

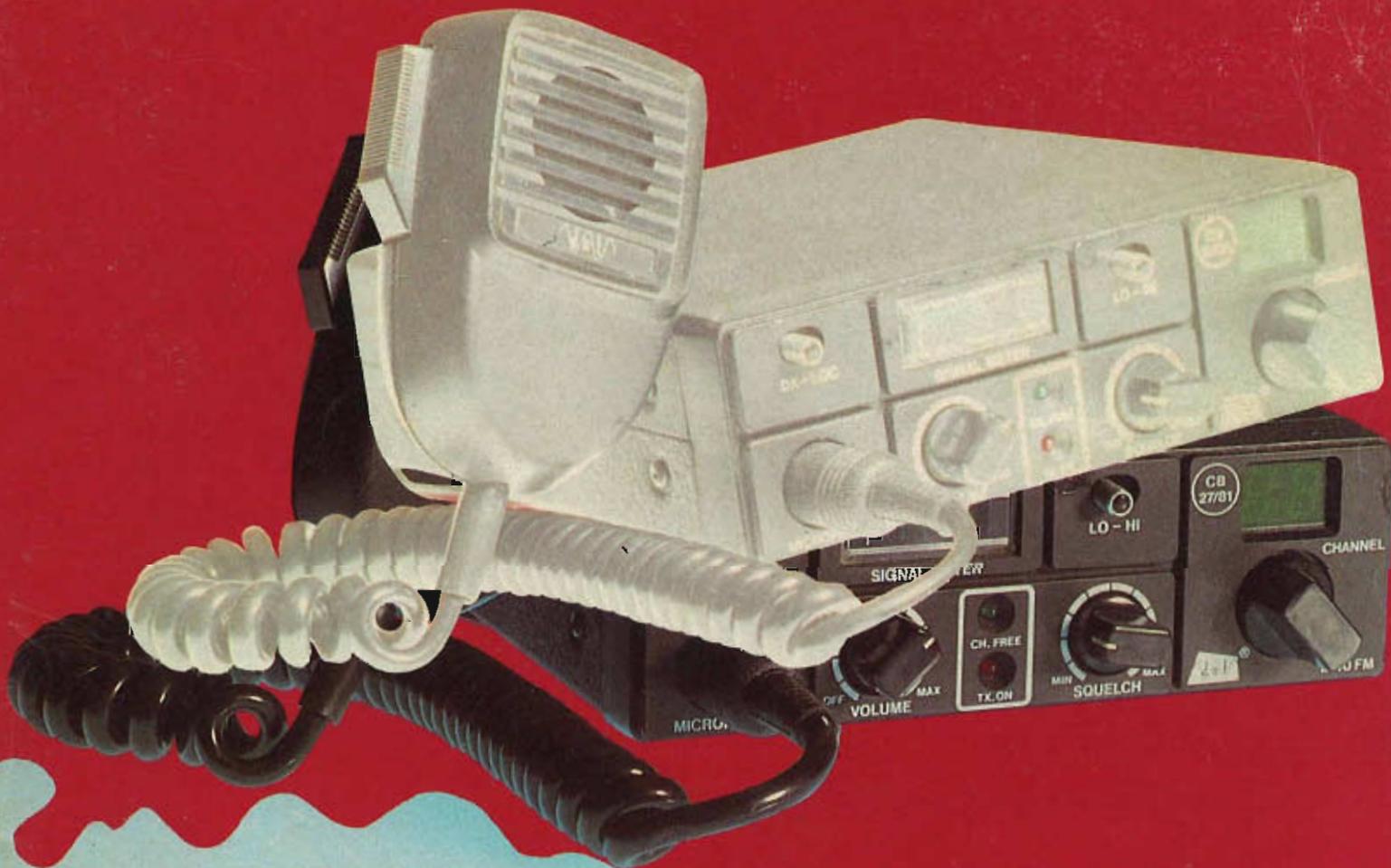
# CB

AN ARGUS SPECIALIST PUBLICATION

## CITIZENS' BAND

FOR BRITAIN'S 250,000 CB USERS

***BLEEDOVER BLIGHT***  
**Causes and cures**



***DIY DX COMPRESSOR***  
**Noise abatement project**

**Latest equipment, clubs and QSL news**

The

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# CB

## CITIZENS' BAND

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# UPDATE



## Editorial

It seems a long time ago since citizens' band radio was featured on national television (in fact, it was a long time ago) but Channel 4's *Network 7* came up trumps a few weeks ago with their slot *True or False*, which featured Deana and Ron Stewart. The tale, which you had to guess was true or false, was about a young couple who met over CB radio and eventually got married. Could a marriage made in Heaven really be the

result of a chance encounter over CB? Well, the answer was TRUE.

For those of you who aren't familiar with the show, it is a 'magazine'-type programme aimed at the 15-25 year-old group, featuring music, fashion and news. The True or False section comprises a 10-minute film of an unusual story on any subject. Thanks to the efforts of your favourite magazine, *Network 7* came up with an unusual CB love story. As always, it's pleasing to see citizens' band radio getting good exposure, instead of the usual wally horror stories which appear in the media.

Elsewhere, we look at the problems of bleedover, a common complaint, and one which we could well do without. Also, this month see the beginning of a new semi-regular series on in-car entertainment - entertainment other than CB, that is. If you're fed up with the lunatic fringe on the CB, why not relax and listen to some

soothing music ... or chat ... or weather ... or whatever.

Last, but not least, may I direct your attention to our four-page centre pull-out Readers' Survey, which acts as a guide to what you, the readers, would like to see in the only remaining magazine for citizens' band. Please take this opportunity to make your views known - it will help us as much as it will help you in that, hopefully, we know what you want to see in the magazine.

Lastly, I would like to address those people who have recently purchased CEPT sets. Are you suffering from interference from radio paging etc? If so, let us know which channels are being blocked out (usually, it's channels 24, 17 and 2) and we will try to compile a list and UK map of interference to present to the DTI. Mark your letters "Paging Problems", Citizens' Band, 1, Golden Square, London W1R 3AB.

That's all for now - enjoy!

*Cameron Brival*

## Viva CB!

Brazil's one million-plus independent truckers are calling on their government to introduce CB radio as a precaution against the very real threat of hijacking on the country's thousands of miles

of lonely roads, or at out-of-the-way truckstops.

In many recent cases drivers have been left to die in the remote Brazilian countryside by groups of hijackers out to make a quick profit out of driving the stolen

trucks to neighbours Paraguay. Often working to order in gangs of four or five, the hijackers lie in wait for the lone driver, either at a known stopping place, few of which have telephones, or at a point in the road where the truck is

obliged to travel slowly, such as on winding passes or steep inclines. Once a truck is spotted, it is brought to a halt and the driver is forced to hand it over, often at gunpoint and always at considerable risk to his life.

Once hijacked, the truck is driven across the border into Paraguay, where both truck and cargo can be sold on the thriving black market which exists because Paraguay, which has little or no industry of its own and feels compelled to safeguard what little it has against foreign competition, imposes very high import tariffs on goods brought in from outside South America, particularly from Europe. This together with the ease of passage across the border with comparatively wealthy Brazil, has created a situation in which Paraguayans are ready and willing to buy almost any commodity at less than the official import price, with few, if any, questions asked. Paraguayan border officials seem unable, or unwilling to stem the illicit trade, perhaps in part because the high import dues charged on European goods do not apply to goods from the rest of South America.

Like most South American countries, Paraguay has no motor industry of its own, so that the trucks illegally imported from Brazil, which has its own modern truck and car factories, often become worth more to the Paraguayans, whose demand for transport has grown rapidly in recent years, than the cargoes they were carrying. Nor, until recently,

was it difficult to 'launder' the trucks almost as soon as they had crossed the border. False bills of sale were readily obtainable and with these the hijackers' customers were able to obtain legitimate Paraguayan registration documents, so that within twenty four hours of being stolen, a Brazilian truck would become 'legally' registered to its new Paraguayan owner.

Although it is the truck drivers who are demanding the introduction of CB, trucks are by no means the only vehicles likely to fall prey to the cross-border bandits, with cars, particularly late model American ones, fetching very respectable prices on the Paraguayan market, where almost any commodity will find a ready buyer.

This form of piracy is no new phenomenon in Brazil and although the truckers' union had made numerous representations to the government in the country's capital, Brasilia, little or nothing was done until the drivers decided to take matters into their own hands. In typical trucker fashion, they blockaded the Paraguayan border, refusing to let even legitimate traffic cross until both the Brazilian and Paraguayan authorities had agreed to take action to stop the illicit trade, which, as well as leading to injury and death, is costing the often self-employed truckers million of dollars in lost trade and vastly increased insurance premiums.

The result was immediate! It led to a joint effort between the two governments. Codenamed 'Operation Return', this offensive has so far led to the return of some eight hundred stolen trucks and a number of private cars, together with an attempt on the part of the Paraguayans to tighten their vehicle registration procedure. Even so, the drivers claim that this is nothing more than the tip of the iceberg. They claim that only by fitting CB rigs can they hope to combat the problem. In a country more than twenty five times the size

of the United Kingdom, drivers have stories to tell of colleagues murdered on the spot and others who have been bound so securely that they have died before being able to loosen their bonds. A trucker apparently counts himself lucky if he loses no more than his truck and its load! The Brazilian government points out that the hijackers face very heavy penalties if caught but the truckers insist that without a two-way communication network the sheer size of the country makes their detection and arrest an almost impossible task.

So far the response of the Brazilian government has been disappointing. Official sources claimed that in such a large country CB would do little to overcome the problem, since the distance to the nearest base station, or even another trucker, would be so great as to make a rescue attempt impractical, even if the cry for help were heard. They also claim that it would be impractical to establish monitoring posts at regular intervals on a wide number of channels, especially in the more remote areas favoured by the hijackers.

The drivers counter this argument by pointing out that even if they still lost their trucks, they would at least possess the means to let someone else know where to look for them, reducing the risk of death from exposure, hunger and extremes of temperature. They also point out that the ability to pass information about stolen trucks among themselves, and to the police, would greatly increase the risks faced by the hijackers in driving their booty to the Paraguayan border. They are contemptuous of the argument about monitoring stations and the number of channels required, and point eagerly to the American example of channel 19 and its network of volunteer monitors, pointing out that CB would also bring benefits to the residents of those same

## The Great British Convoy

Plans to bring together truckers from all over the country for the first British convoy are now well under way, with drivers pledging to raise sponsorship for charity.

The convoy, consisting of eight legs starting from different parts of the country, will converge on the American Adventure Theme Park in Ilkeston, Derbyshire, on September 17, to join the American Adventure Truck Rally which offers a weekend of fun and excitement for all the family.

"Convoy 88" will start from as far afield as Exeter and Dover in the South, and Glasgow in the North, and truckers taking part will be raising sponsorship for every mile they cover. The organisers, Truckstop Club, have nominated three main charities for the event: The Save The Children Fund, The Nuffield Orthotic Patient Care Building Appeal at Oxford and the Great Ormond Street Hospital Wishing Well Appeal, although drivers can support any charity they choose.

And the bus fraternity have not been forgotten. There will be a special bus convoy, which will include a number of vintage buses, organised by Bill Wilford of Kent Metro. Bill, who is celebrating 25 years in business, will lead the Brighton leg which has been christened the "Kent Metro Silver Jubilee Run". He is supplying a special commemorative plaque to all vehicles arriving at the Park, and is offering free rides in the vintage buses.

A star attraction at the Rally – and in keeping with the American theme of the weekend – is the incredible

4-axle Western Star 'Lady Louise', owned and driven by Geoff Byford. Geoff will lead the Bristol leg of the convoy, and his truck will be on display throughout the weekend, along with the many other vehicles – of all shapes and sizes – taking part.

The management of the American Adventure Theme Park have offered space for at least 500 trucks, buses and street vans, and after the initial admission fee (reduced for rally entrants), all major rides are free.

There will be a Rally Special Hoe-Down and bar-b-que in the Silver City western town, complete with saloon, where cowboy gear is the order of the day. Action-packed live shows and wild west attractions will be happening throughout the weekend.

Said Bill Wilford, "The event is likely to be one of the most memorable in British trucking history, if the response so far received is anything to go by. And the sight of all those trucks and buses in convoy along the motorways is one that the public are not likely to forget in a hurry".

He went on: "Obviously, the more truckers who register the better, and we hope that anyone who hasn't already done so will contact the organisers, Truckstop Club, as soon as possible for an entry form. It is going to be a great British/American Adventure and one, I am sure, that will be enjoyed by everyone who comes along".

Anyone wanting further information about entries to the Convoy or the Rally should ring the Rally Hotline on (0795) 535076.

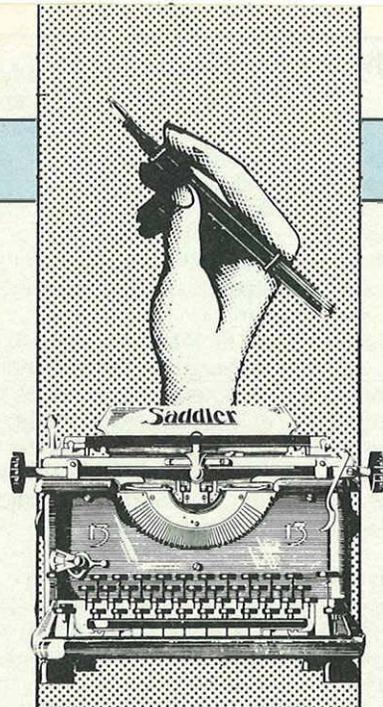


remote districts in which the hijackers like to operate.

From their recent actions and the immediate response which they elicited from the Brazilian government, it is unlikely that the truckers will continue to take 'no' for an answer indefinitely and our sources suggest that they are planning further disruption of cross-border and internal traffic and communications to

demonstrate their strength of feeling and to persuade their government to permit the use of a facility which most civilised countries regard as nothing more nor less than a basic freedom.

To more than a million Brazilian truckers it could mean the greatest freedom of all, the difference between life and death! We wish them well!



# Do the DTI Listen?

## Do the DTI Listen?

Mike Charlie from Northampton seemed, to me, to list quite nicely the problems in this country with *not* CB but the DTI.

As he mentioned, I too have worked the range 26-28MHz frequencies and have found it to be enjoyable, especially on SSB. But I'm afraid that I too must now take this opportunity to have a moan and put forward some points and ideas.

1. We got 27MHz by a petition for AM. Strange. Were the DTI listening to our plea? Or was it all arranged beforehand?
2. If we are going to be restricted to 26MHz in the future, who is going to be using 27MHz?
3. They say that all this AM and SSB interferes with . . . who?
4. I must say that I feel very strongly about the need for an exam and a callsign (sorry, lads). I see this as the only way to clean up and maintain a certain standard. On passing this exam, the user would be permitted to use frequencies no lower than 25MHz and not above 27MHz. Modes would include AM, FM and, of course, SSB:  
25-26MHz SSB (max output 400 watts - like amateur radio).  
27MHz SSB (max output 40 watts).  
27MHz FM (max output 4 watts).
5. What's the matter with having 25-27MHz in one box? Currently, two sets are required. Can this change? A stack system of radios in my car doesn't sound great.
6. Why don't you guys make out a questionnaire in the next issue and give them to the DTI. Try to get across what the people want. If possible, have a discussion in Telford with the DTI and the surrounding DXers of Shropshire.

**Blue Boy,  
Telford**

## Grow Up

First of all, I would like to compliment you on the standard and quality of your magazine. Regarding the letter by Freelance in a recent issue: I am also a member of Natcolcibar and I cannot believe that Natcolcibar would defend, to the bitter end, these people who purposefully go out of their way to degrade the CB system.

Natcolcibar's aims and purpose is to fight for a better UK CB FM system and also to fight for the legalisation of AM/SSB.

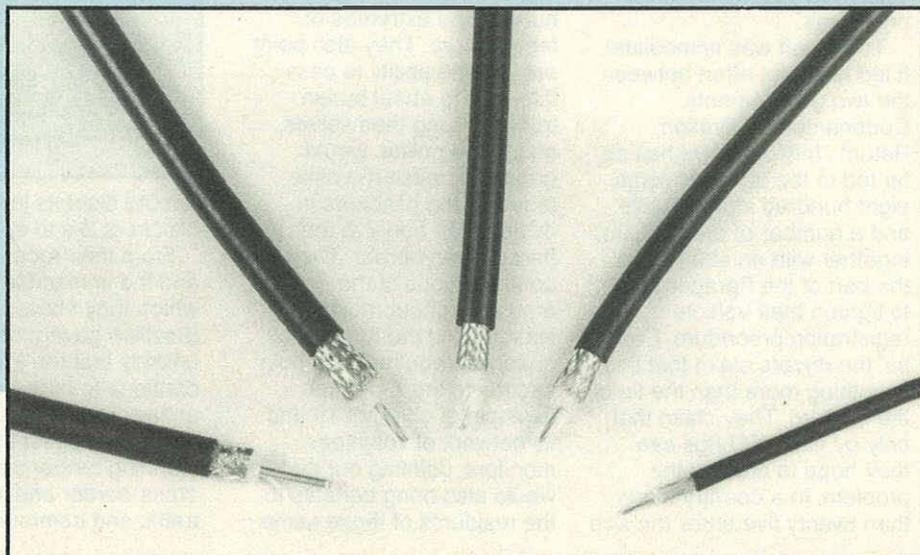
I am appalled to read, in his letter, that older, more experienced breakers have formed themselves into a Mafia-style organisation that goes round clipping co-ax cables. What are these people hoping to achieve? I suggest that they approach the proper authorities, grow up, and stop giving CB the cut-throat

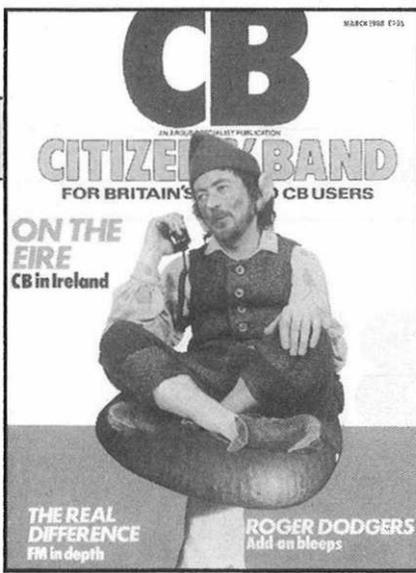
image it does not really need.

Now may I turn to older members of CB radio. I am 22 years of age and came on CB when I was 19. I have noticed that most - not all, but most - older breakers regard the young, new breaker as a nuisance and a wally. This is not so. Most young breakers come on and are not sure of the general running of CB. Why can't the older breakers take newcomers under their wings and guide them. Some of the older breakers around my area - mentioning no names - aren't the 'good buddies' they make themselves out to be.

Now, onto your article in the April issue regarding examinations for the CEPT frequencies. I think it is a very good idea indeed and it could sort out the wallies from the genuine breakers.

**Major Tom,  
Wakefield**





## Embarrassed

Please, please, please don't put me through it again. It started with mild symptoms in November. In December and January, it got noticeably worse but in March it reached its peak. But what am I talking about, you may ask. The truth is, you see, that I am becoming increasingly more embarrassed when I pick up my copy of *Citizens' Band* from my newsagent.

November displayed a selection of possibly the worst QSL cards produced, with the exception of the Rainmaker one. December featured a Santa Claus protruding from a fake snow and cotton wool-covered chimney. Less obtrusive was the photograph of the Editor – but only so because of the black-and-white factor.

Come January, I sallied forth to once again purchase the latest issue. As the proprietor handed it over the counter, I

was appalled to find a super-imposed highlander plastered over the cover. Not, of course, that I have anything against super-imposed highlanders but I failed to see the connection until I read the article.

This, however, is no consolation, as the innocent bystander will have no knowledge of this and therefore his opinion of the average CBER as a way-out weirdo is even more confirmed.

I breathed a sigh of relief in February but the reprise was short-lived for when my March copy was produced for me beneath the counter and I reached for my wallet, I had to blink and pinch myself before I recovered from the shock. OK, so the emphasis was on the Emerald Isle but come off it! A *pixie* on the front of a CB magazine? I am now convinced that my newsagents feel that CB is just for those who enjoy spending their time gazing at undersized freaks on toadstools with outsize ears.

However, on another note, I still always look forward to my monthly copy, despite having to roll it inwards. I feel the content remains excellent and ever-interesting. Thanks, lads, for keeping this link open. Keep it up.

**Will Robertson,  
Birmingham**

*Sorry to have embarrassed you, Will. Perhaps you could wear a disguise next time you visit your newsagent. And, by the way, it was a leprechaun, not a pixie – Editor.*

## Old Code

May I comment on the improper use of the International Phonetic Code by almost all radio users, professional and otherwise, in the use of the phrase "repeat" if the listener does not quite get the over. The correct question is to ask "I say again". Very few radio users are aware that the phrase "repeat" is a royal artillery firing order and should not be used. During the war, the army, on firing practice on the ranges, almost caused a severe accident through hearing "repeat" over their radio. This was believed to have been caused by a freak transmission.

