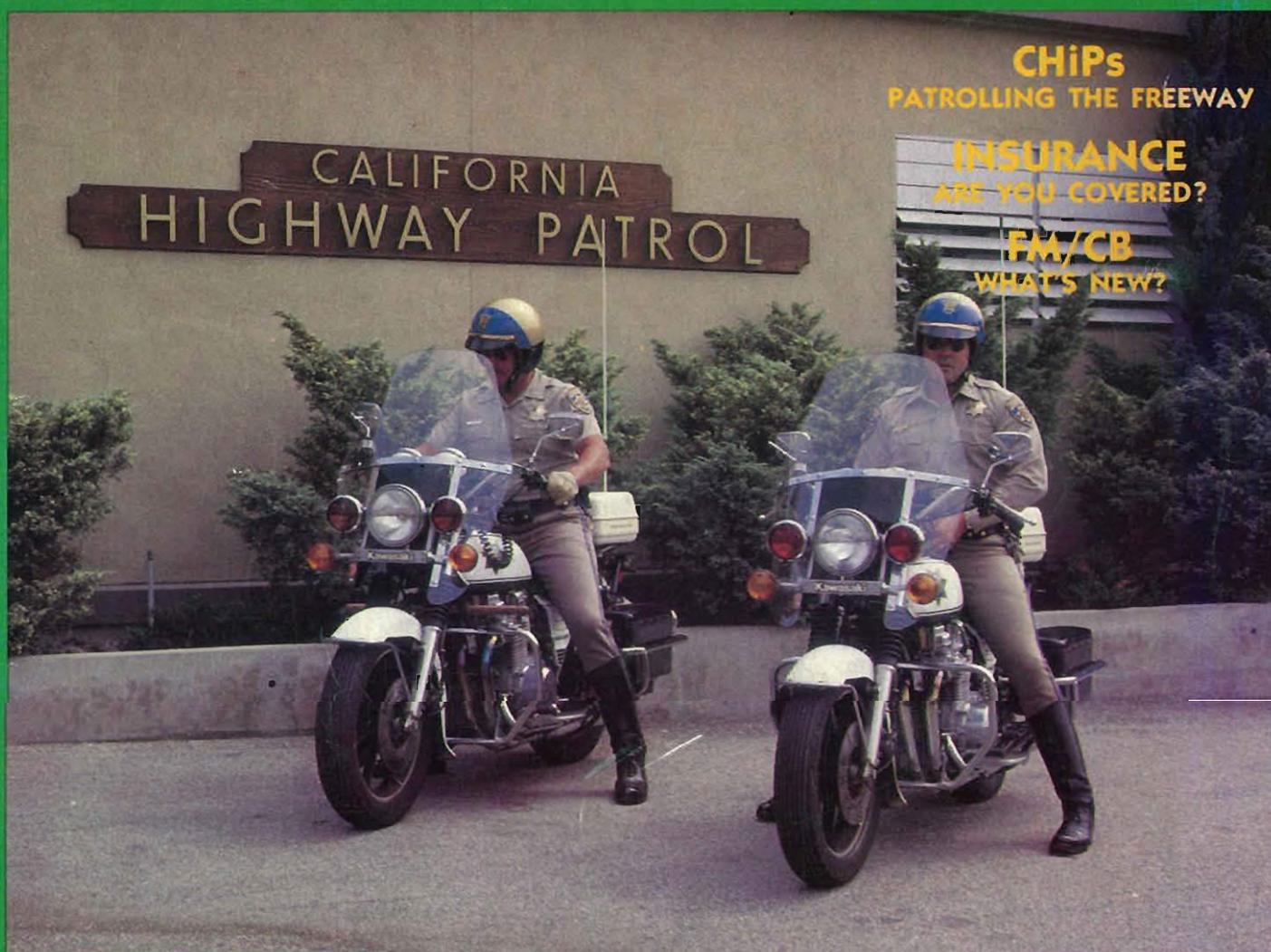
# CB RADIO

VOL. No. 2 ISSUE No. 21

**MARCH 82**

**70p Monthly**

IRISH REPUBLIC £1.04



**CHiPs**  
PATROLLING THE FREEWAY

**INSURANCE**  
ARE YOU COVERED?

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# CB RADIO

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AM to FM conversion ..... page 44



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Part 1 ..... page 4



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# Attenuation or no attenuation?

That is the question

We certainly stir up the hornets' nest every time we write an issue of CB Radio Magazine, either by saying something which we feel needs saying or by not saying something which some of our readers think needs saying.

In the February edition of CB Radio Magazine, we did it again. Our regular feature, The Law and You, ended by saying, with regard to the legality of rigs, "A final and perhaps simple check, although perhaps not flawless, is to look for the 10dB attenuation switch which must be fitted to all legal FM transceivers". Now this is the interpretation we made of the MPT 1320 page 1 section 1 paragraph 2 which reads:

"If an antenna is mounted at a height exceeding 7m. the licence will require a reduction in transmitter power of 10dB. To enable the user to accomplish this easily, the equipment manufacturer shall provide as a standard facility on the equipment means by which the transmitter output power may be reduced by a minimum of 10dB."

The author of "The Law and You"

had obviously read the specification and in his mind was satisfied that an attenuation switch was a legal requirement. Satisfied, that is, until Chris from CFCB in Birmingham, phoned to say that he was stocking a well-known brand of rig to which no attenuator was fitted and did this make his stock technically illegal.

After sweating a few buckets, the only way we could see of solving this problem was to seek advice from the horse's mouth and in this case the horse was a very obliging Home Office official who then pointed out to us page 7 of the MPT 1320, paragraph 42, which states: "The equipment manufacturer shall provide as a standard accessory an attenuator having a minimum attenuation of 10dB, or alternatively provide a switch which can be used to reduce the power by a minimum of 10dB, for use, where necessary, between the transmitter output and the antenna terminals of the equipment, a removable link may be necessary."

We are obviously pleased that the stock Chris is keeping is legal and

that the 'well-known brand' of rigs aren't outside of the law. However, both the Home Office official and ourselves are a trifle mystified as to how such an obvious contradiction found its way into the specification. It just goes to prove that you should never believe what you read (unless your source of reference is CB Radio Magazine, of course). Next time, we'll read every publication that the Home Office has ever written before committing anything to paper just in case FM isn't legal after all.

## Reader Survey

You are an interesting bunch, judging by the results of our Readers' Survey in last month's magazine. We still haven't collated all the information that you so kindly supplied but it would seem that you range between being fanatical AM users reading every publication under the sun to mildly-interested FM breakers who stole their copy of the mag from a friend. Keep the replies coming as they are providing us with some very amusing bedtime reading.

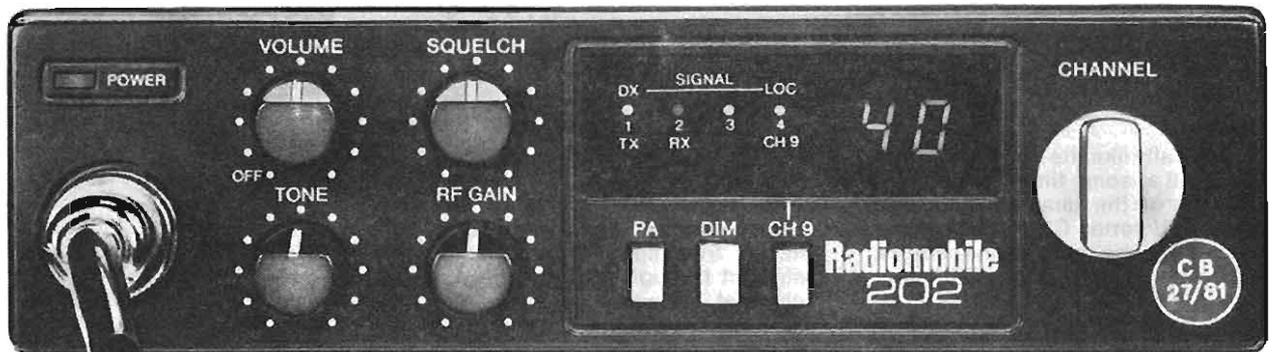
## COMPETITION PRIZE WINNER

Pictured here is last month's prize winner receiving the very valuable and rare gold-plated K40 antenna. The correct answer to the competition was to be found on the Acorn Trading advertisement where the £5 note had been changed to read K40.

In the photograph, Acorn Trading's sales and marketing manager, Geoff Wilding (Pickpocket) is seen presenting the Mad Mole from Greenford, Middx., with his prize. The Mad Mole, who is 18 years old, has been on channel for about two years, DX'ing, illegal AM breaking and using FM. Unlike many original AM users, Mad Mole is very pleased with the results he gets from his FM set. At the time of going to press the February issue had only been on sale for four days and Geoff Wilding, from Acorn Trading, was very impressed with 300 or so replies we received for this competition and, being an enterprising character, has got more competitions planned for the future.



# CB to start the professionals talking.



**O**ur extremely stylish new CB202 mobile unit will certainly start the professionals talking.

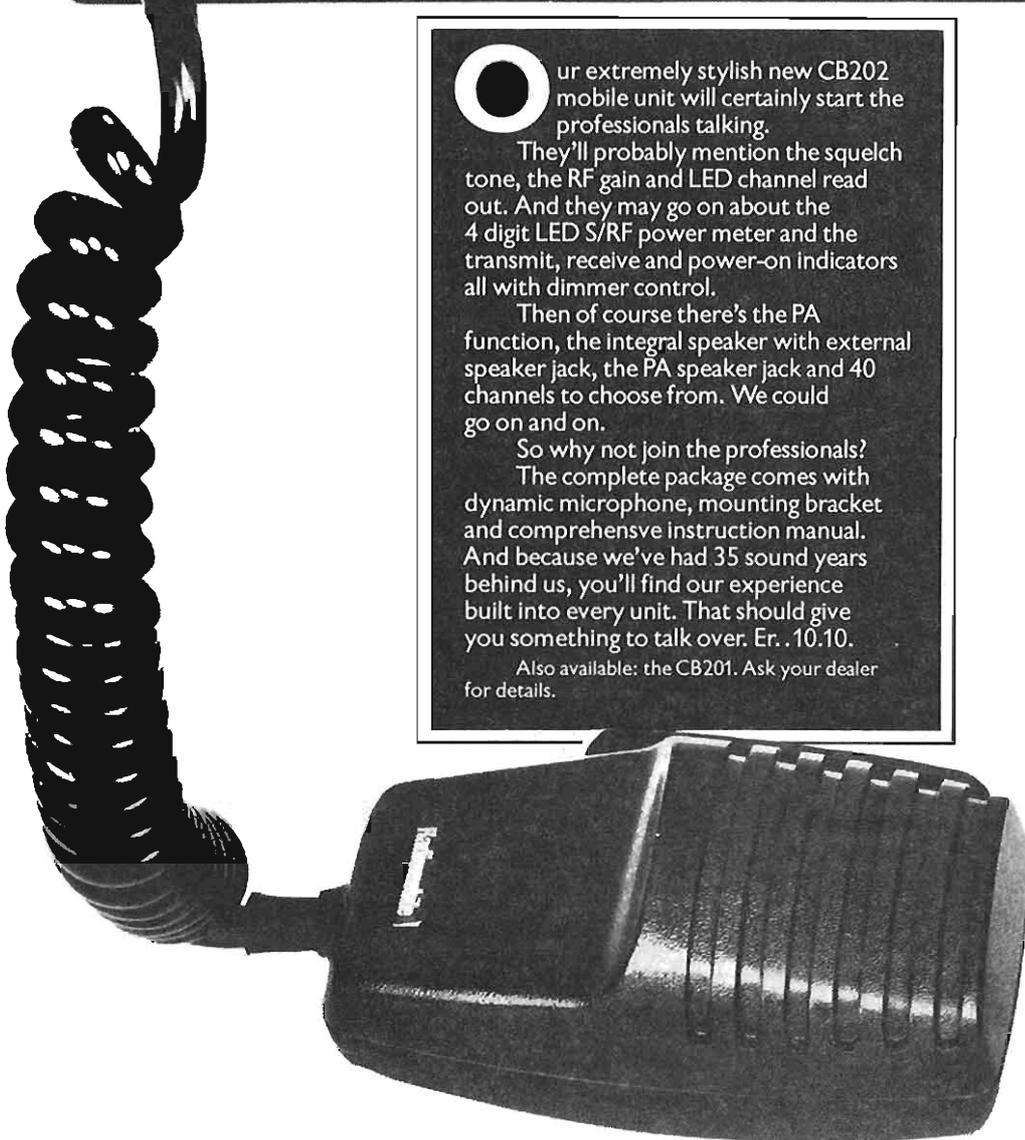
They'll probably mention the squelch tone, the RF gain and LED channel read out. And they may go on about the 4 digit LED S/RF power meter and the transmit, receive and power-on indicators all with dimmer control.

Then of course there's the PA function, the integral speaker with external speaker jack, the PA speaker jack and 40 channels to choose from. We could go on and on.

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# The Real CHiPs

A look at CB and the California Highway Patrol

Or is it really like the movies... Most readers will at some time have caught an episode on the small screen of the American TV series CHiPs. Motorbike fanatics like the action and stunts, whilst some of the fair sex find their pulses quickened by Ponch and/or Baker, depending upon their taste. In America for a while there were even reported outbreaks of CHiPism - if you can coin such a word. Here we would just call it impersonating a police officer. All in all the series went down reasonably well. One aspect that has appeared in more than the odd programme is CB - it is used as a prop. This has become quite common

with many American films and TV series, although not always portrayed in its true light. They always get straight through with no one else on channel. However, that aside, the American public are made more aware of CB and its possible uses through such programmes. Because of this we decided to take a look at how their system works and if CB used to or still plays a role and if so what that role is. In this, our first look, we will concentrate on how the LA system operates before casting any conclusions on CB's effectiveness.



## L.A.P.D.

Los Angeles covers well over 100 square miles of the southern end of California, stretching along the Santa Monica Bay and round the coast for more than 50 miles. Californians are proud of the size of LA; indeed, it can be considered as a large city, with 19,000 miles of county highways and over 500 miles of freeway.

The whole area is policed by one force consisting of 85 female and 4,150 male officers, controlled, monitored and despatched from one central computerised communications centre. The Los Angeles Police Department, California Highway Patrol Building, is situated off the Hollywood Freeway on the west side of Los Angeles. From this central point 25 stations in the LA county need to be constantly advised of any situations that may affect their area. To this end there are 12 despatch unit areas co-ordinated by 16 control consoles housed in this main building. Each console is coded by colours, e.g., white, black, brown, orange, pink, sil-



ver, gold and blue. In the instance of a cross-area car chase then as opposed to one terminal having to hand to another and so on, the system has one master co-ordination terminal which

can take over control of any sector and follow the chase.

From these terminals officers and units are despatched to intercept, in the case of a chase, or investigate the reported crime or incident. All incoming calls and the subsequent conversation are recorded by a huge recorder and kept in a vast filing vault. The telephonist receiving the call is trained to gauge the severity of the incident and ask the appropriate questions before passing the incident on to one of the controllers. This way the much-publicised police code, the 10 code, upon which CB'ers based their own code, can be applied by the telephonist and thus the allocated control board dealing with that area can understand instantly and react on the report.

Perhaps members of our British police force would be surprised to learn that not all reported incidents must be investigated by an officer. For example, a report of a motor vehicle without a registration plate, no front wings and no bumpers would not necessitate investigation. However, a disabled or stationary vehicle or a stranded female driver must receive investigation and a full report. At this point perhaps a little explanation is necessary. The American judicial system is very time and motion conscious and unlike Britain, where all we get is new and more laws and regulations, America evaluates the effectiveness of all its forces' work and in particular the 'life-saving' effect of any regulation. Thus it was found that the fortunes spent on stopping and inspecting faulty vehicles was not saving much at all. Less than 3% of all the vehicles involved in accidents were found to be faulty and only a minor amount of this figure was found to have actually caused the accident, hence fatalities or serious injuries could not be pinned on generally-faulty vehicles. Hence whilst the police officer can, if he wishes, inspect a motor car, he has been trained to look for and if he can prevent the more serious crime, such as in the case of a disabled car with a female driver - 'Rape'.

Looked at in this light one cannot help but agree with the training, hence although somewhat surprised at the time when I questioned Officer Garcia on general traffic violations he said: "We consider that a vehicle driving dangerously, for instance tailgating in the fast lane of a freeway, is more liable to cause an accident or injury than say a car travelling safely with a white tail light and no doors. I guess if there was nothing better to do



an officer might caution him about the white rear light but there's always something better and more important."

Just to help finalise the computerised control and its effectiveness in gathering and being supplied information, there are sensors sunk into the surface of the freeways and these monitor the flow of traffic, continually updating the information available on traffic flow. Once collated this is then released every half hour to the various LA commercial radio stations, with supplementary information fed to them on any accidents. Thus both the police and the public can be advised within minutes of a blockage, obstruction or problem. This liaison between the police and the commercial radio stations works both ways, serving to help the motorist avoid the area and thus making the clearing-up procedure easier. By the way, motorists, you don't need to have an MoT or insurance to drive in California, although let me warn you the latter is advisable. American courts do believe in large settlement claims.

### The CHiPies

Having seen the brain or central nerve of the California Highway Patrol, I decided to go and see the motorbike section first hand. As it just happened, where else did their public relations department arrange for CB Radio Magazine to report on but the actual station where the TV series is filmed? Yes, their Police Department is so into public image and helpfulness that they actually lay a whole genuine police station at the film crew and director's feet. "Where else but America?"

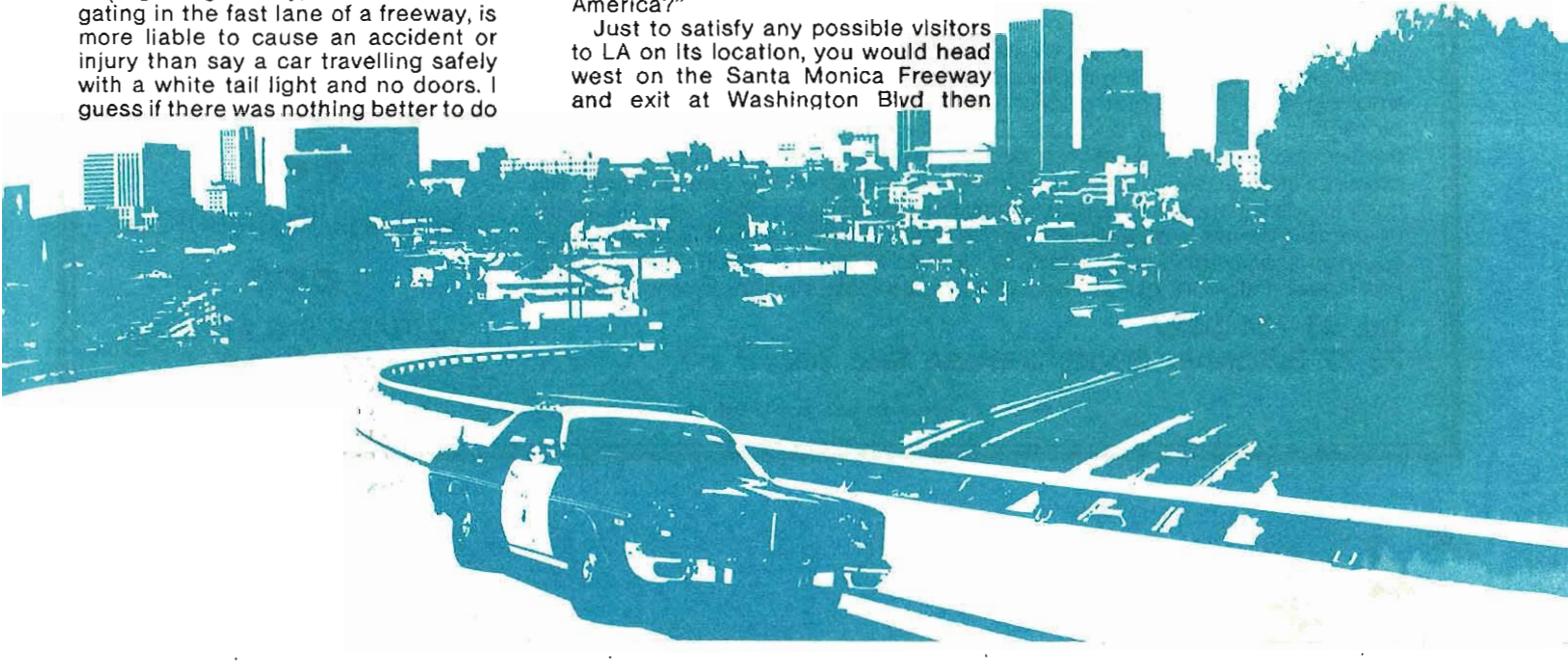
Just to satisfy any possible visitors to LA on its location, you would head west on the Santa Monica Freeway and exit at Washington Blvd then

backtrack two blocks to Adams. Situated underneath and behind the freeway one could describe the area as slightly seedy, for Americans it's just on the edge of Downtown LA.

I was introduced to serving CHiP officers D. A. Walker and C. W. Palmer. They had served 12 and 2½ years respectively. Both loved every minute of the job. Actually, they are pictured on the cover from right to left. Believe me, you would not want to get on the wrong side of them. Again, unlike Britain, there are no restrictions on conversation and information a serving officer is allowed to discuss, other than the obvious of not relaying details or information on cases awaiting trial or future investigations. Perhaps because of Britain's previous history (two world wars) Britain's Official Secrets Act prevents our officers from being as frank or, if you prefer, unguarded.

Either way, there was no one occasion in our conversation when an officer was not able to express an opinion and more importantly not just a personal viewpoint. Next month we will discover what uses CB had for these officers, whether it is still used and find out their thoughts on Citizens' Band Radio. By the way, it is not illegal to monitor police or any other public service communication in America. As an example of American freedom, when asked what frequency the CHiP bikes use the reply was frank and official. Quite simply 42-46MHz 25 watts low band with 50-55 miles range, using Motorola sets and either Firestick or Shakespeare antennas. "Where else but America?"

JOH



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## CHELSEA CB CENTRE

# INTERCEPTOR

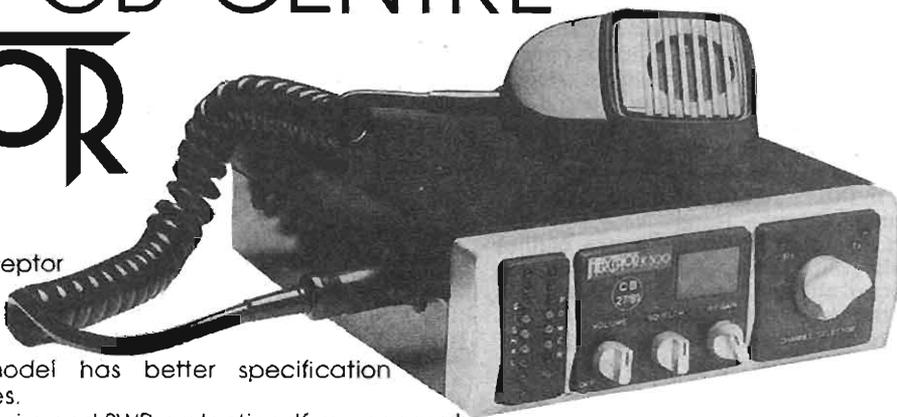
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(CBR 3/82)

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# IT'S IN CB82 WHAT IS?

How about an exclusive talk with Timothy Raison, Minister of State? And a special section for new breakers - how to start, speak and use the codes? What else? Oh yes, there's a review of rigs available in the shops, tips on DIY fitting, improving reception, a nice little story on how the campaign for AM is going, and an arty piece on how to design your own OSL cards. That all? No, not at all. There's much more. Tell you what - why not read it yourself?

It's available from newsagents everywhere. At £1.75 you can't afford not to buy this 100-page special book on your favourite subject.

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 A Guildford Publication

# Are you covered?

## How secure is your rig?

When you buy your rig you don't think of any of the unfortunate things that can happen to it. You just think of a nice new rig with shiny knobs and dials, talking to your friends, avoiding the traffic and maybe lending someone a helping hand. So what happens if you lose the rig, have it stolen or set fire to it? Are you out of a rig and do you have to go on your bended knees to the bank manager for a new one?

Depending on the circumstances of the loss or damage there are three possible ways a CB set could be covered:

- a) Through motor vehicle insurance;
- b) Through home contents insurance;
- c) By a specific CB insurance policy.

## Motor insurance

Whether your set is covered for loss or damage whilst in your car depends on several variables. If the CB is fully installed it would be classed as a fixture and is considered part of the car and its accessories (e.g., like a cassette player). So, simply speaking, if you were comprehensively insured your rig would be covered.

However, the insurance expert we spoke to said that accessories such as stereos were rather a 'grey' area in insurance and the individual insurance companies may have differing views. As he pointed out, CB's may make the car more desirable to a thief and may increase the risk of electrical fire to the vehicle. Many companies are getting increasingly worried about the high cost of stereo fittings to cars which enlarge the risk to the insurance company and the cost of a possible claim. The company may not pay out if the risk has been increased and they have not been informed and have so been unable to raise the premium if necessary.

If you are not comprehensively insured and have third party only or third party, fire and theft then you are out of luck if you lose your set when your car gets stolen. This could well be the case too if the set is just loose, on the back seat for example, even if you have a comprehensive policy, as it is not a 'fixture'. Some policies do allow coverage of some personal effects but only to a very limited amount. Even the 'fire' bit of your policy could be dodgy if the fire was

started by faulty electrical wiring to your rig, although the company could have to prove negligence.

If you have CB equipment in your car and are worried about it, it would be best to contact your insurance company for advice, especially as they can refuse to meet a claim if your circumstances have changed and they have not been informed. It is also possible to get an all risks extension to cover items like CB, stereo, etc.

## Home contents

Home contents insurance normally covers furniture, furnishings, household and kitchen goods, electrical equipment, personal effects, etc., up to a stated limit and cover for loss, damage due to perils such as fire, flood, theft, etc., and some accidental breakage.

