

# CB

AN ARGUS SPECIALIST PUBLICATION

## CITIZENS' BAND

FOR BRITAIN'S 250,000 CB USERS

**THE DESERT SONG**  
Hoskins on safari

**LOUD AND CLEAR**  
SP 2000 speech processor

**HOLDING HANDS**  
Danita 285 handheld reviewed

Latest equipment, clubs and QSL news



# The THUNDERPOLE RANGE

## Out of this World!

### THUNDERPOLES ARE GO!

#### The Ever Popular Mk II (Base Loaded)

Base loaded ribbed coil design on a single radiating element 1.5m long. Doubly encapsulated windings for maximum performance and all weather protection.

Pre-tuned and requiring no S.W.R. adjustment.

Precision machined alloy base with 3 angled ground planes each 2.67m long with cross bracing, designed for maximum performance.

Power handling 500w, frequency 27mhz, S.W.R. 1:15 or less.

Base for 1 1/2" diameter. Pole mounting.

#### The Amazing Mk III (Centre Loaded)

Centre loaded helically wound coil with low radiation angle shrink wrapped for all weather protection and that amazing extra performance you would expect from the world famous Thunderpole range.

Bigger diameter, radiating element 1.65m long, making the most of the latest H.O. specifications.

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Suitable for all models — AM, FM, SSB.

Base for 1 1/2" diameter Pole mounting.

#### New Thunderflash Mobile (Centre Loaded)

Centre loaded helically wound solid copper winding on fibre glass shrink wrapped for maximum protection — strength.

The whip is 17.7 p.h. stainless steel and all fittings are chrome brass with stainless steel screws.

Slim elegant coil. Overall length of the Thunderflash 1.65 long.

Fully compatible for use on 27FM and new CEPT frequencies.

#### To obtain maximum performance insist on:-

##### THUNDERPOLE HATCHBACK/BOOT MOUNT

No drilling or soldering necessary. Standard 1/8" UNF. Thread mounting adjustable angle with positive non-slip action.

**THUNDERPOLE STRIKES AGAIN!** Citizens Band magazine on the fantastic Thunderpole range.

#### Thunderpole II

*The Thunderpole was the best all round base station antenna tested.*

*A well constructed easily assembled and erected excellent performance legal antenna with the added bonus that it is pre-tuned.*

#### Thunderpole III

*On test the Thunderpole Mk III performed very well and contact was maintained even when the mobile test vehicle encountered a strong signal on the next channel in our notorious blackspot. In conclusion we consider the Thunderpole III to be a strong well constructed, top performance antenna.*

#### Thunderflash Mobile

*Firstly it is a very slim and neat looking aerial. The whip is 17.7 p.h. Swedish stainless steel and the centre loaded copper coil is wound on fibre glass for added strength and rigidity.*

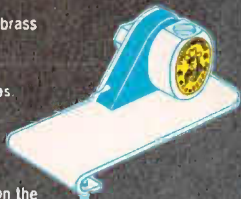
*The screws themselves are stainless steel and all fittings are chromed brass. A very elegant antenna indeed. Reported TX was excellent.*

*It is strong and very well constructed and excellent value for money at around £16 00.*

THUNDERPOLE ANTENNA U.K. LTD.  
A subsidiary of Freeman & Pardoe Ltd,  
Tything Road,  
Arden Forest Industrial Estate  
Alcester, Warks. B49 6ES  
Tel: (0789) 762673

Ask for Thunderpole at your local stockist

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Citizens' Band Magazine A.S.P. Ltd., 1 Golden Square, London W1R 3AB.  
 Telephone 01-437 0626. Typesetting by Mulliform Photosetting Ltd., PO  
 Box 88, University Place, Splott, Cardiff Tel: (0222) 462320.  
 Printed by Chesham Press Ltd., 16-18 Germain Street, Chesham, Bucks. HP5  
 1LH, U.K. newstrade distribution by SM Distribution Ltd., 6 Leigham Court  
 Road, Streatham, London SW16 2PG. Telephone 01-677 8111.

Overseas sales and non newstrade-sales by Magazine Sales Department, No.  
 1 Golden Square, London W1R 3AB. Tel: 01-437 0626.

Subscription Department: Infonet Ltd., 5 River Park Estate, Berkhamsted, Herts  
 HP4 1HL. Tel: 04427 76661-4. U.S.A. Subscription Agent: Wise Owl Worldwide  
 Publications, 4314 West 238th Street, TORRANCE, CA90505, U.S.A.