How many users of our hobby recall the old Alphabet:

A	ABLE	M	MIKE
B	BAKER	N	NOVEMBER
C	CHARLIE	O	OBOE
D	DOG	P	PETER
E	EASY	Q	QUEENIE
F	FOX	R	ROBERT
G	GEORGE	S	SUGAR
H	HOWE	T	TEAR
I	ITEM	U	UNCLE
J	JUNE	V	VIXEN
K	KING	W	WOLF
L	LOVE	X	X-RAY
		Z	ZEBRA

**Sparky,  
Wiltshire**

## Plea for Good Behaviour

I'm not usually the type of breaker to fly off the handle (no pun intended) but month after month of reading letters and hearing opinions in my own twenty I thought it about time that I put my own view across, and hopefully, that of many others. This was finally triggered off by the July issue of your magazine and firstly a letter by a Mike Charlie 117 of Northampton.

What did he mean by "deteriorates to the level of the 27/81 band"? Maybe in Northampton he may regard that being the case but in general I disagree. Slowly, in my opinion, the channels have improved since 'the fashion-followers' that used 27/81 when it was legalised have lost interest along with most of the wallies, bucket-mouths and budding DJ's. Sorry to stick the knife in but this is a typical attitude of some Hams (or think they are) suffering from a superiority complex.

Not that I disagree with everything he said. The imminent withdrawal of 27/81 in 1990 is most alarming. Not only will 500,000 rigs in circulation become

redundant but this will cause considerable distress for certain groups of people. I refer of course to the elderly and disabled in our community for who the rig is their only lifeline, giving comfort and friendship. Okay, I know this sounds a bit melodramatic but the facts are there and I pray this decision is reconsidered.

My last points (did I hear at long last?) are to do with the article 'CB and Common Sense' by Paul Coxwell. Most of the points I agreed with except: 1) Quote- "how many times on hearing two strangers talking in the street do you go barging in between them and ask them what their names are and where they live?" Who said CB is anything like a street? The view here is that it is a community and anyone who wishes to come in on the side is always welcome and rig checks are given if asked for. Rarely is this as common as every two minutes but more like greatly in excess of twenty minutes on the busiest of evenings. Consideration also implies good manners which means not ignoring people which by the sound of it

is the opposite of Mr Coxwell's twenty. One additional point though which fortunately only applies to a very small minority, please, please, try QSKing between transmissions. In the end it saves time and frustration so please take notice.

2) Another further point to add regards occasionally jumping onto someone else's channel. This can be helped a lot by first checking the channel before moving there. Again, please take notice. 3) Although taxis are allowed to use the frequencies isn't this a little dangerous for the passenger? Take the example of a young woman waiting outside a pub for a taxi. The message goes over the air and is heard by a less respectable member of the community and . . . need I go on? Furthermore, if the taxi firm wants a specific channel to use why not invest in their own radio system? If they can't co-exist with present breakers then they shouldn't use the CB at all.

Lastly, keep up the extremely good work.

**The Believer,  
Romford**



# ABLE Aerial?

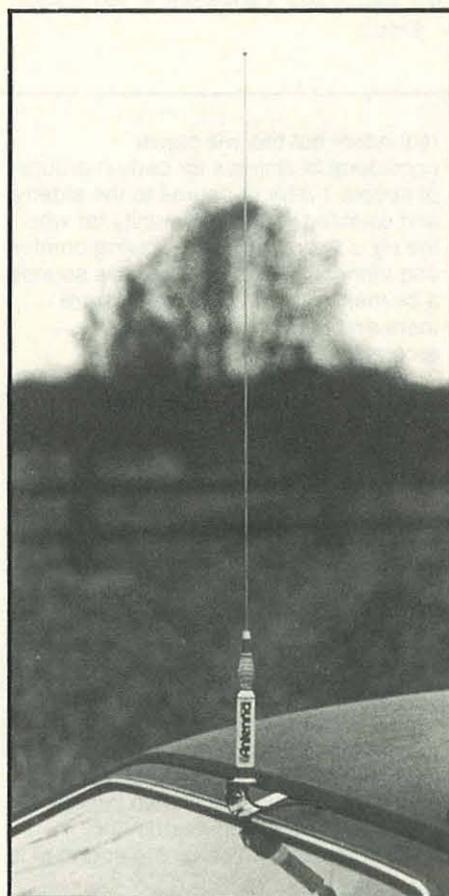
## Able Aerial :: Socket to Me :: Guilty in Charge :: Expensive Event

### Able Aerial?

**Q** I'm very new to CB and I've just installed my first rig in my car. The rig came from a local Sunday market, and it cost just £5.00 – a real bargain! It didn't come with any instructions, antenna or cable but I've managed to work out all of the controls, and thanks to a friend we've had it running in his car, so I know that it works okay. The problem is that it won't work at all in my car – I thought it may have packed up, but it still works fine in my friend's car. The lights and display come on and there's noise from the speaker, but all of the channels remain absolutely dead. The aerial and cable in my car are both new, purchased recently from Halfords, the CB aerial adaptor plug was brought from a reputable local radio shop – what can you suggest?  
Alec Harper  
Chichester

**A** I'm beginning to smell a rat here – are you actually using a CB antenna, or have you tried to hook your new rig into your existing car aerial? That's what it sounds like, and from what you've said, about all channels remaining dead, I'd put money on you having an open circuit on the aerial connector or cable. For Pete's sake don't go keying the mike, unless you want to spend out on a new RF output transistor (and that'll cost you more than a fiver!). Get a proper CB antenna, and have it competently

*installed. A normal car aerial can be sudden death to a CB rig. Put simply, a CB antenna and its cable are 'tuned' to CB frequencies and the output stage of a CB rig – normal car aerials are not and should never be used. By the way, welcome to CB, and don't be put off, you'll soon pick it up . . .*



### Expensive Event

**Q** I've been roped in to help organise our local village fete – I'm in charge of the parking, so it occurred to me that CB would be a useful aid to me, and my helpers. We've been in touch with a local CB shop, who have agreed to loan us five hand-held walkie-talkies but they said we'd have to pay for our own batteries. As the fete will run for two days I reckon that it's going to cost us a small fortune in batteries. Would it be cheaper to get a set of re-chargeable batteries for each unit?  
H. Wooley  
Crawley

**A** A typical hand-held draws around 50-100 milliamps in the receive mode and 500mA or more when transmitting. With the kind of usage you're suggesting – ie more or less continuous operation over a two-day period you'd probably get through a couple of sets of batteries on each unit, each day. A full set of alkalines could cost £5.00 or more – a set of re-chargeables will cost about two to three times as much but will last for hundreds, possibly a thousands or more charge/discharge cycles. So yes, the running costs would be far less, but you have to take into account the cost of the batteries, and the chargers – don't forget, you'd need at least a couple of extra sets of batteries to replace those on charge. And if you bought them, what would you do with them once the walkie-talkies have been returned? It seems to us that your best bet would be to try and find a local company to loan you five sets of re-chargeables – after all it's in a good cause.

## Guilty in Charge

**Q** I'm about to set up a base-station in my 16 year-old's bedroom. There's no problem with the rig - I'm giving him my old mobile rig (Uniden 2000). I'm using a home-built dipole, mounted on the side of the house, it's a tried and tested design, so there shouldn't be any difficulty there. The only problem now is a mains supply - rather than go to the expense of buying a purpose-made unit would it be possible to use my old battery charger? If not, I've had a root through the loft and come up with an old train-set controller - I believe this has a 12-volt output, could I use this?  
*'Motorman'*  
 Devonport

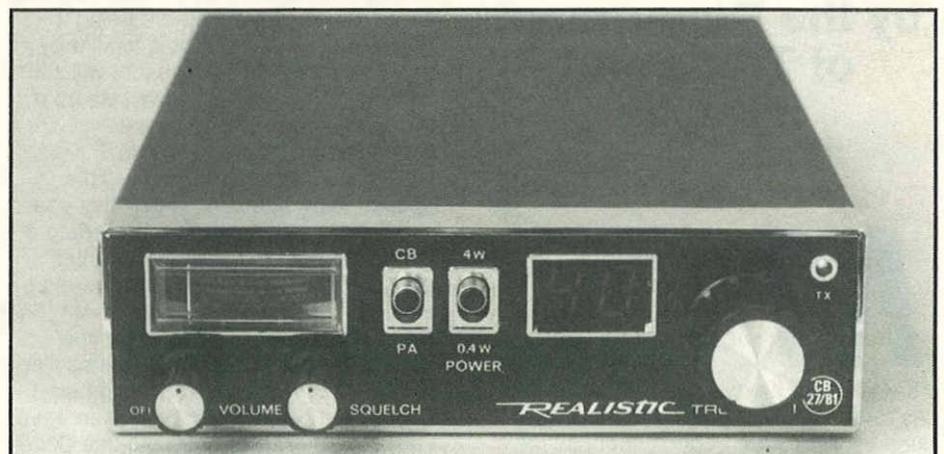
**A** Not really... Most battery chargers have little or no regulation, and virtually zero smoothing so you'd probably get a very loud 'buzz' from the speaker if you tried to use it. Besides, the unregulated supply could damage your rig if the output voltage wandered too high. As far as the train controller is concerned, without knowing more details, it's impossible to say but we suspect that it too will be unregulated and have little or no smoothing, so again you may experience a loud mains 'hum'. In any case it may not be able to deliver the necessary current (up to 1.5 amps). Why skimp? Mains PSUs start at around £10 and they turn up now and again at boot sales, and second-hand shops, and there's some real bargains to be had - if you look around. However, as with any mains-powered appliance, have it checked thoroughly first - we don't want to lose any readers.



## Socket to me

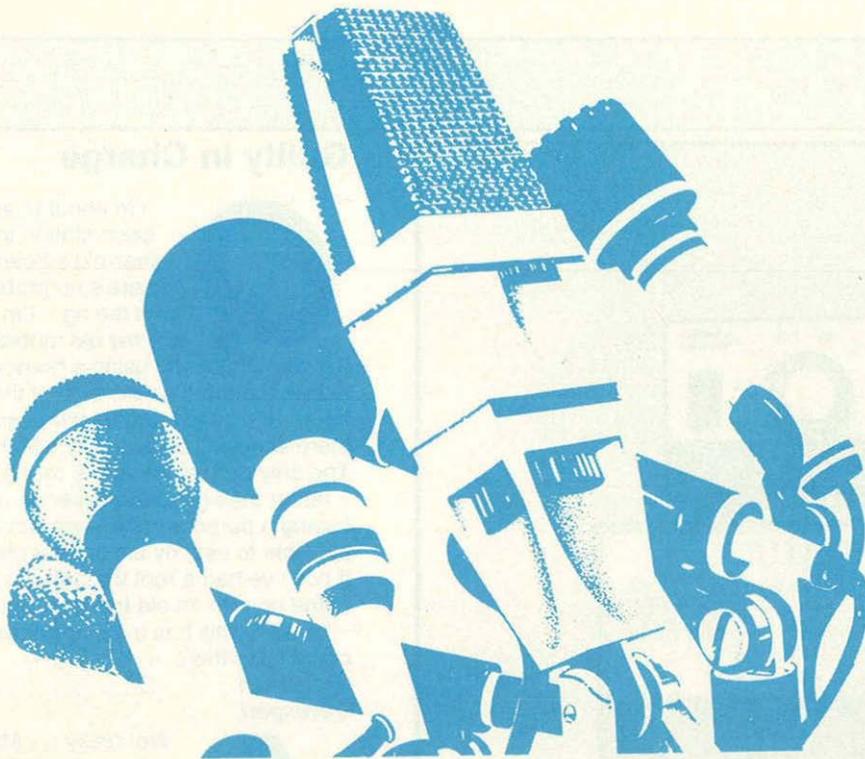
**Q** Here's an odd one for you to sort out - I've got a K40 mike (remember them?), a real classic, and I want to use it with a recently acquired Realistic (Tandy) TRC209 - no-one seems to have any data on either of them so I'm a bit stuck as to how to connect up the mike. Can you help?  
 Dave 'Leadbucket' Hills  
 Somerset

**A** No problem. The TRC209 has a standard 5-pin mike socket - pin numbers are, or should be, marked on the plug. From the top, reading from



left to right it goes 1, 4, 2, 5, 3. The K40 connections are as follows 1-black &

braid, 2-yellow, 3-red, 4-white and 5-blue.



# OVER THE AIR

## Shepherd Man ponders over the recent decisions by the Department of Trade and Industry

**M**y thanks to Andy Napier from Aberdeenshire for his thoughts on SSB in reply to mine. I am sure that Tony Jaconelli (SACBC) will have noted his comments. As for the idea that SSB may be some kind of "April Fool", I don't suppose we will find that out until the 1990 Review. Well done also to IB (Fuller Flannel) for his letter in Back Chat (June) on

summer motoring. The only thing left out was the 2.3 children that can be found bouncing on the seats and poking their tongues out at anyone that passes by.

Following on from last month when I offer *my* interpretations of the "DTI Press Notice - re 934MHz". I have been sent a copy of a letter sent out by the DTI/RIS re the Order change under Section 7 of the Wireless Telegraphy Act 1967 headed "Restriction On Sale/Possession Of Unapproved CB Radio Equipment". It would seem that when this order is approved by Parliament (July?) it will ban the sale and possession of sets outside MPT specifications. This will also include *anyone* offering to sell such sets. So if you have a set fitted with a conversion board, AM or SSB set or own a set that has been increased in output power etc, your stand a good chance of being busted. So what's changed? The change is, that they don't have to prove intent to use or that you are using it - possession (even in a box) is all they need. Although 934MHz users will still be able to buy and sell their sets after this Order takes effect, as the withdrawal of MPT 1321 is on Importation and Manufacture. This applies even after December this year.

Will this new Order change create a 'black market' or 'under the counter' situation, thus pushing some prices up? How will this affect the sales of AM/SSB sets to the Amateur user when you consider that AM/SSB sets will be illegal to possess *prior* to conversions being carried out? And why has it taken seven years for the DTI to bring out this Order change? Is there more to this than "just tightening up on existing legal requirements"? If this was a game of

chess and we were the pieces, then this could be 'check-mate' to the DTI.

As a final thought, some CBers around the UK are beginning to recall the Mass Rally of 1979 which paved the way for legal CB in the UK. Those who can remember it speak of the effect this had on the capital. The estimated figure (never quoted) was around 100,000 breakers, and some feel that it could be time for another!

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**"... they don't have to prove intent to use or that you are using it..."**

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Jet Breakers Community Radio Team would like to hear from any emergency monitoring teams around the UK who would be interested in helping them put together a list of 'contact' telephone numbers for use in an emergency. They feel that it is important to have as many contacts as possible to aid the passing of information on missing persons etc. Those interested in this idea should contact the team via: PO Box 60, Royal Leamington Spa, Warwickshire CV31 1FP.

Those Scottish breakers who have in the past given financial support to The Robert Mitchell Appeal, will be saddened to know that the little boy passed away in May. However, by request, all monies raised so far will be transferred to the Lynn Gilmour Appeal and White Heather from Glasgow will be continuing her good work to help raise funds. The Lynn Gilmour Appeal is set up to give financial support to a young girl from Glasgow who attends a special clinic in Hungary. Monies raised from the Seamill Eyeball (19th June) will go towards helping this appeal.

Talking about Eyeballs, whilst at the Worthing DX Group's Eyeball in June I ran into an old CB friend, namely Shutter Bug (Keith) from Somerset. He thrust into my hand some information about the Sunrisers DX Group Eyeball on the 1st October 1988. It is being held at Homefarm, Edithmead, Burnham-on-Sea, Somerset. Although the actual event is only on one day, many breakers turn it into a weekend bash. Entry for the day is 50p per person (10am - 5.30pm). Or you can buy a ticket to cover the day and evening's entertainment at £3 per adult and £1.50 per child under 12 years. These prices include a buffet. Trade and club stands are welcome and there are facilities to camp overnight with your own camper or tent etc. For more details contact: PO Box 7, Bridgewater, Somerset.

2LO Radio Club "Sixth Annual Cycle Ride" from Richmond to Brighton takes

place on the 14th August. It is in aid of The Royal Star & Garter Home. This charity event helps to provide for disabled sailors, soldiers and airmen. Bob (Bended Knee) would like to hear from anyone who would like to enter the ride or give sponsorship to those who are already taking part. They also run a Sponsored Copy over the weekend (UK FM) and money raised also goes to the charity. Want to know more? Then contact them via: PO Box 50, East Molesey, Surrey KT8 9QH.

Tripe City Breakers' "2nd Mass Eyeball" (including card swap) is being held at Barton Village Hall, South Garstang, Lancs, on the 20th August. Trade and Club stands are welcome. Open from 10am - 10.30pm (with an evening disco). More details and information from: 217 Queens Road West, Accrington, Lancs, or telephone Accrington 390440.

CB 4 The Blind Fun Day (Eyeball) is on Sunday 28th August at Stanmer Park, Brighton, Sussex. Trade and club stands are welcome. No parking or entry fees. Everyone welcome and money raised will go towards helping other blind breakers. More details from: PO Box 2, Brighton, Sussex.

At the Tango Bravo Club Meeting held on the 24th April 1988 at the Tolworth Bowling Centre, a cheque was handed over to Mrs Joan Fielding, the representative for Guide Dogs For The Blind, to the value of £805.05. Mrs Fielding and her guide dog Jenny was presented with the cheque by Mars Bar (Dot) and Spitfire (Roger) on behalf of the Club. The money was raised over the Whitsun Bank Holiday Weekend last

confirmed. However, regardless of the fact that these sets are being sold with the PR 27 GB sticker - they still remain *non type-approved* for use within the UK. I would once again suggest that you check with the DTI before you purchase a CEPT set, as they are more than happy to go through the list of approved sets. The telephone number is 01-215 2171.

As CEPT seems to be the 'in thing' to talk about amongst many CBers, I was very interested to learn from a friend that the channels presently used by on-site paging systems will not be completely cleared until 1996. From information he has received via the DTI, they state that these on-site paging systems should not cause interference to CEPT CB. Furthermore that if any CBER is experiencing such problems then they should consult the RIS. So what are these systems used for? Induction Loop Paging, HF & VHF on-site paging, UHF on-site paging and local communications. The one that causes most problems to the CEPT CB user is between 26.978MHz to 27.262MHz (HF 27MHz band). This is a 'one-way paging system' with no return speech facility. For more details and a copy of the performance specification, apply to the DTI, and quote publication number BR6. But to help those users who are not into MPT specifications etc, I will leave you with this following information gleaned from the "DTI On-Site Paging Information Sheet" under the heading of: *Introduction of CEPT CB*.

"The Conference of European Posts and Telecommunications Administrations (CEPT)

Department was able to make available immediately frequencies at 26MHz to help the situation as CB is introduced into the 27MHz band. Users are not compelled to leave 27MHz until 1996 but if they remain they will run the risk of receiving harmful interference. Those users who do remain at 27MHz and cause interference to the incoming CB service will be expected to remedy the situation".

Radio Paging Association (RPA) is the liaison link between manufacturers, pager users and the DTI. The Association members are asked to offer advice to their customers and make sure that none of its members cause interference to users of adjacent systems. The RPA is also the UK representative on the European Selective Paging Association. There is a self-policing arrangement between the DTI and members of the RPA which provides, by mutual consent, the mechanism for tackling any problems the users might experience.

So if you are suffering from problems on CEPT and they are caused by on-site paging systems, contact the RIS and complain. Do you think that it is fair that we should have to wait until 1996 before we have our *total* use of all 40 channels on CEPT? Do you suffer from these problems in your area and if so, how many *can't* you use?

To finish up for this month, I would like to share with you all the following details seen on a car sticker in the back window of a local VW. It should help some of you late booking holidaymakers and offers you the chance to obtain a super and lasting tan:

"Holiday at Windscale - for that glowing experience".

## **"If you are suffering from problems on CEPT and they are caused by on-site paging systems, contact the RIS and complain."**

year by a collection of breakers from local CB clubs under the guidance of Snapshot (Chris), and these fund-raisers included darts, tombola, car-washing, bowling and a car boot sale/auction, finishing up with a dance on the Sunday. Those involved would like to thank everyone for their hard work and support.