A CB would qualify as electrical goods along with hi-fi, etc., and would be covered in the same way. Limited cover may also extend to goods away from home (like the set on the back seat of the car, maybe?) but this is limited.

You probably wouldn't be covered for spilling coffee over a rig or dropping it but it is possible to get 'accidental damage' cover for a selection of individual high risk or valuable goods and a rig could be included in that. A particularly expensive rig would need to be 'declared' to the insurance company and this could increase the premium.

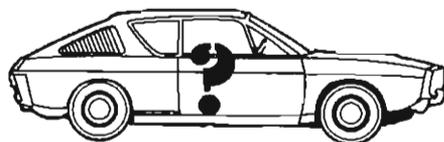
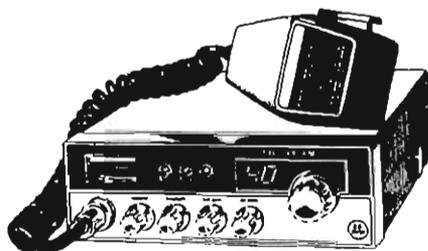
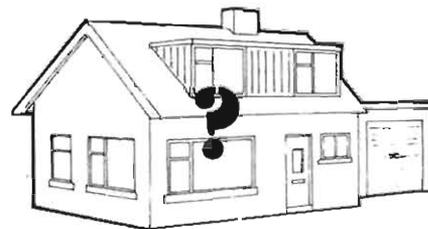
A further complication is 'indemnity' or 'replacement as new' insurance. 'Indemnity' will cover the cost of repairing damaged articles or replacing destroyed or stolen goods less wear and tear and depreciation.

For items on a 'Replacement as new' basis you will be paid the full cost of repairs or replacement. Bear these in mind as it could make a lot of difference in replacing your rig.

In both vehicle and home contents insurance it is worth referring the matter to the insurance company if you are worried. Remember, too, that unless premiums are paid up to date the insurance is void.

## Special CB insurance

There are several companies now offering individual insurance policies



for CB and some accessories (like antennas and SWR meters). These generally cover theft, loss or damage due to fire, etc., and concentrate on sets fitted in cars although some cover premises, too. There are usually a set of conditions that explain what sets are not covered for, i.e., cleaning, repairing or restoring, electrical breakdown or confiscation by authorities.

Generally speaking vehicle and home contents insurance applies to legal CB sets. Some specific CB policies will cover AM sets, even against confiscation. Many of the insurance companies advertise in the CB press and will be pleased to quote. Roughly premiums are between £5-£15 depending on the value of the set.

Insurance through one of these companies is probably the easiest way of covering your rig, although make sure you read your policy closely to make sure that you are covered against the things you consider are important. The policy will also tell you how to go about making a claim.

All this performance may make boring reading but it's worth thinking about. Imagine not being able to go back on channel if you lost your rig.

SS

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Please allow 28 days for delivery. CBR3

# Readers Write

Dear Sirs,

Through your excellent magazine I would like to pose a few thought-provoking questions regarding our new and technically-superior CB system.

1. Am I the only person in the UK who, after looking forward to a supposedly technically-superior legal system, now find it totally useless when I most need it, e.g., during the day because of world-wide SSB?

The Home Office are supposed to have chosen the frequency and channels after consultation and field tests. I can only assume that the Home Office carry out their tests at night. (I suggest Timothy Raison tries out his 'highly satisfactory' system for himself).

Have we been conned?

2. In your article 'FM Transmissions' (Jan.) your writer states on page 10 that the circuits required for FM sets are less complicated than AM or SSB which is reflected in the overall price of sets. Why, then, are new sets so expensive? (Re. your letter from Wrecker One in Jan. issue).

Have we been conned?

3. We are constantly being told that the reason AM was rejected by the Home Office was because of interference. If that is the case can anybody tell me how the Americans make it work so successfully?

Have we been conned?

4. Where do new FM users get the impression that the majority of AM users are either crooks, riot organisers, toilet mouths or hell bent on the destruction of civilisation as we know it? Some of us are quite normal. In fact I even managed to pass my 11+ some years back and I have been known to get further than a three what copy without using one four letter word!

Finally, after reading your comments on page 2 (Jan.) and your enlightening article on antennas, do I detect a note of disillusionment on your part?

Yours sincerely,

The Wetherby Pedlar

*To answer your last question first: Yes, our technical expert is totally disillusioned, no worse, disgusted, with the requirements of antennas for British FM. To answer your "Have we been conned?": the bureaucrats have made the wrong decision on frequencies, mostly because they did listen to the pressure from existing CB'ers demanding 27MHz but did not understand the pressure was AM not anything 27. - Ed.*

Dear Sir,

I do not usually waste my time writing to CB mags as most of them have, without doubt, betrayed the 27MHz AM and sidebanders who created those CB mags, supported those CB mags and made them their profits and without those same 27MHz AM and sidebanders there would have been no CB mags and certainly no CB in Britain. Those same AM and SSB'ers are branded criminals for what? For the terrible crime

of exercising their right to freedom of speech over the airways without becoming a technical genius first (and before someone jumps in saying through the top of their head that the RA exam is simple or the Morse test then let them try both and see how simple they're *not*. I know for I am trying to study for them both).

CB Radio Magazine seems to be the only magazine still trying to get a fair deal for the illegal AM and SSB'ers and how's this for a twist in the RRD's tail - according to the Treaty of Rome (Articles 30-36) AM'ers are legal and the new FM channels are illegal! Now this present Government had better make up its mind about one thing - either we are citizens of Europe with same rights as every other European citizen or we are not. If we are European citizens what the hell is this Government playing at by trying to make us criminals under the Treaty of Rome by forcing upon the British public their stupid illegal FM channels?

CB Radio in the December issue put the blame for the present FM mess just where it belongs - on the shoulders of the faceless civil servants of the HO and RRD who did not want the British people to have any CB at all and so gave us the worst they could plan and in an act of sheer bloody mindedness they put those FM channels directly in opposition to where they know the AM sidebanders operate.

The great gullible British public are now being ripped off 19 to the dozen with the toy FM rigs which cost about £45 each when they come into Britain and are sold at prices varying from £70-£100. So all you little FM bunny rabbits have been warned. You are being ripped off.

A letter in CB Radio December issue said it all. When a law is an ass, like the present laws banning 27MHz AM and sideband, the only weapon left in the hands of the people is to defy that law and that is exactly what AM breakers and sidebanders are doing and will continue to do. So 27MHz AM and sideband will not go away and will not be driven off or scared away and if CB Radio's predictions for 1982 are correct and the present Government makes tougher penalties for the use of AM and sideband then the reactions of AM/sidebanders will become harder. Here is the reason why. There are thousands of sidebanders who have purchased, quite legally, HF amateur equipment like Sommerkamp, Yuaesu, Icom and Trio at prices ranging from £450-£1,000. Do the civil servants or the Government expect these thousands to dump such expensive equipment into dustbins and use the FM toys? There is no way that those thousands will throw such amateur equipment away, no matter what the penalties

and most of them are quite prepared to fight a war on their doorsteps in order to keep such equipment, as are thousands of others with such AM sideband rigs as Cobra, Colt, Midland, Ham and Stalker.

CB Radio made some predictions for 1982 so you won't mind if I make a few.

1. The community violence between FM'ers and AM and sidebanders created by civil servants will get worse.

2. That the British Government will be told by Brussels "Either implement the C.E.P.T. AM CB recommendations or get out of the EEC".

3. That by the end of 1982 the FM will be gone and forgotten.

4. That long before the end of 1982 the British Government will, for once, ignore the faceless civil servants and legalise 27MHz AM with sideband according to the C.E.P.T. recommendations.

5. That as TVI increases due to the low antennas (23ft) used by FM rigs the Government will at long last force television, stereo and radio receiver manufacturers to install in such equipment filters to reject spurious CB emissions.

6. That by the end of 1982 CB Radio Magazine will (if it keeps up its campaign for a fair deal for AM and sidebanders) be the only serious CB magazine left on the market and that all the other CB magazines will either have disappeared or become the kids' Comic Cuts.

Sam (Radio England 404)

*For someone who rarely puts pen to paper you certainly managed to muster some fighting talk. I am sure your sentiments will be both agreed with and disputed with equal enthusiasm. One point, however, C.E.P.T. recommendations are 22 channels 0.5 watts not with SSB. - Ed.*

Dear Sir,

I am writing as secretary of the Disabled on Channel Society recently formed in Braintree to raise cash and equipment to provide free CB radio facilities to the disabled and housebound people in our area thus giving them an interest in life and communication with the outside world.

Membership is made up from breakers in both local CB clubs (the Braintree Breakers Club and the Braintree Zebra Club) and whilst membership is free and unrestricted any donations are welcome.

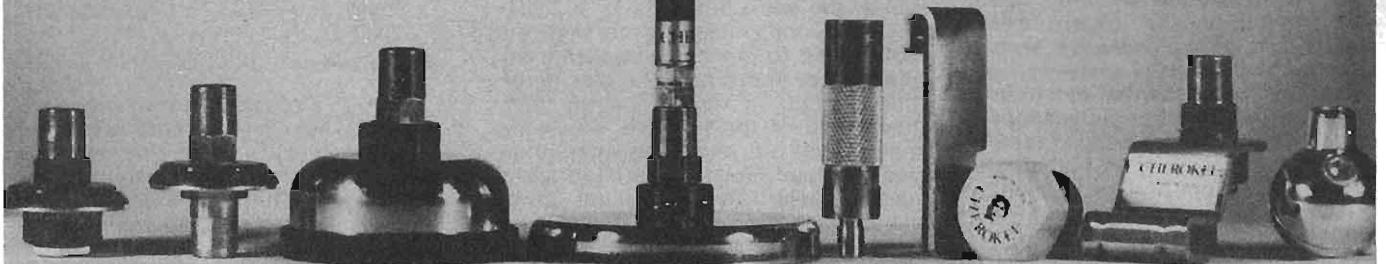
Any publicity you could give to our Society would be very helpful. Manufacturers and wholesalers of CB equipment are being approached for their assistance and given sufficient support we hope to widen our field of operation in the future.

Yours faithfully,

Robert H. Bell (Lumberjack)  
4 Harold Road  
Braintree  
Essex

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HAD THE BEST MOUNTS**

**SOME THINGS NEVER CHANGE**



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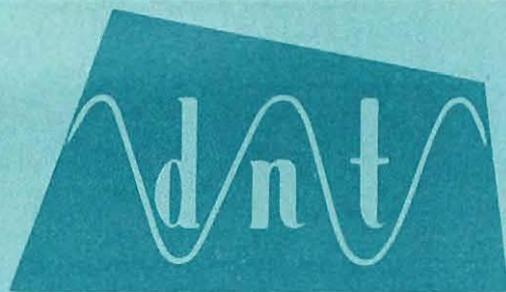


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# Rig Test



## The DNT M40 FM

We made a geographical error when we originally wrote about the DNT M40 when stating that it was manufactured in Japan.

The truth is that the M40 and all the other DNT sets were designed in Germany, manufactured in Hong Kong and imported into the United Kingdom by a Jersey-based company. Believe it or not, with Hong Kong still being a British protectorate, this rig can be the only one that can claim it is of British origin. It must also be the only rig that can claim that it has been handled by residents of four different countries before it is even sold.

DNT have been producing CB equipment for the European market for many years and this experience has helped them to develop one of the best FM sets that we have so far tested.

### Our guarantee

As with all of our previous tests, the readers of CB Radio Magazine and the manufacturers and importers of the DNT M40 are given the assurance that the test undertaken is of the highest possible calibre and that every aspect of the report was obtained from actual workshop tests and are not the results of an over-vivid imagination. It is essential to stress this point as many other publications carry out rig reviews which look technical but are based upon manufacturers' specifications and the opinions of the writer. Rig Reviews are not Rig Tests.

#### 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 repetitive errors. However, if a repeat does occur within the following issue will have to update another correct information.

### Microphone

Unless you purchase a special microphone for your rig as an optional extra, the ones supplied by the manufacturers are all very similar in design and construction. Two minor irritating points about the microphone on the DNT M40 are to be found on the plug and the socket. The microphone plug doesn't screw into the set in any way



and is of the five-pin din variety normally used in audio products. With a slight tug the plug quite easily comes out of the socket.

The second criticism is one that can be applied to most sets available on the market and that is the placing of the microphone socket on the left-hand side of the rig. This is a very minor point but one, if changed, that could make mobile operation very much easier in right-hand drive vehicles.

### Construction

The M40 is well engineered and designed and the fascia is of a modular type with subdivisions for each of the controls. This makes knob and switch identification very easy, especially at night time. The style of this set is similar to DNT's European models which incorporate the maximum amount of controls with the minimum amount of fuss.

### Transmitter test

The standard equipment used for this test was:

- The Racal 9081 and a Racal 9082 signal generators
- Marconi TF 42F distortion meter
- Marconi TF 340 audio power meter
- Racal 9916 frequency meter
- Racal 9101 and a Bird 43 power

meter

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

### Power output

We have received a few telephone calls asking why we bother quoting power output at various different input voltages when a car battery is 12 volts. A car battery very rarely gives an output of 12v and it fluctuates quite considerably either side of this figure. It is, therefore, essential that the rig is capable of operating at various voltages and consequently that its performance is tested under these varying conditions.

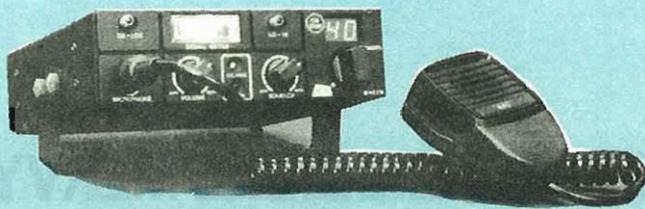
The DNT M40 is virtually 100% accurate on both full and attenuated power modes.

#### Power Output and Attenuation

Atten.	10.8v	13.5v	14.5v
High	2.4W	3.6W	4.0W
Low	0.05W	0.35W	0.39W

### Frequency

Channel spacing was measured and found to be accurate at 10KHz and extremes of temperature made only minimal difference to the frequency of the set.



Temperature Stability & Channel Spacing		
Temp.	CH1	CH40
48°F (cold morning)	27.60108	27.99108
68°F (room temp.)	27.60110	27.99110

#### Modulation

For this test the peak deviation is measured and an audio tone fed into the microphone connections.

Modulation limiting on the DNT is very acceptable and full deviation of the modulation is possible, which means that voice patterns should be reproduced faithfully.

Input Level	Modulation		
	500Hz	1125Hz	2500Hz
0.5mV	0.45KHz	1.5KHz	0.6KHz
1.0mV	0.75KHz	1.5KHz	0.65KHz
2.0mV	1.00KHz	1.6KHz	0.65KHz
50mV	1.25KHz	1.6KHz	0.65KHz
200mV	1.4KHz	1.6KHz	0.7KHz

#### Receiver test

##### Audio output

Measured into an 8-ohm load, powered at 13.2v at 1KHz, the lower output distortion levels of the M40 are either lower or on a par with most other sets. At a full 3 watts audio output, however, the distortion was measured at 30%, which is rather high considering that most of the other characteristics of this set are above average. It must be stated that the manufacturers only claim a maximum of 2 watts output.

Measured Distortion	
1.0 watts	at 2.7% distortion
2.4 watts	at 10% distortion
3.4 watts (max.)	at 30% distortion

##### Squelch level

Threshold - 0.1uV.

Fully muted - 0.4uV.

This is the least variable squelch control that we have so far come across which can either be viewed as an advantage or disadvantage depending on what you want from a rig. In essence, this set will not blank out very much at all when the squelch is fully muted.

##### Receiver sensitivity

Probably the most sensitive receiver of any of the sets we have so far tested. In the absence of interference, this receiver will bring in the farthest CB stations very well.

Sensitivity	
10dB quieting	0.17uV
20dB quieting	0.49uV
30dB quieting	1.9uV

##### AM rejection

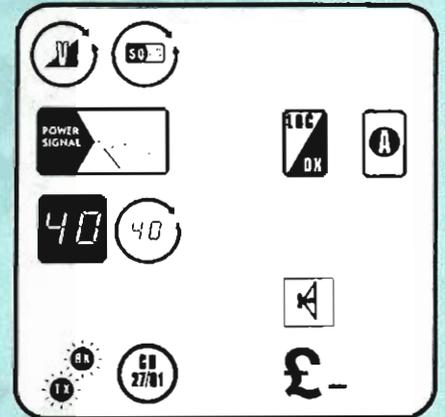
A result of 38dB was measured on the DNT M40 by feeding a fully-limited FM signal (10uV) into the receiver, this is artificially modulated with a 1KHz tone (1.5KHz deviation). At this stage the receiver's audio output is noted. Then the modulation is changed from FM to AM but with 30% modulation. Now the audio output is measured again and a figure relative to rejection is obtained.

The DNT again managed to give a good result, although once more one must understand that the rejection is

normally of signals that are exactly on frequency, not AM signals that are off frequency - they would give a different result.

##### Adjacent channel rejection

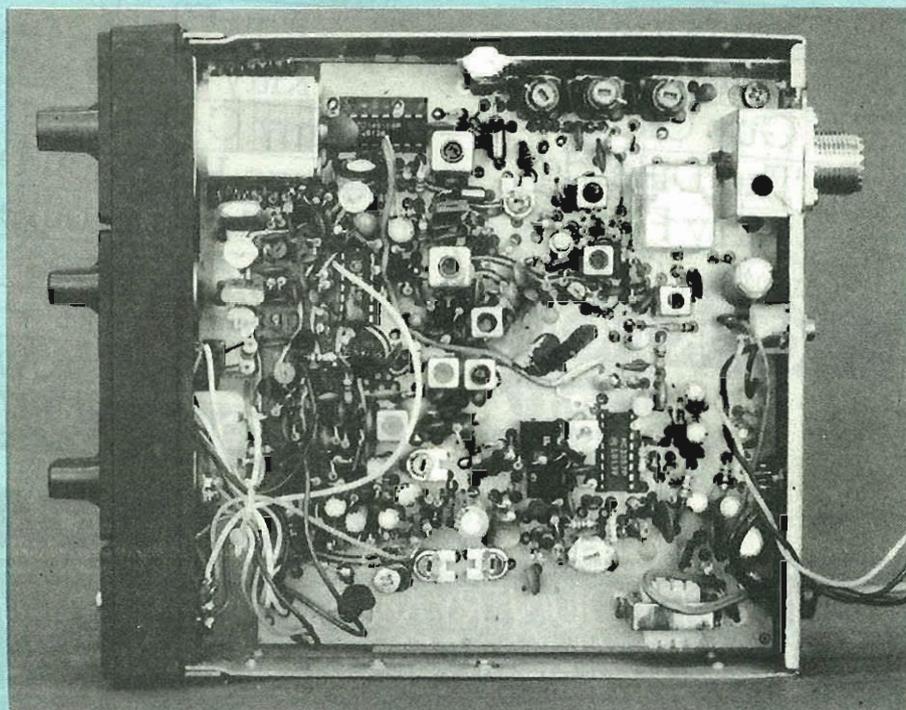
Obtaining a relative indication of rejection by feeding two signals into the set, one on channel 19 the other on 20, the output of one generator can be gradually increased until the receiver starts to hear a deteriorating unwanted signal of exactly 3dB. This is readable on the generator's output and gives good indication as to the set's capability. 50uV for 3dB is the reading for the DNT M40 and once more this figure is considered to be fair although marginally higher figures have been achieved in the past.



Manufacturer's Specification	
<b>General</b>	
Frequency	26-28MHz/operational 27.6015-27.99125MHz
Channels	40 switched
Frequency tolerance	0.001%
Operating temperature	-10°C-+55°C
Operating voltage	12 volt battery/13.2V nominal
Operating voltage range	11-16 VDC
Dimensions	165 x 155 x 50mm
Semiconductors	24 transistors, 14 diodes, 4 IC's, 2 LED, 1 channel display
Ceramic filter	3
Weight	1,400gr.
<b>Receiver</b>	
Sensitivity	Better than 0.4uV for 10dB S+N/N
Selectivity	±3.6KHz-6dB 10KHz-85dB
Adjacent channel rejection	80dB
IF frequencies	455KHz/10.695MHz
Squelch, adjustable	0.1-1.5uV
Image rejection	Better than 90dB
Audio output	2 watt/8 ohm
<b>Transmitter</b>	
RF output	0.4/4.0 watts (Lo/Hi)
Type of modulation	FM
Modulation deviation	2.5KHz max.
Harmonic, spurious rejection	Better than $5 \times 10^{-8}$ / $2.5 \times 10^{-6}$ watt

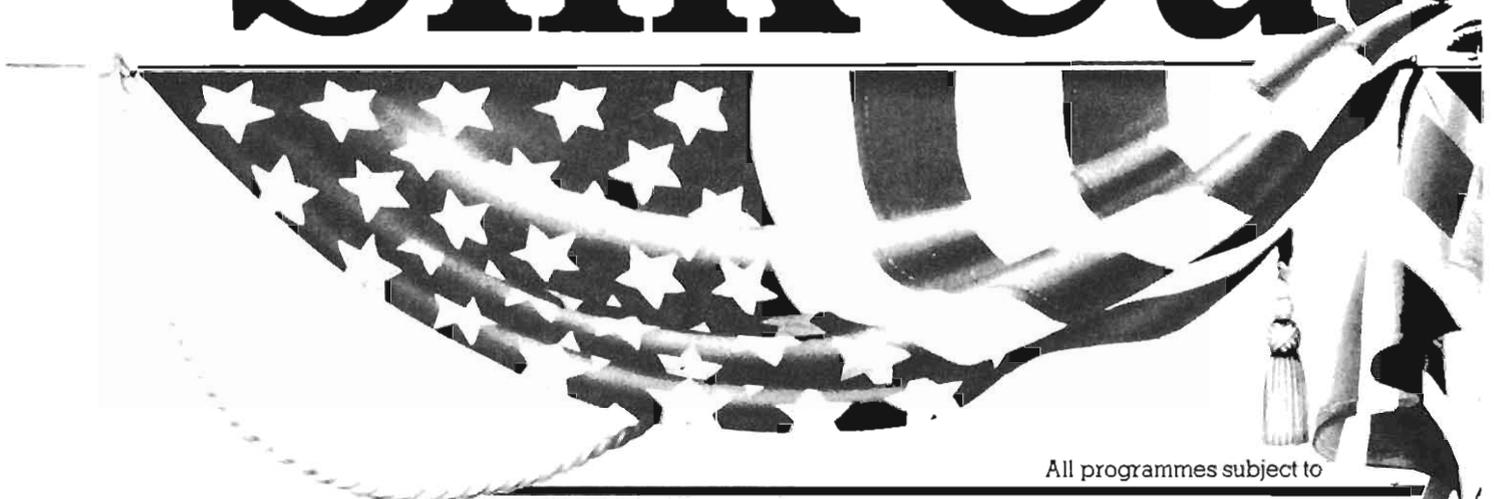
#### Summary

This is a true FM set with not one part of it looking as though it has an AM ancestor. RF filtering is the best that has so far been seen indicating that the equipment is obviously purpose designed for the UK market. Internally the set is well laid out and the construction of the circuitry is fairly good.



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# OVER THE COUNTER

Just a few more legal rigs and twigs

Since we last presented a range of legal rigs which at the time were available, no less than 30 new models have come onto the British market. Many of the sets that have recently been launched are the same, externally, as others but with different trade names on the front of the set.

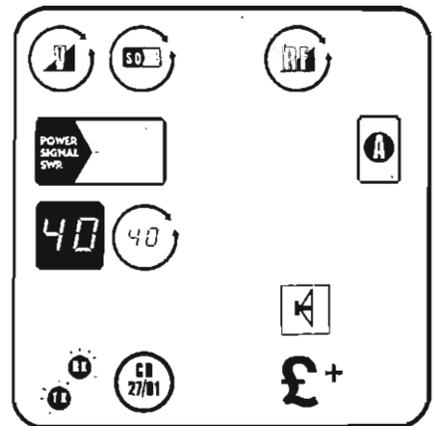
Internally, the majority of CB rigs can be traced back to about five Far Eastern manufacturers who make CB radios for the world market; which makes much of the circuitry very similar. In essence then, not many of the rigs in this feature are totally unique but many of them do incorporate facilities or controls that haven't previously been seen.

We will leave you, the potential customer, the task of identifying the manufacturer and the ultimate decision as to which set to buy, as retail prices vary for very similar-looking equipment.

## Interceptor TC 300

You may have already seen pictures of the Interceptor range of transceivers but at last the sets themselves are available. Our ingenious symbols were designed before final specifications of the TC 300 were released which means that the clever SWR warning indicator, which this set has, cannot be pictorially depicted. Imported by Chelsea CB and Parkington and available from good CB shops.

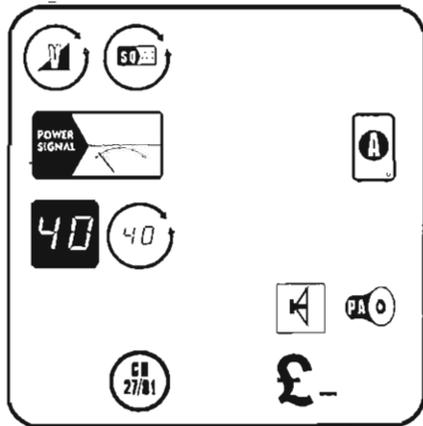
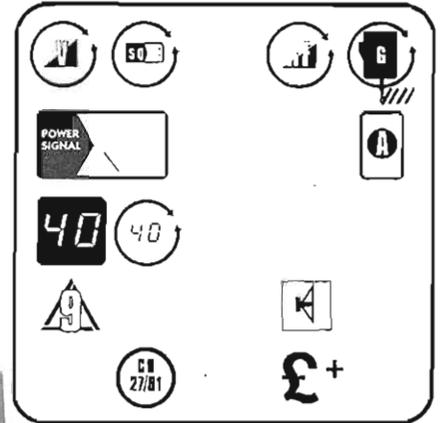
# INTERCEPTOR





### JWR Diplomat 40

Definitely a rig for those with a bit more cash than your average feature writer. The Diplomat can be purchased complete with a selective calling device built in which gives this home base a distinct advantage for business users. If you decide to have the optional sel. call. fitted, the retail price of this John Woolfe Racing set will exceed £200 (phew!).