# CB

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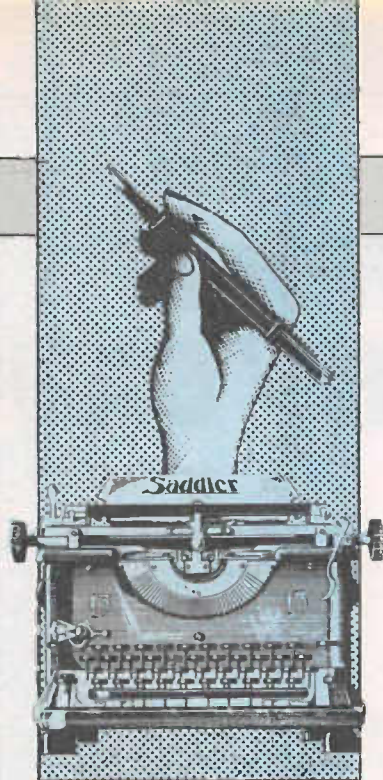
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Get our loud and clear with the new SP2000 speech processor. 46



## BACK CHAT



### International CB

I recently dashed to my newsagent, as usual, to pick up a copy of my favourite magazine - *Citizens' Band*, naturally. Quite apart from the excellent content of the mag, I was particularly interested in a letter in Back Chat (page 7) entitled 'Spanish Situation' from a Senor Garcia.

I found it very interesting to read and, although it did not go into too much detail about the citizens' band situation in that part of the world, it set me thinking.

Since there are so many other breakers around the world (see your regular QSL pages), why not carry this a stage (or two, or three etc.) further? Would it not be possible to feature the CB scene in different countries every month? Many of us can afford a week or two abroad and would naturally like to be up to date on that particular country's situation. Please, please, please, let's

have more news on the rest of the world's CB.

**P Laughton,  
Reading,  
Berkshire.**

*Thanks for your comments, P. We are, at the moment, attempting to contact various countries throughout Europe, the Far East and the Southern Hemisphere but, as you can imagine, it is both difficult and time-consuming. Ideally, we would like to run a regular series on as many countries' CB habits as possible, so if anyone out there is reading this who feel that they could come up with the goods, why not contact me at 1, Golden Square, London W1R 3AB. You never know - there might be a few bob in it for you!*

# INTERNATIONAL

## Editorial

As I write this, the light is gradually getting worse as more and more packing crates are piling up between my desk and the window. Yes, it's moving



time again. The whole of Argus Specialist Publications are moving to Hemel Hempstead, Hertfordshire. Older readers will remember that Citizens' Band was based at Hemel about three years ago so it won't come as too much of a culture shock for me, but I pity some of the rest of the staff here to whom Hertfordshire seems to be the Last Frontier. As I know the place well, guess who'll be given the task of showing the lads where the pubs are!

On a different note, I would like to thank two people in particular who worked very hard in helping to organise our front cover this month. They are Duncan from Henry's in London and Phil from Nevada Communications in Portsmouth. Getting together with A&M Records, Duncan instigated the use of a CB radio link for the convoy, while Phil supplied the equipment. Thanks, lads, for your efforts and the very best of luck with the expedition.

*Simon Bevel*

## Leave Them Rigs Alone

Microphone wiring has been an enigma to the majority of the CB population. Many 'rig doctors' have tried and failed at the basic first hurdle of CB electronics, yet these people, after their original failure, turn their heads away from the simple side of CB radio engineering to the far more complex side - the box itself.

How can someone, after failing to rectify a simple problem, then turn their attentions to the far more complicated electronics of the CB with a screwdriver as their only company?

If rig doctors learned to use a multimeter they may be able to repair and wire microphones and, one day, even have the knowledge to remove a CB radio cover with the correct size and type of screwdriver, rather than the ever-popular flatnose scriber-cum-screwdriver-cum-earscratcher.

Roll on the day when CBers learn to "Leave them rigs alone"

**Robin Hood,  
Abbey Wood,  
London**



## Sheffield Shame

Looking over past issues, I came across a letter from Major Tom from Wakefield. He is correct in every single sentence of his assumption of the breakers over in that city. They, in my opinion, are the worst set of CB users I have ever listened to in the United Kingdom this present decade.