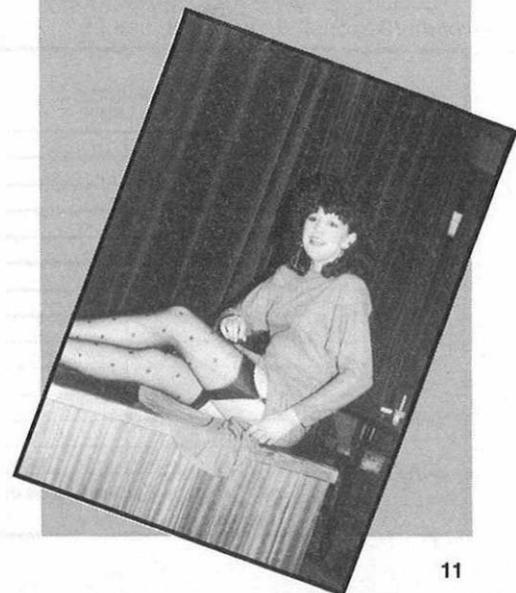
It seems that around the middle of June, the CB market was again seeing the return of the Satcom/Atron Scan 40F (CEPT) sets for sale in many shops. The only difference *this time* is that on the front top right-hand corner can be found a PR 27 GB sticker. It has even been said that these sets are being sold under a third name but this has not been

recommendation provides common European frequencies for FM Citizen Band (CB) radio. The adoption of the CEPT frequencies at the lower part of the 27MHz band means that there is a need to relocate the existing users of the band.

As HF paging services operate at the lower part of the 27MHz band it was recognised that alternative frequencies to those intended for CB should be found for existing HF pager users.

After consultation with RPA it proved possible to agree on a new long term allocation for on-site paging at 49.00-49.50MHz. In the future, most on-site paging systems will operate on these frequencies. In addition, the

**As a result of numerous enquiries about last month's column, here she is - the gorgeous Maggie!**



# D.I.Y. Compressor

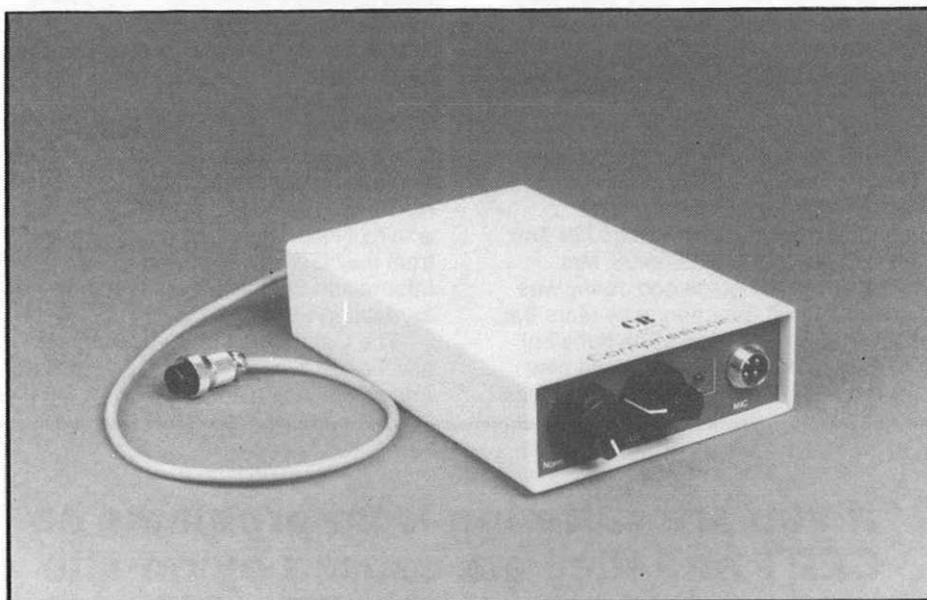
**Blot out unwanted noise with this special project, courtesy of David Cox**

**A**udio dynamic range compressors, such as the one described in this article, have been around for many years now. They are used in top-flight audio recording and broadcasting applications, as they are used to combat the unavoidable noise which is induced via the recording or broadcasting medium. The D.I.Y. project shown here uses the same simple technique to process speech to make it more efficient for CB radio transmission.

## Compressors and Expanders

Compressors and expanders are two complete opposites yet they almost always go hand in hand. Essentially, one processes the sound and the other "unprocesses" it. For this reason, the complete technique is often referred to as companding.

Looking at figure one, the effects of compression and expansion can be

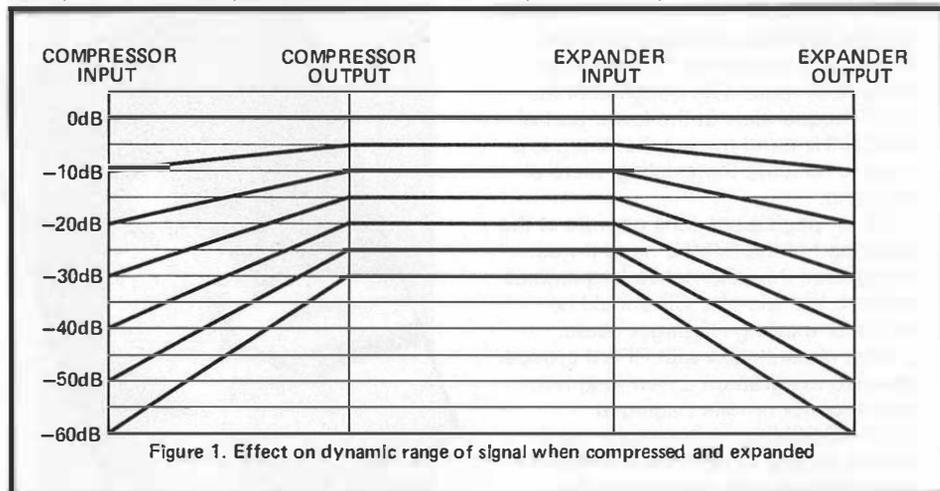


seen. The best way of describing what a compressor does is to say that it is an amplifier whose gain is inversely proportional to the signal applied to its input. That, in practical terms, tells us

that the lower the input signal, the more the compressor amplifies it. On the other hand, the expander does the complete opposite. It reduces the low signals still further.

The dynamics of this technique can be seen by referring back to fig. 1. The scale on the side of this diagram shows the amplitude of the input signal. Note that 0dB is used as a reference point to indicate the optimum amplitude of an input signal. In our case this could be the loudest vocal signal before overmodulation occurs. On the scale, anything lower than 0dB shows that a signal is below this optimum level. Of course, vocal noises contain both loud bits and quiet bits alike and so it will not always be possible to obtain the best level.

On the diagram, note the input and output levels to and from the compressor. See that a -20dB input



effects a -10dB output etc. The expander, being the opposite of the compressor, reverses these levels back to their originals.

Now that both effects can be seen, you may well ask "Why bother?" After all, we have ended up with exactly what we started with. Well that's true, but the real benefits of companding can be seen if we add some noise to the diagram.

Diagrams in fig. 2 and fig. 3 show the effect of noise on a normal signal and a companded signal.

Figure 2 shows an input signal with a dynamic range of 30dB (-30dB to 0dB). Upon transmitting, noise is encountered down at -15dB, and because of this, at the output all signals below -15dB are lost in the noise.

However, now look at the effects on the same situation that are caused by companding the input signal (fig. 3).

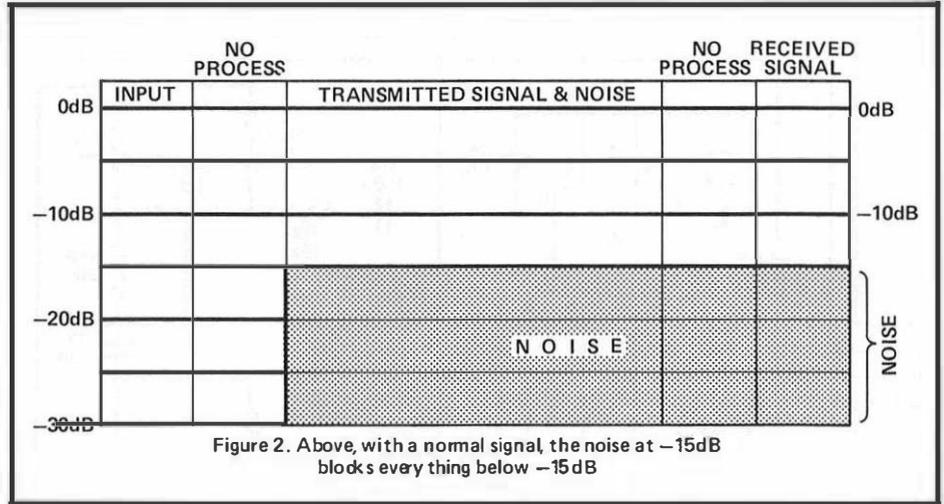


Figure 2. Above, with a normal signal, the noise at -15dB blocks every thing below -15dB

noise which is louder than the level of speech, it will actually make it worse. That would mean double-trouble for beedover sufferers.

use but this can be avoided by switching the unit off when talking to local stations. The compressor is designed to really make a difference when talking to an extremely distant station where perhaps, your signal is not even strong enough to move your counterpart's "S" meter needle.

The compressor designed for this article is intended to be a cheap but effective and practical method of improving the sound of speech for long distance work. It also includes a variable control so that the amount of compression required can be altered to suit a particular situation.

## Design in Brief

The actual compressor circuit is based around a single integrated circuit. For short, it is called a VOGAD which stands for a Voice Operated Gain Adjusting Device.

It is this that does the hard work and with only a few external components, completes the compressor stage. note that the VOGAD is connected to a stage which controls its attack and decay times. This is necessary so that the VOGAD will not alter its gain too quickly as this will lead to distortion.

As can be seen from figure 4, the input is split so that it can also drive a fixed gain amplifier. This amplifier is required to balance up the unprocessed signal against the processed VOGAD output. As a result, both types of signal

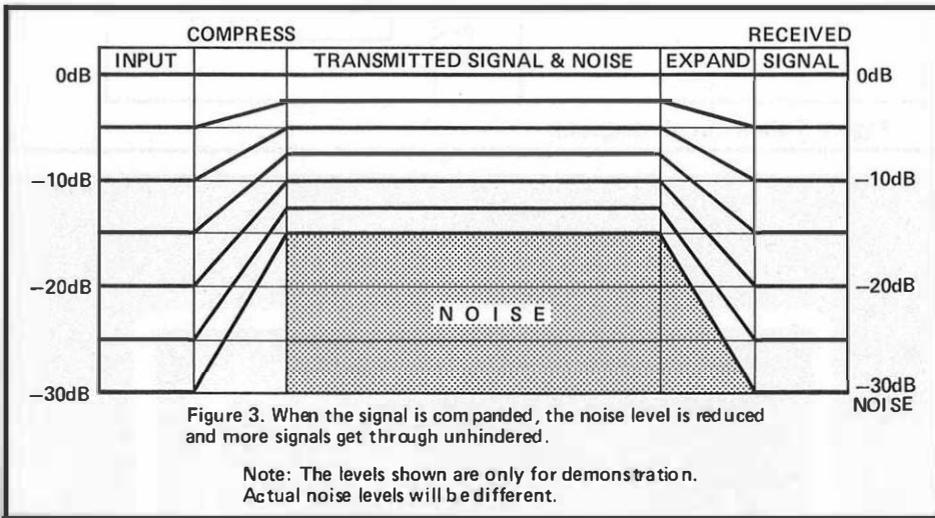


Figure 3. When the signal is companded, the noise level is reduced and more signals get through unhindered.

Note: The levels shown are only for demonstration. Actual noise levels will be different.

Again we start with an initial dynamic range of 30dB which is later compressed to a range of 15dB. After the compression stage, note that all of the input signals above -30dB have been taken above the level of the noise. During the expander stage, these signals are dropped back to their original levels. But also, see that the expander has dropped the noise level way back. Now the advantages of compression/expansion are clear. The noise level has been halved and all of the original signals remain intact.

Now doesn't all this sound wonderful? The thought of having ultra-clear speech and next-to-no-noise emerging from your loudspeaker. It has to be too good to be true! There must be problems! It is, and here they are.

The first problem is that the compressor must be with the transmitter and the expander with the receiver. The compressor is the easy bit, but having an expander would also entail having another audio amplifier and an external loudspeaker. The complete system becomes awkward and expensive.

The second problem is that if an expander encounters a sudden burst of

Just these two problems make the system impractical. Fortunately, some of the original good intentions can be retained if we make use of only the compressor. After all, it was this part that boosted the signals above the level of noise. This is surely the most positive aspect.

The only slight drawback with having just the compressor is that the signals are left out of proportion relative to each other. This does tend to make the speech a little overpowering for normal

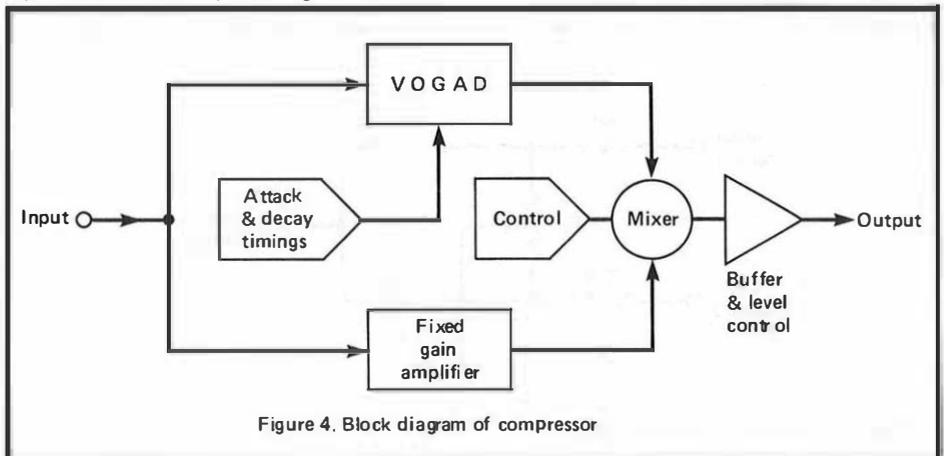


Figure 4. Block diagram of compressor

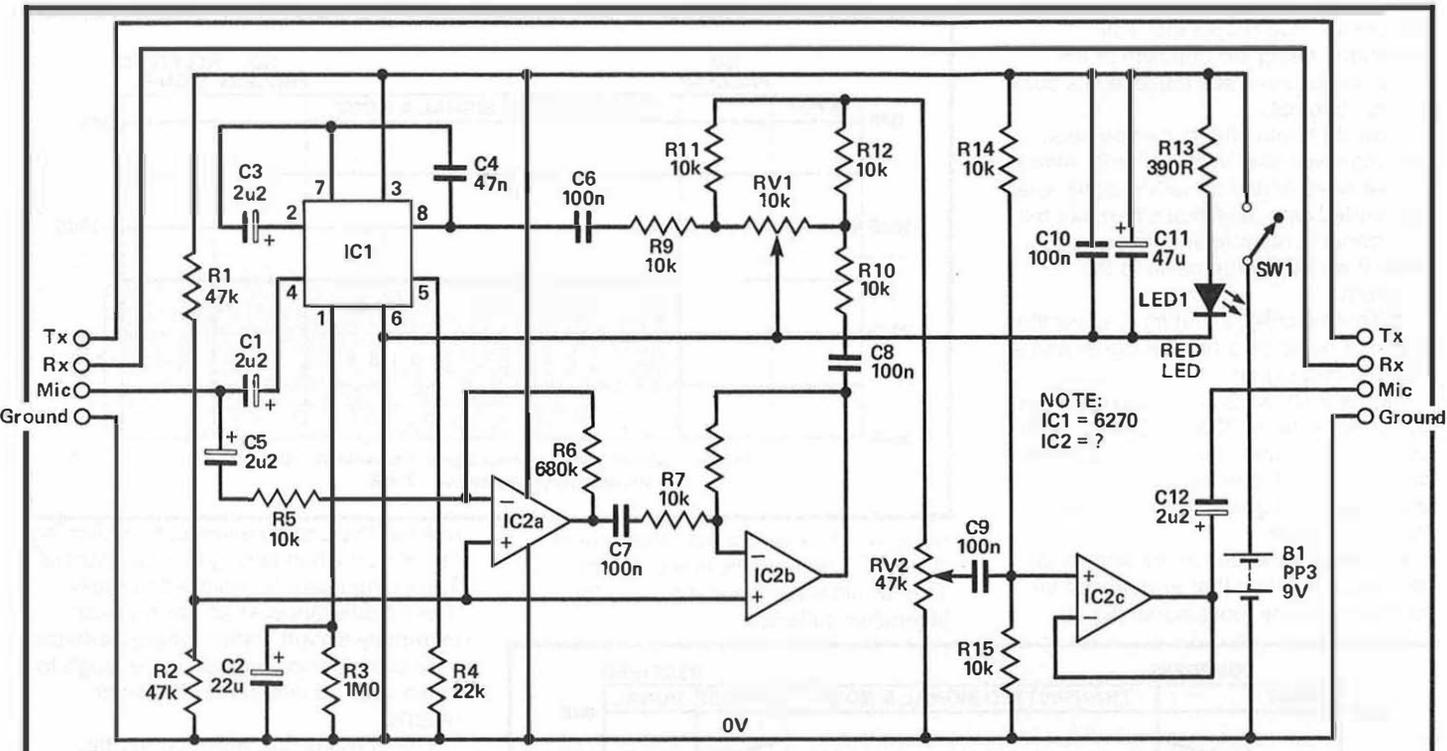
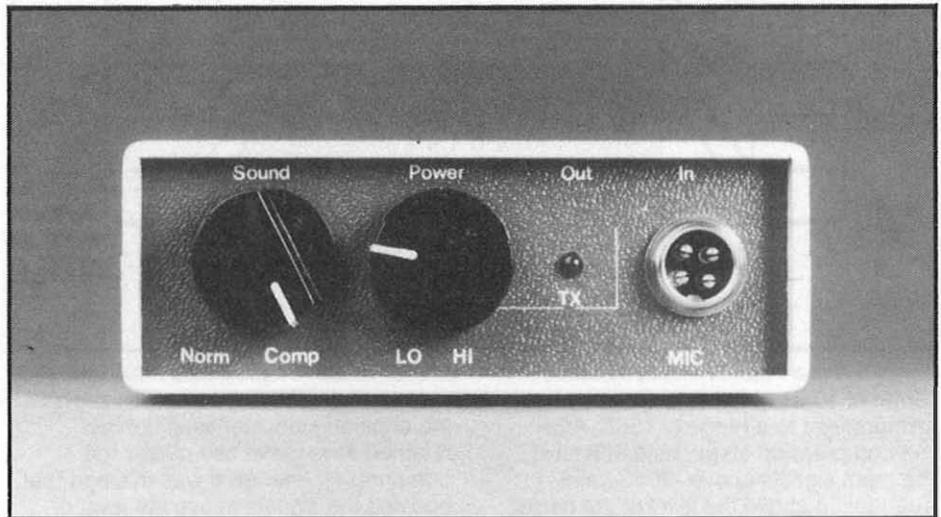


Figure 5 Main circuit diagram.

are of generally equal amplitude when they reach the next stage; the controllable mixer. The control to the mixer allows us to choose between a non-compressed output and a totally compressed output or anything in between. The output from the mixer is passed through a level control before being buffered and sent to the CB.

### The Circuit

Figure 5 shows the completed circuit diagram and it is simply a practical interpretation of the block diagram figure 4. IC1 is the VOGAD and is the SL6270C 8-pin chip. The input is passed to this IC via the DC blocking capacitor C1. This capacitor also acts as a basic passive high-pass filter and, as such, reduces all signals whose frequency is less than about 300Hz. The VOGAD has two inputs and they are terminated at pins 4 and 5. However, only one input is required for this application and so pin 5 is tied to ground via the resistor R4. IC1 takes its power from pins 3 and 6. The



device contains two internal stages; a pre-amplifier and a main amplifier. Capacitor C3 connects the two together. Pin 7 is the main amplifier input and is connected through C4 to the main output. This capacitor acts as a low-pass filter with a cut-off point of

3300Hz. Capacitor C2 and resistor R3 set the attack and decay times (respectively) for IC1.

The fixed gain amplifier is based around IC2a and IC2b. The input is fed to the input of this section through the blocking capacitor C5. The fixed gain amplifier is made up from two inverting amplifiers. R6 and R5 set the gain of IC2a to 36dB (68 times). R8 and R7 are equal and therefore the circuit based upon IC2b has no gain, but simply re-inverts the signal from IC1a. R1 and R2 bias these amplifiers and C7 and C8 are used to remove this DC offset from the signal path.

The two signals from the VOGAD and the fixed gain amplifier are then passed via further DC blocking capacitors to the mixer stage.

Fig. 6 outlines the mixer in greater detail. It is a very basic passive mixer which is roughly similar to the way a

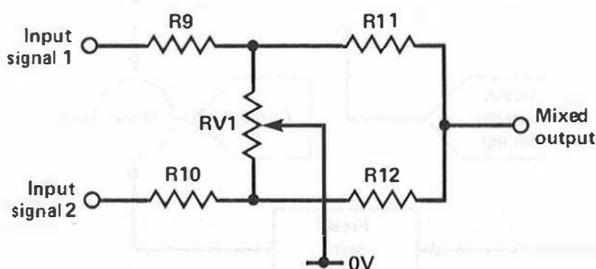


Figure 6 Passive mixer stage.