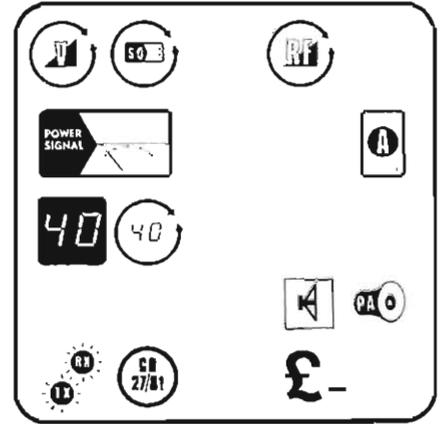
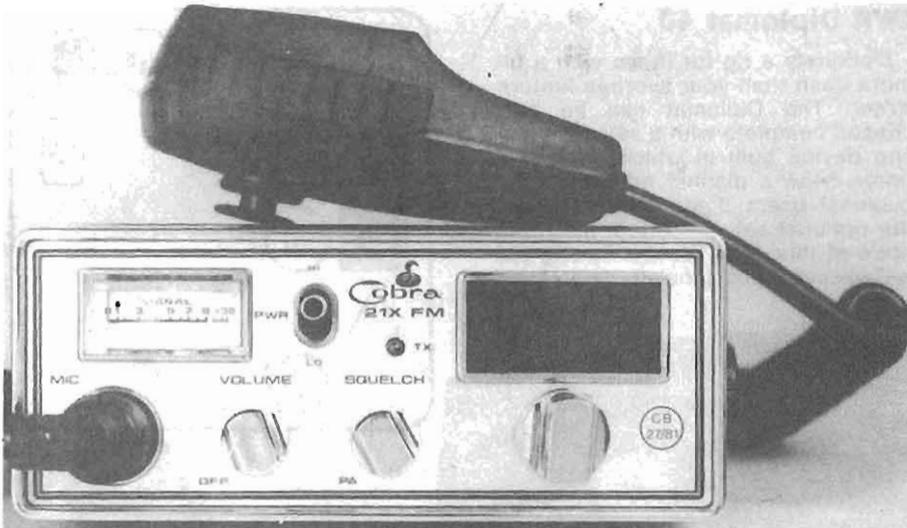
# HARVARD CB

### Harvard 402 MRA

Imported and distributed by Harris Overseas, the Harvard 402 is one of five mobile sets bearing the Harvard

name. The Harvard name has become well established, especially among younger breakers, as the company who make walkie talkies. Chances are when you see a young person 'playing' with a walkie, it will have come from this company.



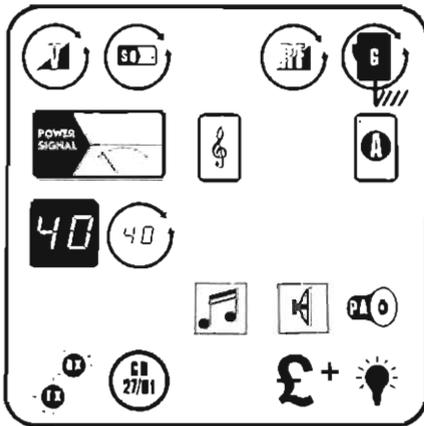


### Cobra 21X FM

The brand name Cobra can be found on the front of many AM sets as well as this, their first legal FM rig. Mura Electronics have the sole importation and distribution rights to Cobra in the United Kingdom and it is through their appointed agents that you will be able to purchase the 21X FM.

### President KP 77

President are known world wide as purveyors of things CB. However, this particular set is not exactly what it seems. If you look closely at the photograph of this base station, next to the CB 27/81 logo, you will see the Dutch PTT mark which indicates that this set was originally planned to sell in Holland. It has been converted to meet British specifications and until we manage to put it on the test bench we cannot say how well it meets MPT 1320 requirements.

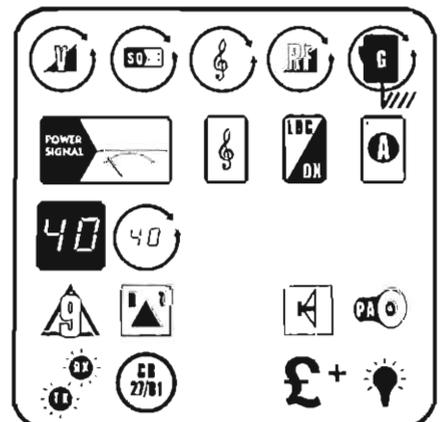


# YORK

### York JCB 863

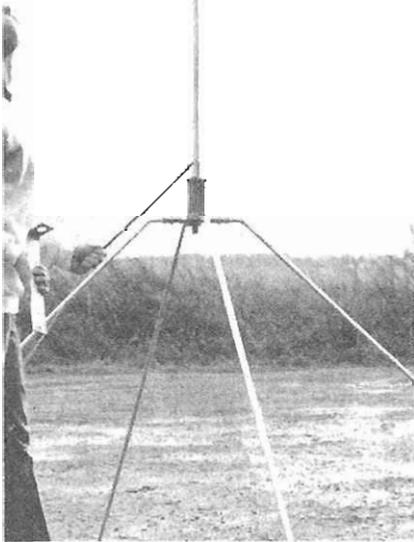
Another relative newcomer to Britain is the name York. The JCB 863 is

definitely designed for people with more than two hands judging by the amount of controls included on the front panel (1-4 for Octopus). On sale in larger branches of Woolco and Woolworth along with a whole range of York products.



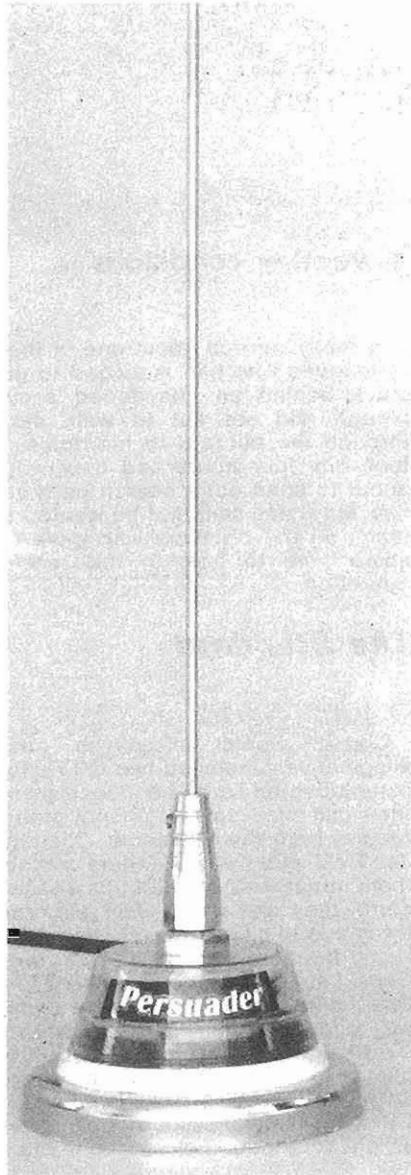
## Stingray home base antenna

Designed by our resident genius antenna maker, F. C. Judd, the Stingray is one of the first legal home base antennas to meet British specification. This antenna can be either pole mounted or left free standing and is entirely British made. Suitable for FM or AM operation, the Stingray has a power handling capacity of up to 500 watts. Distributed in the UK by C-Brit Ltd.



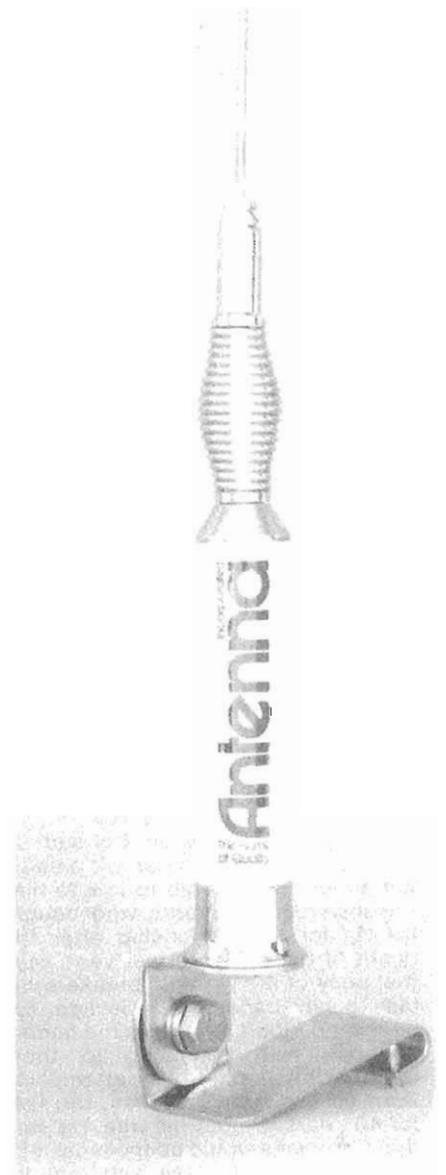
# THE STINGRAY

# Persuader Antennas

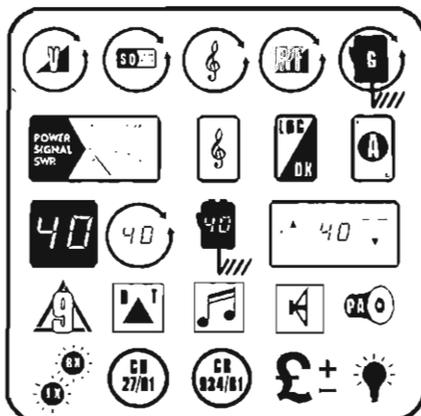


## Persuader antennas

Two new legal mobile twigs which are now available come from Antenna Incorporated and are being sold under the name of Persuader. Marketed by Mocom, they are both adapt-



able to being mounted in the variety of ways most popular to CB users. Seen as serious competition by most major antenna manufacturers, Antenna Incorporated products are becoming increasingly more popular.

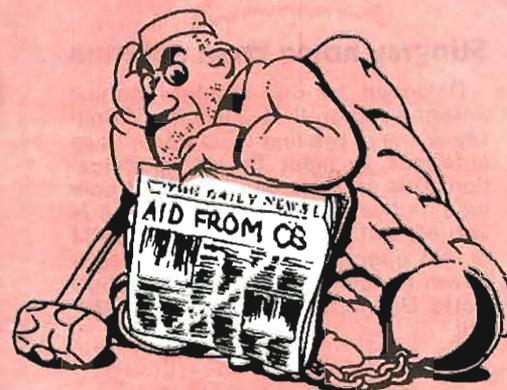


## GLOSSARY OF SYMBOLS

	Channel Change: Push Button		Channel 9 Select Switch		Tone Switch		Local/Distance Switch
	Extension Speaker Facility		Public Address System		Attenuator Switch: Front or Back Panel		Amount of Channels
	Selective Calling		Panel Light Dimmer Switch		Channel Change Control		Channel Change on Microphone
	Volume Control		Squelch Control		Delta Tune Switch		End Transmission Signal (Roger, Etc)
	Tone Control		Radio Frequency Gain Control		Transmit/Receive Indicator Lights		Over C70/Under C70 (Retain)
	Microphone Gain Control		Signal Strength/Power/SWR Meter		27MHz FM		934MHz UHF

REPRODUCTION OF THESE SYMBOLS IS FORBIDDEN SAVE WITH THE EXPRESS PERMISSION OF THE PUBLISHERS. BRITISH BREAKER PRODUCTIONS 1982

# NEWS REVIEW



## CB radio proves helpful in severe weather conditions

The severe weather conditions that we have been experiencing over the last couple of months have given rise to a tidal wave of good publicity for breakers up and down the country. Helping people out of snow drifts, flooded buildings and other hazards have proved to be some of the many assets attributed to CB radio.

Christmas also produced some favourable publicity for CB. Donations of rigs to disabled and handicapped people proved to be a popular pastime amongst the CB clubs.

### Sunday People

#### Nobody talks to Bert, the sad CB pensioner

Lonely Albert Dawson, the sad CB fan, recently made a heartfelt plea on the airways for people to talk to him. Seventy-year-old Albert, who bought his rig for companionship after the death of his wife late last year, says that none of the younger breakers will talk to him because of his age. Ex-deckhand Albert, who uses the handle Tugboat, was appealing to them before Christmas in an attempt to liven up the festive season, the first for 46 years without his wife. He said that Christmas would be the most miserable time of his life and that he would welcome the chance to chat with youngsters on CB but all they seem to want to do is take the mickey out of him.

### Eastern Daily Press

#### CB fans rescue 12 from drifts

Mid-Norfolk CB fans swung into action as a snow rescue service during the recent bad weather. Using their rigs they saved dozens of people from snow drifts and even gave some of them a bed for the night. Kevin Caine, Secretary of the Mid-Norfolk CB Club, said that they dug one car load out and put them up for the night and that several other people were wandering along the Dereham bypass and were given a lift back into town. Seven hundred members of the club were covering a wide area of Norfolk from the A11 to Hunstanton, assisted by a central control station. At one point, club members were get-

ting really worried about one of their colleagues who had managed to get stuck behind an abandoned snowplough and set out to walk back through the blizzard to his home. It took him four hours and they were about to send out a search party for him. Mr. Caine said that he wanted to thank all the breakers who gave up spare time to help in the rescue operation.

### The Standard

#### Helping a jock in a jam

Capital Radio executives have imaginatively installed two CB radios in their Euston Tower headquarters so they can pick up on-the-spot traffic reports from their listeners. Capital's Jan Reid said that if listeners contact them about sudden snarl ups or accidents they can divert their airborne flying eye to check the situation over. Using the handle Cockney Sparrows, Capital are at the moment limited to a three-mile radius but plans are under way to increase this figure to 10 miles.

Although the BBC and LBC do not plan to follow Capital's example there are numerous disc jockeys who use CB radio - Tony Blackburn, DLT, Steve Wright and Adrian Love to name but a few.

"I find it incredibly useful," says Adrian Love. "I use it all the time when I'm in a hurry to get somewhere so I can avoid being stuck in traffic for half an hour."

### Daily Express

#### Katrina's love in the air

Brave thalidomide victim Katrina D'Andilly has become more than good buddies with fellow CB fan Keith Aldridge. Sexy Eyes - 19-year-old Katrina's handle - got her man after he jokingly insulted her over the air. That was eight months ago. They arranged an eyeball and haven't looked back. "We got on very well, considering his insults," she said, "but we don't do our courting over the air any more because there are too many people listening." Keith said that they both owe a lot to CB radio. "Without it we might never have met. On channel she's a very popular lass. Even though

## CB fans rescue 12 from drifts

Mid-Norfolk CB fans swung into action as a snow rescue service.

Using their radios, they saved a dozen people from snow-drifts and gave some a bed for the night, said Mr. Kevin Caine, secretary of the Mid-Norfolk Breakers' Club.

"We dug out one car-load at Shipdham and put them up for the night. Some more people were wandering aimlessly on top of the Dereham bypass, so we took them into town," said Mr. Caine (Electric Frog, as he is better known to fellow CB users.)

"We had about 700 breakers covering a patch from the A11 to Hunstanton. A central control also logged road reports radioed in by members.

"We got really worried about one member, though. His car got trapped behind a snowplough which got stuck near Watton, and he started to walk back home to Shipdham in the blizzard. It took him four hours - we were on the verge of sending a search party."

Mr. Caine said he wanted to thank all the breakers who helped in the rescue operation and missed sleep through it. "It was totally spontaneous. We had not rehearsed this kind of incident. Myself and the chairman, Mr. Richard Baker (or Bluebird) started it - and it just snowballed."

I'm engaged to her I have to wait my turn to talk to her over the air. Everybody wants to talk to her," he said.

## Northern Echo

### Bad buddy upset CB listeners

Naughty words on CB radio led to an incident involving a length of chain and a strip of copper piping says the Northern Echo. Unemployed Stephen Barker, 24, and about 15 other CB enthusiasts, were at a house in Newton Atcliffe when they heard the bad language on the air. They located its source, resolved to go down and sort it out and that was when the piping and chain were picked up.

In the row that followed a young man received a three-inch cut across his head from a blow with the copper piping. Mr. Barker admitted a breach of the peace and was bound over in the sum of £200.

Three other young men are to face similar charges at a later date.

## Eastern Anglian Daily Times

### CB helps rescue of Ipswich diabetic

Ipswich diabetic Mrs. Jennifer Hook, is recovering at home after being rescued by a CB operator. Jennifer collapsed in the early hours of the morning at her home which is not on the phone. "I did not want to leave Jennifer and the phone around the corner is often out of order anyway," said her husband. "She collapsed on the floor and I was very worried so I put out an emergency call on the CB set in the living room," he continued. "I finally picked up a breaker called Organ Grinder in Colchester and told him what had happened."

Organ Grinder phoned an ambulance which arrived in five minutes. Jennifer was taken to the Ipswich Hospital where she was treated and later released. Mr. Hook, whose handle is Country Boy, said, "It could have been very dangerous and I think the CB could have saved her life."

## Western Daily Press

### Kidney boy's good buddies

Kidney transplant patient Mark Gardiner, aged 13, received the Christmas present of his dreams thanks to his good buddies on the airwaves. Gloucestershire breakers were moved by Mark's bravery following transplant in Guy's Hospital, London a few months before. So when they discovered that he was a CB enthusiast they collected £139 to buy him a rig and all the extras but CB shop owner Mr. John Barker has given Mark the equipment free and the money raised will go to Guy's Hospital Kidney Unit.

Mark, who comes from Bisley, near Stroud, has had a kidney disease almost from birth. Last summer he had both kidneys removed and was confined to a dialysis machine. He is now recovering from the transplant and is expected to be allowed home shortly.

# CB helps rescue of Ipswich diabetic

IPSWICH diabetic Mrs. Jennifer Hook is recovering at home after a coma collapse ordeal in which a CB operator came to the rescue.

And her husband Ron believes the CB set at their Spenser Road home helped save his wife's life.

For Jennifer collapsed in the early hours of the morning at the couple's home, which is not on the phone.

"I did not want to leave Jennifer and the phone around the corner is often vandalised anyway," said Mr. Hook.

"She had collapsed on the floor and I was very worried."

So he put out an emergency call on the CB set in his living room.

"I finally picked up a breaker called Organ Grinder in Colchester and told him what had happened."

The fellow operator called an ambulance which arrived in five minutes.

Jennifer was taken to the Anglesea Road Wing of the Ipswich Hospital where she was treated and later released.

Mr. Hook, whose handle is Country Boy, said, "It could have been very dangerous and I think the CB could have saved her life."

## Daily Mirror (Live Letters)

### Big Four to CB radio

It is not often that we feature letters in this article but this particular one caught my eye. The letter comes from Miss C. L. Abbot of Hamlet Gardens, Hammersmith and reads as follows:

"I was very interested to read in your paper about people's experiences with the CB radio. It prompted me to write to you about my mother, Mrs. Shirley Abbott, who runs a small taxi business. She suffers from multiple sclerosis and life up to now has often been lonely and dangerous.

"Now, thanks to her new CB radio, friendly voices and help are not far away. Within a week of getting the radio, Silver Lady - her CB handle - has made many friends and it's not only voices that come into her home, their owners turn up too.

"Among those who drop in are Catweasel - David Saxon - who is also disabled. He gave her a table which is designed so she doesn't have to reach for the mike. He has since started a group to help people like my mother by converting switches and rigs, etc.

"The nicest thing about CB is that

now I don't worry so much because I know that if she doesn't answer the call after a few minutes, someone nearby drops in.

"It's a lifeline to my mother and I am sure it would make a tremendous difference to many disabled people."

## Daily Mirror

### Heartbreak for CB youngsters

Thousands of youngsters who were given CB walkie-talkies for Christmas are now throwing them away in disgust. The sets, which cost between £25-£35 each, are only useful up to 100 yards in a built-up area. It's easier to shout than call each other up on the radio. Even in the open they only have a range of one mile - and that is reduced as the batteries run down.

Thousands of hand-held rigs, all carrying the CB27/81 stamp, were sold over the counter at Christmas. Experts claim that retailers are partly to blame for selling equipment they know nothing about. Some of the blame must also fall on the parents who have bought the sets without seeking information about their capabilities.

# AMERICAN SWEAT SHIRTS

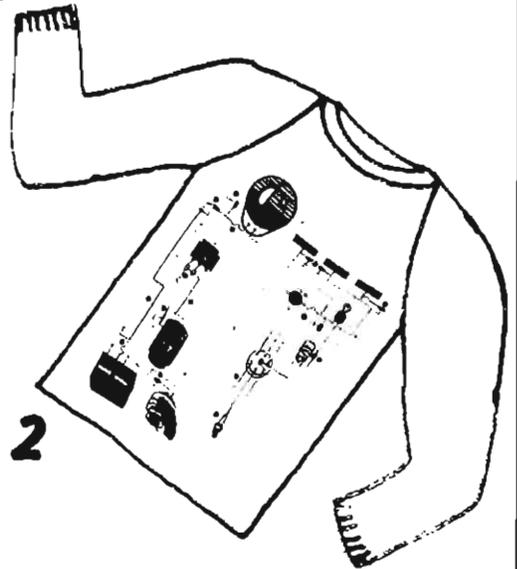
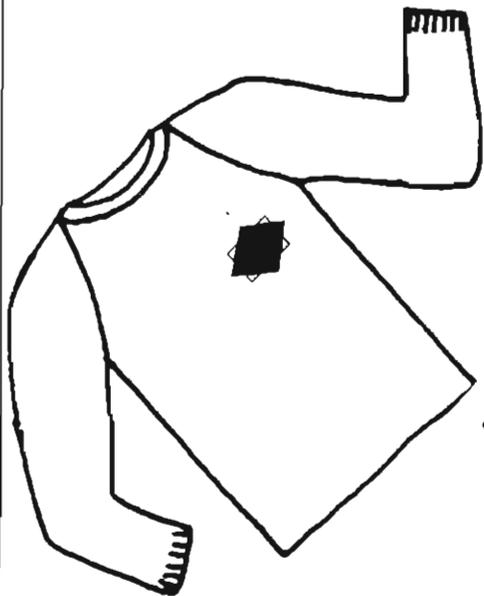
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# BRITAIN'S BIGGEST NATIONAL EYEBALL 2

**FEATURING: FROM RADIO 1 DAVE LEE TRAVIS AND PHIL ENGLAND'S RADIO LUXEMBOURG ROADSHOW**

Yes, due to the enormous success of the first "Britain's Biggest National Eyeball" and to the great demand from breakers everywhere, Britain's Biggest National Eyeball 2 is set for Sunday, 28 March 1982, 2.00-11.30pm, at Thorpe Park, Chertsey, Surrey. Britain's Biggest National Eyeball 1 was a raving success and we're all set to repeat the experience with the help of Radio 1's Dave Lee Travis, himself a CB operator, and Phil England's Radio Luxembourg Roadshow.

## What is an Eyeball?

You may have been to a CB exhibition before and think you know what to expect. *Well, forget it.* This is something different. Our aim is to *entertain* and inform. An Eyeball, in CB terms, is a meeting, a getting together of people with a common interest in CB, a social event as well as an opportunity for you to browse around trade stalls and a chance for you to find out about some of the other aspects of CB, such as the emergency monitoring services and sideband operation.

## What will be there?

Trade stalls and exhibitions, CB and sideband clubs, top DJ's, bars (all-day extension) and catering facilities, the regular Thorpe Park attractions (roller rink, Cinema 180, waterbus, amusements, children's rides, fun house and model world as available) *but most of all fellow CB'ers.*

## How much?

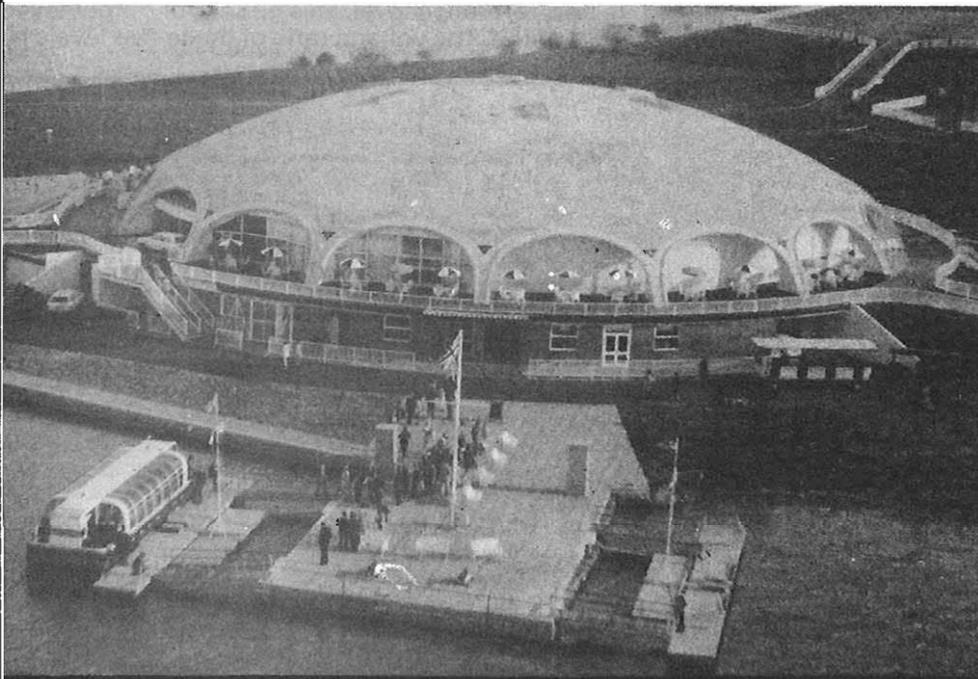
Tickets will be £2 on the day, under-14's £1 and under-5's free. Advance bookings for 25 and over £1.75 each and for 50 and over £1.50 each. Free car parking.

## Can I bring the children?

Yes, of course. They are welcome and will enjoy the day with, of course, the Thorpe Park facilities.

## Advance booking conditions

Advance tickets are sold at the stated rates regardless of user. Therefore, children's tickets do not count towards discount quantities and should be purchased separately.



Thorpe Park is situated on the A320 half way between Staines and Chertsey (exit 2 on the M3). It is 6 miles by road from Heathrow Airport and 21 miles from London's West End.

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# FM TRANS

## Part 3 by E. A. Rule

So far this series we have dealt with sensitivity and selectivity in some detail with a brief look at the 'capture effect'. This capture effect is unique to the FM system and has no counterpart in either AM or SSB. Because it offers the FM system an advantage of co-channel working which the others do not have we shall now take a closer look at this capture effect and how it is measured.

The capture effect is the ability of an FM receiver to suppress the weaker of two signals on the same frequency present at its input. The weaker signal tends to produce amplitude modulation of the stronger and as this amplitude modulation is then removed by the limiter stage the weaker signal is suppressed. The amount of difference between the two signals strengths, before capture, is expressed in dB's and is the CAPTURE RATIO. The LOWER the figure in dB's the better the receiver.

The way this effect is measured is shown in figure 1. The test requires two signal generators, one of these must be capable of FM modulation, the other one only needs to provide an unmodulated signal. The outputs from the two generators are combined via a matching network and the combined outputs

taken to the receiver input via a suitable artificial aerial. The two generators are both tuned to *exactly* the same frequency on the test channel. The unmodulated generator is switched off and the modulated one is set up to provide an input to the receiver which will produce a signal to noise ratio of 30dB. The generator is modulated at 400Hz to a deviation of 1.5KHz for this test, and the attenuator switched out of circuit. The attenuator is then switched into circuit at 1dB attenuation and the receiver output set to provide a suitable 0dB reference point on the millivolt meter. The attenuator is then switched out of circuit again. The unmodulated generator's output is then increased until the output shown on the millivolt meter drops to the 0dB reference level. The signal input is noted. The attenuator is then switched back into circuit and set for 30dB attenuation. The sensitivity of the millivolt meter is increased so that this new (lower) level establishes a new 0dB reference level. The attenuator is again switched out of circuit and the unmodulated generator output adjusted until the receiver output falls to this new reference level. This generator output level is also noted. The voltage ratio of these two levels is

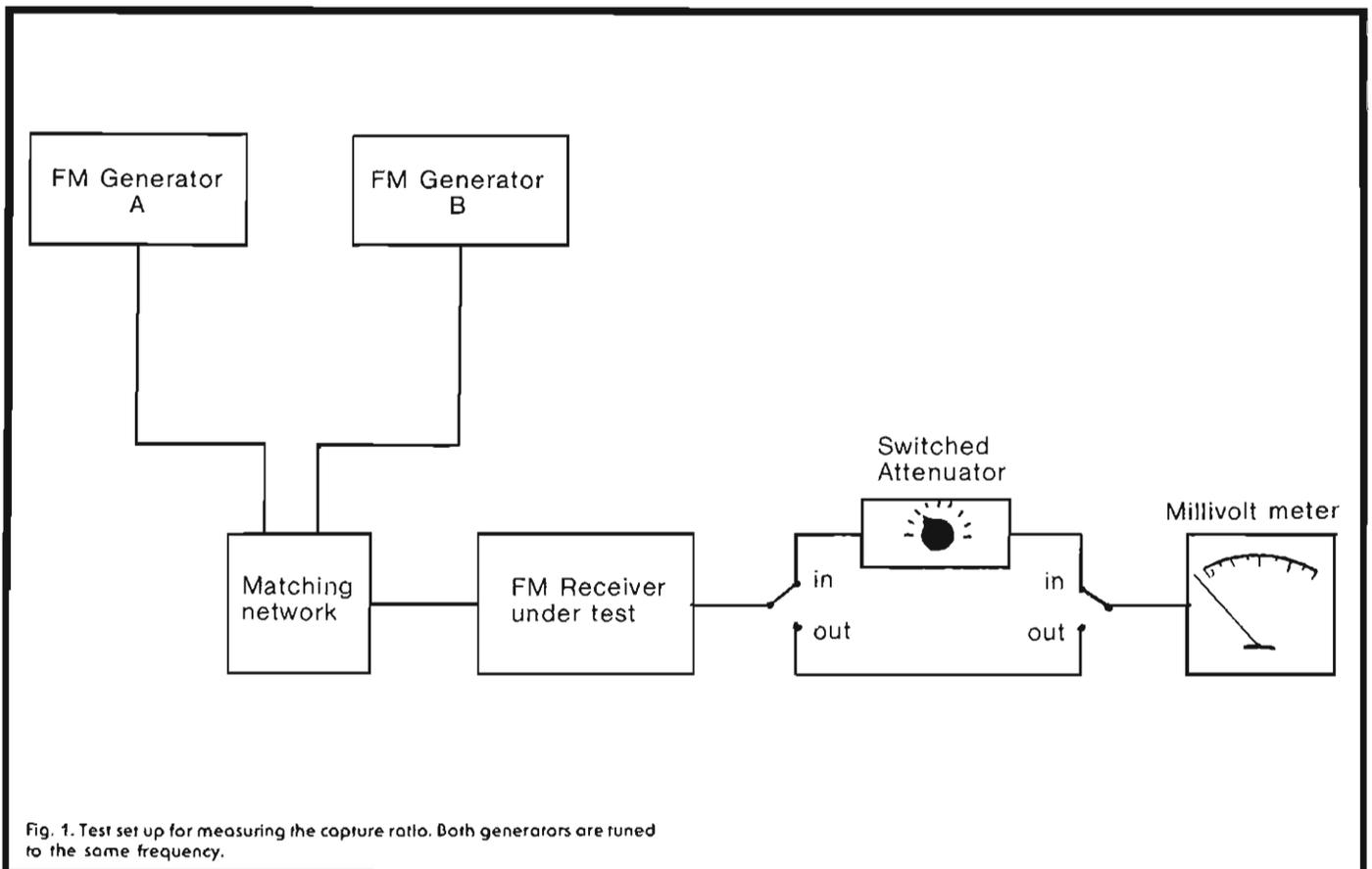


Fig. 1. Test set up for measuring the capture ratio. Both generators are tuned to the same frequency.

# MISSIONS

converted to dB's, half of this ratio is the capture ratio in dB's (the reason for halving the dB's is because we are concerned with the signal power and the generators will be calibrated in voltage outputs).

The test is repeated at different signal input levels and the results recorded, it can also be repeated at different modulation (deviation) levels and a curve plotted showing the capture ratio obtained for varying input signal levels. The receiver RATED capture ratio should be the WORSE figure obtained. Great care is needed during this test to ensure that the two generators remain exactly on the same frequency during the whole of the test period. Figures of less than 6dB can be considered good and figures less than 12dB reasonable. This test is not an easy one to carry out and care is needed if meaningful results are to be obtained.

## Image rejection

The immunity of an FM receiver to spurious signals can be tested in a number of ways and we have already looked at one of these (selectivity), another concerns the image rejection. All superhetrodyne receivers will respond to two input frequencies. These two signals are spaced from the local oscillator frequency by the IF frequency, one on each side, Fig. 2. Only one of these is the wanted signal, the other is the image (sometimes called the second channel interference). By suitable choice of IF frequency and front end selectivity this unwanted image signal can be reduced to an acceptable level and the ratio between the two responses is the image response in dB's. In this case the higher the number the better.

To measure the image response the generator is first tuned to the wanted frequency and its output level adjusted for rated receiver sensitivity for a signal to noise ratio of 30dB. Its output level is noted. It is then tuned to the image frequency and its output increased until the same output from the receiver is obtained. The difference in dB's between the two output levels is the image rejection ratio. Figures higher than 60dB can be considered good with figures of 80dB excellent. Under 50dB is likely to allow interference from strong signals on the image frequency. Receivers with less than 40dB may suffer from severe interference at times. Fifty dB image rejection should be considered the minimum for 27MHz CB use. Note that with an IF of 10,7MHz the image could fall into the UK band 1 TV frequencies and if a receiver is used close to one of these high-power transmitters a poor image rejection could result in a buzzing sound (picture signal) on some or all CB channels. A series trap tuned to the *image frequency* and connected across the receiver input will greatly help reduce this source of interference (this

could be applied to any source of interference due to a poor image rejection).

## IF rejection

This is similar to the above except that signals are picked up directly at the IF frequency. It is measured by switching the generator to the actual IF and increasing its output until rated sensitivity is obtained. The ratio in dB's between the two levels is the IF rejection ratio. Most CB receivers have two IF's and the rejection should be quoted for both frequencies. Figures should be higher than 70dB for the lower IF and higher than 50dB for the higher IF. Figures of 80dB and 60dB for the lower and higher IF's respectively can be considered excellent for CB receivers but lower figures of 60dB and 40dB may cause problems under certain conditions. Again a suitable series trap tuned to the IF across the receiver input can greatly improve matters. Some of the published specifications only give figures for the lower IF (normally 455KHz) and ignore the higher one, which in practice is more likely to cause problems.

## AM rejection

The ideal FM receiver should not respond to AM signals of any kind but as we do not live in an ideal world they all respond to AM to some degree. The AM rejection is the amount in dB's that a 30% modulated AM signal would be reproduced at the output of an FM receiver compared with a modulated FM signal. This test is made by first injecting an FM signal at a strength of around 10 microvolts (see note at end of this month's article) which is deviated to 1.5KHz and setting the output level to a 0dB reference on a suitable meter. The generator is then switched from FM to AM modulation at 30% and the drop in output on the meter noted. The difference between the two readings is the AM rejection in dB's.

Figures higher than 30dB can be considered good with 45dB or more excellent. Less than 25dB is poor. This test is sometimes carried out with simultaneous FM and AM modulation of the generator with a special filter to remove the recovered FM signal (400Hz) to be measured. This test is more severe and lower figures can be expected. Note, ignition interference is AM in nature and a good AM rejection figure will result in less ignition interference from your mobile rig reducing the need of suppressing interference from this source.

## Limiting

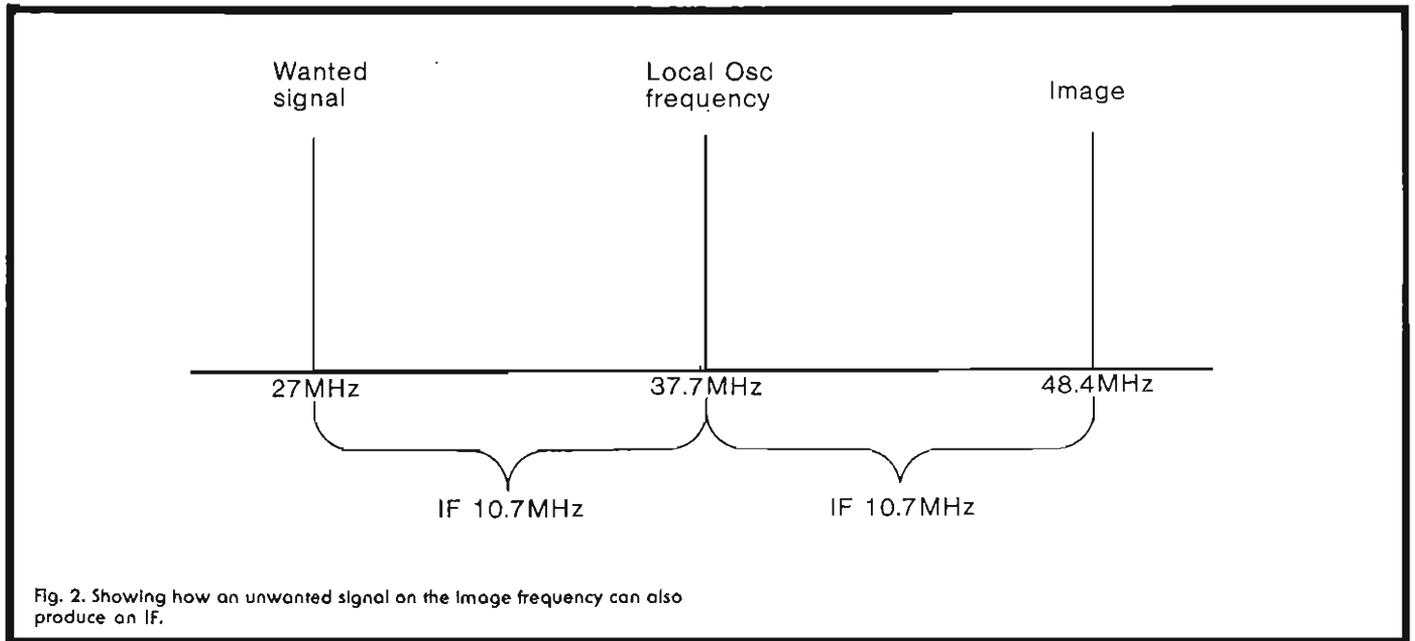
Once the signal input reaches a certain strength any further increase will NOT produce a corresponding increase in audio output. This point is

# FM TRANSMISSIONS

where the receiver has reached full limiting. Measurement of this is simple. A generator is set for full deviation at 400Hz modulation frequency and its output increased until there is no further increase in audio output from the receiver, its output is then decreased until the output of the receiver drops 1dB. The generator output level is noted and is the signal input required for full limiting.

This point will be very low (around 1 microvolt or less) with a well-designed receiver. In general, receivers with poor limiting will also have poor AM rejection and capture ratio figures.

this test. These are designated  $f_1$  and  $f_2$ . The intermodulation product is due to:  $2f_1$  minus  $f_2$  and  $2f_2$  minus  $f_1$ . For example, channel 5 and 6 would be 27.641 and 27.651, therefore  $2f_1$  minus  $f_2$  would give 27.631 (channel 4) and  $2f_2$  minus  $f_1$  gives 27.661 (channel 7). In other words, if two signals on channels 5 and 6 are strong enough they will be heard mixed together on channels 4 and 6 as well, causing interference to any signals already on those channels. The rated RF intermodulation rejection figure is the difference in dB's between the rated receiver quieting sensitivity and the signal level



## Repeat spot rejection

This figure is rarely quoted in specifications. If a very strong signal is applied to the input of a receiver it is possible for it to mix with the second harmonic of the local oscillator and produce an IF signal. The input frequency required to do this is at plus or minus half the IF one side of the wanted channel. Measurement is made by setting the generator frequency higher (or lower) than the receiver by half the IF. Its input is then increased until the same *quieting* figure is reached as for a standard sensitivity test. The difference between the two generator outputs is the repeat spot rejection in dB's. This can be expected to be at least 20dB better than the image rejection figure and on a really well-designed receiver can be as high as 80-100dB. Like image rejection this is dependent on the front end selectivity but good mixer design plays an important part as well. The reason for using the quieting figure instead of signal to noise is because as the signal is mixing with the second harmonic of the oscillator the actual amount of deviation will be changed.

## RF intermodulation

Once again, this figure is rarely quoted yet it is one of the most important as it gives an indication of how a receiver will perform in the presence of a number of strong signals. Two signals are used for

required to produce intermodulation products equal to this. The two signals,  $f_1$  and  $f_2$  are applied at equal strength via a suitable calibrated attenuator.

The higher the resulting figure the better the design of receiver with 40dB or more being considered good. Fifty dB or more would be excellent for a CB receiver, with anything below 20dB causing severe problems.

How do modern CB receivers stand up to these tests? In order to find out, three FM CB transceivers were obtained and put through the tests outlined above. The results were quite surprising and next month all will be revealed together with the results of a few other tests. Enough for the moment to say that there is room for improvement!

Regretfully an error crept into the article last month. When checking selectivity an input signal of 10 microvolts is used, not 100 as stated.

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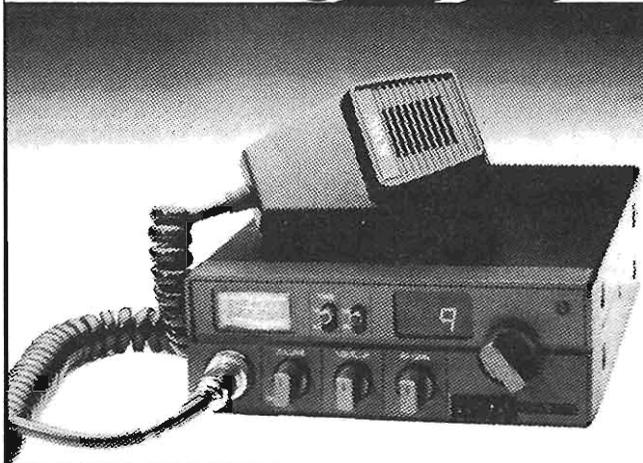
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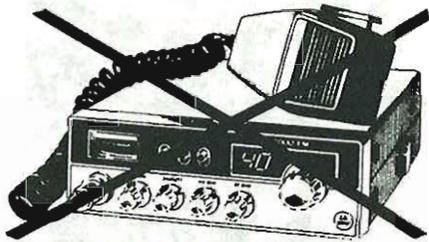
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# Round Up



## UK rules?

The real implications of a 'British only' system is being brought home to the truckers who regularly travel abroad. Pat, a driver who runs his own truck, was travelling over to France with a Binatone Speedway installed in his cab.

On reaching France and going through Customs, he was told in no uncertain terms that the set was not allowed in and could not be used. The set was confiscated and held in store for the duration of Pat's trip. He was allowed to collect the set on his way back to England on payment of a 'storage' fee of nearly £10. He was also firmly told that the French had a CB system, the British had a CB system and never the twain shall meet!

It's a shame that for all we are members of the European Community there is no unified system to aid drivers and particularly truckers on their travels.

## THAMES Paramedico

THAMES emergency monitoring service has formed a new branch of its operation which will deal with or help with accidents requiring medical assistance. The service has been started by London ambulance man Mr. P. Costello after initial contact with the Bromley Flying Doctor Service who use CB for helping with accidents, etc.

The Paramedico service has had a lot of thought given to it and has two doctors as National Medical Advisers and a doctor as National Director of Training. The Constitution lists its objects as

1. The preservation of life.
2. The provision of medical and rescue assistance in the event of a major disaster or incident.
3. Medical advice to THAMES.
4. First aid training to monitors.

The service has already given advice and assistance at road accidents and accidents in the home. In the event of a major or national disaster members of THAMES Paramedico can be co-ordinated into the area to give assistance to the emergency services.

Membership is open to doctors,

## CB Diary

Received this in the post recently and liked it, so thought we'd let you read it too. Looks as if it will be a regular feature as well!

### Confessions of a CB Enthusiast

from Videostar (Raymond E. Orr)

#### PLT (Pre Legalisation Tension)

Were you ready on Legalisation Day? I was! Late on Sunday 1 November, I carefully drilled a hole in the roof of my Volvo and mounted an 'approved' twig, discreetly hiding the co-ax lead down the windscreen pillar to the front dashboard. Everything was OK and I then took my latest pride and joy, a Harrier 40ch FM transceiver, from its box and read the instructions carefully. After all, if you've spent close on £90 on equipment, you would never forgive yourself if after installation you switched on and melted the engine and blew the battery! A quick final check that I had all the details correct (I had) and the time slowly ticked round to midnight. Whilst I was debating whether to wait until 00.00 before transmitting to check SWR, a thought had occurred - even though it would be legal in less than 20 minutes, I still couldn't buy a licence so technically I would still be breaking the law! After having a quick look round, nobody seemed to be interested in my nocturnal endeavours, except possibly for the neighbourhood cat, with a will I nervously keyed the mike and trimmed the twig with my 'el cheapo' SWR meter and got an acceptable 1.5:1. There was no need to saw bits of the twig off, which proved a relief. After all, if you've paid £20 for a SuperDeLuxe 'Bring-It-Back-10-4' twig, it's not an encouraging sight to see a sizeable pile of metal filings after you discovered the reason why you couldn't get a decent SWR was because you remembered to connect the rig to the meter but not the meter to the twig!

Promising to myself I would go

direct to the Post Office and get my licence first thing, I switched on and turned to channel 14 and waited. And waited. And waited . . . not a thing! I searched up and down and nothing intelligible was to be heard. This proved to be a body blow as I was expecting to be able to listen in to all those interesting conversations the CB dealer told me I could eavesdrop on! That was enough for one night, so locking up the car I went to bed hoping that I would hear someone when driving into work in the morning. It hadn't occurred to me that I could have called out for someone to copy me!

#### We're legal (Legalisation Day)

Up sharpish, I grabbed a grubby tenner from my quickly dwindling funds and shot round to my Head Post Office with my CB Licence form neatly filled in (and secretly thanking CB Radio for including one in the November edition!). With the time-worn gesture of grumbling when paying my £34 TV licence, the clerk was most surprised to see me gleefully pushing money her way without even a grimace or a moan about the cost of living. I waited with baited breath whilst she looked in her stamp book, I went a little pink when she started searching through her drawers and nearly expired when she said that she hadn't been issued with the stamps and had to see the Head Clerk for guidance! Ten minutes later, the sheet of CB stamps (CB1) were found and my form was duly stamped and receipted. I was now officially 'legal' until midnight on 31 October 1982!

With the joys of spring (well all right, winter) in the air - I phoned my local ITV station and told them that CB was now legal and would they mention it on their locals news/magazine programme? They did better than that, I was told to bring my car round to the TV studios as they wanted to film a legal CB in action. Fresh disasters were about to come . . . and I'll tell you about them next month!



qualified nurses and professional ambulance personnel in the Medical Section and to fire and police officers with first aid certificates and experienced first aiders with four years' continuous certificates in the Paramedical Reserve Section.

Contact by doctors, nurses and first aiders should be made to Mr. A. Medcraft, 10 Stanhope Grove, Eden Park, Beckenham, Kent and by fire, police and ambulance personnel to Mr. P. Costello, 13 Glennie Court, Lordship Lane, East Dulwich, London SE22 8NY.



### Irish Rovers

We have had a letter from an Irish reader, telling us of the Irish Rover International DX Group. Malcolm is 11R24 and at the time of writing the club has 31 members, 24 in Ireland, two in England, three in Belgium, one in France and one in Italy. That isn't bad for a club only two months old. The club has the usual package of ID cards, club stamps, pens, QSL cards, etc. and the membership cost is £5.00 Irish currency (although I don't think

all those items are included in that price).

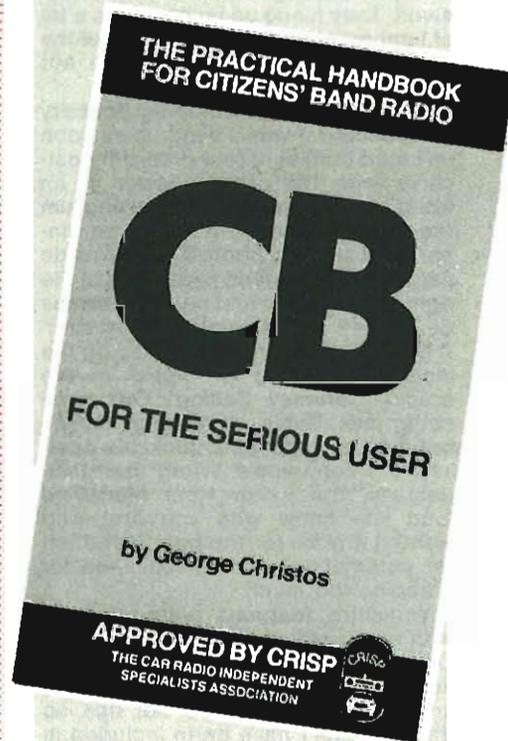
Malcolm is obviously keen to get some publicity for this very friendly club, so contact name is Joe Cashin, Mooncoin, Co. Kilkenny, Ireland (he is 11R001). Malcolm will 100% QSL and can be reached at Aughnish, Ramelton, Co. Donegal, Ireland.



### CB for the serious user

Just published is a book written by George Christos, one of the founder members of the Car Radio Independent Specialists Association (CRISP). The book, *CB For The Serious User*, is described on the back jacket as "the common-sense guide to CB for people who want to put private radio to good use in business and in the home. It is not a racy irrelevant celebration of American truckers' culture". This is an accurate picture of the book and its opinions and would be a good introduction to British CB for a potential buyer with no previous knowledge of CB. The book covers the history and uses of CB, business and commercial applications, what to look for in a CB and the usual mixture of codes, language and codes of practice. It also features a section on CRISP and the advantages of buying from or dealing with a CRISP member.

All in all a nice, informative book. However, two minor quibbles. The book was, understandably, written before legalisation and has made a few assumptions which haven't held good (like official call signs). Also the presentation is a little basic to attract the eye and to justify the cover price of £2.99.



### Oxygen unit donated

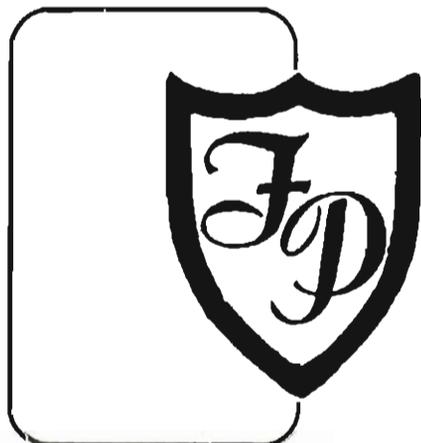
Midnight Blue, of the Big 'C' Club '80 at Carmarthen, Dyfed, sent us a letter giving details of the results of their recent charitable efforts.

After various fund-raising functions, the club donated a portable oxygen unit to the Dyfed Ambulance Unit.

The unit was presented to Mr. D. T. P. Rogers of the Dyfed Health Authority. Also present at the presentation was the Chief Ambulance Officer, Mr. G. B. Evans and members of the ambulance



crew.