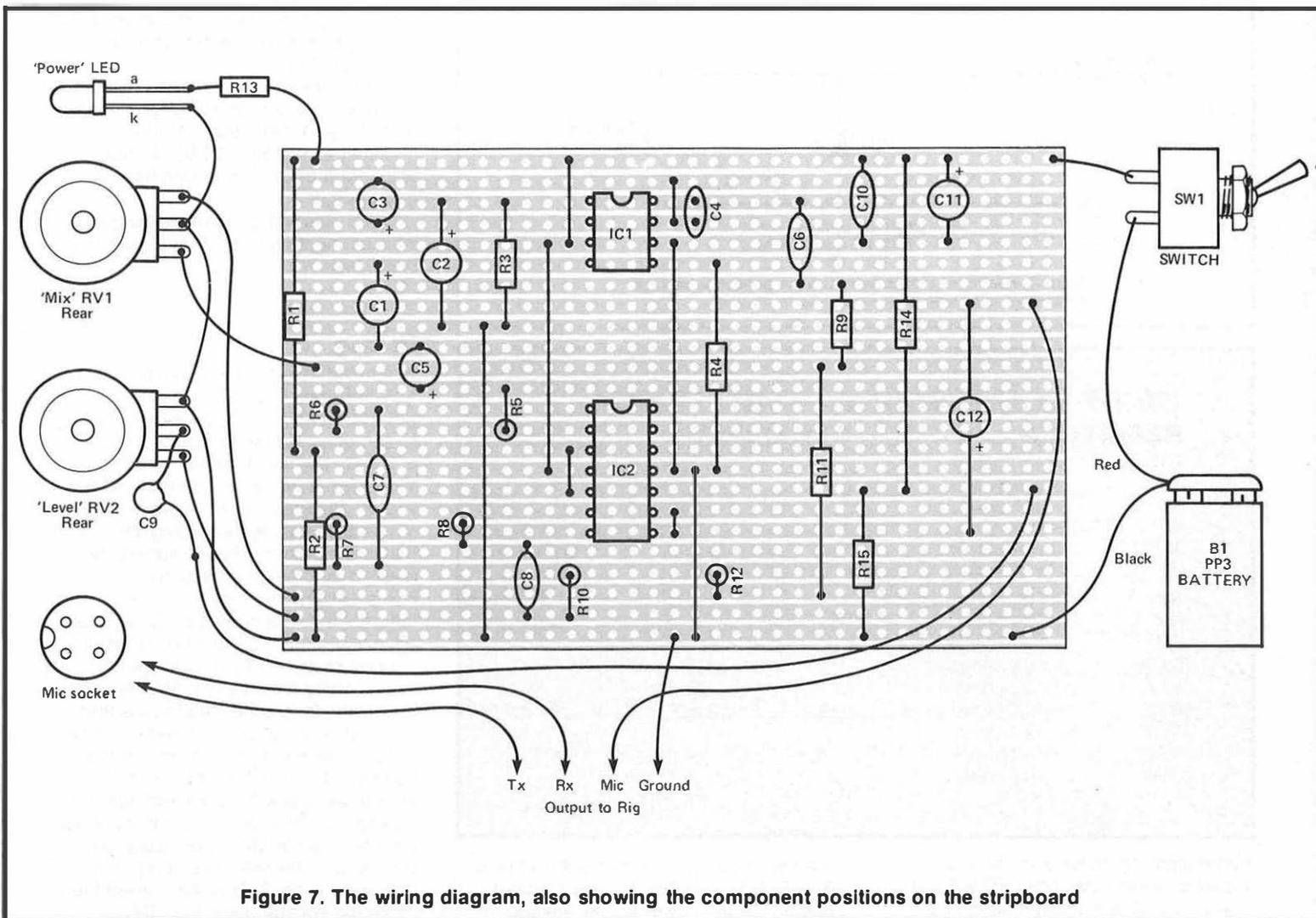


Figure 7. The wiring diagram, also showing the component positions on the stripboard

balance control works on a stereo hi-fi. Its function is to produce an output which contains a controllable amount of each of the two input signals.

When looking at figure 6, assume that there are two different signals being applied to the two inputs. Also assume that VR1 has its slider (marked b) set to the middle of its track. In this instance, the two signals will pass through R9 and R10 respectively and be present at either end of the track of VR1 (a and c). As the slider of VR1 is in the middle of its track, there will be an equal resistance between point (a) and ground and point (b) and ground. Therefore, the composite output will contain an equal amount of each of the input signals.

Let us now assume that the slider is turned fully to one end of the track, say to end (a). In this case, the two signals will again pass through resistors R9 and R10 to get to points (a) and (c) respectively. Now, though, there is a high resistance between end (c) and ground, but a very low resistance between end (a) and ground. Due to this low resistance, input 1 is effectively shorted out at this point. The output in this case would contain 100% of signal 2 and nothing from signal 1. Obviously, the tables would turn if VR1 was turned

fully the other way.

R9 and R10 are necessary because otherwise, one of the inputs would be directly shorted out if VR1 was turned fully to one way. This action would place a strain on either IC1 or IC2 and sooner or later one would be destroyed. R11 and R12 on the other hand simply separate the two halves of the mixer so that VR1 would not cancel both signals when they were brought together at the output.

Back to the full circuit diagram, the output from the passive mixer stage is fed directly to the output level control (VR2). C9 prevents the DC bias voltage arranged by R14/R15 for IC2c from reaching this control as any DC offset on the potentiometer track tends to make the control very noisy when it is moved. IC2c is a standard buffer which takes any strains placed on the output line away from VR2. C12 is the final DC blocking capacitor.

Note that of the four microphone wires, only two are used by the circuit. The other two remain unchanged and pass straight from input to output. The power to the circuit is provided by a 9-volt battery. S1 is the power switch and R13 is included to set the current through the power indication light, D1.

Two capacitors (C10 and C11) are also provided and these smooth and decouple the power supply.

## Construction

The completed circuit can be built on a piece of copper stripboard having 24 copper strips with 37 holes in each. Every strip on the board is used. There are a few components not mounted on the board and these include VR1, VR2 and S1. The full wiring diagram is shown in Fig. 7 and note that R13 is soldered directly to the LED and capacitor C9 is soldered onto VR2.

Begin preparing the stripboard by severing the copper tracks in the 11 places in between the two columns of pins of each of the integrated circuits. Continue by soldering in each IC socket and then inserting the 8 on-board wire links. Follow this by inserting all of the resistors and the capacitors. Some of the capacitors will only work when fitted in a certain way. Make sure you follow the "+" signs on Fig. 7 and match them to the indicators on the capacitor body.

Next, prepare the box you have chosen to house the project by drilling all the holes required by the panel components. VR1 and VR2 will need

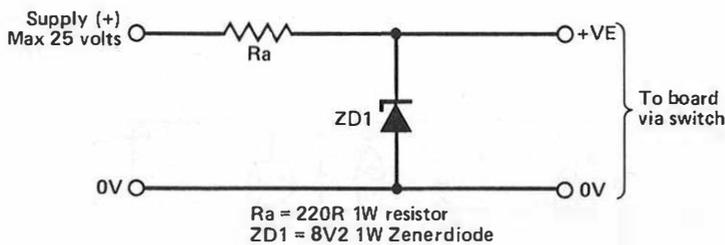


Figure 8. Hard wiring these two extra components allows the compressor to be used with supplies up to 25 volts.

## CB DX COMPRESSOR - PARTS LIST

### RESISTORS

R1	47K ohms
R2	47K ohms
R3	1M ohms
R4	22K ohms
R5	10K ohms
R6	680K ohms
R7	10K ohms
R8	10K ohms
R9	10K ohms
R10	10K ohms
R11	10K ohms
R12	10K ohms
R13	390 ohms
R14	10K ohms
R15	10K ohms

### CAPACITORS

C1	2.2 $\mu$ F
C2	22 $\mu$ F
C3	2.2 $\mu$ F
C4	47nF
C5	2.2 $\mu$ F
C6	100nF
C7	100nF
C8	100nF
C9	100nF
C10	100nF
C11	47 $\mu$ F
C12	2.2 $\mu$ F

10mm diameter holes and the mic socket a 16mm hole. The LED will shine nicely through a 4 or 5mm hole. The power switch is left to you to choose and could be mounted on either the front or the rear panel. To give the unit that professional touch, title the features with rub-down transfers and cover with a spray on protective varnish.

Once all the panel components are tightly in place, begin the wiring up process, following closely figure 7. Try to use only short wires as this will reduce the chances of the microphone wires picking up foreign noises.

Finally, clip in the two IC's making sure they are in the right way around. Add a battery and switch on. The LED should shine brightly. If you happen to have a multimeter, try measuring the current being drawn from the battery.

If this current exceeds 50mA or the LED fails to light then switch off immediately. The chances are a wire has been placed in the wrong hole or two tracks on the underside of the board are connected when they shouldn't be.

By the way, if you don't possess a multimeter yet and are thinking of taking up electronics as a hobby, you should think seriously about getting one. Used with a touch of ingenuity, they can be used to track down almost any fault. For example, if this circuit failed to work, you could check the power supply to pins 3 & 6 of IC1 and to pins 4 & 11 of IC2 with

a meter. You could also check that pins 3, 1, 5, 7, 10 and 8 of IC2 are at about one half of the power supply voltage

with no signal applied to the input. If this is not the case, you're not far from finding the fault.

A good meter needn't cost you an arm and a leg. Maplin have a range starting at less than £7 and their "Hobby Multimeter" priced at £8.95 is good value for money. Tandy also have a good range.

Once everything seems to be going well, connect up to a CB and give it the once-over.

## In Use

When first trying out the unit, turn VR1 fully anticlockwise (no compression). Set VR2 to about halfway and try talking to someone not too far away. If you get a "You're overmodulating" report, turn VR2 down a bit (and vice versa). Once you get the levels right, try adding a bit of compression by increasing VR1. Note that when compression is added, the levels may change a bit as the compressor may amplify your voice to a different level than normal. Some slight adjustment of VR2 might be necessary.

Don't be put off by a local station saying nasty things about your sound. It is only the long distance stations that will appreciate your compressed voice.

As a final word, *do not* replace the battery in this unit for a connection to your power pack. You will damage the compressor. If you do want to connect the unit to a car battery or power pack, then wire in the two extra components as shown in fig. 8. This will correct the incoming voltage down to 9VDC.

## ADDITIONAL EXTRAS

IC1	SL6270C
IC2	LM324
D1	5mm LED
VR1	10K LINEAR POTENTIOMETER
VR2	47K POTENTIOMETER

8 PIN IC SOCKET, 14 PIN IC SOCKET, STRIPBOARD (24 STRIPS BY 37 HOLES), SOLDER, WIRE, PP3 9 VOLT BATTERY, SUITABLE BOX, KNOBS, TRANSFERS, BATTERY CLIP, CABLE CLAMP, STICK ON FEET (4 OFF) ETC.

COMPONENTS ARE AVAILABLE FROM USUAL SUPPLIERS.

FOR THE SEMICONDUCTORS, TRY:-

SMJ ELECTRONICS,  
55 SLATEFORD ROAD, EDINBURGH, EH11 1PB. TEL: 031 337 6950.

FOR EVERYTHING ELSE TRY:-

CIRKIT HOLDINGS,  
PARK LANE, BROXBORNE, HERTS. EN10 7NQ. TEL: 0992 444111.

MAPLIN ELECTRONIC SUPPLIES,  
PO BOX 3, RAYLEIGH, ESSEX SS6 8LR. TEL: 0702 552911.

# COMMUNICATION THE

# QSL WAY



## More names and addresses from QSLers all over the world, courtesy of David Shepherdson

**W**ell, last weekend the crowds descended on Wolverhampton again for the third annual Eyeball organised by the Lovely Lady herself, Ann

(Lucky Lady) which, as always, was well attended by many of the European QSLers and clubs. When she recovers, I'm sure she will be starting to plan next year's any day now. Keep up the good work Ann!

Because I've details on so many eyeballs this month, rather than have a separate "Events Slot," I've included the main details here, with the necessary addresses included in the Club Address slot. This weekend, (20th August) there's the Tripe City Breakers 2nd Big Eyeball being held at the Barton Village Hall on the A6, about two miles from Garstang in Lancashire between 10am and 5pm with a disco running from 7.30pm until 10.30pm. Admission is by ticket only.

Also on the 20th is the MDX 32 Group Eyeball. This Group uses PO Box 32, Trowbridge, Wiltshire, but unfortunately that's all the info I received. The following weekend (August 29th) there's an Eyeball at Holyhead, Anglesey but again, that's all the gen I've got hold of.

Moving in September as after all, this is the September issue. I've details on quite a few Eyeballs around the country. On the 8th there's the MV Royal Iris Evening Cruise organised by the Tango Papa/Sefton Breakers which sets sail at 8pm. Admission is by ticket *only* (£1.50) and they are very limited. From what I was told at the Southport Tango Papa Eyeball, it's a case of "Book now, for next year's!"

Then there's the Sierra Tango DX Club's sixth Annual Eyeball and Holiday Weekend held at the Robin Hood Camp, Coast Road, Rhyl, in North Wales from



the 9th through to the 11th. The message is "Come on down and spend the weekend in glorious North Wales and have a great Eyeball!" Chalets cost about £12 per night and the organisers can be contacted at either PO Box 8, Rhyl or (0745) 54207 or 50161. On the same Saturday (10th) about five miles away (according to my map) is the "North Wales Eyeball and Evening of Entertainment." This one is being held by the Sierra Bravo Breakers at the Bodelwyddan Community Centre and Playfield, just off the A5. There's a Grand Raffle, tombola, club and trade stands and refreshments throughout the day planned. Admission is free, all proceeds

of raffles etc in aid of the BBC's Children In Need Appeal. Contact address is Harry (Breweryman), 11 Hoel Clwyd, St Asaph, Clwyd, North Wales, LL17 0PB. The last one in September is held over the weekend of the 17th and 18th at Warwick Race Course by the Warwick Kingmakers and runs from 12 noon until 6pm. Admission is 20p or 50p per family. There's trade and club stands expected and a country and western evening on the Saturday at the Warwick Liberal Club. All proceeds in aid of Warwick Hospital's Children's Ward. Contact Ad for bookings, map etc is Joe (Beautlighter) or Mike (Two Tone), PO Box 105, Warwick, CV34 5GX.

## QSLer Addresses:

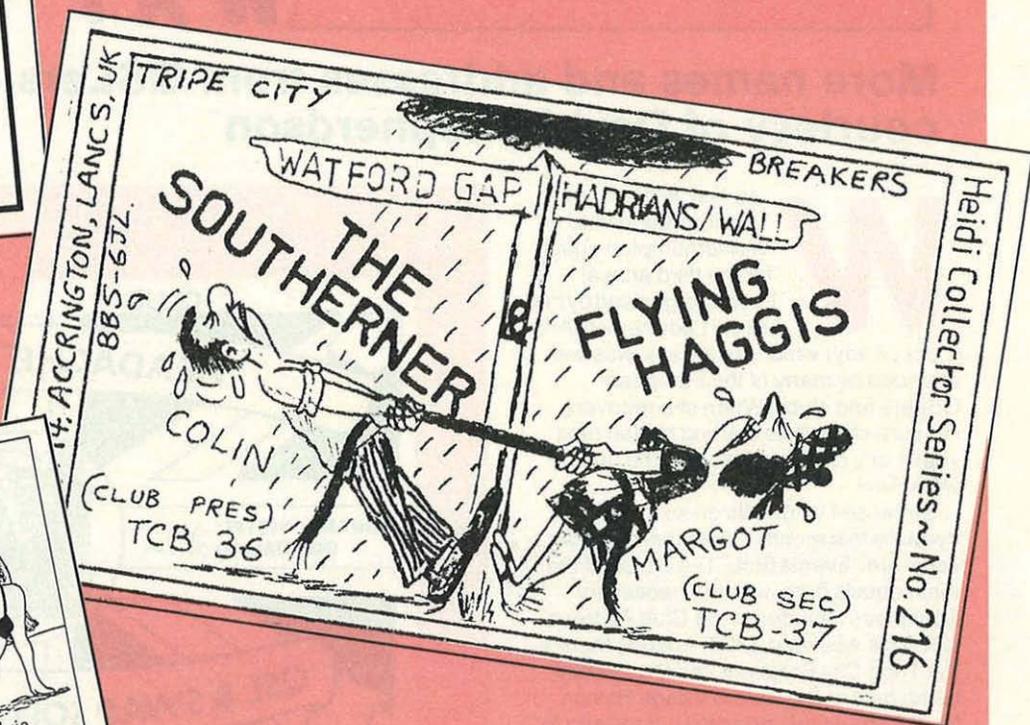
Sylvia (*Bermuda Blonde*) 99 Bermuda Village, Nuneaton, Warwickshire CV10 7PW  
 Gerry (*Gerry Can*) 1 Roland Rd, Wallsend, Tyne & Wear, NE28 6QB  
 Mark (*Saint*) 55 Church Lane, Ferryhill, Co Durham DL17 8LP  
 Ivy (*Vision*) MG11, PO Box 19, Abingdon, Oxon OX14 5TF  
 Mick (*Leprechaun*) 85 Radstone Walk, Rowllatts Hill, Leicester LE5 4UJ  
 Stan (*Lightfoot*) 68 Southfields Drive, Leicester LE2 6QR  
 Percy Thrower ORC47, PO Box 33, Ripley, Derbyshire  
 Greentingers, PO Box 12, Melton Mowbray, Leics. LE13 0YU  
 Snowflake, Patient  
 Lady, Kingfisher,  
 Norman (*Mystery Man*)

**MYSTERY MAN**  
NORMAN



FOX & HOUNDS  
PO BOX 12, MELTON MOWBRAY  
LEICESTERSHIRE, LE13 0YU  
ENGLAND, U.K.

Artwork by Lightfoot... Currie Collector No. 861



14: ACCRINGTON, LANCS, UK  
BBS-6JZ

Heidi Collector Series ~ No. 216

ARTIST 15



99 Bermuda Village, Nuneaton, Warwickshire, CV10 7PW.

Moving into October I've details on five, and they are all in the first few days, then nothing until November! The first, is on the 1st and is the Sunrisers DX Group's Third Annual Eyeball and Evening Buffet which is being held at the Home Farm Caravan Site, Edithmead, Burnham-on-Sea, Somerset from 10am until midnight. Day and evening tickets cost £3 (children £1.50) which should be obtained by the beginning of September. For the Eyeball only, the cost is 50p at the gate, and this runs from 10am until 5.30pm. Club and trade stalls should be booked in advance. For fuller details, tickets, booking form etc, please send a SASE to Keith (1SR14), PO Box 7, Bridgwater,

Somerset.

On Friday 7th, the Breakaways CB is holding their third All Midland Eyeball at the Old Hall, Church Gresley, Burton on Trent, Staffs with ent's, refreshments, bar, parking etc. Tickets cost £1, with children and OAPs 75p. No information on the actual time was sent to me; sorry. Contact address is PO Box 15, Swadlingcote, Burton on Trent, Staffs., DE11 0AA.

On Saturday the 8th, Lichfield and District CB Club is holding a country and western night at the Burntwood Institute, Rugeley Road, Burntwood from 7.30 until 11.45pm. Admission is by ticket *only* (adults £1.25, children £1). Music by

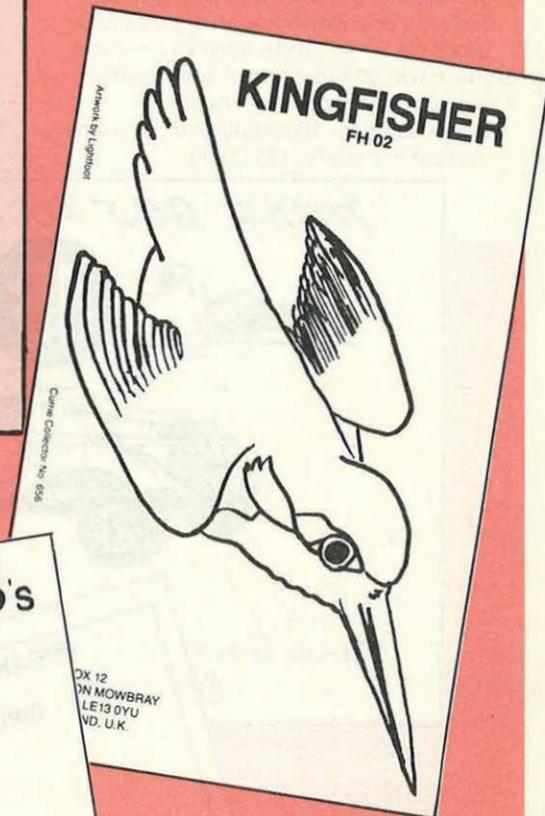
Montana, a Grand Shoot Out with trophy for first and second quickest draws! Contact Les (*Paramedic*), 190 Chelmsley Road, Chelmsley Wood, Birmingham, B37 7SR.

The last one in the South of the country is that of the Dover International Meeting held at the Dover Stage Hotel, Marine Parade, Dover. The times are 10am-4pm and 8pm-midnight Saturday and 10am-2pm Saturday. Admission for the Meet only is 50 per day and limited hotel accommodation is available from £19 per night. Final booking date is September 16th. Contact Terry (*Terry Rider*), PO Box 112, St Leonards on Sea, East Sussex, TN34 6NX, and a SASE for reply is

## QSL Club Addresses:

Currie Card Bank	68 Southfields Drive, Leicester LE2 6QR
Currie Card Collectors	68 Southfields Drive, Leicester LE2 6QR
Kendal & District Breakers	PO Box 37, Kendal, Cumbria, LA9 6RJ
Organised Radio Society	PO Box 33, Ripley, Derbyshire
Roman City/Blue Star	PO Box 1, Cramlington, Northumberland NE23 9LD
Tango Papa	PO Box 13, Southport, Lancs.
Tripe City	217 Queens Rd. W. Church, Accrington, Lancs.

When writing to any QSL Club or Firm, always include return postage to assist with their reply; it does help.



essential.

The final Eyeball in October is the Big One! This is the annual three-day event held by the Solway Pirates CB Club at the Southernness Holiday Village. Six-berth caravans may still be available at about £28 for two nights or £36 for the full weekend. Three nights of music from groups for all ages and occasion, with a Scottish flavour! Contact address is Solway Pirates Eyeball, PO Box 15, Kirkcudbright, Scotland, DG6 4DH.

Just before I leave the subject of Eyeballs/Events, earlier this year one was held for the first time at Nuneaton as part of the Nuneaton Carnival. I've just received a letter from Sylvia who was the

organising force behind the Eyeball and she has asked me to pass on her good wishes and many thanks to everyone who came. There were visitors from all over the country, from Wales, Birmingham, Derby and, of course, Coventry. The weather was a little "iffy" to start with but it did pick up a little later. I'm guessing here, but I think we can look forward to a repeat next year!

Now, as I write this, I've actually just returned from one Eyeball in the North. Unfortunately, I can't tell you all, but I have been asked to pass on some of the more printable. A little while ago I mentioned that the Roman City Club had been taken over by Dennis (Applejack) of

the Currie Card Collectors Club. I'm sorry to say that, due to ill health, Dennis has had to "retire" from QSLing and the Roman City Club has been taken under the wing of the Blue Star QSL DX Club of Cramlington run by Ken (Beerman). The two Currie Card clubs that Dennis had have now been taken over by Stan (Lightfoot) of Leicester with the renowned Gerry Can taking on the post of Vice President. I'm sure that you'll join me in sending best regards to Dennis.

A few of the names and cards that have been piling up starting with that of Mark (Saint) who helps out with the Foxtrot Victor DX Group in Co Durham. Then there's a whole bundle of cards in

from Ivy (*Vision*) of Abingdon who is the Secretary of the Mike Golf DXing Group; that's the one which has an old style MG sports car on its cards. Mind you, Ivy and one or two other people of late, do seem to be confusing me with somebody whose handle is Blackdog as from time to time I get cards made out to David,

"Blackdog," QSL Column! This isn't me! I'm Dragonrider One. The only Blackdog I can think of, though I'm sure I'll soon be told just how wrong I am, is Des Currie, the printer of the Currie cards.

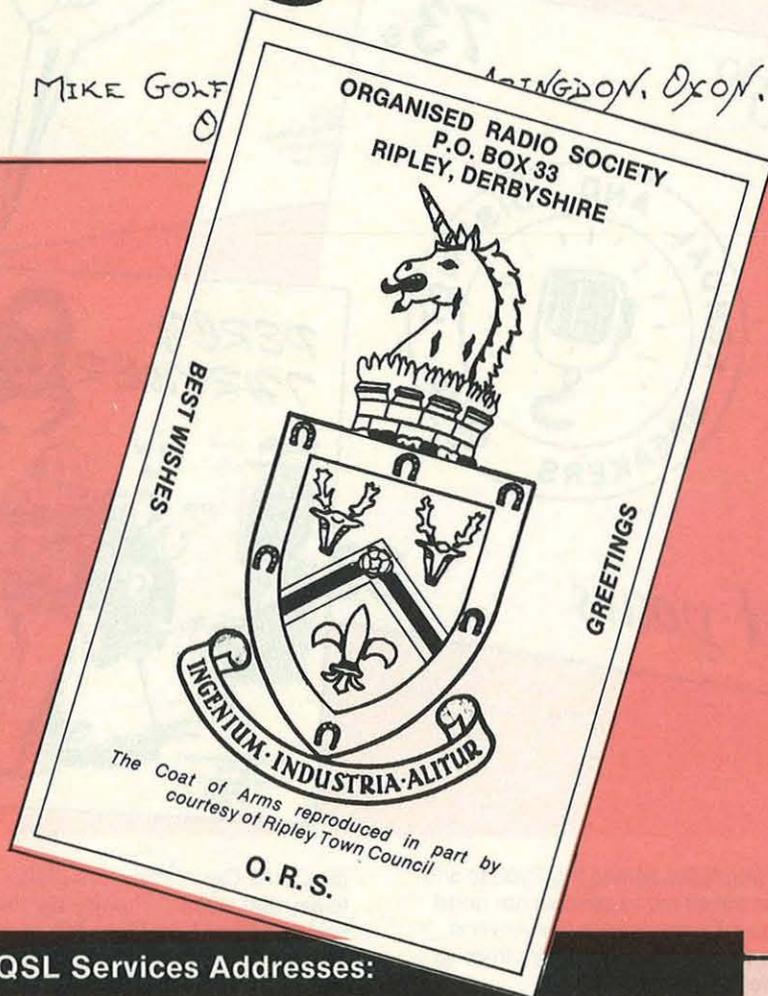
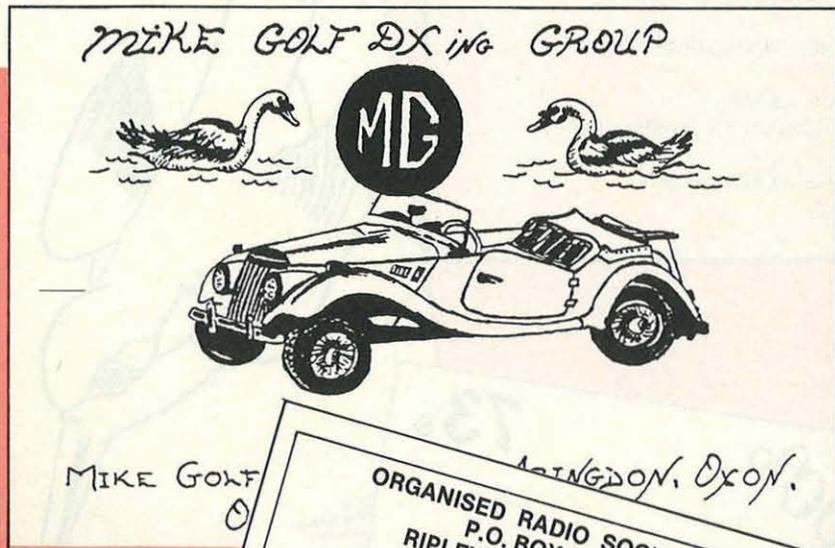
*The Leprechaun*, who's known as Mick in many circles, hails from Leicester, as do the following QSLers. They are *Tricky*

*Dicky* and *Little Princess*, Norman (*Mystery Man*), Irene (*Patient Lady*), *Kingfisher*, *Snowflake*, *Greenfingers*, *Deerslayer*, *Lovely Lady*, *Teardrop* and *Breezy*. All of these QSLers hold Currie Cards for those of you collecting the series and can, in fact, be contacted via Stan (*Lightfoot*) which means that you could send each of them your cards and put them all in one big envelope thus saving a little postage costs. Please do remember that a single first class or second class stamp only covers the first 60 grammes of weight, and if you are sending ten or more cards in an envelope, it might just be best to check the weight of your QSL package before you post it. You'll find an accurate scale at your local Post Office. It's there for your use so please make full use of it. Doing this should help to cut down on the amount of overweight packages sent which arrive "postage due."

Final name for this month is from a quick note from someone with the handle of *Percy Thrower* who asks for a mention for himself and his favourite club, the Organised Radio Society of Ripley. I did promise last month to try to include some details on various clubs which I spotted at some of the Eyeballs that have been held up and down the country. This month the Club in the spotlight, at least as far as its postal membership package is concerned, is one of them. It is the Kendal and District Breakers Club. A bit of a change from the more usual QSL Club which usually fits in this Browse Slot but why not!

Membership to this Club costs £5 and can be made by (UK) cheque or postal order made out to the Kendal & District Breakers Club and for this amount you get the following items. Naturally your Unit number and an ID card (which was actually missing from the review pack) with your XYL free. Ten hot-foil Club QSL cards are included, as is a club pen, leather key ring and fully mounted club stamp. Some postcards of Kendal and the Lake District, plenty of varied and colourful tourist information and a certificate (which, again, was missing from the review pack). Also included is one year's free use of the Club PO Box, after which it will cost you a further and very reasonable £1 per year. Extra club cards are available at £6.50 per 100. I cannot comment on the missing certificate or ID card, but going from the friendliness of the club and the quality of the cards and stamp, I doubt if you will be disappointed should you join this local club.

That's it, out of room once more. If you want a mention then please drop me a line direct to 3 Tarn Villas, Cowpasture Road, Ilkley, West Yorkshire, LS29 8RH. Any news of Forthcoming Events are always welcome, the sooner the better please and if you want a reply, then please don't forget a SASE or similar.



### QSL Services Addresses:

Charlie Cards	26 Edward St, Hartshorne, Burton-on-Trent, Staffs, DE1 1 7HG
Currie Cards	89 Derwent St, Blackhill, Consett, Co Durham, DH8 8LT
Ensign Cards	58b Market St. Ashby-de-la-Zouch, Leics.
Vine Lodge Products	11 Mill Lane, Butterwick, Boston, Lincs. PE22 0JE
Products	
Scottish CB	C/O 'Arnail,' Patison, Neilston, Glasgow,
Newsheet	G78 3AT. One year's subscription £2.10

# NEVADA

**THE UK'S SCANNER SPECIALISTS**  
**JUST ARRIVED THE NEW**  
**BLACK JAGUAR MkIII**



Switchable between AM/FM.  
 Base & mobile charging  
 Frequency range:-  
 26-30MHz, 60-88MHz,  
 115-178MHz, 210-260MHz,  
 410-520MHz.

**£235**

## 100 XL Bearcat

Hand held scanner with 16 channels.  
 Memory scan covering:-  
 66-88 Mhz, 118-174 Mhz,  
 405-512 Mhz.  
 Complete with carrying case,  
 earphone and charger unit

**£189<sup>99</sup>**



## Bearcat 175 XL BASE

Base station scanning Rx with 16 channel memory scan covering: 66-88Mhz, 118-174 Mhz, 405-512 Mhz.

**NEW LOW PRICE**

**£179<sup>99</sup>**

## 50 XL Bearcat

A super NEW low cost handheld scanner with 10 memories and covers:-  
 66-88MHz, 136-174MHz,  
 406-512MHz

**£99<sup>99</sup>**



## Bearcat 800 XLT

40 Channel Base Scanner  
 Covers: 29-54MHz, 118-174MHz,  
 406-512MHz, 806-912MHz.  
 Complete with AC adaptor

**£257**

## NEW 580 XLT Bearcat



100 Memory channels covers:  
 29-54 MHz, 118-174, 410-512 MHz.

**£225** Requires 12V DC supply

## 70 XLT Bearcat

Pocket size scanner with 20 memory scan covering 66-88 Mhz, 118-174 MHz, 406-512 MHz  
 Complete with carrying case, earphone and charger unit.

**£179<sup>99</sup>**



**NEW BUMPER CATALOGUE**  
**£2** Includes £2 Voucher

**USE YOUR CREDIT CARD FOR IMMEDIATE DESPATCH**  
**HOTLINE (0705) 662145**

**NEVADA COMMUNICATIONS**  
 189 London Road, North End,  
 Portsmouth PO2 9AE. Telex: 869107

## NEW RIGS

ROTEL 240 .....	£79.00	MOONRAKER (MAJOR) ....	£89.00
OSCAR 271 .....	£69.00	MOONRAKER (MINOR) ....	£60.00
SHOGUN .....	£79.00	JESAN KR200 .....	£85.00
COLT 295 .....	£69.00	JESAN KR 303 (MICRO) ....	£55.00
UNIDEN 100 .....	£70.00	MAXCOM 21E TALKBACK .....	£69.00
UNIDEN 200 .....	£99.00	MIDLAND MICRO .....	£65.00
DNT TRANSIT (MICRO) .....	£73.00	DNT - M40 FM .....	£65.00

## (BASE STATIONS)

UNIDEN 300 .....	£145.00	FIDELITY 3000 .....	£65.00
GENERAL ELECTRIC AM40 .....	£49.00	HYGAIN 7 AM20 .....	£45.00

## (HAND SETS)

HIGH-TEC (CEPT) 40/4 WATTS .....	£89.00	HARVARD WT 44 .....	£60.00
MOONRAKER MASTER ....	£75.00	MIDLAND PORTABLE 40/4 WATTS .....	£97.00
JESAN 950 40/4 WATTS .....	£69.00	BINATONE 12/4 .....	£35.00
D.N.T. 12/3 (3-channel) ....	£47.00	SONIC (2 channel) pair .....	£39.00

## (NEW C.E.P.T. RIGS)

ALPHA 4000 .....	£205.00	SATCOM SCAN 40 .....	£169.00
ALPHA 4002 .....	£175.00	ZODIAC M144 .....	£149.00
UNIDEN 400 .....	£99.00	DNT CONTACT 40 (MICRO) .....	£89.00
BREAKER 40 (MICRO) .....	£69.00	ZODIAC 244 .....	£224.00

**WE HAVE VARIOUS USED RIGS IN STOCK.**

## AERIALS

GENUINE HYGAIN SILVER RODS £35.00 - SIRIO 2012 £75.00 - SIRIO TORNADO £45.00 - ANTRON (Shakespear Type) £67.00 - HI-GAIN SILVER ROD 1/2 £17.50 - HI-GAIN SILVER ROD 3/8 £18.50 - GPA 1/2 WAVE £11.00 - 3/8 WAVE £12.00 - THUNDERPOLE II £19.00 - THUNDERPOLE III £21.00 - TAGRA 5 ELEMENT BEAM £79.00

**WE CARRY MASSIVE STOCKS OF ALL C.B. EQUIPMENT + TELEPHONES + CAR STEREO + RADIO CONTROL!**

**CB RADIO & MODEL HOBBIES**

Pernden Mill 0279 - 418817  
 Pernden Mill Lane  
 Elizabeth Way, Harlow, Essex

## EXTEND YOUR RANGE ON THOSE LONGER NIGHTS

### SSB ADDER FOR FM RADIOS . . .

Single side band is the ultimate mode for CB radio when long distance DX is the object. The quiet no-signal standby means you will hear the weakest signal and squelch is unnecessary.

Even without 'Skip' conditions, 4 watts SSB will typically give 3 to 4 times the range achievable with 4 watts FM. With 'Skip' conditions now improving the World is a real possibility without resorting to antisocial high powers.

### Features Include:

Coverage of LOLO, LO, MID, HI and Legal Bands. This is 26.065 to 27.991MHz

Operation on FM, USB and LSB Modes.

Bands and Modes indicated by three colour LED's.

Band and Mode change by repeated operation of simple push or slide switches

Alpha Channels and K/C shift

Full disable facility to original FM Band

Available fitted to the best 27/81 and CEPT radios

Price on application

### FREQUENCY CONTROLLER 2000DX

Imagine a 5 digit frequency display unit which operates on receive and transmit

Imagine it can operate on AM, FM, CW and SSB.

Now imagine it will operate on any Multimode radio using a 145106, 8719 or 02A PLL whether bands are crystal, Logic or combination derived.

Imagine the unit will operate also with our SSB Adder

Finally, imagine that you can switch from channel switch control to '2000' control giving you continuous scanning control over 26 to 28MHz in 5 or 10KHz steps.

Well . . . Stop Imagining . . . You can have all of this with the FC 2000DX

Price on Application

### JD CUSTOM CATALOGUE

We apologise to our customers for the delay in appearance of our catalogue.

This is now available and gives full details of our range of Conversions, Self Fit Modules, Repair Services and CB Equipment.

Price £1.25

## THE PROFESSIONAL TECHNICAL SERVICE FOR CB

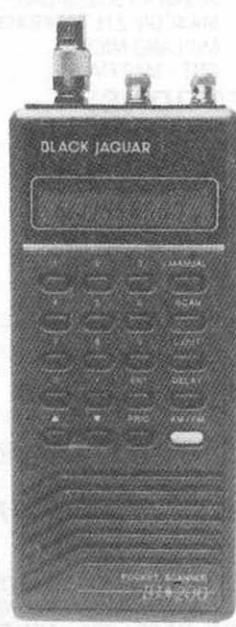
### J. D. Custom Electronics

18 DEANS WAY, EDGWARE, HA8 9NL.

Tel: 01-906 1225

Hours of business: Mon.-Fri. 9.00-5.30. Saturday 9.00-1.00.

# SHARMAN'S



**CHALLENGER  
BJ 200**

5 Band  
programmable  
hand held scanner  
26.0/29.995 MHz  
50/88 MHz  
115/178 MHz  
200/280 MHz  
360/520 MHz



**MAXCOM 30E**

Most popular UK 81 CB  
now back in the UK.



**ES 880 ECHO CHAMBER**



**SW VR-1 QUALITY VOLTAGE  
REDUCER. 24-12 VOLT  
10 AMP RATED**



**SW PSU 3-5 AMP  
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**METER MATCHER SWR 176**



**SHARMAN METER SWR-T2**



**POWER METER SWR-12**

If you would like further details of the full range of CB equipment, telephones, In Car entertainment, portable TV and radio and all the benefits of dealing with one of the country's major wholesalers, then please phone 061-834-9571 for immediate attention.

**3 BURY NEW ROAD, MANCHESTER M8 8FW**  
**TEL: 061-834 9571 TELEX 665446 Sharma G FAX 061 835 3679**

**SHARMAN'S** **FAX 061 835 3679**

# CB

## CITIZENS' BAND

### READERSHIP SURVEY

**25 FREE subscriptions must be won!**

If you would like to receive a copy of your favourite magazine FREE for 6 months, simply complete this questionnaire and return by 23rd September 1988 and you could be one of the lucky 25 people to win a 6 month subscription to CITIZENS BAND.

Some of the questions are of a more personal nature and do not directly relate to the magazine.

Answers to these questions help us present an overall profile of our readers and their lifestyles to advertisers

who require such data for selecting suitable magazines for their products.

No names and addresses will be supplied to third parties and all details will be treated in the strictest confidence by the publisher.

We would like to thank you in advance for your time and remind you that only fully completed questionnaires received by 23rd September 1988 will be eligible for the FREE draw.

**1. How long do you keep your copies of CB for:**

- Less than one month
- One month
- Three months
- Six months
- A year or more

**2. If kept, how often do you refer back to issues of CB?**

- Once a week or more
- About once a month
- Once every three months
- Less often
- Never

**3. How long do you spend reading your copy of CB?**

- Over 2 hours
- 1½-2 hours
- 1-1½ hours
- ½-1 hour
- Less than ½ hour

**4. How long have you been a CB reader?**

- Less than 3 months
- 3-6 months
- 7-12 months
- 1-2 years
- 2-5 years
- Over 5 years

**5. How often do you buy CB?**

- Occasional issues
- Most issues
- Every issue

**6. How much of CB do you read?**

- Read only some articles
- Read most articles
- Read all articles

**7. With regard to the advertisements in CB, do you?**

- Read or look through most or nearly all the ads
- Read or look through some of the ads
- Just read or look through the occasional ad
- Very rarely/never look at the ads

**8. Does anyone else read your copy of CB?**

- No, only myself
- One or two other people
- Three of four other people
- More than four other people

**9. If your copy of CB is read by other people, please give details of their age and sex:**

	Person 1	Person 2	Person 3	Person 4
Age: 9-14 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15-24 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25-34 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35-44 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45-54 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55-64 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Over 64 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sex: Male	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Female	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**10. Thinking specifically about the advertising content, would you please rate the two main types of advertisement:**

	Display	Classified
Very useful	<input type="checkbox"/>	<input type="checkbox"/>
Useful	<input type="checkbox"/>	<input type="checkbox"/>
Quite useful	<input type="checkbox"/>	<input type="checkbox"/>
Not very useful	<input type="checkbox"/>	<input type="checkbox"/>
Not at all useful	<input type="checkbox"/>	<input type="checkbox"/>

**11. With respect to the articles in CB, how do you rate the following:**

	Poor	Average	Good	Excellent
QSL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lady Breaker	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Truckstop	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Captain Sparx	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**12. Would you like to see more or less coverage given to the following:**

	More	Less	Same
Historical radio articles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telephones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DIY projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
"Chatty" columnists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. Which of the following would you most like to see featured with the magazine? (please tick one box only).