### A legal base antenna

Last month we featured a little item, 'Legal Base Rigs at Last,' with details

of two purpose-built and purpose-designed base sets. The other big problem up to now has been getting a base station antenna to go with it.

This problem is beginning to be solved now as importers and manufacturers have applied their ingenuity to it and the nice thing is that several of the antennas are of British design and manufacture.

Freeman and Pardoe Ltd., who when not making antennas are making bits of Concorde, have introduced the Invader 1.5, suitable for loft or external use. We haven't had the chance to test it but the manufacturers claim it is efficient and very competitively priced. At a general retail price of £24-£25 it is proving very popular, so keep an eye open for it.

# Readers Write

## with a difference!

I don't know quite what we started with the win-a-rig competitions! The licence competition wasn't so bad as it was easy to decide who had won but the deliberate mistake contest in Round Up . . . ! Post by the sackful nearly and Carole, who opens the post, got to the stage where she was dreaming of letters addressed to 'Win-a-rig'.

Lots of people got the right answer, of course, but we were amazed by the number of people who got the wrong answer. It was sobering to see how many mistakes get through the proof reader as a lot of readers pointed out spelling and typographical errors. Trouble is those aren't deliberate, so we decided they didn't count. As you've partly realised by now, if you read the magazines in order, the results are on the introduction page in February's issue. So hard luck and commiserations to those who didn't make it. (Incidentally the answer was, for any of you still trying, that the pictures of Motorfair and Custom Car Show were transposed).

By way of compensation we present a selection of the funny, mildly correct and just plain guesses that we received. They made us laugh, so as a bit of light relief we offer "The Best of the Win-a-Rig Contest". Names are left out to protect the innocent!

One reader from Chipping Sodbury (I suspected it was a wind up as soon as I read that) sent four different post-cards with the same answer in an attempt to bludgeon us into giving him the rig. Best attempt was "I is de winner cos I sees de boob. If you turns de page upside down de pictures is in the right place so you just needs to swaps de words." Entertaining but too late!

More than one reader picked up the incorrect spelling of 'weird' in the article 'Germany Calling'. Our typesetter has these occasional lapses but how anyone can think it's spelt 'wierd' I don't know. Wierd that! Incidentally, the writer from Mansfield (and you know who you are) who wanted a prize for the best typed letter automatically got disqualified for creeping too much.

Yorkshire featured quite strongly with some answers that surprised us. One suggestion was that Sirtel, mentioned in 'Rigs and Chips', only make and market accessories, not rigs, so they shouldn't have been included in the list of rig suppliers. Wrong, of course, because they sell the own-brand Searcher. 'Germany Calling'

Dear Sirs,

Win A Rig 20/2/81

Competition - January 1981 issue

The deliberate mistake on page 53 of the December, 1981 issue in the Round Up feature is that the word weird is incorrectly spelt wierd.

Keep up the good work in what is the best CB magazine available (creep creep) and if the prize is awarded to the best typed letter, please send it to the above address!

Yours faithfully

*John*

Custom Car & Motorfair photos should be vice versa

The deliberate mistake in last month's Round Up was the photos of the Motorfair but the picture of the Supermarket can show it in

De deliberate mistake in last month's Round Up was the photos of the Motorfair but the picture of the Supermarket can show it in

It is de winner cos I sees de boob. If you turns de page upside down de pictures is in the right place so you just needs to swap de words

Send de rig to dis pig

25 Woodhouse Dale  
Chipping Sodbury  
Glos  
GL51 6AL

the mistake in last month's Round Up was the paragraph "All Goss at Custom Car & Motorfair" the mistake was misspelled by T.H.S. and it is presented to be sold before 9.00 Jan. Two letters were sent a day

Dear Sir,

In reply to your competition in January issue of CBEM I hope the answer is to be found in 'Rigs and Chips'. The article states that microchips Electronics Ltd. stock rigs made by Sirtel. To my knowledge Sirtel only make accessories

I am a new FM Blackburn a leading CB Radio Club for a few months now. The deliberate mistake I think is Tony Blackburn. He did not agree with the CB slang used on Am. mistake → language

came in for criticism again as one sentence was rather ambiguous - "The legal CB in Germany bears no resemblance at all to the illegal American AM CB . . ." Sunbeam quite rightly pointed out that CB wasn't illegal in America. However, it was meant to be read that American CB is illegal in Germany! The reporter has been sent back to school to learn some sentence construction.

A couple of people thought we had the dates of Motorfair incorrect (Could be, I suppose, but that wasn't a deliberate mistake either) and one reader thought it was Motorflair. Another astute gentleman pointed out that you couldn't swap an Escort for a De Lorean, even if you had the money and wanted to, because the De Lorean is for export only. I've learned a lot from reading these letters, you know.

A courageous reader from Salford thought that Tony Blackburn was the mistake. None of us would be brave enough to say that. Wait a minute, I've read the letter again and it says the mistake is Tony Blackburn's in referring to slang not language. Hmm.

A 12-year-old reader from Wiltshire reckoned we had got it wrong by being at Trafalgar Square Post Office

at 7.45am as they open at 9.00. Only wish you were right, lad, then Paul needn't have got up at 6.00am but they open at 8.00 all right.

One of the cheekiest letters received was from the Isle of Arran in Scotland. This reader got the answer right and crawled quite well by saying what an excellent mag we were but he blew the whole thing by saying "As I am certain to be the only successful entrant, I look forward to receiving by return of post a nice new 27FM receiver and as I'm sure you already know a rig needs a twig and plenty of co-ax too"! Greedy!

This last one everyone else in the office thought was hysterical. I'm not too happy about it and you'll see why. An unnamed (and good job, too) reader from Walton-on-Thames decided that the big mistake was in 'More of a sigh than a gasp'. People who keep back copies will see that there is a thank you from a lady reporter with a flat tyre. Our reader decided it was really a **man!** Come on now, I'm no Debbie Harry or Bo Derek but I'm definitely not a man! My husband's been giving me funny looks ever since he read it!

Ms SS

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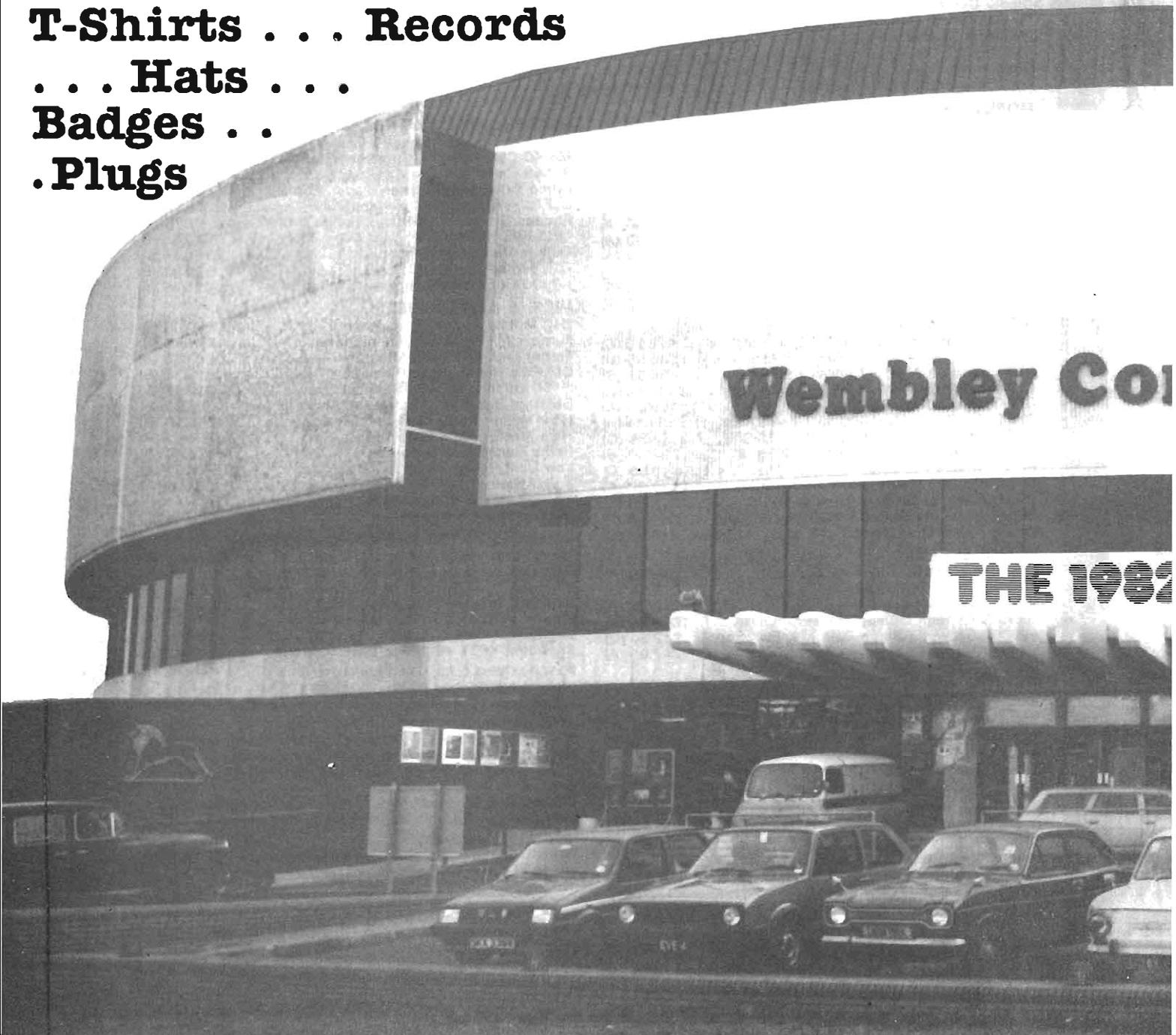
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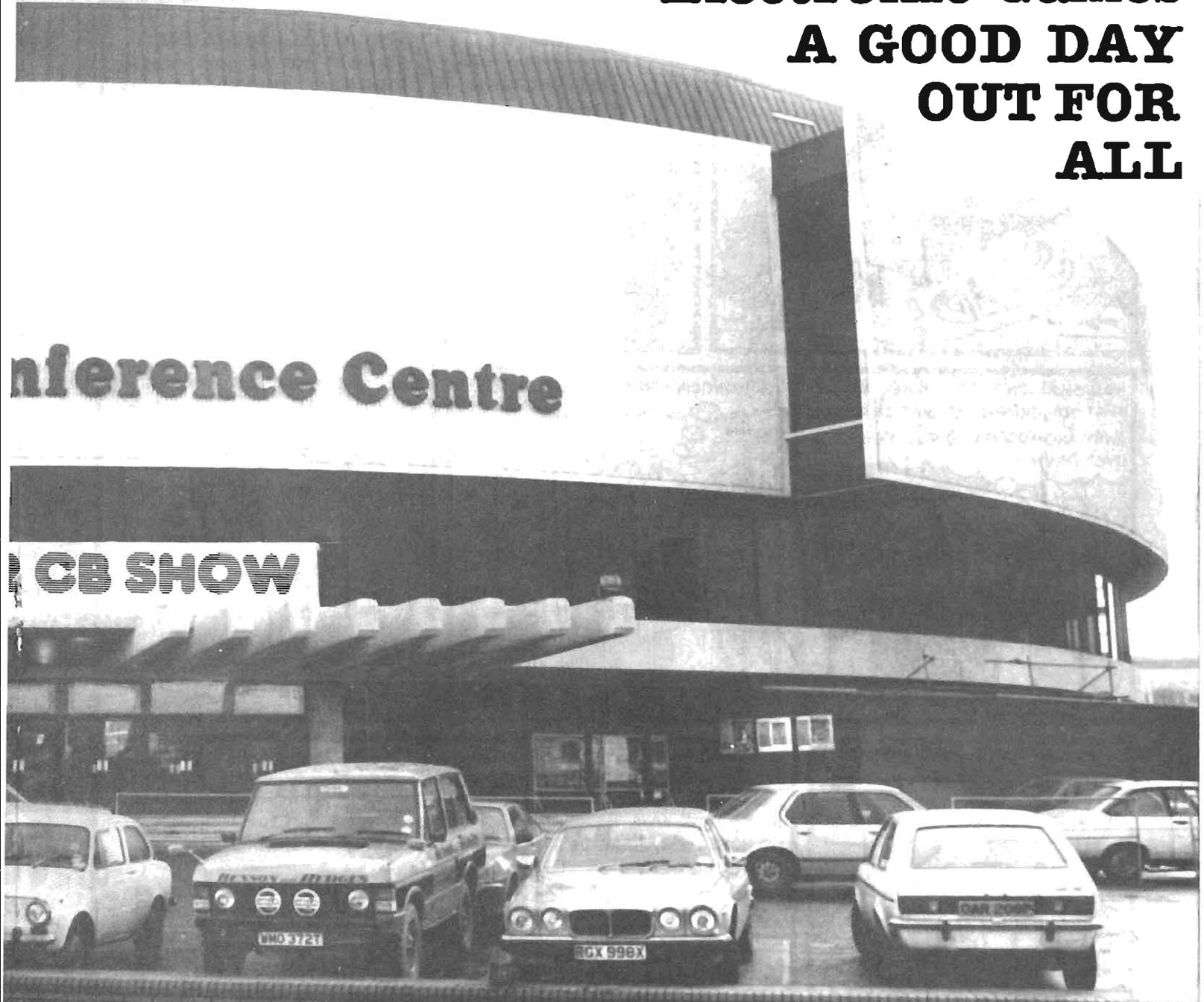
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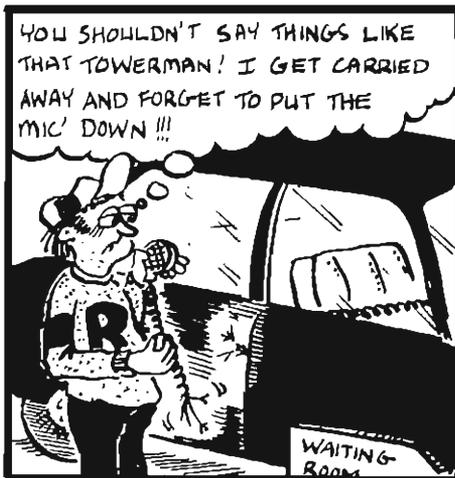
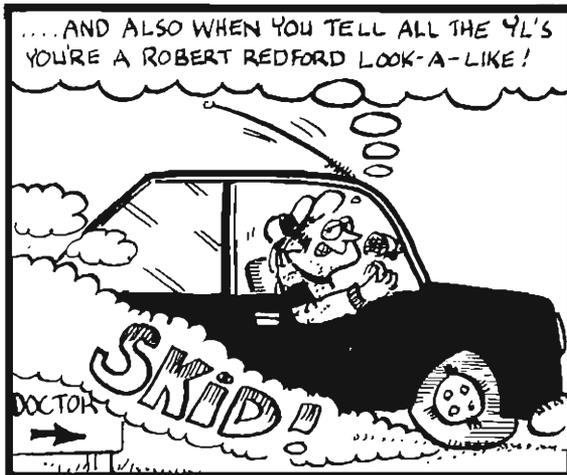
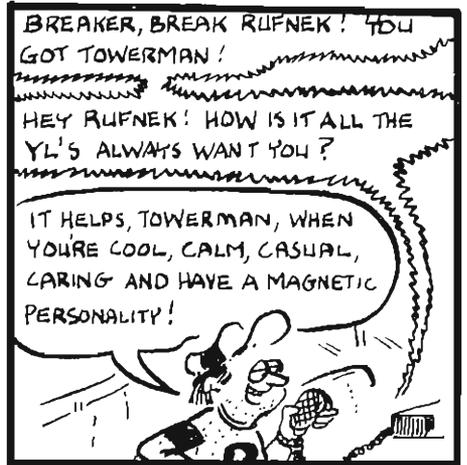
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Rama 006 SWR/PWR/Matcher & FS	15.95
SWR 25 SWR/PWR Twin Meter	12.95
Hansen FS 5 E	29.95
Hansen SWR 50 B	22.95
Rama PC 3 Power Reducer	16.95
Rama PC 5 Power Reducer with Meter	21.95
Replacement Mike Fits Most Rigs	5.60
Hy-Gain H 1022 Telephone Handset	14.95
K40 Speech Processor Microphone	33.50
Turner Expander 500 Base Mike	59.95
Ham-Master 4200 Base Mike	32.95
Ham-Master 4500 Base Mike	44.45
CBS 140 Kraco Extension Speaker	4.60
K40 Extension Speaker	5.95
5 Watt Public Address Horn	4.95
12/15 Watt Public Address Horn	9.95
SMCL 150PL 150 watt Dummy Load	15.65
CB 707 5 watt Dummy Load	95
DL 30 30 watt Dummy Load	6.45
Heavy Duty Gutter Mount	3.25
Hirschmann Ro 250 Rotator	49.50
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# THE 1982 CB SHOW



"Time flies when you are enjoying yourself," so the saying goes and the last few months have simply flown past since we started talking about the 1982 CB Show. During these months of negotiations between Wembley Conference Centre, the proposed exhibitors and our readers who are coming along to this spectacular event, we have been pleased with the sheer enthusiasm that all the involved parties have shown. Exhibitors and breakers alike are literally coming from all over the world to converge on Wembley over the Bank Holiday weekend in April.

## An extra day

Due to the sheer number of people who have already booked advance tickets for the 1982 CB Show, we have now decided to keep the Show open for an extra day. This not only means that the 1982 CB Show will be the largest and most professional event of its kind but also the longest running. Since the Citizens Band Show, scheduled for this month, has been cancelled, it also looks as if the 1982 CB Show will be the only national CB exhibition to be held this year.

## Official opening of the 1982 CB Show

The 1982 CB Show will be officially opened by the Father of CB, Mr. Al Gross, who is coming all the way from the USA to cut the ribbon at 10.00am on Friday, 9 April. General admittance to the Show can be made between 10.00am and 8.00pm every day except Easter Monday when the doors will close at 6.00pm.

## The exhibitors

As usual, I am writing this article two months prior to the date that you are reading it but already I can tell you some of the names who will be displaying their wares.

K40, the manufacturers of two of the most popular CB accessories, are shipping their stand over from America and the stand will be manned by personnel from the CB Centre in Croydon. Plustronics, the importers of the Midland range of transceivers, will have their product on show in the

Hampton Room. Downstairs in the Greenwich Room, the Antenna Specialists selection of legal twigs will be displayed on their Ford Escort car and exactly opposite them Automotif Products will be showing their wide range of accessories. Back upstairs you will be able to see rigs by Harvard, Interceptor, Viper, Transcom, Commtron and Sun. There will also be a wide selection of books and publications on CB available.

## A country flavour

Next door to the Wembley Conference Centre is the Wembley Arena and throughout the duration of the 1982 CB Show, the Silk Cut Festival of Country Music will be taking place there. We have been approached by some country and western exhibitors who want to sell their goods at our Show. As CB radio and country music have always enjoyed a very close rela-

tionship, we are welcoming these exhibitors to the 1982 CB Show to make the appeal as wide as possible for everybody attending.

## Competition prizes

Our daily competitions and games have already attracted some valuable prizes. Legal rigs, accessories, T-shirts and, of course, magazine subscriptions, are up for grabs for the lucky winners.

## Advance booking

Don't forget, you only have a few days in which to book your advance group tickets at the discount rates shown opposite. Any orders received prior to 10 March will still qualify for these beneficial prices. However, any orders that arrive any later will have to be returned.

# VIPER

# 88



# K40

# MIDLAND



© "Stripes of Quality"

# INTERCEPTOR

# MOCOM





stantial discounts for group bookings made in advance. The following prices apply only to bookings made before 10 March 1982.

<b>25 tickets or over</b> £1.75 each.	<b>50 tickets or over</b> £1.50 each.
<b>75 tickets or over</b> £1.25 each.	<b>100 tickets or over</b> £1.00 each.

### Price on the day

The entrance price will be £2 per person per day on the door, so it will be beneficial for you to organise a party booking and pay in advance.

### OAP's and the disabled

People who can produce documentary evidence of either being an Old Age Pensioner or disabled will pay £1 and there is no need to book in advance.

### Facilities for the disabled

Wembley Conference Centre is a modern building and as such is well equipped with ramps, lifts and suitably designed toilets. These facilities make us able to offer a full welcome to people in wheelchairs as well as the able bodied.

### Express entrance

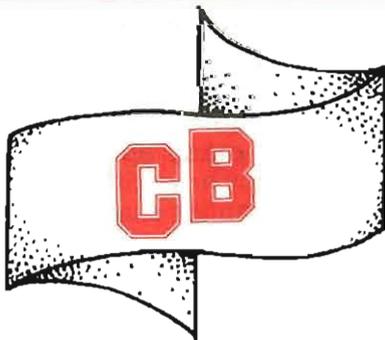
We will have a separate express entrance for people in possession of advance tickets which Old Age Pensioners and the disabled will be able to use. People buying tickets on the day will have to queue in the normal way.

### Children

We welcome children to the "1982 CB show" and if you are under the age of 12 you will get in for half price (£1). Infants under the age of three will get free admittance.

### Advance booking conditions

Advance tickets are sold at a flat rate regardless of the user, i.e., adult, child, etc. Therefore having purchased a discounted quantity of tickets additional children, etc., may gain entry with the party through the express entrance at the £1 rate.



The 10th of April is the anniversary of the first legal CB transmissions being made in America on that day in 1947. Anyone quick enough mathematically will have worked out that 10 April 1982 is the 35th anniversary of that occasion. Celebrate with us, whether you be an AM or FM breaker. Come to Wembley over Easter '82.

### Entrance Charges

"The 1982 CB Show" will be good value for money. We are offering sub-

Please send me.....tickets, which are valid for any one of the three days.  
We are hoping to come on 9/10/11 April (delete where necessary).

Name .....

Address .....

.....

.....

Tel. No.....

I enclose a cheque/PO for £.....

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Return to CB Radio Magazine Ltd., Tudor Works, Beaconsfield Road, Hayes, Middx. UB4 0FL.

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ANTENNA TYPE:	Base Station
IMPEDANCE:	50Ω
FREQUENCY:	27.60125–27.99125 MHz
GAIN:	±4dB
BANDWIDTH:	1 MHz
POLARIZATION:	Vertical
VSWR:	less than 1.5
MAX. POWER:	500 W
CONNECTOR:	UHF female
ELEMENT LENGTH:	1.5 m
TOTAL LENGTH:	2.0 m
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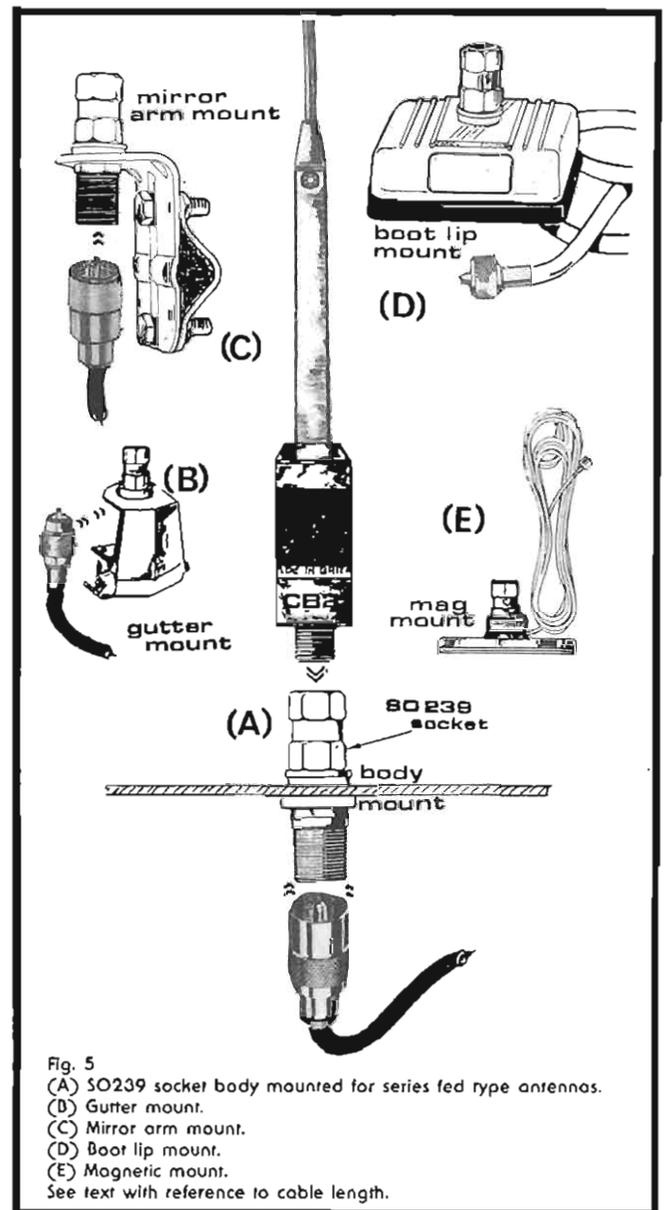
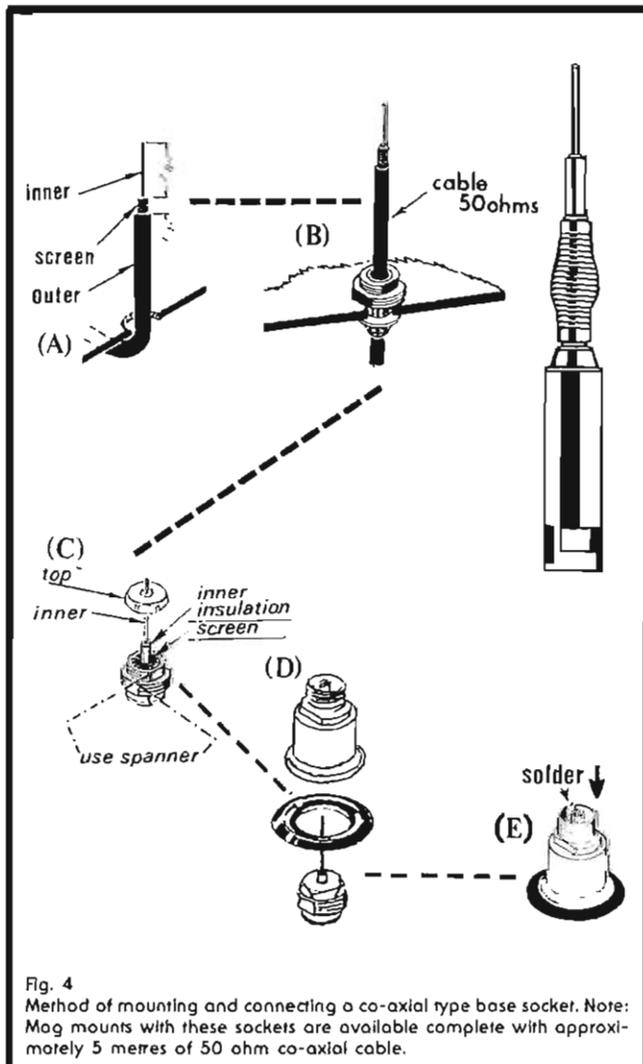
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# PRACTICAL ANTENNAS

no consideration whatsoever to those who own fibreglass vehicles many of which are used by disabled drivers, although there is a way of overcoming this problem as many have already discovered. This will be dealt with in a later article.