- Cover mounted gifts
- Additional supplements
- Competitions
- Money saving offers

14. Please give any further comments or criticisms that you feel will help us improve CB.

.....

.....

.....

15. How much do you estimate your CB set or equipment to be worth?

- Under £50
- £50-£100
- £101-£200
- £201-£300
- £301-£500
- Over £500

16. During the next 12 months do you intend to buy?

- A new rig
- An antenna
- Accessories

17. Are you a member of a CB club or association? If so please state which one(s).

- Yes  No

.....

.....

.....

18. Are you aware of the scheduled publication date?

- Yes  No

19. If the answer to the previous question is YES, do you attempt to purchase the magazine on that day?

- Yes  No

20. How do you normally obtain your copy?

- Chance purchase
- Newsagent shop collection
- Newsagent home delivery
- Subscription
- Passed on copy

21. If you are a subscriber, on which date did you receive this issue?

/   /

22. If you are a subscriber, how long have you subscribed to this magazine?

- 1-6 months
- 7-12 months
- 1-2 years
- 3-5 years
- Over 6 years

23. If you do not obtain your copy by subscription, is it due to one of the following:

- Subscription too expensive
- Not every issue required
- Not aware subscription service available

24. Are you aware that to subscribe to this magazine in the UK is the same cost as purchasing it in a shop?

- Yes  No

25. Would you like to receive further details on taking a subscription?

- Yes  No

26. If you do not subscribe, from which type of newsagent do you most often obtain your copy?

- High Street Shop
- Estate shop
- Corner shop
- Travel point
- Other (please specify)

.....

27. If you have subscribed to this magazine but now lapsed, is it due to:

- Subscription too expensive
- Every issue no longer required
- Lateness in receiving subscription copy
- Poor service from our subscription bureau

28. What is your marital status?

- Married
- Single
- Divorced

29. Age

- Under 15 yrs
- 15-18 yrs
- 19-21 yrs
- 22-24 yrs
- 25-34 yrs
- 35-44 yrs
- 45-54 yrs
- 55-64 yrs
- Over 64 yrs

30. Sex:

- Male  Female

31. Are you:

- In full time employment
- In part time employment
- Not employed at present
- Retired
- Student — full-time
- Student — part-time

32. If in full-time employment, please state your occupation:

.....

33. If a student what subjects studied?

.....

.....

.....

34. Please tick the box which represents the annual total of your gross income:

- Under £6,500
- £6,501-£8,000
- £8,001-£10,000
- £10,001-£12,500
- £12,501-£15,000
- £15,001-£19,000
- £19,001-£25,000
- Over £25,000

35. Do you have any of the following cards either yourself or jointly with another person?

- Cash dispenser card
- Retailer card/store card

36. Do you own your own home, rent or live with your parents?

- Own
- Rent
- Live with parents
- Other (please specify)

.....

37. If you own your own home, what is the approximate value (your principal residence if you have more than one)?

- Under £50,000
- £50,000-£74,999
- £75,000-£99,999
- £100,000-£149,999
- £150,000-£200,000
- Over £200,000

**38. How many rooms does your home (or principal residence) have?**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Bedrooms	<input type="checkbox"/>					
Reception rooms	<input type="checkbox"/>					

**39. If you have children, please indicate their age and sex (give details of the four youngest if you have more than four)**

	<b>First</b>	<b>Second</b>	<b>Third</b>	<b>Fourth</b>
Age: 1-3 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-8 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9-12 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13-16 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Over 16 yrs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sex: Male	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Female	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**40. How many of the following items do you buy, on average, over a month?**

	<b>Less than 1 per month</b>	<b>1 or 2</b>	<b>3 or 4</b>	<b>5 or 6</b>	<b>More</b>	<b>Never buy</b>
A book	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A record	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A tape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**41. Please indicate below when you last did any of the following:**

	<b>In last week</b>	<b>In last month</b>	<b>Longer ago</b>
Ate out at a Restaurant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entertained at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Went to the theatre/opera/ballet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Went to a music concert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Went to the cinema	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attended a sporting event	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Visited an art gallery/museum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Went to a pub	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Had a short break in a hotel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overseas holiday (in last 12 months)	Yes <input type="checkbox"/>		No <input type="checkbox"/>

**42. Which of the following do you drink?**

	<b>More than once a week</b>	<b>Once a week</b>	<b>Less often</b>
Beer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sherry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Port	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brandy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vodka	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Whisky	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liqueurs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Don't drink	<input type="checkbox"/>		

**43. Where do you buy most of your drink from?**

- An off-licence
- A supermarket
- A Public House
- Other (please specify)
- .....

**44. Which of the following do you have?**

- Bank current account
- Bank deposit or savings account
- Life assurance policy
- Any stocks or shares
- Access card
- Barclaycard (Visa)
- American Express
- Diners Club
- Unit Trusts
- Private medical insurance
- Personal Accountant
- Building Society account
- A mortgage
- Any HP agreements
- Telephone

**45. How many cars are there in your household?**

- None
- One
- Two
- Three or more

**46. What cars do you own?**

.....  
 .....  
 .....

**47. Is one or more of your cars a company vehicle?**

- Yes  No

**48. Do you usually buy your cars new?**

- Yes  No

**49. How often do you tend to change your car(s)?**

- Once a year or more often
- About every two years
- About every three years
- Less often

**50. Name the three television programmes you watch most regularly**

.....  
 .....  
 .....

51. Do you listen to commercial radio stations?

Yes  No

52. Are you a member of a book club?

Yes  No

53. Are you a member of a record club?

Yes  No

54. Which, if any, of these sports and activities do you play or take part in nowadays?

- Cricket
- Fishing
- Golf
- Rugby
- Soccer
- Sailing
- Skiing
- Shooting
- Swimming
- Squash
- Tennis
- Weight training
- Windsurfing

55. Which of the stores listed below have you been shopping in during the last six months?

- Boots
- W. H. Smith
- John Menzies
- Dixons
- Currys
- Laskys
- Rumbelows
- Burtons
- Austin Reed
- Hornes
- Next
- Fosters

56. Do you own a:

- Stereo/hi-fi system
- Tape player/recorder
- Video recorder
- TV
- None of the above

57. Which of the following newspapers do you read?

- The Times
- The Daily Telegraph
- The Financial Times
- The Guardian
- The Independent
- The Daily Express
- The Daily Mail
- The Mirror
- The Sun
- Today
- None of the above

58. Which of the following Sunday newspapers do you read?

- The Sunday Times
- The Observer
- The Sunday Telegraph
- The Sunday Express
- The Mail on Sunday
- The Sunday Mirror
- The People
- The News of The World
- News on Sunday
- None of the above

60. Other than items purchased for your CB interest, have you bought any other types of goods by mail order during the past 12 months?

Yes  No

61. If the answer to the previous question is YES, please state the type(s) of goods purchased.

.....

.....

.....

.....

59. Do you smoke:

- Cigarettes
- Cigars
- Pipe
- Don't Smoke

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.....

COUNTY ..... POST CODE .....

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# WHOLESALE

# BLEEDOVER causes and cures

Adjacent channel interference, image interference  
 – all problems connected with bleedover. Here,  
 Paul Coxwell gives a few hints on possible cures

**B**leedover" is a phrase that brings instant misery to many CB users. It encompasses a fairly wide range of technical problems which all give the same ultimate result: a lack of intelligible signal. In this article we will examine some of the causes of "bleedover" from the technical point of view, and offer some practical cures.

## Channel Organization

In order to deal with the problems we are facing, it is vitally important to be able to understand some basic concepts of frequency and channel allocation. Figure 1 shows the frequency assigned to each of 40 channels.

1	26,965	21	27,215
2	26,975	22	27,225
3	26,985	23	27,255
4	27,005	24	27,235
5	27,015	25	27,245
6	27,025	26	27,265
7	27,035	27	27,275
8	27,055	28	27,285
9	27,065	29	27,295
10	27,075	30	27,305
11	27,085	31	27,315
12	27,105	32	27,325
13	27,115	33	27,335
14	27,125	34	27,345
15	27,135	35	27,355
16	27,155	36	27,365
17	27,165	37	27,375
18	27,175	38	27,385
19	27,185	39	27,395
20	27,205	40	27,405

Fig. 1. 40 channel allocations

(British readers please note that these are the CEPT channels; the same principles apply to the CB 27/81 allocation but the figures are harder to work with.) Notice that with a few exceptions the channels are 10kHz (0.01 MHz) apart. The gaps are for channels allocated to other services. The peculiar mix-up around channels 22 through 26 is another story, but need not concern us here. In fig. 2 we have a few channels represented graphically. The center frequency of each channel is that listed in fig. 1, and as each channel is not only 10kHz away from its neighbour, but also 10kHz wide, they slot into the available space with no gaps between them. Channel 37 for example is centered on 27.373, with its lower boundary at 27.370 and its upper boundary at 27.380MHz.

The receiver section of our rig must be able to select just one channel at a time, rejecting those to either side of it. In the very early days of broadcasting (long, long before Citizens' Band radio!) there were few stations and they could be on frequencies many tens or hundreds of kilohertz apart. If a receiver couldnt reject a signal 100kHz away it

didn't matter because there probably wasn't another signal that close. As radio became a part of everyday life however, demands on the spectrum soared, until today we have stations packed about as densely as possible. Modern receivers must therefore be capable of rejecting signals very close to the wanted station.

## Receiver Selectivity

As you may gather from the name, selectivity is a measure of how well a receiver can select the wanted signal and reject all others. In specifications it is listed with those funny-looking technical hieroglyphics. They aren't really that difficult to understand, and we will examine them shortly. Before that we must see the effects of selectivity. In fig. 3 we have three varying degrees of selectivity. At (a) we are living in a perfect world where receivers have reached the ultimate state of development. The rig accepts signals right across the full 10kHz channel bandwidth, while at the same time totally rejecting all signals outside this range. This is clearly impossible to achieve, and at (b) we have a more plausible situation. The best receiver response is centered on the required channel and its sensitivity (or "ability to receive") diminishes slowly as we move away on either side. We are using an arbitrary scale of 0 through 10 to measure sensitivity here, but even so you should be able to see that this receiver will still allow signals from adjacent channels to be picked-up quite well. In technical terms it has *poor selectivity*. Moving to (c) we are reaching a more acceptable state of affairs. The sensitivity of the receiver drops sharply at the edges of the required channel, thus offering far better rejection to unwanted signals

close by. It is said to have *good selectivity*. Now we'll return to those dreaded specifications!

Firstly, we must understand decibels. There is a lot of confusion over the "mysterious dB," but it is really quite simple. The figure given is just a ratio of one power level to another. Because in radio work we often have to compare signals that may be many thousand, million, or billion times different in strength, it is all too easy to wind up with so many zeros on a page that it becomes difficult to follow. What we do instead is to use logarithms to make the figures more manageable. You can use a pocket-calculator if you want exact figures, but remembering that 3dB represents about half/double the power, and 10dB represents one-tenth or ten times the power is enough for rough work. So 10dB is ten times, 20dB is a hundred times, 30dB is a thousand times and so on. 23dB would be 200 times: multiply by 100 for the 20dB, then by 2 for the 3dB.

Now let us take an example. Suppose the manual for a receiver states that selectivity is 60dB at 10kHz. We now know that 60dB represents a power ratio of one million. Assume we are tuned to a signal that is given a reading of 9 on the S-meter. Call this signal A. Now remove signal A, and turn on another signal, B, that is 10kHz away from where A was. As the receiver cannot possibly be perfect, if we increase the power of signal B enough we'll eventually hear it. Now if we turn up the power of B so that we get the same S9 reading, we find that the strength of signal B is one million times that of signal A! To put it another way, if we are turned to say, channel 37, and there is someone transmitting on channel 38 that we can hear, the signal is one-millionth of the level it would be if

we were receiving on channel 38. That may sound like a very high figure, but 60dB rejection at 10kHz is only average. The higher the rejection figure (e.g. 90 or 100dB) the better, but beware! The frequency at which the signal is measured plays a big part. 80dB down at 15kHz is not necessarily better than 60dB down at 9kHz.

From the discussion above, you may come to the logical conclusion that receiver performance can be improved simply by reducing the bandwidth of the signal it accepts. Within certain restraints this is true, but as with most technical matters there are added complications. Looking back at fig. 3, notice that we want the response curve over the *required* channel to be as flat as possible. It is easy to reduce the bandwidth and give a selectivity figure of over 100dB at 10kHz, but we must also consider the side-effects. If the channel bandwidth is reduced too much, we will start to lose some of the required signal, which is not quite what we want to do! Receivers traditionally use tuned-circuits (capacitor/coil combinations) to create these "response curves." A single tuned-circuit only gives a very gentle "slope" to the curve, so many such inductance/capacitance combinations are required. Virtually all modern CB transceivers use ceramic or crystal filters as well, which can provide a much steeper "slope" to the response. Some specifications may give two sets of figure for selectivity, e.g. 57dB at 10kHz, 6dB at 4kHz. This shows that the centre of the adjacent channel is rejected by 500,000 times (57dB), but that to 4kHz either side of the carrier of the wanted signal the response is only down to one-fourth (6dB). This is shown graphically in fig. 4. Do not be misled into thinking that the adjacent channel is

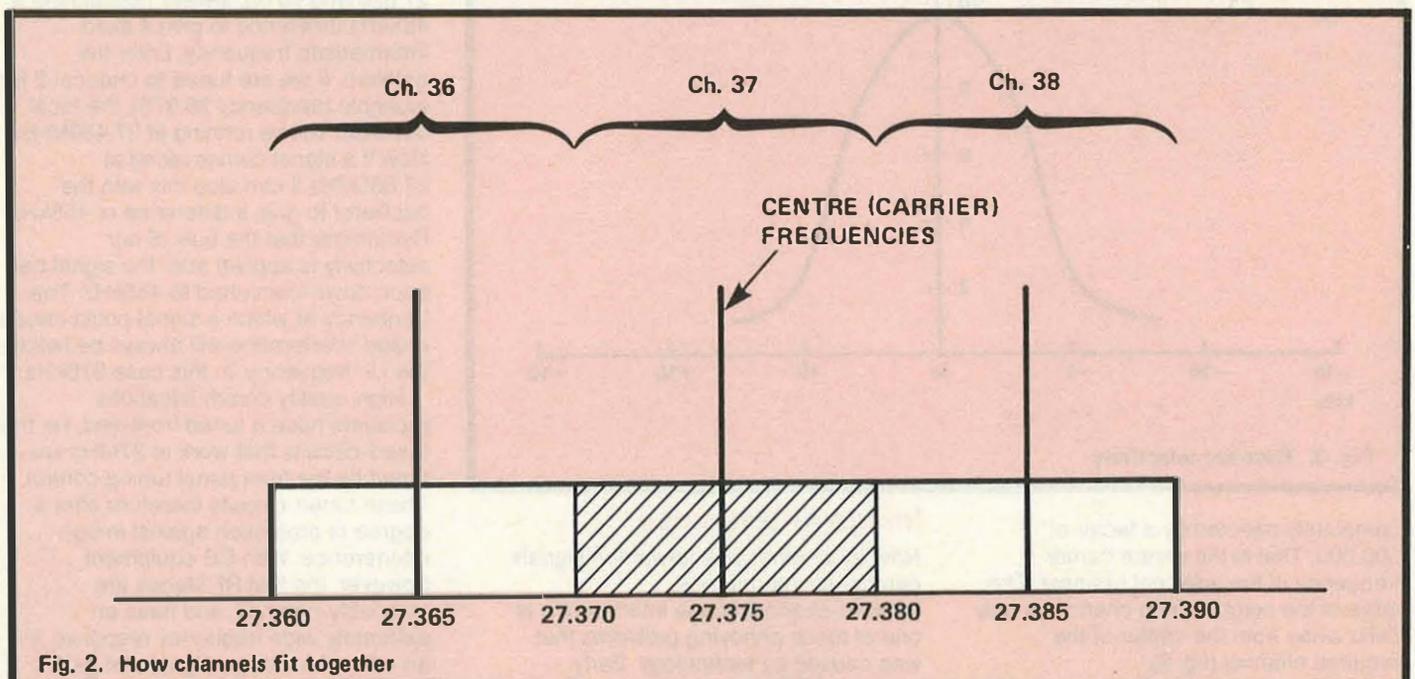


Fig. 2. How channels fit together

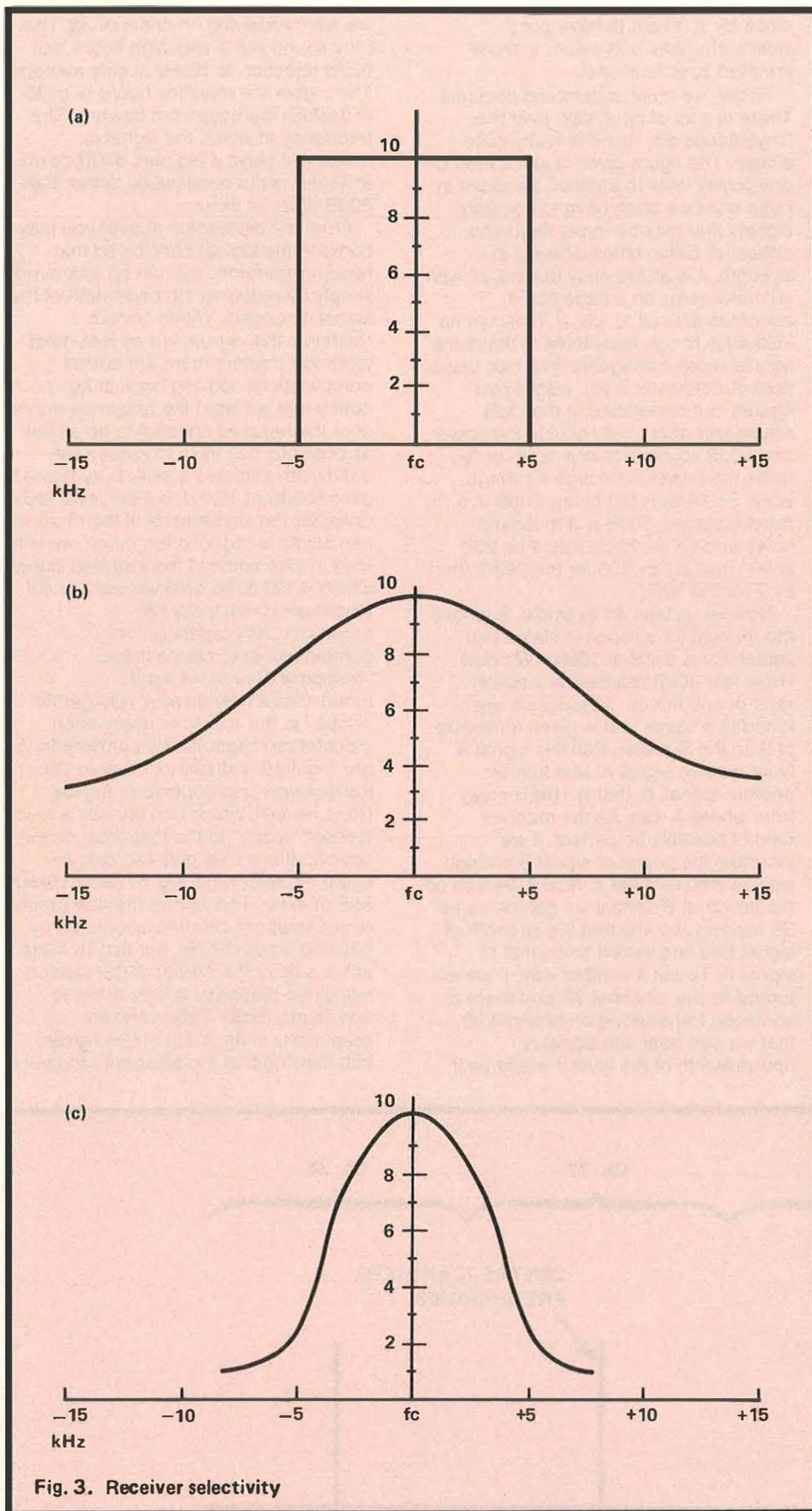


Fig. 3. Receiver selectivity

completely rejected by a factor of 500,000. That is the centre *carrier* frequency of the adjacent channel. The edge of the neighbouring channel is only 5kHz away from the center of the required channel (fig. 2).

### Image Interference

Now for another way unwanted signals can cause interference. Second-channel image interference is one of those annoying problems that was caused by technology. Early

receivers may have had very poor selectivity, but they did not suffer from image interference. As superheterodyne receivers evolved to improve selectivity, they brought along their own nasties. Basically, in a modern receiver the incoming signal is converted down to a much lower frequency before the bulk of the filtering and amplification is applied. For a great many years one such figure has been 455kHz. There are several reasons for doing this. Firstly, all those tuned-circuits that are required for good selectivity have to be tuned to the right frequency. If they all worked on the incoming 27MHz signal they would have to all be reset every time you switched channels. Not very elegant, and most certainly expensive to arrange. Converting everything down to a fixed frequency means that they only have to be tuned once when the set is made. Secondly, it is much easier (and therefore cheaper) to obtain the necessary response curve at a lower frequency. The channel bandwidth is 10kHz, whether centred on 27MHz or 355kHz. 10kHz is only 0.04% of 27MHz, but over 2% of 455kHz, a much better proposition. Finally, applying the amplification needed to obtain a usable signal is much easier at a lower frequency because construction and layout of components is far less critical.

A superhet receiver converts signals to a fixed frequency by mixing them with another (locally generated) signal. Whenever two signals are mixed we find four main resultant signals. There are the two original frequencies, the sum, and the difference. It is the difference signal we are interested in here. Assume a receiver tuned to channel 35 (frequency 27.355MHz). If the oscillator in the receiver is set to run at 27.810, we find the difference works out at 455kHz. For channel 36 the oscillator will run at 27.820 and so on, always maintaining a 455kHz difference to give a fixed intermediate frequency. Enter the problem. If we are tuned to channel 2 for example (frequency 26.975), the local oscillator will be running at 27.430MHz. Now if a signal comes along at 27.885MHz it can also mix with the oscillator to give a difference of 455kHz! Remember that the bulk of our selectivity is applied *after* the signal has been down-converted to 455kHz. The frequency at which a signal could cause image interference will always be twice the I.F. frequency, in this case 910kHz.

High-quality communications receivers have a tuned front-end, i.e. the tuned-circuits that work at 27MHz are tuned by the front panel tuning control. These tuned-circuits therefore offer a degree of protection against image interference. With CB equipment however, the first RF stages are invariably untuned, and have an extremely wide frequency response. If an unwanted image signal can get

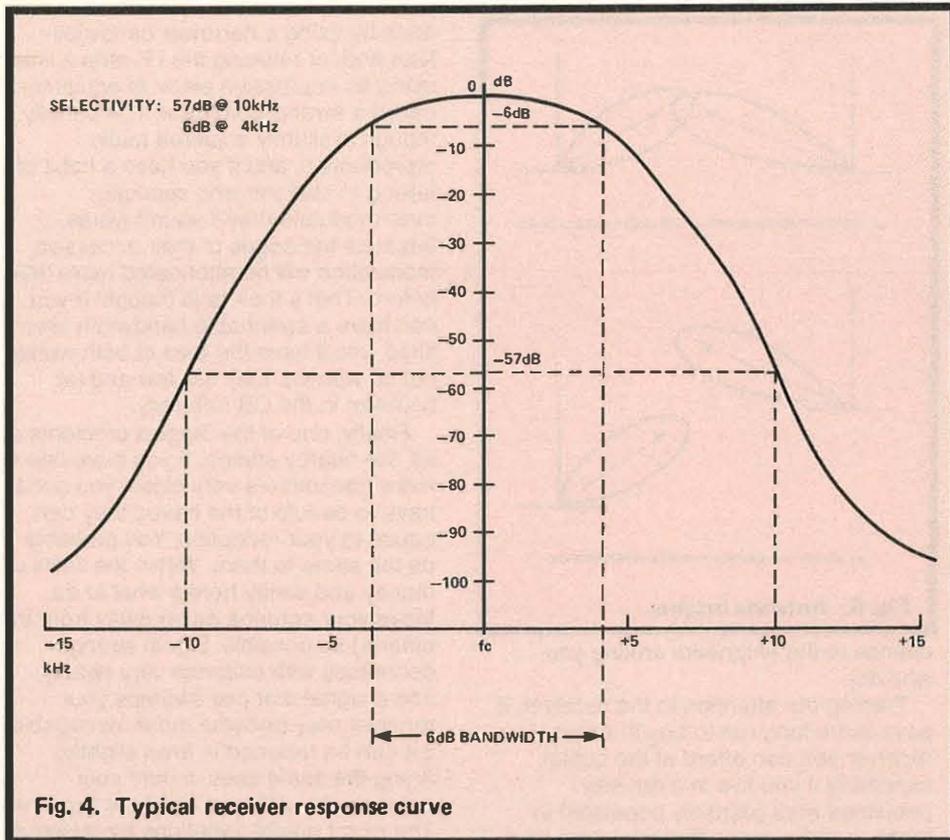


Fig. 4. Typical receiver response curve

rejection. To get the improved adjacent channel selectivity we so desperately need, the signal is then converted down again to around 455kHz, where most of the filtering and amplification takes place.

### Other Forms of Interference

As if everything we have seen so far isn't enough, there are other ways in which we can pick-up unwanted transmissions. In a badly made or badly adjusted receiver a signal on 10.695MHz or even 455kHz can work its way straight through to the I.F. stages. Such a set would be termed to have bad I.F. rejection. Very strong signals close by can simply swamp the first RF transistor amplifier. When you consider that a signal from someone down the street can easily exceed a signal from a couple of miles away by several thousand or million times, it's hardly surprising. It's like trying to listen to a whisper from fifty yards when there's someone three feet away shouting at you! We've seen how signals can mix together and be beneficial to us, but unfortunately the same mixing process can cause untold problems. There are

through to the mixer with little attenuation it can cause image interference. Figure 5 compares the response of a tuned LC-circuit in a communications receiver, and the broadband response of a typical CB front-end. Note that although considerably better than its CB counterpart, the slopes on the communications receiver tuned-circuit are still not all that great. It relies on the I.F. stages to provide most of the selectivity.

In specifications you may see an item such as "Image rejection 60dB." This works the same way as the selectivity specification, the amount by which the image signal is removed from the wanted signal after being double the I.F. frequency.

One way to overcome image problems in receivers, particularly where the front-end is untuned as with CB, is to increase the I.F. frequency. With an I.F. of 1.6MHz for example, the image will be 3.2MHz away and the front-end tuned-circuits will provide greater rejection. The disadvantages are those we have already found - the very same reasons we wanted to convert down to a much lower frequency! The way around the problem is to use a double-conversion process. In most modern CB rigs the incoming signal is first converted to 10.695MHz, which you should not be able to calculate gives second-channel image some 21.39MHz away. This puts the image either down around 6MHz, or up around 48MHz, both a long way off 27MHz so the first RF tuned-circuits can provide good

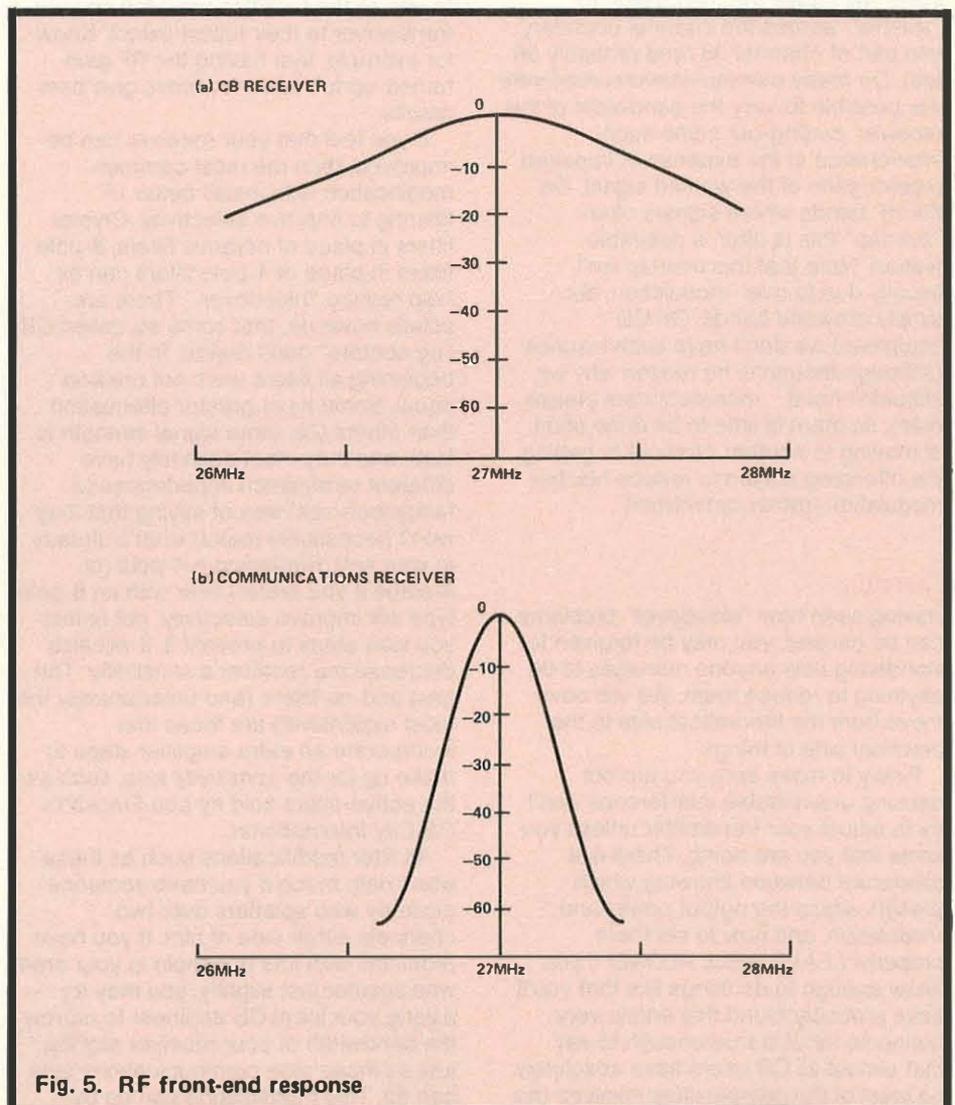


Fig. 5. RF front-end response

an almost infinite number of ways in which strong signals can mix with others in the area to generate a signal close to the frequency you are working on, or right on your I.F. frequency. Certain types of receiver design are better at reducing such effects than others. Receivers with FET mixers tend to be somewhat superior in this respect.

## Transmitters

You may have noticed that we have so far only been looking at interference due to shortcomings in the receiver. This is simply because it is the receiver that is usually to blame, unless you have an above average selection of "fiddlers" in your immediate neighbourhood. Sometimes it is the transmitter that is at fault, the most common defect on CB being over-modulation. Looking back at fig. 2 once again, notice that each channel edge just reaches the next channel. If you are receiving on channel 38 and there is someone else transmitting on channel 37 there shouldn't normally be any interference (unless they are very close). If the modulation on the transmitter is set too high however, the peaks of the user's voice will cause the modulation to "splatter" across the channel boundary into part of channel 38 (and probably 36 too). On many communications receivers it is possible to vary the bandwidth of the receiver, cutting-out some such interference at the expense of impaired reproduction of the wanted signal. On the HF bands where signals often "overlap" this is often a desirable feature. Note that this overlap isn't usually due to over-modulation, but simply crowded bands. On CB equipment we don't have such luxuries (although though is no reason why we shouldn't have - manufacturers please note), so there is little to be done short of moving to another channel or getting the offending station to reduce his/her modulation (rather optimistic!)

## Cures

Having seen how "bleedover" problems can be caused, you may be forgiven for wondering how anyone manages to do anything to reduce them. We will now move from the theoretical side to the practical side of things.

Firstly to make sure you are not causing unavoidable interference don't try to adjust your transmitter unless you know that you are doing. There is a difference between knowing which presets adjust the output power and modulation, and how to set them properly! *LEAVE WELL ALONE!* If you know enough to do things like that you'll have probably found this article very boring so far. It is true enough to say that almost all CB users have absolutely no ideal of the complexities involved (no

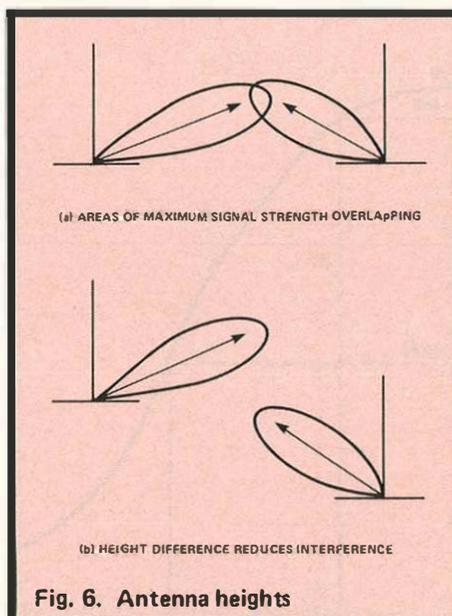


Fig. 6. Antenna heights

offense to the engineers among you who do).

Turning our attention to the receiver, it pays in the long run to buy the best receiver you can afford at the outset, especially if you live in a densely populated area (densely populated in terms of radio usage that is). Learn how to use all the facilities provided on your transceiver to their fullest extent. Know, for example, that having the RF gain turned-up full doesn't always give best results.

If you feel that your receiver can be improved, then the most common modification is to install better I.F. filtering to improve selectivity. Crystal filters in place of ceramic filters, 8-pole filters in place of 4-pole filters can all help reduce "bleedover." There are pitfalls however, that some so-called CB "rig doctors" don't realize. In the beginning all filters were not created equal. Some have greater attenuation than others (i.e. more signal strength is lost), and they most definitely have different termination impedances (a fancy technical way of saying that they won't necessarily match what's already in your set). Replacing a 4-pole (or 4-stage if you prefer) filter with an 8-pole type will improve selectivity, but unless you take steps to prevent it, it will also decrease the receiver's sensitivity. The best add-on filters (and unfortunately the most expensive!) are those that incorporate an extra amplifier stage to make up for the sensitivity loss, such as the active-filters sold by Lou Franklin's *CB City International*.

All filter modifications such as these won't help much if you have someone close by who splatters over two channels either side of him. If you have problems with lots of people in your area who splatter just slightly, you may try asking your local CB engineer to narrow the bandwidth of your receiver slightly, just as those nice communications sets can do. This modification can be by

done by using a narrower bandwidth filter and/or retuning the I.F. strip a little using an impressive piece of equipment called a sweep-generator. The penalty though is slightly impaired audio reproduction, and if you have a habit of talking to stations who seriously over-modulate they'll sound worse, because the edges of their excessive modulation will be attenuated more than before. That's their fault though! If you can have a switchable bandwidth filter fitted, you'll have the best of both worlds, but be warned: they are few and far between in the CB fraternity.

Finally, one of the biggest problems of all, the nearby station. If you have one or more transmitters very close, you don't have to be told of the havoc they can cause to your reception. You probably do the same to them. Within the limits of money and sanity here's what to do. Move your antenna as far away from the other(s) as possible. Signal strength decreases with distance very rapidly, and a signal that just swamps your receiver may become more manageable if it can be reduced in level slightly. Along the same lines, mount your antenna at a different height to the other. The exact height variations for minimum interference will depend on the particular antennas used, but as antennas have an area of maximum radiation (usually several degrees above horizontal) try to put yours away from the maximum power zone of the other. It works both ways, you'll reduce problems to the other guy, so in these cases it pays to help each other (no arguments over whose antenna is highest though!). Figure 6 shows how antenna heights may help or hinder you. The other thing to do is if you have a low-power switch use it when you can. This only works if everyone living near to each other co-operates however, and you are very much dependent on common sense and consideration all around.

## Conclusion

All in all then, we are seriously limited as to what can be done. There are other ways of helping reduce interference, a tuned RF stage for example would help somewhat, but is about as rare as moon dust in the CB world. How about it set-designers? For those of us who want better performance an improved receiver with tuned RF stages, switchable I.F. bandwidth, notch filters and all the trimmings, at a price naturally.

As a final note, if you want the best receiver performance possible, there is no reason why you shouldn't use a separate communications receiver for listening, and just use the transmit side of your existing rig. The transmit/receive switching can be taken care of fairly easily without a great deal of wiring, and will form the subject of a later article.

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# Mobile Music

## Terry Bentley introduces a new column on another aspect of in-car entertainment

**H**ello, good evening and welcome. This is the first of what may turn out to be many contributions from me on the subject of in-car audio. It's an exciting field these days, as equipment becomes ever more sophisticated and technological innovations like CD and DAT start to make an impression. We're convinced that most CB owners and users have room in their cars for some sort of a decent sound system and would like to be kept in touch with developments, so a regular slot has been scheduled.

Don't worry – CB isn't going to turn into some sort of ICE-pickers' gazette. All we're planning to do is provide a frequent update on what's new and interesting on the mobile audio scene, filling a page or two each month. It won't take over the magazine!

A word about a word: 'ICE' . . . I loathe it, and from here on you won't find me using it much, if at all. For a start, I don't like jargon (even if some CB-users still do!). For another thing, 'in-car entertainment' just isn't a full and accurate definition of what we're talking about. Sure, we all use our stereo equipment for simple amusement some of the time, listening to music, radio comedy shows and so on, but it can also be an important source of information – anything from traffic bulletins to news of crucial world events. So it's not just entertainment, OK?

Right, now we've defined our terms, on with the show . . .

**Terry Bentley**

### G-Whizz from Panasonic

It looks as though Panasonic have done it again. Building on the tremendous acclaim with which the uprange, feature-laden F-series radio-cassette units were met, they have produced a powerful challenge in the middle tier of the market with three new models: the CQ-G25, CQ-G20 and CQ-G10.

In some ways, in fact, the G-series models represent further technical advances. They all have an even more refined development of the 'Alphatuner' radio used in the F-types. As before, this offers a very high level of sophistication, packing in features such as an automatic dynamic range controller (to guard against distortion from ultra-strong FM signals); adaptive front end, to set optimum sensitivity for the desired signal; impulse noise quieting, to cut out electrical impulse interference; automatic multipath distortion suppressor; and automatic separation, treble cut and soft-muting circuits to avoid unpleasant effects as a stereo signal weakens.

The new version of the tuner design offers a total of 30 station presets (six MW, six LW, and three separate sets of six FM), with the bonus of 'Auto Preset Memory' for the half-dozen FM2 selections. That's to say that, at the push of a single button, the tuner automatically scans the FM frequency band, picks out the six strongest signals (wherever you happen to be) and stores them – great for anyone who travels over long distances a good deal and wishes to pick up local stations in unfamiliar territory.

Features all three G sets have in common with the F series include seek/scan radio tuning, an auto-reverse tape deck, separate bass and treble controls, four-way output with inbuilt front-rear fader, front-panel input for portable CD players, switchable loudness circuit, 'radio monitor' function, and switchable 'metal' tape bias. The most significant things they don't have are Dolby noise-reduction (except for the G25) and electronic tape deck control logic.

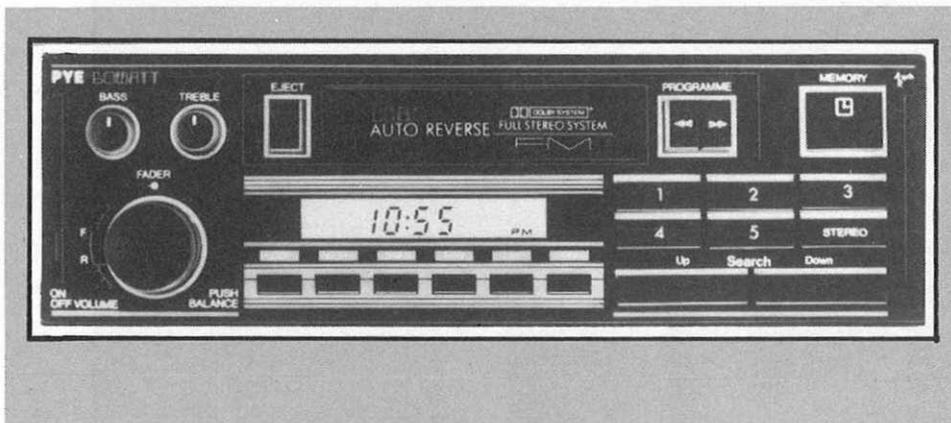
The G25 and G20 come with quick-release anti-theft slide mounts. Again they score over the F-series equivalent (the CQ-F35), in that their heavy amplifier sections are left within the fixed mounting bracket, leaving only the relatively lightweight tuner/deck assemblies attached to the front plate to be carried around. The G10 has a security code system (making it useless once disconnected from the car's power supply unless the programmed combination of numbers is correctly re-entered) as a discouragement to thieves.

The CQ-G25 and G10 are unusually powerful for their market sector, with four-by-25-watt maximum outputs. The G20 has only half that total power but has a 'pre-amp out' provision (and selectable fader) for coupling with additional amplification, graphic equalisers, etc. Panasonic have recently reduced the prices of the F-series units, making them even more attractive than before, but the latest models are tagged at keener levels yet: you're likely to find the G25 at around £270 (a tenner less than the cheapest of the prestige range, the F30), the G20 at about £240 and the G10 at a whisker under £200. The competition must be more than a little worried . . .