Firstly, what is the best position for the mobile antenna and what effects, if any, do different positions have on radiation? Many attempts have been made to verify the effect on radiation caused by the position of the antenna relative to the rest of the vehicle but nothing really concrete has been established. Much depends on the shape of the vehicle, the nature of the antenna and the amount of radiation reflected from the vehicle body itself. Most modern motor cars have a fairly low profile and antennas situated on front or rear wingside as in fig. 3 (B) and (C) will not be too much influenced by the vehicle itself. The tendency is that rear wing and boot lip centre (A) mounted antennas have a slightly better forward radiation field, i.e., in the direction in which the vehicle is travelling, whilst front wing mounting tends to give better radiation toward the rear. The optimum position is always the rooftop centre because the otherwise omni-directional radiation pattern of the antenna is less affected by radiation reflected from the vehicle body.



## Antenna base connections (co-axial type)

The antennas shown in fig. 1 as (A), (B) and (C) must have a through co-axial base connection as one side of the inductive system is directly grounded along with the outer braid of the co-axial cable. The co-axial inner conductor goes through to the feed point. The antenna (D) is series fed and will be dealt with separately. Co-axial base connectors are fairly standard regardless of whether they are used for body mounting or magnetic mounting and the method of connection and assembly is shown in fig. 4. All antennas using this form of base should be provided with installation diagrams similar to those shown. It is important that good electrical contact is made between the car body fitting (B) and (C) and the car body itself. Make sure that the body surface is cleaned bright and free of paint or rust. Where soldered joints have to be made ensure that the soldering is good and not likely to crack or come adrift with vibration.

### Antenna base connection (series fed)

The antenna design fig. 1 (D) is series fed and normally only one through connection is made which is the inner conductor of a co-axial cable. The outer or screening braid of the co-ax cable must otherwise be bonded to ground (the car body). The antenna itself will have a base connecting section  $\frac{3}{16}$ in. diameter (standard 24 thread) which screws into an SO239 threaded socket. The arrangement for connection of a series fed antenna is shown in fig. 5. This form of connection is also used for most helical type antennas. Magnetic mounts usually incorporate the SO239 threaded socket and have the co-axial cable already connected complete with the co-axial plug for the CB set. Much the same applies to boot lip mounts. It should be noted that series fed antennas are easier to adjust for VSWR if the co-axial cable is five metres long. It is for this reason that many magnetic and boot lip mounts already include the requisite five metres of cable. This should not be shortened.

When a series fed antenna is body mounted, or gutter bracket mounted five metres of co-axial cable should still be used. The surplus can be coiled up and tucked away under the dash or a passenger seat.

Magnetic mounting relies on a ground connection to the car top by the capacity formed between the mag mount base and the car body metal. Some cars have metal tops covered with vinyl and whilst the magnetic mount will hold mechanically, the capacitive coupling is reduced and which sometimes

makes it difficult to get a reasonably low VSWR. Careful adjustment to cable length or the use of an antenna matcher may help solve this problem.

### VSWR

Many CB operators are concerned about what constitutes an acceptable level of VSWR. Obviously the lower the better but a perfect one to one ratio is not possible over a relatively wide frequency band with antennas that are inductively loaded and therefore sharply resonant. VSWR should be adjusted at the centre frequency of the band for the lowest reading that can be obtained. It will always rise towards each end of the band. In fig. 6 the curve marked *GOOD* is rarely possible except with broadband antennas. A more likely curve will be the one marked *AVERAGE* but even this is not always possible with physically short artificially tuned antennas. The curve marked *ACCEPTABLE* may be the only one possible with some base loaded antennas and indicates a mismatch between the cable and the antenna feed point, although power loss in this case is not as bad as one might imagine. With some antennas this curve may dip lower at the centre frequency but not rise above two to one at the band end. The curve marked *NOT ACCEPTABLE* means precisely what it says and indicates a very poor match.

Next month we can look at some possibilities for base station antennas for those who live in flats or cannot use any form of antenna outside.

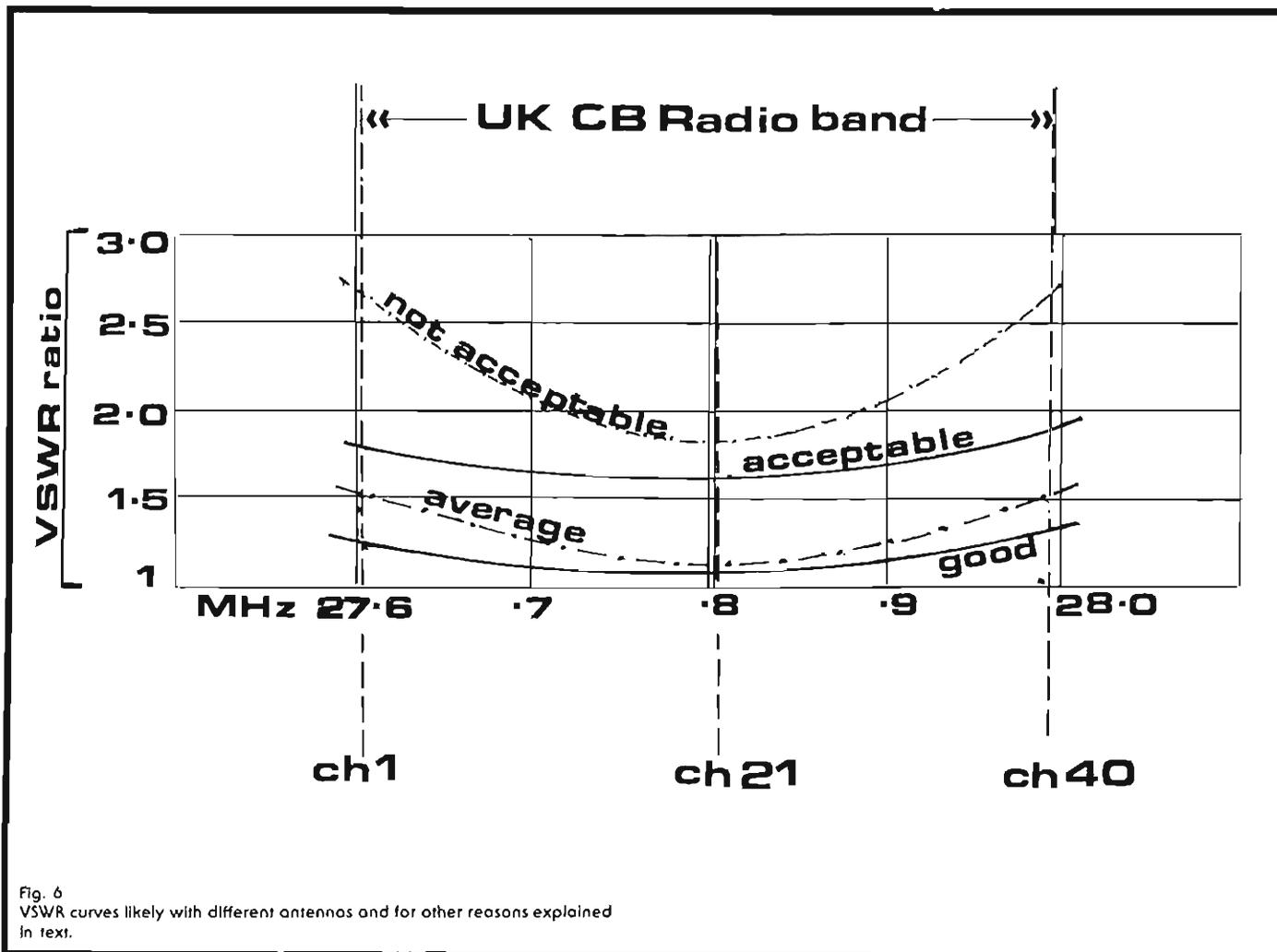


Fig. 6  
VSWR curves likely with different antennas and for other reasons explained in text.

# PRACTICAL ANTENNAS

## Part 1 – Mobile Antennas by F. C. Judd

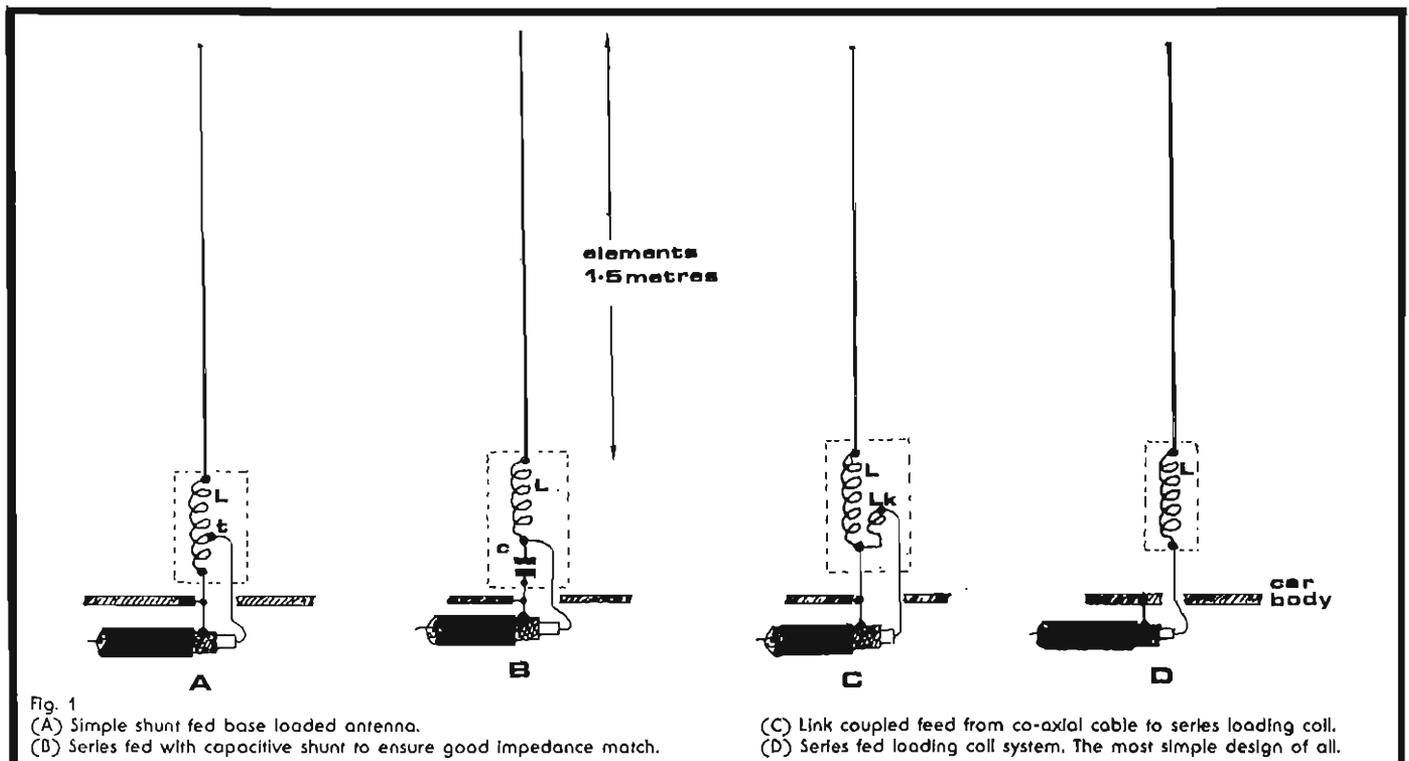
From the point of view of safety, antennas for mobile operation on 27MHz need to be reasonably short and it so happens that the H.O. specified length of 1.5 metres is about right. Whilst a real quarterwave antenna of approximately 8ft 6ins long would be very efficient from the point of view of radiation it could prove very hazardous on most road vehicles. However, as already pointed out in previous articles in this magazine, the specified base loaded only 1.5 metre antenna is not very efficient, i.e., it will not radiate all the power supplied to it even when tuned electrically to a quarter-wave-length and reasonably accurately matched.

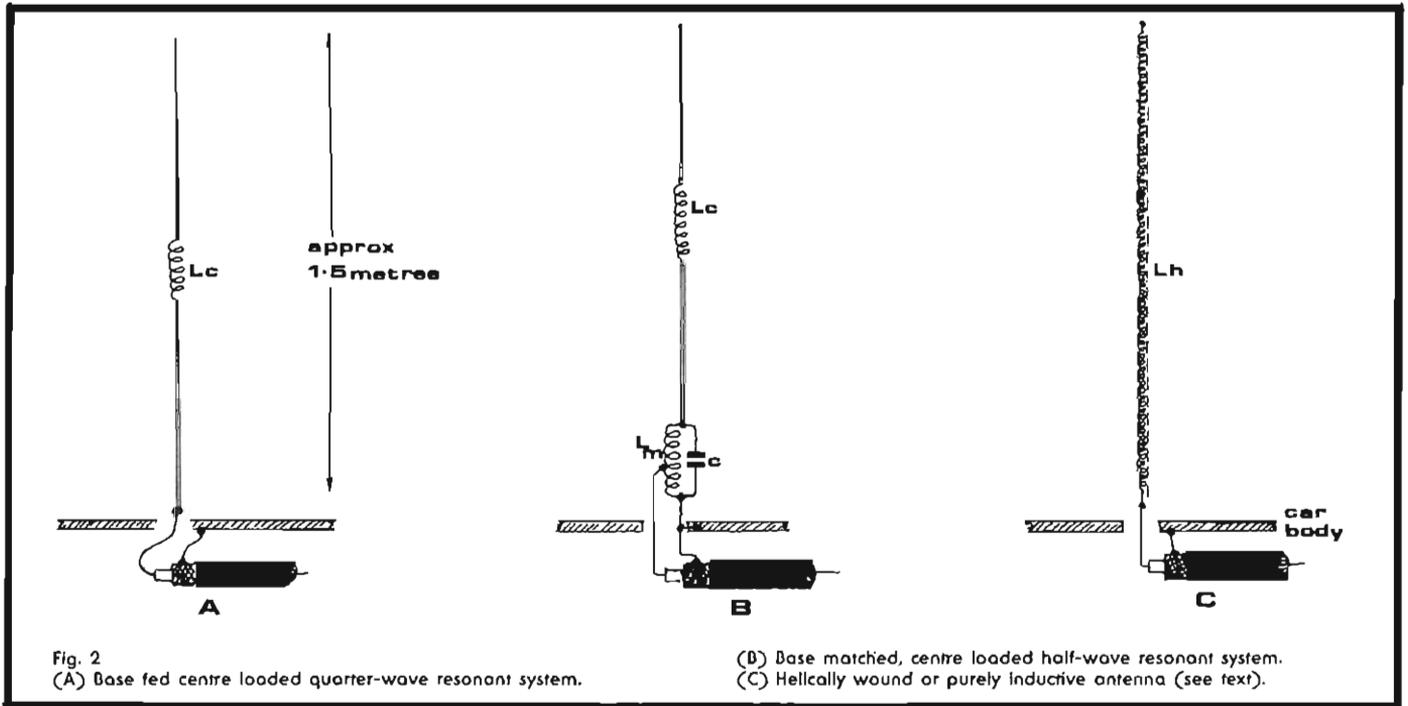
The possibilities of obtaining any worthwhile increase in the efficiency of the specified design is unfortunately almost nil but we can at least prevent further loss by using the best possible loading coil systems. The different antenna configurations shown in fig. 1 represent the group that can be classified as legal, i.e., meeting the conditions of the CB licence. Each has an open radiating section or element 1.5 metres in length. There is nothing magic about this length by the way and it was simply chosen by the Home Office as a means of insuring that the radiated power would be considerably lower than that actually supplied to the antenna. All that the antenna designer can do is to ensure that the efficiency, such as it is, is not further degraded.

### Common base loaded designs

One of the most common designs is the *shunt fed* system shown in fig. 1 (A). The loading coil (L) is used to obtain resonance and a reasonably accurate match to the now standard 50 ohm cable is achieved by connecting the cable at the tapping point (t) where the impedance is low. Connection to the 'ground-plane', i.e., the car body, or a real ground-plane, is made at the bottom end of the loading coil and with the screening braid of the cable. This design has a slightly broader bandwidth and consequently a more acceptable level of VSWR is possible across the allocated CB band.

The designs shown as fig. 1(B) and (C) are similar and serve only to provide an alternative but efficient impedance transformation to match the feed cable. From the point of view of overall efficiency there is nothing to choose between either of the designs shown as (A), (B) and (C). The design shown as (D) in fig. 1 is a *series fed* arrangement and relies entirely on the capacitive reactance of the element cancelling the reactance of the loading coil to achieve resonance. A small amount of adjustment to the length of the radiator is usually necessary to shift the resonance sufficiently to provide the appropriate impedance transformation at the base for a 50 ohm feed cable. This type of antenna may have a





high resistive loss unless a very high 'Q' coil is used. Most of the mobile antennas at present on the market employ one or the other of these designs and all that can be done to keep the efficiency as high as possible is the use of high 'Q' loading coils and good quality insulating materials.

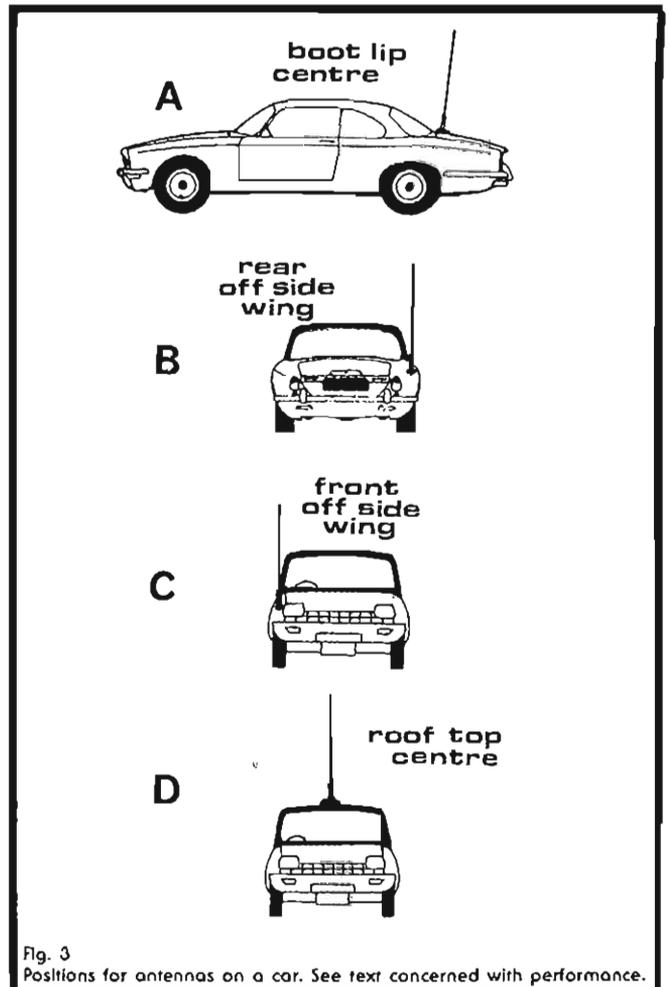
### Increased efficiency

The three degrees shown in fig. 2 are optimum for a physical length of about 1.5 metres but unfortunately they are considered illegal. The design (A) is tuned, as it must be, to an electrical *quarter-wave length* but being centre loaded more current is able to flow in the straight portion of the radiator beneath the coil with the result that a little more power will be radiated. The design (B) is somewhat more complex and electrically tuned to a *half-wavelength*. The base coil combination ( $L_m$  and  $c$ ) form a shunt fed low to high impedance transformation network so that the antenna section which includes the centre coil ( $L_c$ ) is *voltage fed*. This design has a high rate of efficiency although tuning and VSWR adjustment can be critical unless certain special precautions are taken.

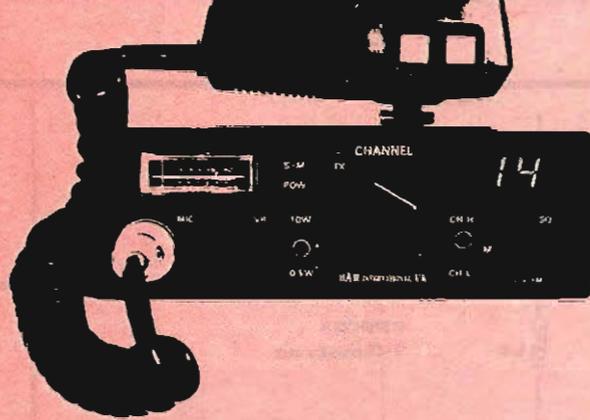
Lastly we have design (C) which is the helically wound antenna. The long coil system ( $L_h$ ) can only be made to operate electrically as either a quarter-wavelength or five-eighths of a wavelength, depending on the total amount of inductance used. Such antennas are normally series fed and it may be difficult to get an easy adjustment of VSWR. Some helical antennas have a small sliding top rod to facilitate this. The five-eighths wavelength design is the most efficient and the performance compares favourably with that of the centre loaded half-wave design (B). Alas the Home Office will not allow these types of antennas to be used, at least not yet, although for some time now they have been carrying out tests to prove whether or not such antennas are liable to cause interference to other services due to radiation of harmonics emanating from the CB transmitter. This is most unlikely anyway but if the results of the tests are satisfactory the use of such antennas for 27MHz CB may be permitted but to date no one knows when.

### The antenna on the vehicle

Firstly there is the aesthetic aspect, i.e., where will the antenna not look too conspicuous and what may be done to avoid boring a hole in the car body. All antennas for mobile operation must unfortunately have a direct ground connection to the car body which itself must be all metal. The Home Office gave



# Rig Test



## An AM to FM conversion hits our test bench this month

I am not being evasive when trying to decide quite what this rig is and I don't mean because it was an AM and is now a British FM. Before I start, let's get one thing clear: the conversion works and the following is merely interesting and an example of how the British CB market has gone or was or even still is?

From the information we have received so far it would appear that this particular transceiver started as an AM set, in kit form produced in Korea as an imitation Ham International set. Yet it is stamped on the casing as originating in Japan and silk screened as being a Ham International UK transceiver. This possibly took place at manufacture or the set was then transported to the Isle of Man where it could have taken on its new identity. As many of you are probably aware, it is illegal to import AM CB equipment into Britain. However, a loophole existed via the Isle of Man which allowed the importation of semi-completed sets into the I.O.M. with VAT and duty payable.

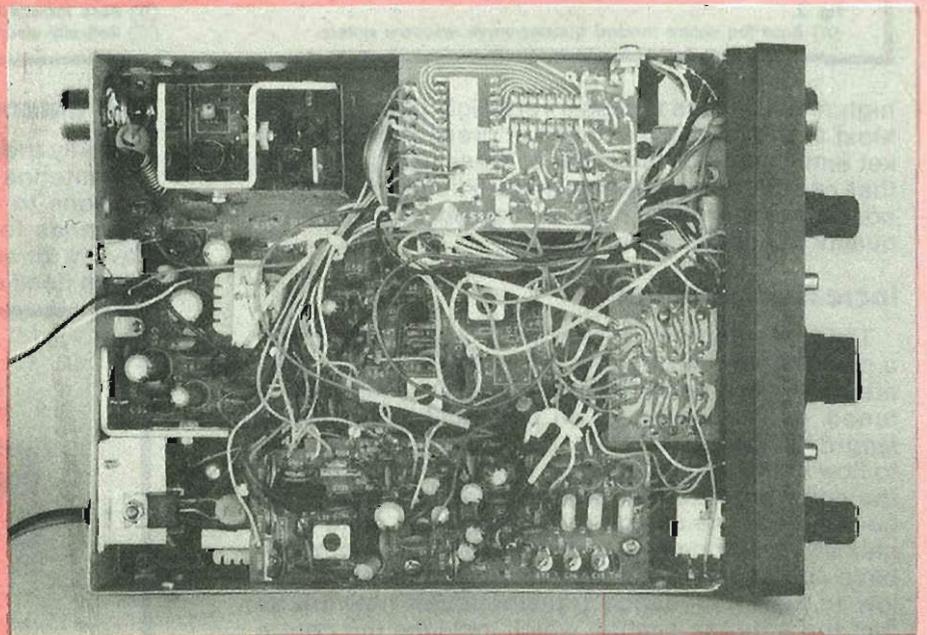
Once on the Isle the sets could legally be made operable and then through another loophole, which stated that goods transported from the Isle to the British mainland are not deemed to be imported and as such are not liable to further duty, the sets are landed in either England, Scotland or anywhere else in Britain. Hence illegal AM sets arrived in Britain as VAT and duty paid or pseudo legal, illegal AM... Confused...? Well, just to cap it all, this set happened to find its way into the hands of an unsuspecting individual who gave it to Northampton Communications to be converted to a legal British set conforming to MPT 1320 using a conversion system that they are currently marketing... Simple really.

### Conversion kit

ElectroMec and Northampton Communications have combined to set up dealerships to carry out their conversions. The interesting thing to note is that they will only supply conversion kits for rigs which they, themselves, have successfully converted. Whilst many sets are cosmetically different, they realise that the internal circuitry is often very similar. However, to prevent problems they prefer to con-

vert each different model in turn before claiming their conversion as suitable. To overcome this problem they market the kits in colour-coded packages specified for different types, rather similar to many car accessories where a list of approved models will

appear on the items package or separately listed with a reference colour. To convert a set from illegal AM to legal FM requires two of three conversion kits. One, an Eprom/PLL PCB, which will convert the frequency from the lower channels to the British fre-



### Summary

To actually print this report is exceptionally misleading and we must thank both companies for allowing us to release our guarantee for this rare occasion.

In the past we have tested other transceivers and been unable to report because we do allow a second chance and grab another rig if we find something major wrong. On occasions we have been unable to actually go a head and print a review because the sets were so bad. On more than one instance we found transceivers to be 4kcs off frequency. In such instances, the manufacturer has obviously been thrown into a panic and, we hope, not released the set.

With this particular test the situation is different. THIS REPORT SHOWS THAT THE TRANSVERSION WILL WORK BUT AS YET NOT WITH

THIS PARTICULAR SET WITHOUT FURTHER RESEARCH. Once the research has been carried out then this peculiar Ham International UK/Imitation/AM set can be added to their list of successful convertible rigs.

Therefore, to assure all our readers that the conversion works and can make certain sets (21 to date) 100% legal from 100% illegal AM, we intend to test and report on the set used both before and after transversion. Thus, rather than be misleading, you will genuinely be able to compare the performance before and after.

Finally, we must explain that from preliminary tests on a Midland AM set that was also transverted by these people, we noted briefly that the set was now quite genuinely a legal British FM set.

quency and two, an AM/FM PCB, which consists of a speech processor circuit and a means of converting or if you prefer transverting AM into FM. For a set to be 100% legal both kits must be used in conjunction with each other.

To date boards are available for 21 different types of rig and work is under way to expand this number. The suggested retail prices of FM to legal FM is £19.95 and for illegal AM to legal FM £25.95.

## Microphone

One of the problems facing us in writing this review is self evident. Many of the points cannot be specifically described as the set for conversion will be your own. Hence, the microphone description for this set will have no bearing on your equipment.

## Internal construction

Again this depends on your set but we can state that the necessary printed circuit boards carrying the components are of good construction and are wired in with a six-strand braid. Then the internal wiring of the actual set is connected to the board. This can make the transversion look like Spaghetti Junction with a total of 13 odd wires connecting between the board and the rig itself. However, this in itself is only to be expected. The only minor consideration which could cause the user problems if the set is subjected to vibration is the actual fixing of the PCB to the chassis. With the conversion supplied it was attached only with one nut and bolt on a small angle bracket. In itself perhaps not quite sufficient and certainly not aided by having been attached at only one diagonal corner of the board. A second bracket and bolt could easily have been accommodated and this would certainly prevent any possible vibration problem.

## Transmitter test

Once again the major equipment used is as follows:

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 unit.

## Power output

Firstly we must state that the transverted rig we received for testing was originally 10 watts switchable to 0.5 watts. As we previously said, the rig is of a weird and wonderful, almost indescribable, origin. Therefore, to expect a 10-watt illegal AM set to come out 100% legal 4-watt maximum FM, is asking for quite a lot.

This particular set failed. It is not

legal. Taking into consideration what we just said that is not totally surprising. It is worth mentioning that if you look at the following figures, the transversion came close and in fact an operator would only be breaking the law if he had a well-charged battery or a constant power supply of exactly 13.2 volts. Also the power could be reduced further with a little tweaking, so although this set failed to be totally legal on power it would still not be beyond hope.

Power Output and Attenuation			
Atten.	10.8v	13.2v	14.5v
High	2.3W	4.1W	5.2W
Low	0.3W	0.5W	0.6W

## Frequency

Not surprisingly, this set was more sensitive to temperature variation than any other set yet tested. Although there was more drift than on other sets, the variation was not critical. It would appear that to be smack on frequency a mid temperature would be ideal for this set. Once again, this is greatly dependent on the particular rig you have transverted.

Temp.	Temperature Stability	
	CH1	CH40
48°F (cold morning)	27.60128	27.99130
68°F (room temp.)	27.60119	27.99120

Quite honestly, if the temperature stability was poor before transversion, you must accept that the rig will still retain, to a certain extent, its old characteristics.

## Modulation

The legal limit allowed by MPT 1320 is 1.5kcs. To exceed this would mean that the rig is illegal.

This set failed this test and as can be seen 4.5kcs was actually recorded, well exceeding the legal limit. High bleed over would result from a set operating with this level of modulation.

Input Level	Modulation		
	Input Frequency		
0.5mV	500Hz	1125Hz	2500Hz
1.0mV	0.00KHz	0.21KHz	0.200KHz
2.0mV	0.30KHz	0.49KHz	0.47KHz
50mV	0.60KHz	1.00KHz	0.85KHz
200mV	4.30KHz	3.20KHz	2.20KHz
	4.50KHz	3.20KHz	2.30KHz

## Receiver test

### Audio output

Measured into an 8-ohm load at 13.2 volts, we can test distortion. The speaker in this set was an 8 ohm 1W, which is reasonably standard type. But as the set will be your own again, any figure quoted by us will only relate to this set, not the conversion.

Measured Distortion	
1.5 watts	2.2% distortion
2.1 watts	10% distortion
2.9 watts (max)	28% distortion

### Squelch level

Threshold - 0.23uV (microvolts)  
Fully muted - 350uV (microvolts).

To quote our professional testers: "We think this is appalling".

However, as a user of CB, my own personal opinion is that having a squelch range that will cut out even the next-door neighbour is not as bad as a professional radio expert would think. But the sensitivity of this particular set could definitely do with being better.

Please note that this result is not an example of the transversion but more of the set converted.

## Receiver sensitivity

A fairly reasonable sensitivity result was obtained with this set and in the absence of interference reception would be good.

Sensitivity	
10dB quieting	0.15uV
20dB quieting	0.41uV
30dB quieting	1.3uV

## AM rejection

To test for AM rejection a fully limited FM signal (10uV) is fed into the receiver and modulated with a 1KHz tone (1.5KHz deviation). The receiver audio output is then noted. The FM modulation is then changed to AM still with a 1KHz tone but at 30% modulation, the audio output from the receiver is then measured. In the case of the transversion AM rejection was measured at 32dB which is considered to be a good result. It should be noted that this rejection is only true for signals that are exactly on the received frequency and that if the AM signal is slightly off frequency then a completely different result would occur.

## Adjacent channel rejection

Two signal generators are fed through a combining network into the equipment and are set to adjacent channels on the rig (i.e., 19 and 20). Both are modulated with 1KHz tone at 1.5KHz deviation and one is set to 1uV output. The receiver is set to this channel and the audio output adjusted to read 10mW. Now the output of the second generator is increased slowly.

A very good figure was measured for this set and we believe that although the rig transverted does play a major role in the final figures and results the actual conversion kit probably played a large part in obtaining this good result of 460uV for 34dB degradation.

The figures reported on here cannot be taken as an example of the transversion as they are greatly affected by the particular rig being transverted. In the case of this test the rig used was not a good example. Stay tuned for our follow up.

# CLUB SPOT

## Stump Town Breakers

I am writing on behalf of the Committee and members of the Stump Town Breakers. We are from Boston in Lincolnshire and we call ourselves the Stump Town Breakers because of the Boston Stump.

We have been in existence for approximately six months.

Stump Town Breakers' meetings are held every two weeks at 8 o'clock on a Friday evening.

The aims of our club are as follows:

1. To promote a lobby for the legalisation of 27 AM.
2. To promote social and charity events.

We are hoping, in the very near future, to 'adopt' some Old Age Pensioners and help them out with things like hampers at Christmas and shopping and gardening.

On the charity point of view, we are hoping to raise enough money to buy an incubator for the local hospital for the children's intensive care unit.

Finally, I would like to introduce the present Committee of the Stump Town Breakers: Chairman Shell Drake; Vice-Chairman Hawkeye; Treasurer Shooter; Secretary Southern Comfort; Committee Members Catspaw, Red Robin, Blonde Brickie, Stargazer, Dark Cloud, Daisy Duke.

Yours faithfully,

D. A. Bradley (Secretary)



## Garden of England CB DX Club

The Garden of England is a young CB and DX club which is aimed at the more serious breaker. It plans to offer a test centre which may be used by members to check their equipment and an advice service will also be offered by breakers who have experience in the fields of electronics and radio.

The club is more interested in CB than the other forms of entertainment offered by some CB clubs such as loud music, strip shows and disco's. Barbecues, fox hunts, raffles, convoys, discussion groups and films, such as Convoy, are planned. These will, however, take second place to the talks on the correct use of CB, how to SWR, etc., which will be given by experi-

enced breakers who have a thorough understanding of the problems incurred by the new breaker unsure of their equipment and not wanting to damage it by mistakes made due to lack of knowledge.

A CB retail stand is always present and is able to supply equipment at competitive prices and advice on the best equipment for any particular application.

The committee all believe that the club is the members' club and their wishes should be followed as closely as possible, thus any suggestions are always welcome and the committee will endeavour to put them into practice wherever it is practical. The committee is at present looking into insurance through an insurance broker which will not only cover theft but confiscation by official bodies also.

The Garden of England meets at The Becketts, Southborough Lane, Bromley, Kent (a real ale pub) on Monday nights from 2000 hours to 2230 hours. Any breakers are welcome and bar staff will gladly give directions to our club room. The visitor's fee is 75p and the annual membership is £5.00 with an attendance subscription of 50p thereafter.

Yours faithfully,

Lady Go-Diver (Secretary)

## Watertown Breakers

We, the Watertown Breakers, have just started a club, which we hold at the Bagot Arms every Monday night.

We haven't a very large membership but if anybody wants to know more about our particular club they can get in touch by writing c/o The Bagot Arms, Abbots Bromley, nr. Rugeley, Staffs.

If you are wondering where Watertown is, it is Abbots Bromley. If you have a map handy you will notice there is a big area of water which is Blithfield Reservoir, about half a mile from the village.

Lame Duck

## Laverock Breakers

Just writing to tell you about our club up here in the Crows Nest (Larkhall). It meets every second Wednesday at the Jolly Beggars Lounge, Wellgate Street, Larkhall.

We would welcome anyone who would like to come along and find out what we are about.

If any clubs would like to contact us, we would appreciate this and maybe we could organise something together. We also have an eight-man and six-ladies pool team. I nearly forgot, we have 30 members at present but will be opening membership to 50 shortly. Also, any clubs who would like to come over and join in our eyeballs, could you please write to us c/o John

McInnes, 12 Wilson Street, Larkhall, Lanarks.

Well, stay lucky and all the best, 10-10, cheerio.

Laverock Breakers

## Biscuit Town Breakers

I thought you might be interested to hear about the Biscuit Town Breakers. The B.T.B. is the biggest club in the Big RD (Reading - home of Huntley & Palmers) with over 1,000 members. Our Chairman is The Silver Surfer, renowned for his on-air style so popular with the 'Mike Yarwoods' of the area.

Unlike some other clubs in the area, we do give a damn how CB is organised both legally and illegally. We have drawn up a bandplan and code of practice which went down very well at a recent meeting of Natcolcibar to which we send a delegate. We also have a social side with rugby, darts and football teams. At the club meetings held every Sunday evening (venue not for publication at the management's request) we have an info hour, a resident disco, trade stands and, of course, a bar. Bravo Tango Bravo, our DX section, meet every other week and we have a technical meeting at irregular intervals.

The B.T.B. address is PO Box 123, Reading, Berks. This is very useful to our DX section for receiving QSL cards but can be used by any of our members. If any of your readers are interested in attending one of our meetings we request they send a stamped addressed envelope to the above address for details. I look forward to seeing the next issue of your magazine and receiving some feedback via the good ol' GPO.

We're down, we're gone. Breaker break.

The Red Rider

## Charlie Delta "27" Radio Club

We are a SSB club. We came into being at a CB eyeball over a brown bottle and natter.

We are strictly SSB and meet once a fortnight on Wednesday evenings, 1930-2200 hours at the Highbury Vale Hotel, Bulwell, Nottingham. Membership only £1.00 and life membership is £5.00 which gets you your initial goodies for the club, which members say is good value.

We have a club room with bar and are hoping that membership will grow. Our aim is to get SSB frequencies allocated and our hobby to be made legal.

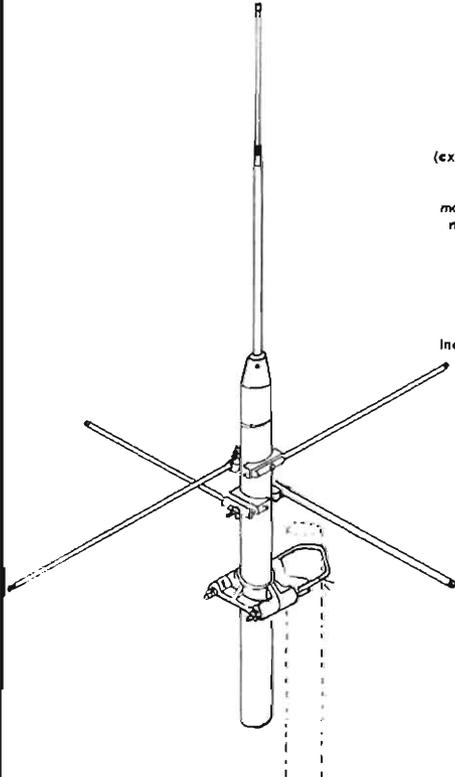
Club officers are: President Poppa George; Vice-President Plastic Man; Secretary Gentle Jesus.

C.D. 020 Clear.

Poppa George (President)

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# DX QSL

# INTERNATIONAL

# CLUB SPOT



## Venezuelan warmth v English fog

Well, here we go again and first off I will apologise in advance for the small European section this month. The reason being that I've received quite a lot of interesting information about CB over in Venezuela and I thought it would be rather nice to read about warm, sunny Venezuela rather than cold, wet, foggy England.

A nice little thing to start off with. Remember last month I was going to QSL a couple of 'terrible paper flyers' which have such a bad reputation. Well, it's one in the eye for all the 'experts' who suggest that you just throw them in the bin. I received a great reply from both ADS and even a nice Christmas card into the bargain! Check out Steve - Sierra Delta 140 and Manola - Oscar 204 on the QSL list. They're OK and well worth a go.

Henry Bartholomew of Allentown, Penn., USA, wrote to me and asked me to tell all his friends and future DX friends that he wishes them all the best for 1982. Henry also made a suggestion that "People should sign at least one extra card and make sure they have a good copy of their name and AD".

Sound advice, Henry, to that I would add one other little thing. Always make a point of stating from who or where you got the AD of the person you're QSL-ing.

Slowly but surely, famous name QSL cards (Dirty Doodler, Runnin' Bare, etc.) are surfacing on the UK QSL scene.

What must be one of the first UK 'Sundown' cards is that of Brian 'The Jackal' Warnaby, who you may recall was in the December issue as a 'Genuine QSL-er'. It's a real beauty of a card and well worth collecting. Seeing as it's so nice, Brian's name is back on this month's QSL list. Drop him a line, you won't be disappointed.

So often in the past Continental QSL cards have come in for a real hiding due to the quality of the artwork and printing and their apparent determination to have a totally undecipherable name and QTH. It may, therefore, be a wee bit of a surprise to you if I tell you that what I consider to be the most artistic card in my collection comes via a West German station:

Astrid and Ralf Bernhardt - X-Ray-mobil.



I've been intrigued by the picture on this card for a long time. Eventually curiosity got the better of me so I got in touch with Ralf and asked if he could explain the origin of it to me. It turns out that Ralf is an architect and also a very talented artist. One of his hobbies is reading sci fi stories, so he combined the whole lot together - architectural design, painting and sci fi - and designed his new QSL card with all three in mind. I still don't understand the concept of the design but what the hell. It's a real nice one to have in your collection. Drop Ralf and Astrid a card, they are genuine 100% QSL-ers.

What finishes a QSL card and envelope off to perfection? Correct, my favourites, rubber stamps. Well, at long last a British manufacturer has produced a range which not only look the part, they won't bankrupt you in the process of acquiring them.

Lincoln Rubber Stamps and Printing of 6 Cornwallis Road, Allenby Industrial Estate, Lincoln LN3 4PD have at present 14 very well made rubber stamps in their range. Unlike the standard USA rubber stamps which are finding their way into the UK these stamps are not mounted on huge chunks of wood but on smart plastic with a screw-in handle. Price of these stamps is excellent, only £2.30 each. Lincoln Rubber Stamps not only

supply stamps of their own but can do a brilliant mounting job on all those unmounted club stamps that you have. Many a time in the past I've had my hands and fingers covered in ink trying to get an impression from a floppy unmounted club stamp. Not any more though, I've had them all mounted by Lincoln Rubber Stamps and I must admit they've made an excellent job of it. They're mounted to exactly the same high quality as their standard range. Once again, their price is low and must take some beating: 1-4 50p each, 5-9 30p each, 10 and above 25p each.

I now have several of their stamps in my collection and have in fact elevated one of them to my No. 1 stamp. Every single card, letter, envelope or whatever which goes outside the UK now bears the legend "All the way from the UK" and alongside it is good old John Bull giving it the 'thumbs up'. Looks really nice. If you fancy some new rubber stamps, just drop Lincoln Rubber Stamps a line. They're a very nice helpful outfit and may well have just the stamp you're looking for.

all the way  
from the  
U.K.



I'll close down the European section with some sad news. Very reluctantly, English Int. DX Club has been forced to raise the membership fee from £5.00 to £6.00. This increase has been forced up on E.I.D.X.C. because of yet another increase in postal rates. Since its founding way back in 1978, E.I.D.X.C. has absorbed three increases in postal rates but unfortunately the latest increase was just one more too many. However, Lez (Lima Charlie 1) informs me that all returned membership forms which state the original fee of £5.00 will naturally be honoured.

My international spot this month is filled by the excellent QSL Club Tucan from the land of beautiful women - Venezuela.

The full QTH of QSL Club Tucan is: PO Box 250, Caracas 1010 - A, Venezuela.

Club Tucan was founded in April 1981 and has close on 400 members, spread over 32 different countries. Up to the time of writing, Club Tucan is the first and only DX/QSL club operating out of Venezuela, which seems quite strange when you consider that in Caracas alone it is estimated that there is somewhere between 12,000-15,000 CB-ers DX-ing.

The President and founder of Club Tucan is a 47-year-old native of Copenhagen, Denmark, Jorgen Hanson. Jorgen has resided in Venezuela these last eight years and in fact Edith, his wife, is a Venezuelan.

As stated earlier, Jorgen started the club off in April 1981 but in actual fact the club had been in the planning stage long before that.

In order to first of all get a lot of good contacts and friends, Jorgen joined about 100 different clubs worldwide. This not only gave Jorgen plenty of contacts but a good insight into the QSL club scene.

This homework was very necessary because previous to Club Tucan, QSL clubs in Venezuela were a completely unknown quantity.

But as Jorgen says, "Interest in QSL-ing among Venezuelans is growing daily as more and more people realise the significance of all the good contacts and friends you can make via QSL clubs. After all, we all have the same main interest - to make friends all over the world via 11 metres and a QSL card."

One thing which Jorgen mentions is that Club Tucan send their club stamp as rubber unmounted only. The reasons being that a stamp mounted on wood is heavy and adds to the already crippling postage rates and secondly that a bulky club stamp inside a club package very often damages the club certificate and quite often breaks open the envelope. Of course, it looks nicer to send out a mounted stamp but for the aforementioned reasons Club Tucan send out the rubber only. Also another small reason but a very valid one is that it is virtually impossible to get hold of good strong envelopes in Venezuela.

Not only does Jorgen have problems with envelopes but also with the mailing system itself (Sounds familiar). Towards the back end of last year, the postal people had a 'slow-down action', similar to our 'Go slow actions'.

At the moment, the club roster, addresses of more than 400 DX/QSL clubs and reproductions of more than 500 club stamps are being printed. As soon as this lot is ready, a special letter will be sent to all members but in view of the recent crippling postage increases, Jorgen has advised that very reluctantly they will have to ask club members for the air mail postage to cover these lists. I'm more than willing to pay it, I can't wait to feast my eyes on 500 different club stamps.

Should you ever wish to have some specific information about Venezuela, private or businesswise, Jorgen and

QSL Club Tucan, Caracas, Venezuela					
	Star Rating	Yes First Class	Fair Second Class	Third Rate	No
1	World Recognition	★			
2	Distribution	★			
3	QSL Response Time	★			
4	Club Stamp	★			
5	Club QSL Cards				★
6	DX Unit Number	★			
7	Wall Chart		★		
8	I.D. Card		★		
9	Club Roster	★	Available in near future		
10	Club Patch/Badge				★
11	DX Log Book				★
12	Club Accessories	★	Available in near future		
13	Club Information	★			
14	Tourist Information		Available if requested		
15	Cassette Swap				★
16	Club Postage	★			
17	Life Membership	★			
18	Discount XYL Membership	★			
19	Value For Money		★		
20	Overall Presentation		★		
<b>Total Star Rating</b>		<b>11</b>	<b>4</b>		<b>4</b>

Edith will be more than pleased to help and assist with your query. This invitation applies to Club Tucan members and non-members but remember, an IRC along with your letter to cover part of the return mail expenses will be highly appreciated. By the way, don't worry too much about language barriers, between Jorgen and Edith (an English teacher) they can handle English, Spanish, German, Dutch, Danish, Norwegian and Swedish. All clever stuff.

Membership fee of QSL Club Tucan is \$15 (cash only no cheques) plus 10 of your personal QSL cards. For this you will receive: wall certificate, unit No., ID card, rubber stamp, QSL cards plus certificate and ID card for XYL.

Apart from QSL Club Tucan, there are several local groups but because of language problems very few (if any) of the groups have members in non-Spanish speaking countries. The most important local groups are: Grupo Star (Mon. 27.605 LSB), Grupo Orinoco (Mon. 27.645 LSB), Grupo Canaima (Mon. 27.805 LSB), Grupo Caracas (Mon. 27.865 LSB) and Grupo Piache (Mon. 27.885 LSB).

Next month, back to earth with some UK groups and then a visit Stateside to check on some 'outlaws' and hopefully some 'illegal frequency operators'.

Till next time, take care, look after yourselves and remember what it's all about - COMMUNICATION.

If you can't use the mic, use the pen. CHARLIE HOTEL. ECHO INDIA 25 CLEAR.

Readers are invited to send their news, views, comments and QSL swaps to Charlie Hotel, c/o 3 West Street, Tyne and Wear SR3 1EU

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Manda (Oscar 204) PO Box 109 Antequera Malaga Spain	Tony Oreluk 200 Carriage Dr Irwin PA 15642 USA Tony would very much like to make contacts with firemen as he is an American fire-fighter
John & Shirley Fisher (Bam Bam & Pebbles) Oldwell House Winlaton Blaydon On Tyne NE21 5QY	Tony & Gina Barber PO Box 303 Elizabeth 5112 South Australia
Janet Perfect (Moscow Mule) Estate Cottage Box Hill School Mickleham Nr Dorking Surrey RH5 6EA	Mark & Rae Cavanaugh (Chocolate Chippie & Lady Souiseeker) PO Box 12 · 814 Auckland New Zealand
Norm. Symonds (CH 2148) PO Box 148 Kaiapoi Christchurch New Zealand	Gerry Christie (Kiwi 6711) 37 Garnet Street Gore Southland New Zealand
Rodger & Wendy Herriott (TU 866) 14 Fraser Crescent Twizel New Zealand	Norm. Hurst (CH 3339) 34 Studholme Street Somerfield Christchurch 2 New Zealand
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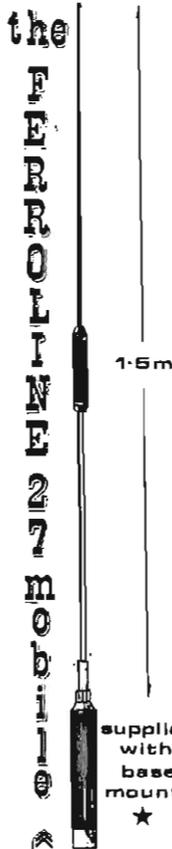
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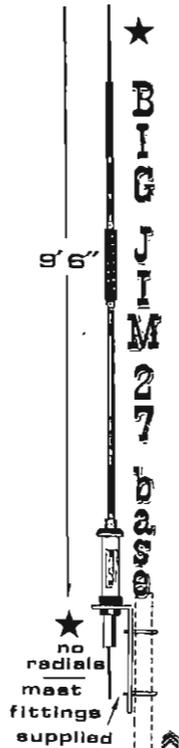


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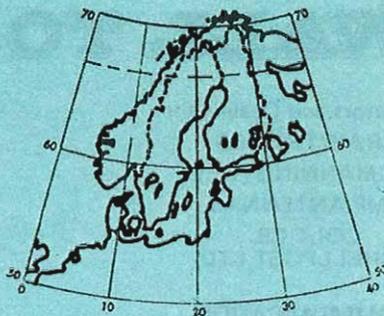
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# FREE RADIO



## What's happening in Europe?

We are already into the fourth month of this series and, judging by the amount of mail received, it is proving quite popular. I am not sure if we are attracting new readers by the article or whether lots of CB'ers are also interested in free radio but keep those letters coming!