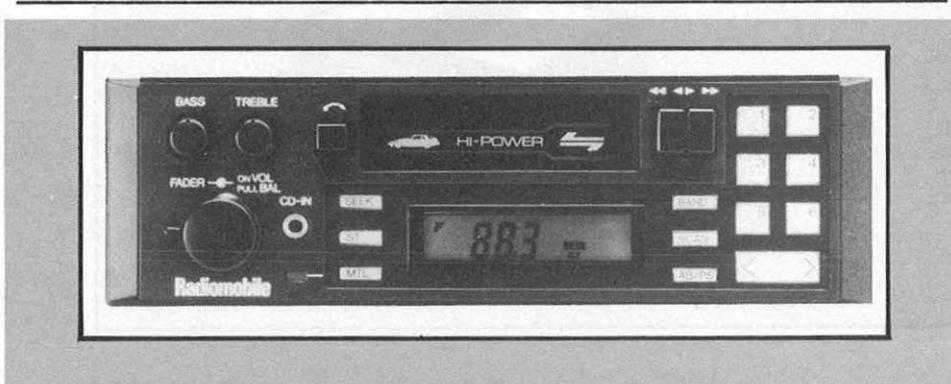
If you need any more information on the G-series equipment, get in touch with Panasonic's Car Audio Division at *Panasonic Consumer Electronics UK, 300 Bath Road, Sough, SL1 6JB; telephone 0753 34522.*



**The Pye CC10, around £40.**



Flagship of the Pye range – the CC80.



One of the 'Hi-Power' range from Radiomobile.



The CQ-G25 by Panasonic.

## Pye Dishes?

Pye – now wholly under the wing of the Phillips empire, in case you didn't know – have launched a completely fresh line of in-car audio products with slick styling, sensible specifications and highly competitive prices. The new range takes in seven radio-cassette units and a complementary selection of five speakers, and is intended to cover various levels of the market from low-budget up to the middling-sophisticated.

Radio-cassette player prices start at a mere £40 (for the CC10) and finish at only £150 for the flagship model CC80. Speakers run from £10 to £40.

The CC80 is an interesting set for its price. Noteworthy features include Dolby B noise-reduction circuitry, auto-reverse, music search and a 'metal' bias setting on its tape deck; PLL electronic search/seek tuning and an interference

absorption circuit on its three-waveband, 15-preset radio; separate bass and treble controls, automatic (pity about that!) loudness and a claimed 60-watt ('total music power') output into four channels, with an inbuilt front/rear fader control. Down in the bargain basement the CC10, although understandably pretty basic, has a reasonable-sounding technical spec: auto-stop, locking fast-forward, MW and switchable stereo FM radio, and a better than average claimed output of 20 watts (total peak power). Like every model in the new range, the CC10 has illumination of at least some controls for night-time use.

The loudspeaker line-up includes a choice of shelf or flush-mount three-element models with 100-watt peak power handling capability (the pod-type SP68 and panel-fitting SP67, priced at £40 and £30 respectively). The SP64 is a door-mounting design that's

likely to be popular, with a four-inch 'honeycomb'-type diaphragm and 40 watts max power capacity, selling for around £18.

Pye in-car products are stocked by Halford's, as well as many specialist distributors. Pye themselves are at the regular Phillips address: *City House, 420-430 London Road, Croydon, CR9 3QR; tel. 01-689 4444.*

## Hitachi RDS

The latest stereo radio-cassette model to be marketed in the UK by Hitachi, the CSK 702, features their RDS ('radio data system') development. This gives fully automated radio tuning, with the set finding each station desired and giving a read-out of its name. RDS also ensures that the best possible reception of a chosen station is obtained, by returning to a stronger signal if one is available. Furthermore, there's provision for picking up travel flashes (due to be provided by both BBC and independent radio) and automatically interrupting entertainment programmes to make them audible.

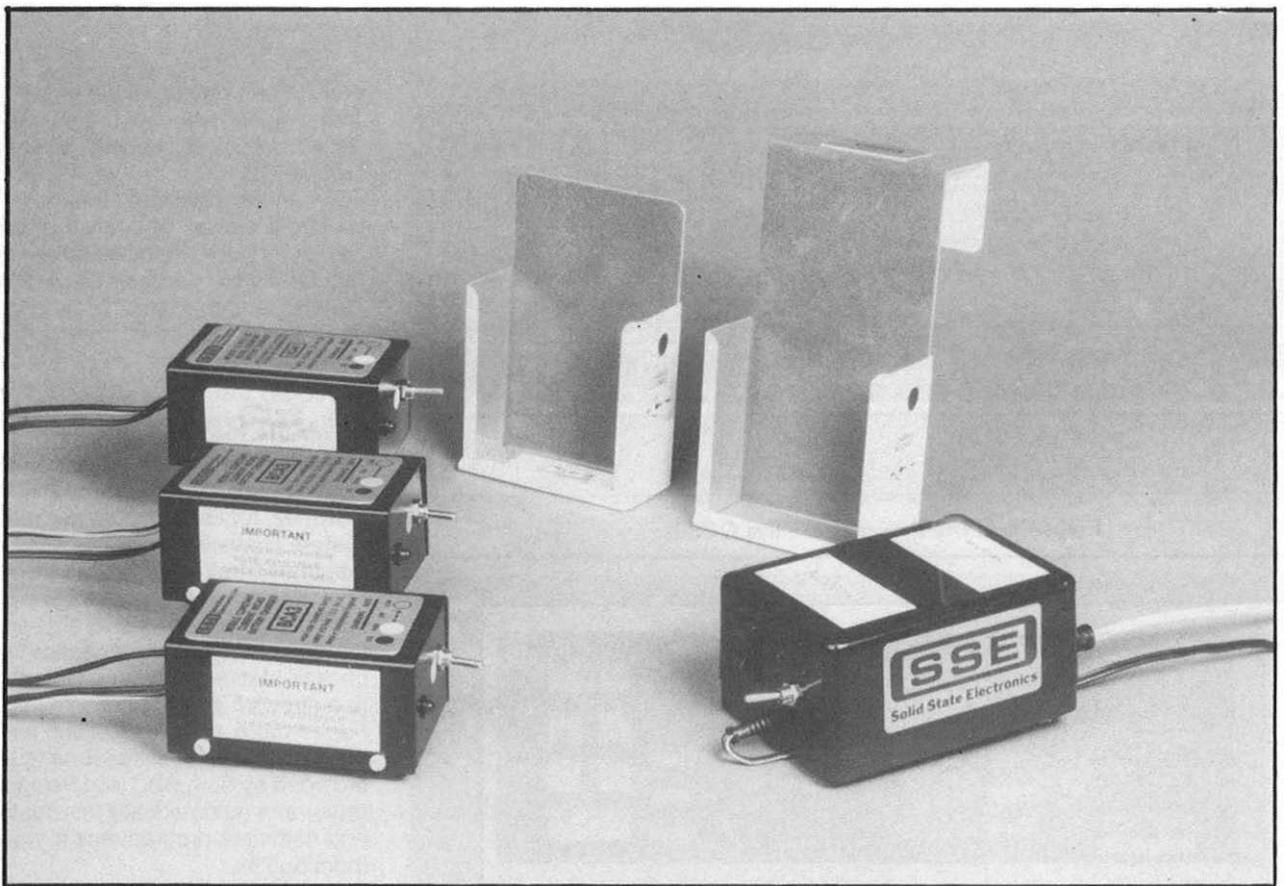
Other attributes of the CSK 702 include an output of eight watts into each of four channels (with a built-in fader control), Dolby B noise-reduction and an automatic 'metal' bias setting on its tape deck, 18 radio station presets, and a quick-release pull-out anti-theft facility. The unit is priced at around £400.

Want to know more? See your local Hitachi car audio dealer or contact *Hitachi Sales (UK) Ltd, Hitachi House, Station Road, Hayes, Middlesex.*

## Radiomobile Range Wider

Radiomobile, nowadays part of the Lucas Electrical group, have introduced two more radio-cassette units with CD inputs. Supplementing their top-of-the-shop AKB990 are the AKB920 and AKB805 models. Both these fit within what Radiomobile designate as the 'Hi-Power' sector of their range, with a total output of some 40 claimed watts. Both have 18 radio presets, 'autostore' tuning (which automatically stores the six strongest FM signals) and 'automatic preset scan' (which samples the stored stations), and each has a front-panel socket to facilitate hooking up a portable Compact Disc deck. The main difference between the two is the 920's auto-reverse tape deck capability (the 805 merely has an auto-stop/revert-to-radio function).

Recommended retail prices are not outrageous, at £145-£150 for the AKB920 and £120-£125 for the 805. Further details can be had from *Lucas Electrical Limited Parts and Service, Great Hampton Street, Birmingham, B18 6AU; telephone 021-236 5050.*



# CHARGE ACCOUNTS

**The Black Jaguar BJ200 handheld scanner has proved to be very popular. Here, Saul Wright looks at a range of accessories designed specifically for this unit**

It makes a refreshing change for us to report on a piece of equipment that has created enough interest to generate its own range of dedicated accessories. The product in question is the **Black Jaguar BJ200** scanning monitor receiver — a compact, high-performance unit that put many larger scanners to shame.

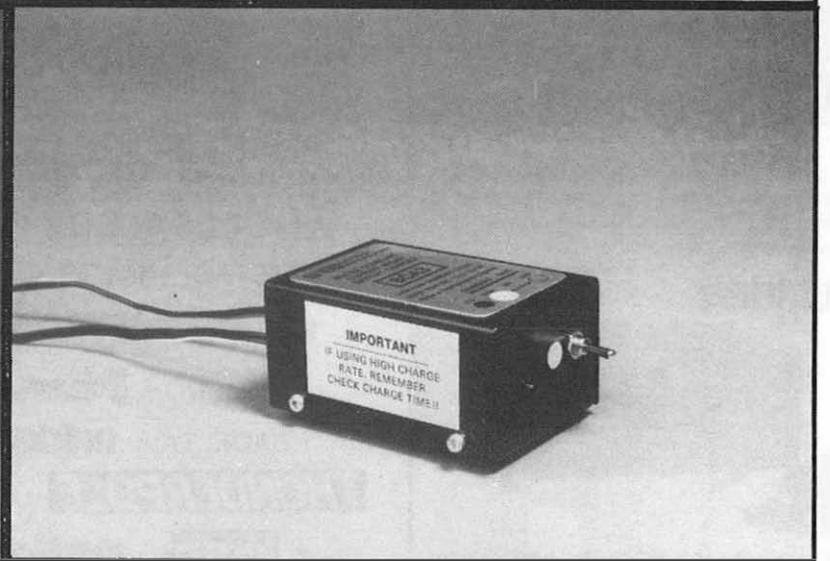
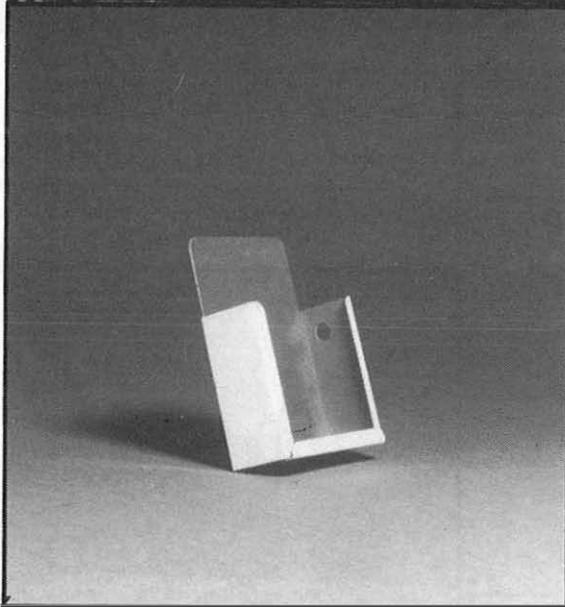
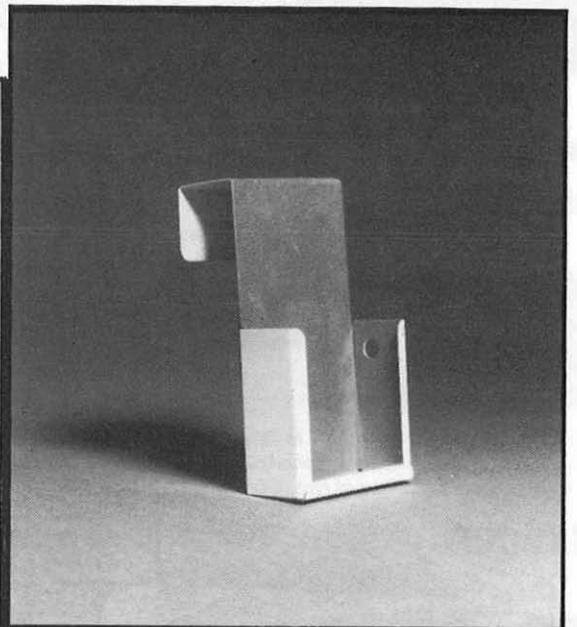
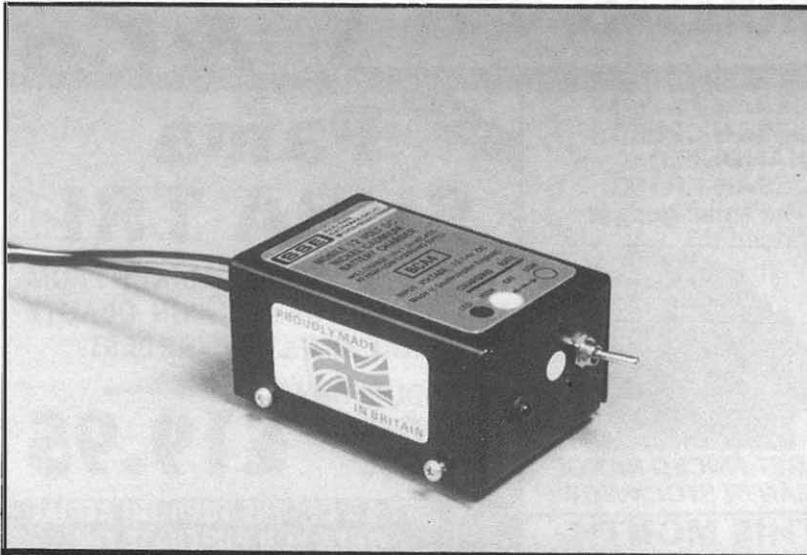
The Jaguar is powered by a nickel-cadmium (nicad) re-chargeable battery, manufactured by *Sanyo*. These highly versatile battery packs, (also used in cordless telephones, torches and numerous other appliances) are rated at 600mAH — the charger supplied with the Black Jaguar (and most other re-chargeable products) is normally rated at 60mA — the time taken to fully re-charge

the pack can be anywhere from 10 to 14 hours. In most circumstances, this is perfectly okay and it can be safely left to charge overnight. However, sometimes it's inconvenient to wait that long — fortunately these nicad batteries can be re-charged in less than a third of that time but it means that they will draw three times as much current and consequently can get quite hot. High-speed charging, whilst basically safe, may, if not carefully monitored, shorten the life of nicads so it's vitally important not to over-charge the batteries by leaving them connected up for too long. For these reasons most manufacturers prefer to play safe and supply charger units that top up the cells gradually.

**Solid State Electronics** have

recognised the sometimes frustrating delay and produced a range of three nicad chargers with switchable high/low current outputs. Two of them (**BCA3** and **BCA6**) are designed specifically for use with the Black Jaguar — these units are powered from a car battery and 240 VAC mains respectively. The third (**BCA4**) is also powered from a car battery and is intended for use with hand-held transceivers, etc, using the common 10 × 1.2v ni-cad set-up.

The **BCA3's** *constant-current* output is controlled by a two-position switched giving a 50mA or 150mA charging rate — the latter will fully re-charge the Black Jaguar's batteries in approximately 3.5 hours. The 12 volt DC input connection consists of a pair of black and red cables



**Top left: BCA switching charger. Top right: CMA1 holder. Bottom left: HMA2 holder. Bottom right: BCA3 switching charger.**

with an in-line fuse. The output lead is terminated in a standard 2.1 mm power plug. A second 'universal' version of the BCA3 is available — this has the power plug wired the opposite way around and is intended for use with a wide range of other products using similar re-chargeable nicad cells (a data and application sheets are available). The constant-current design means that it can accommodate all of the popular configurations (450, 500 & 600maH) consisting of between 1 to 8 cells in series. Both versions of the BCA3 sell for £12.95.

The BCA6 mains-charger has a slightly higher output rating — 60mA in the 'low' setting and 180mA for the 'high' rate — this reduces charge times even further, to just over three hours in the case of the Black Jaguar's nicad pack. The unit is fully switchable, with an illuminated two-pole mains switch for added safety (many mains-chargers have no means of telling whether they're connected to the mains or not, let alone an on/off switch). In common with its battery-powered counterpart the output

lead is terminated in a standard 2.1 mm power plug. The BCA6 costs £14.95.

Equipment using 12-volt ni-cad battery packs cannot normally be charged from a car battery — the charging voltage needs to be *higher* than the supply voltage — typically 18 volts for a 12 volt system. SSE's BCA4 *switching* charger gets around the problem of insufficient battery voltage with a simple electronic switching circuit that raises the charging voltage to the optimum level, (even though the supply voltage from a car battery will not normally exceed 14 volts). The BCA4 sells for £17.95.

The last products in the new SSE line-up are two purpose-designed holders for the Black Jaguar. They're both formed from aluminium and lined with a non-scratch surface to protect the Jaguar's case. The first is the **CMA1** (£6.95) — its shaped lip/hook is designed to slip between the door frame and window on a car door — the scanner will then be securely held in place and the controls can be easily adjusted. A worthwhile alternative to allowing an expensive piece of equipment bounce around on

top of the dashboard, or the passengers' seat. The CMA1 also has the useful side effect of keeping the antenna clear of the car body for improved reception.

The **HMA2** (£5.95), is a desk-top holder for the Jaguar — it keeps the scanner in an upright position, slightly tilted for ease of use and control accessibility. It too is manufactured from lightweight aluminium and is lined to protect the Jaguar's case. A cut-out on the right-hand side of both holders allows access to the charger socket.

It's important to note that high-speed chargers should be used with care as they can lead to reduced battery life — especially if the recommended charging period is exceeded. SSE do warn of over-charging, both on the instruction sheets and the chargers themselves. However, we would have liked to see a rather stronger-worded warning of the possible consequences, especially as nicads can be quite expensive items to replace.

These are all available from **Solid State Electronics UK, 6 The Orchard, Bassett Green Village, Southampton SO2 3NA. (0703) 769598.**

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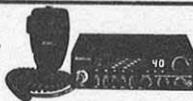
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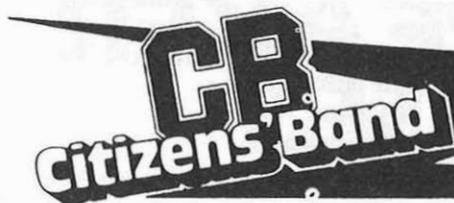
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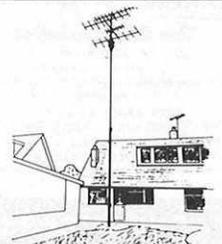
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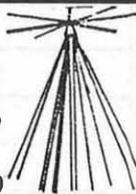
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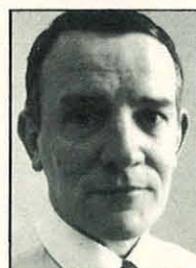
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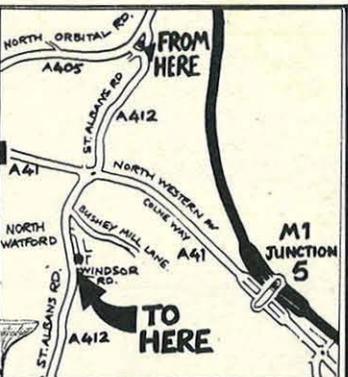
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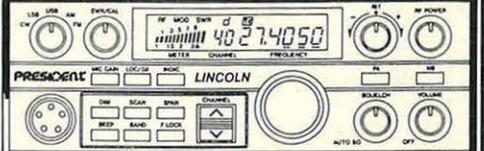


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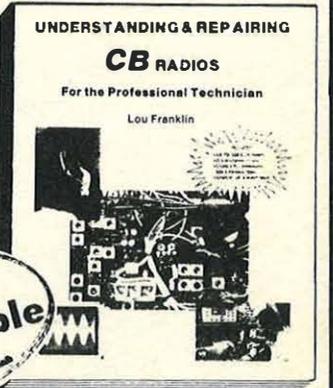
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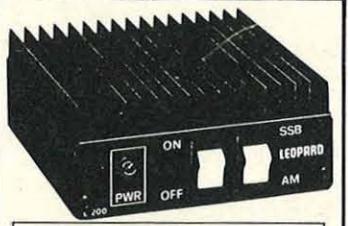


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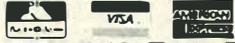
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