Over the past two months we have looked at the British scene. Now it's time to look at Europe. As I have emphasized in the past, it is difficult to publish any definitive information as stations come and go within weeks. Unofficial radio is at its most vigorous and enthusiastic in Western Europe and it is equally popular as a listening hobby as it is for operators. The situation is similar to Britain, where many small stations exist (particularly on short wave) operating a weekend schedule. Some stations operate on medium wave to attract larger audiences but chasing stations across the dial can be frustrating as some broadcasts last only a few minutes and European presenters can have the same problems with unwelcome authorities as their British counterparts.

France also has a strong tradition of 'pirate' radio, offering political comment and opinion as well as musical entertainment. Paris is the focus of radio activity (with 55 FM stations at the last count) and most of the well-known stations operate out of Paris, although north and eastern France are also fertile ground for 'radio libres'.

The situation in France is changing as a result of the General Election, which for the first time in many years

has resulted in a Socialist government. The new President, Francois Mitterand, has been involved in free radio for a few years and, in fact, has an outstanding summons against him for helping to run Radio Riposte. Free radio is gaining an acceptable face and 'Le Monde', the leading French newspaper, has started its own station.

The new president promised to change the existing laws and Paris has already had frequency allocations made and stations registered. There are, of course, restrictions on advertising and profit making but there are so many stations that no new stations can be registered. Outside Paris, government plans and registration procedures have not been finalised and although many new stations have been heard, most of them do not get beyond testing before disappearing. France has also been responsible for some of the very widely read magazines but unfortunately these are dying out.

The Dutch reputation in the free radio scene has risen from its low of several years ago. At that time stations existed which made no announcements, played snatches of barrel organ music and disappeared. Broadcasting is now more disciplined and stations like Radio Gerona on 6290KHz offer Dutch; German and English programmes.

The P.T.T. authorities in Holland are fairly active and Radios Paradijs and Mi Amigo have both been involved in heated 'disagreements'. For all the official activity, stations are thriving on short and medium wave. English

reception of these stations also seems to be good and free radio observers in this country list many Dutch stations in their newsletters and magazines. Stations include Radio Aquarius on 11470KHz, FRS Radio Holland on 6260KHz, Radio Jan Rap (7290KHz), Holland International on 7325KHz, Concord on 7340KHz and Radio Digital, also on 7340 side band. The Netherlands are part of a growing organized and cohesive movement in Europe, working with other stations and countries for better radio. The magazine Radio News is produced in Holland and is one of the remaining magazines on the subject.

Belgian stations work with both French and Dutch and Belgium has been used as a 'bolt hole' and relay station for stations facing prosecution from their own authorities.

As far as the free radio scene is concerned, Germany is somewhat lacking in regular and well-established stations on MW and FM although SW is again popular. Germany was also the home of the very informative Clandestine Listeners Club, now discontinued for a few years. A lot of the German stations are also experimenting with different frequencies. For example, Radio Wunderland on 6275KHz (48m) using 150W are also conducting tests on 6240 and 622KHz and Radio Concorde (7340KHz) also use other frequencies in the 41m and 48m band occasionally.

The German stations often broadcast an English section in the programming. I get the impression that

This chart from a French article on Free Radio shows the very high number of FM stations in the Paris region alone.



English is the international language of free radio for both broadcasting and listening.

The Free Radio Campaign Sweden seems to focus the radio activity in Scandinavia and aims to help hobby pirate stations with printing services and technical and practical advice. They also act as a mailing and distribution address for Scandinavian countries. Their tape library includes original programmes of many European stations and copies of programmes are available at a break-even cost. I have very little information on actual stations operating in this area. Can anyone provide some details?

The unofficial radio scene in Italy deserves an article to itself. Although again I have no real information on individual stations, the legal situation in Italy must make it the paradise for unofficial broadcasting.

Like many of the weekend stations, the first pirates operated on FM. In an unaccountable rush of efficiency, the authorities caught several of these pioneers and they were brought to trial. An enterprising broadcaster, or his legal representative, hit on an original defence.

Article 21 of the Italian Constitution guarantees freedom of communication and the defence was based on this Article. Eventually the Italian Constitutional Court considered the submission and decided that the broadcasting monopoly which Radiotelevisione Italiana had enjoyed since the war was unconstitutional and gave the green light to unofficial radio.

The only limitation to this judgement is that it has been interpreted to apply to local, not national, broadcasting. Since FM was the traditional medium, this has been complied with almost automatically; which may explain the lack of international reports. However, Gamma Radio appeared briefly on 6225KHz and the Italian Broadcasting Company can be heard on 7360KHz.

The amateur Italian broadcaster has embraced this freedom with typical Latin enthusiasm and pirate TV is also very popular. Many of the radio stations do not restrict themselves to music but present views on politics, sociology, education, the proper psychological outlook for good living and so on. Up to half of all the stations are devoted to political radicalism and short of a change in law or constitution the present situation is likely to continue.

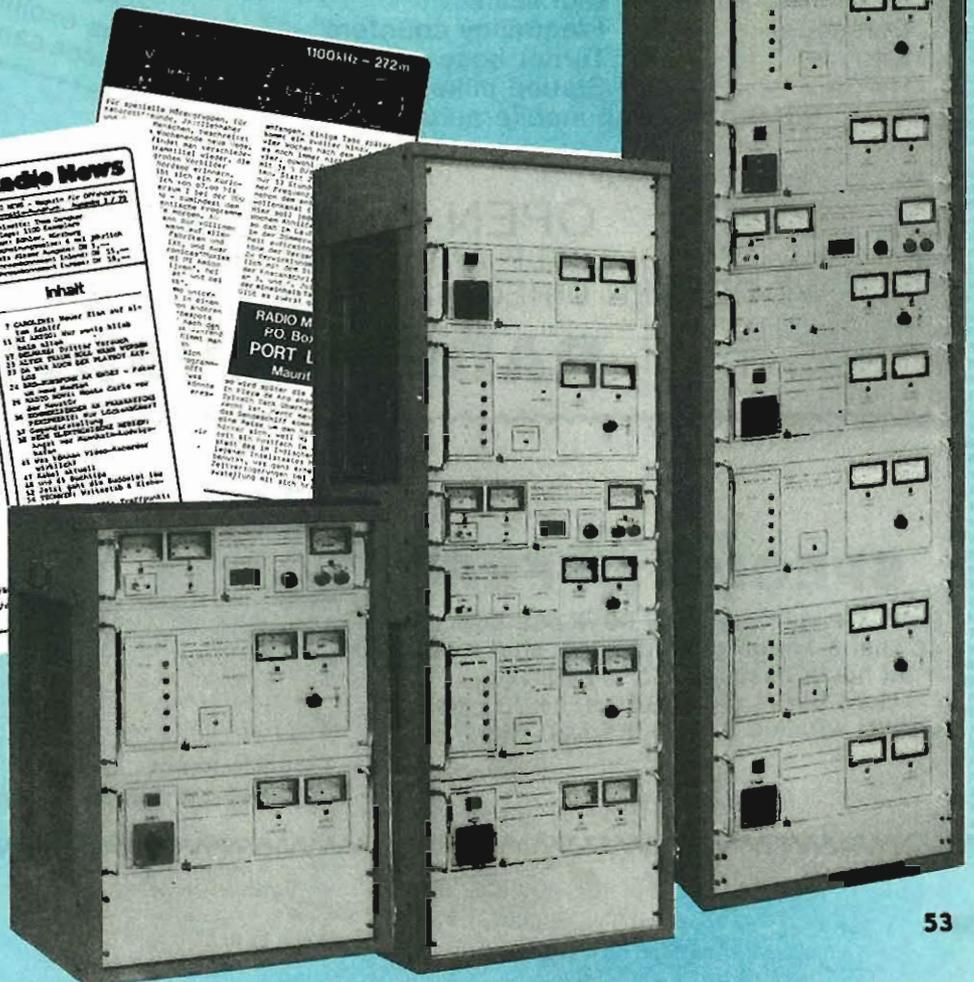
As bitter experience with CB has illustrated, large amounts of power are considered essential by some stations and equipment is very professional with a wide range to choose from. This is a direct consequence of the legality of operation as equipment can be offered openly for sale without the hole-in-the-corner atmosphere of the rest of Europe.

Again I am conscious of just how much I have had to leave out rather than of how much I have included. The scope of the subject is such that there are bound to be stations and opinions not mentioned, either through lack of space or my inawareness of the situation. I am aware that many 'well-known' stations are not mentioned but since they are well known I have concentrated on the less 'public' aspect of free radio in Europe.

Next month is 'miscellaneous' - a collection of the areas of the world not already covered. If anyone has details of more unusual stations and locations send them in.

SS

The Free Radio scene in Europe: QSL cards, a German magazine and a selection of the radio equipment readily available in Italy.





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# Parliamentary Review



## Parliament returns and CB is still a prime subject

It was only a matter of days after the return of our learned friends to their respective Houses that pertinent questions were being raised about our CB radio service. The question of interference caused by the use of illegal AM/SSB equipment seems to cause concern, not only to TV viewers and emergency services but also to those breakers using the legal FM system.

Another point of great importance was given an airing in the House of Lords. The point which has been the cause of concern to the police and motoring associations concerns the safety of motorists who operate their CB sets whilst on the move.

### FM reception problems

**Mr. Freud** (Liberal MP for the Isle of Ely) asked the Secretary of State for the Home Department how many complaints have been received by his Department in respect of faulty reception of FM citizens' band radio caused by illegal use of the AM wave band.

**Mr. Raison** (Secretary of State for the Home Department): We regret that this information is not available since no statistical record is kept of complaints of interference to the licensed citizens' band radio service.

**Mr. Freud** asked the Secretary of State for the Home Department how many licences for citizens' band radio have been issued to date; and if he will make a statement.

**Mr. Raison:** By 31 December, 106,408 citizens' band licences had been issued. It appears that the authorised system has been generally well received. The rate at which complaints of interference from illegal citizens' band transmissions are received is falling.

### CB radio and road safety

**Lord Underhill:** My Lords, I beg leave to ask the Question which stands in my name on the Order Paper.

The Question was as follows:

To ask Her Majesty's Government what steps directed to road safety are proposed in relation to the use of CB radio in cars while travelling on highways.

**The Earl of Avon:** My Lords, The Government's prime concern is that drivers with citizens' band radio equipment in their vehicles should not let it interfere with their concentration while at the wheel. The voluntary code of practice issued by the Government warns drivers against using their equipment in such a way as to impair their ability to drive safely, and I am glad to take the opportunity of re-emphasizing this advice today.

**Lord Underhill:** My Lords, I am grateful to the noble

Earl for that Answer. Would he be surprised to learn that motorists have been seen using a hand-microphone, driving with one hand, even on motorways, and would he not agree that that is a very dangerous practice? I am sure the noble Earl would agree that it is desirable to avoid offences rather than have to take action. Are any conditions to this effect included in the CB licence, and could arrangements be made in agreement with retailers for printed advice on this and other relevant matters to be given when these sets are sold?

**The Earl of Avon:** My Lords, I will indeed take note of what the noble Lord has said. We would, of course, advise most strongly against operators making calls while on the move. However, as the noble Lord is aware, it is really too early to predict how far citizens' band radio is likely to be used by drivers, and we will certainly keep a close watch on the situation.

**Lord Gisborough:** My Lords, would the noble Earl agree that on the same reasoning it is highly dangerous for drivers to smoke because it is extremely difficult to smoke without taking one hand off the wheel, in order to light the cigarette. Could smoking be banned as well?

**The Earl of Avon:** My Lords, I should not like to enter into a debate with my noble Friend on this subject, I have also seen recently shaving done at the wheel, as well as reading newspapers at the wheel.

**Lord Whaddon:** My Lords, would the noble Earl bear in mind the experience of private pilots in using this sort of equipment for many years, where the presence of a transmit button actually on the controls is very common and gives no trouble?

**The Earl of Avon:** My Lords, I know that those with experience, and particularly emergency drivers too, would agree with the noble Lord.



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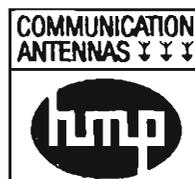
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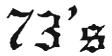
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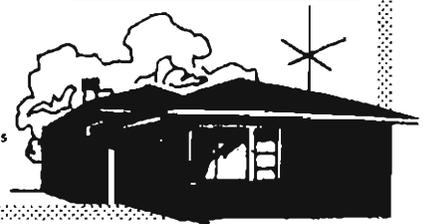
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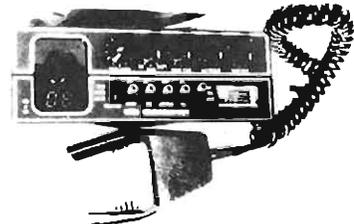
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# Selective Paging & CB

Basically it does not mix

If you have ever been in hospital or even just watched Angels on TV, you will doubtless have come across paging systems. This type of communication is strictly non-vocal and relies on a control transmitter being able to select a chosen receiver and indicate to the wearer that he is either required on the phone or in a different location in the building. It is quite unnerving to find the person next to you bleeping like a strangled mouse. However, that sound could be instrumental in saving a life or putting out a serious fire.

The major drawback to all the paging systems in use is the one of interference. The pager itself causes no interference as the range of any system is limited to the size of the site on which it is used. Any potential user has to apply to the Home Office for a licence and the licence specifies the amount of output that the operator can use. The interference problem I am referring to is from CB. All paging systems operate on 27MHz FM and AM and both systems (CB and pagers) have 12 channels in common.

A demonstration of the effects of CB on paging systems, which was organised by The Selective Paging Committee, came up with disastrous results. A simple CB signal was generated and the result was nothing; the paging system would just not operate.

Historically, paging systems have been operational on the 27MHz band for over 20 years and until recently the pagers and aero-modellers have successfully shared this facility. The advent and growth of CB has had the effect of rendering a good part of this service in many cases unreliable and in some instances totally inoperable. A lot of this interference could be eliminated by breakers not keying the microphone in the vicinity of hospitals and other selective page users. The problem is, however, not quite that simple. A breaker with a 500 watt linear amplifier could interfere with such a system from miles away without even realising the consequences of his action. The second part of the problem is that it is almost impossible to tell who is using a paging system. One hundred and twenty-seven thousand receivers are being used in the United Kingdom on nearly 5,000 different sites.

## PRESS INFORMATION SELECTIVE PAGING COMMITTEE

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Chairman: R.F. Thorne  
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### PROFESSIONAL PAGING SYSTEMS

On-site Selective Paging (bleeper) systems have been legally operating in the U.K. in the permitted VHF 27 MHz band for over 20 years using both amplitude (AM) and frequency (FM) modulation.

Being selective, paging systems are very economical in the use of frequency spectrum and upto several thousand receivers on a given site can individually react to a transmitter's signal. Selective reception is achieved by tone sequential or coded digital transmission. Control and feature provision is usually by microprocessor-based signal encoders and radiated power is generally from 1 to 5 watts.

Systems are used to locate personnel by 'bleeping' individually pocket-worn receivers. Each user has to hold a special Home Office Licence before they can operate a system. By definition, each system's coverage is restricted to the licence holder's own premises.

Paging's best known application is in hospitals to locate medical staff primarily to deal with emergencies. A paging call can mean the difference between life and death in a cardiac arrest case.

In industry and commerce, paging is essential to staff location, security and safety. In these applications paging has proved it can make a significant contribution to efficiency; can alert private fire and medical teams to deal with dangerous situations; can notify engineering teams of process and production interruptions and can reduce the need and number of return phone calls.

cont...

There are over 4,000 systems installed in the U.K. at the present time involving the use of more than 100,000 receivers. Among the users of these systems are some of the largest companies and organisations in the country.

Given the nature and importance of their applications and the extent of their use, the Selective Paging Committee do not believe that professional paging systems can be expected to co-habit the same close frequency band as a Citizen Band Radio Service of low integrity and subject to casual and indiscriminate use of several million users with all the problems of interference this will entail.

End

**CONCLUSIONS**

The current uncontrollable use of illegal C.B. severely interferes with VHF paging systems.

This Committee does not believe that the specification for the legalization of C.B. will have the effect of reducing interference to an acceptable level for the reasons stated.

This Committee is unable to accept that paging systems, used for professional purposes, should be expected to co-habit the same close frequency band as a general radio service of low integrity and subject to the casual use of several million members of the public.

Finally the Committee is concerned that no provision has been made for an alternative VHF paging frequency on which paging users may be placed to avoid interference from the wide use of illegal C.B. equipment.

**C.B. IMPLICATIONS TO RADIO PAGING**

**Note**

On Site paging is permitted in the UK in the Low Frequency, Ultra High Frequency and Very High Frequency (VHF 27 Mhz) bands.

Of these, 27 Mhz VHF is used in the great majority of cases, because it provides the most practical service at an acceptable cost.

This report relates to 27 Mhz VHF paging only. References, statistics and comments exclude all other forms of paging.

27 Mhz paging systems are currently produced in both AM and FM format. The choice of either AM or FM for Citizens Band use is therefore not considered a relevant factor in relation to Radio Paging; neither format will, in itself, preclude interference.

Citizens Band in its widely used illegal format, utilizes a minimum of 40 channels (sub frequencies) in the 27 Mhz band, 12 of these directly coincide with those allocated by the Home Office for Radio Paging use.

**ALLOCATIONS IN RADIO FREQUENCY BAND**  
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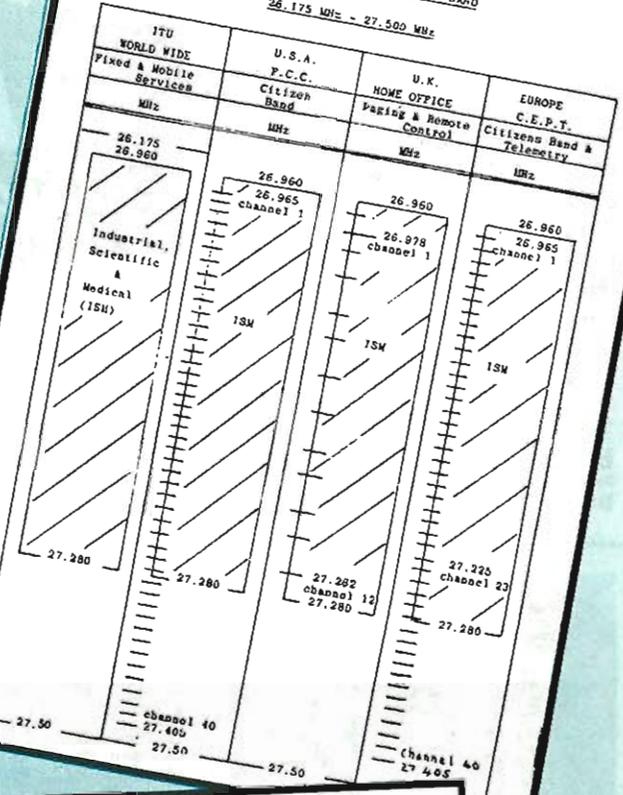


TABLE II

**PAGING v. ILLEGAL CB CHANNELS**

PAGING	C.B.	C.B. CHANNEL	DIFFERENCE
26.978	26.975	2	3KHz
27.003	27.005	4	2KHz
27.028	27.025	6	3KHz
27.053	22.055	8	2KHz
27.078	27.075	10	3KHz
27.103	27.105	12	2KHz
27.127	27.135	15	2KHz
27.162	27.165	17	3KHz
27.187	27.185	19	2KHz
27.212	27.215	21	3KHz
27.237	27.235	24	2KHz
27.262	27.265	26	3KHz

The information reproduced was supplied by The Selective Paging Committee, who have been considering CB and selective paging with some anxiety. They add further fuel to the growing conviction that the Government's decision on UK CB did not have sufficient thought behind it.

Hospitals are the obvious users of paging systems, where most aspects of work carried out are vital to human life. Less obvious uses which are just as vital are often unknown or overlooked. First aid teams in large factories, security personnel in banks, fire officers in petro-chemical plants, are all some of the more essential users. Less essential users are key personnel in large companies to whom a fast answer to an incoming telephone call could secure a large order which might otherwise be placed elsewhere.

The Selective Paging Committee, which is made up of representatives from the major manufacturers of paging systems, is currently seeking a change of frequency from 27MHz to 31MHz. A very small proportion of this

band area is reserved for use by the Government for a defence service. Even in time of war this band could never be used as fully as the 27MHz band. The SPC requested a change of band as long ago as 1977 but the Home Office, being their usual efficient selves, have still to make a decision!

A more recent conversation between the Home Office and the SPC ended with the Home Office suggesting that the legalisation of CB should have the effect of lowering the incidence of interference. The SPC's view is that, while they are very much in favour of a legal CB service, this will make no difference to the currently disastrous position. Fifty per cent of all paging systems already use FM and with the increase of FM users that is going to occur in the next few years, FM paging

systems could well be useless. The Committee also hold the opinion that although FM CB is legal, AM CB will still flourish due to dissatisfaction with the UK system.

The dilemma still exists and until the Home Office allow a change of band, CB, legal or illegal, will still be a hazard to paging systems. Next time you key the mike next to a hospital the consequences could prevent a heart attack victim from getting immediate attention. Until the Home Office acts, it should be the responsibility of CB clubs to liaise with local health authorities or industry to assess the amount of paging systems in use. Many clubs are already doing this and 'no modulation' areas already exist. This will have to start working on a national basis.

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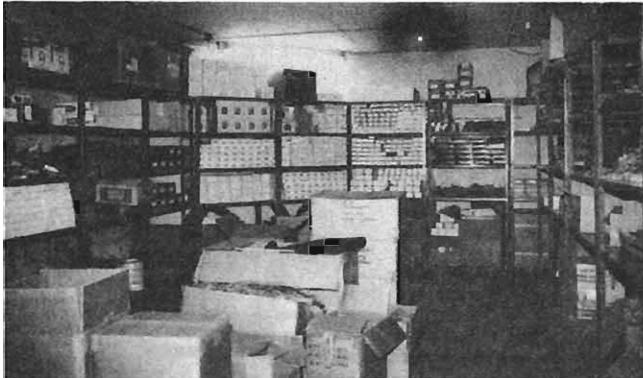
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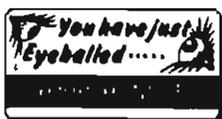
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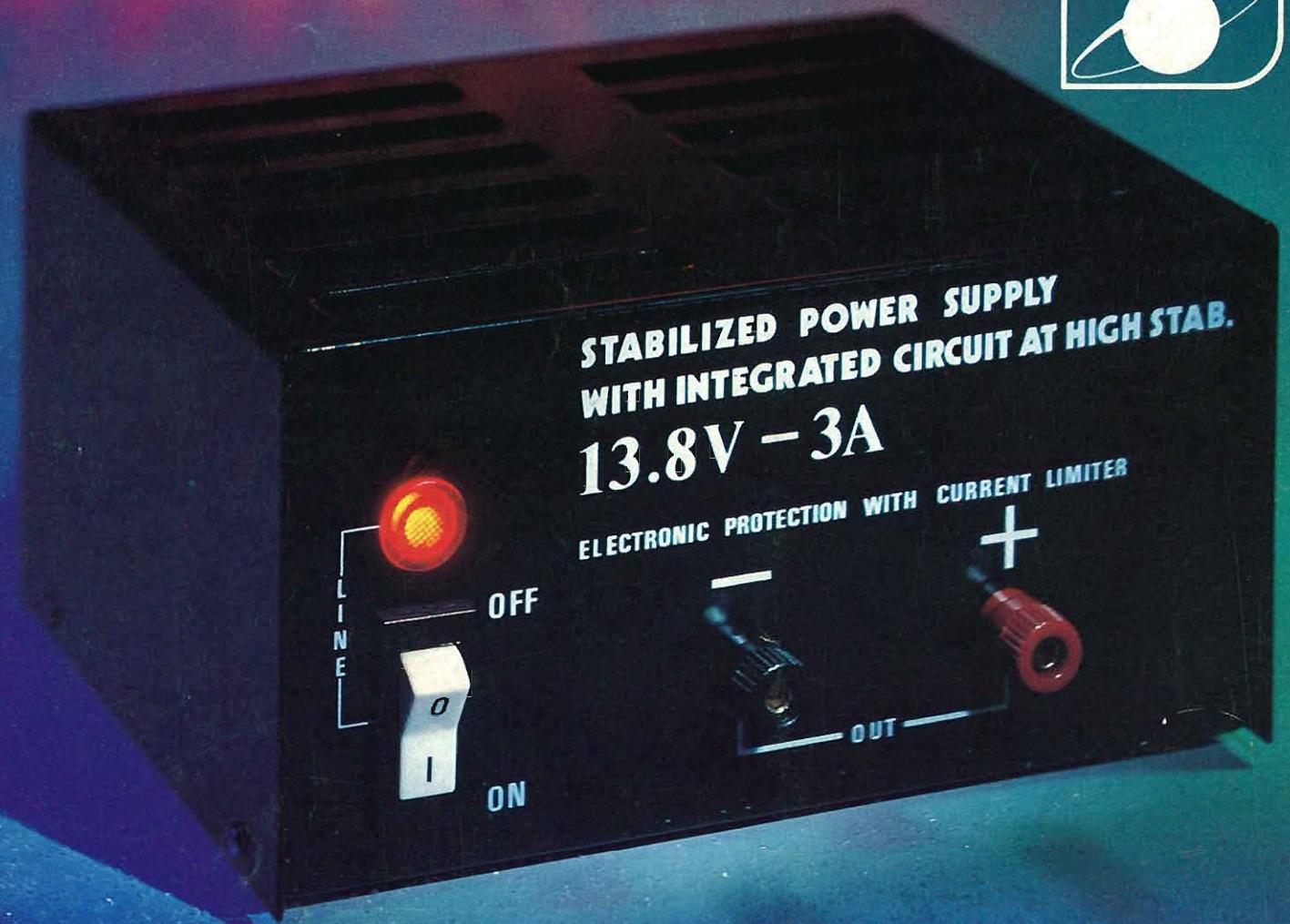
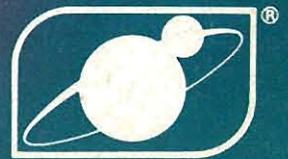
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