Only a few days ago, whilst flicking through channels, I picked up a violent argument raging – one Sheffield breaker was saying "What you want, buddy, is a hammering and if I ever catch up with you, that's what you'll get".

All too often, this attitude is prevalent in Sheffield and I don't know if the DTI are ever listening in to Sheffield but if I were a DTI official, that's the first place I would clean up – and very quickly!

**Barnsley Bull,  
Barnsley,  
S. Yorkshire.**

## International Radio Pirates

We wrote to your magazine late last year but unfortunately did not have any invitations to become members of our group as we were still a very new DX group. Since the last letter we have now had them printed. We also now have our first batch of rubber stamps, our first batch IRP stickers (£1.50 per 100). The card enclosed cost £2 per 100 and are printed by a very good company in Sunderland.

Our membership has slowly grown to around two dozen but recently we have had new members from Portugal, Gibraltar and Zimbabwe.

Our first magazine is due out around now and will contain members list, fund sheet, DX tips, wiring diagrams, problems page, who's contacted who and photographs of our recent Christmas 'do'.

Best wishes and keep up the good work on the magazine.

**R Craig,  
International Radio Pirates,  
PO Box 4,  
Stanley,  
Co Durham.**



## Handheld Hint

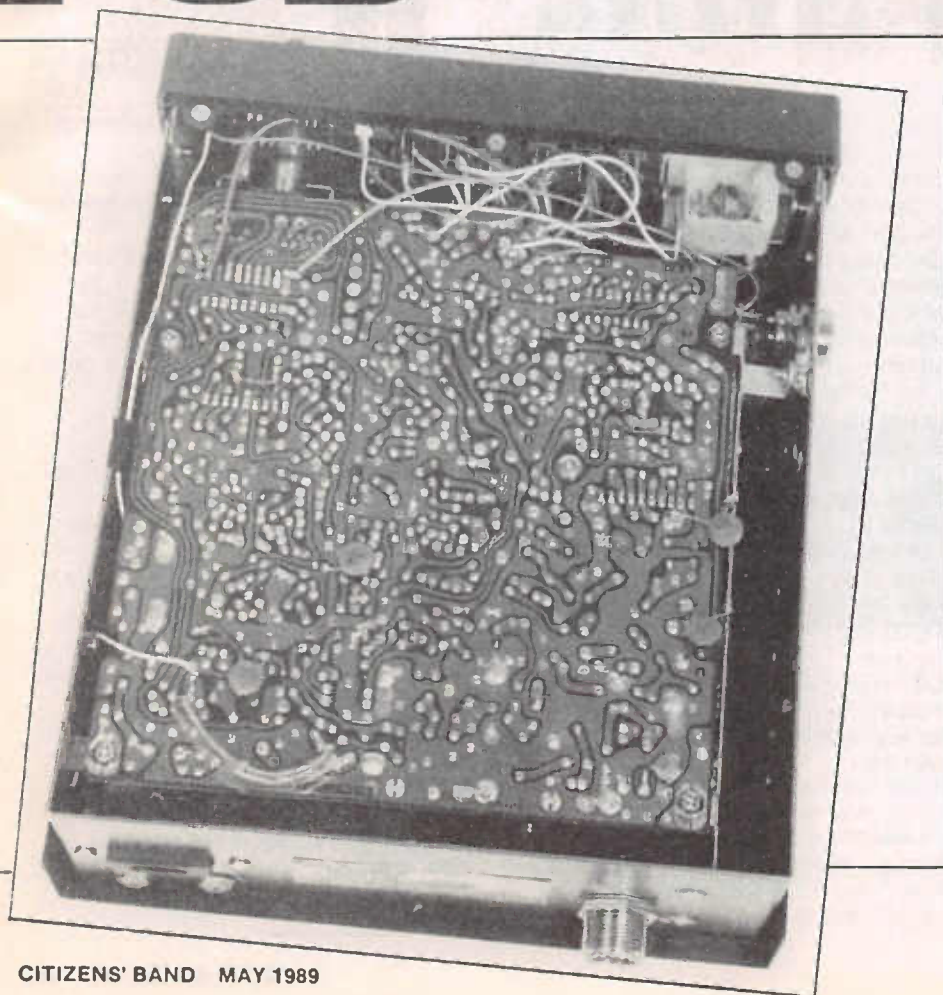
Your recent article "Over the Air" mentions the DNT 4000 handheld not having a carrying case. It might be of interest to your readers to know that the carrying case for the Harvard 410T fits very nicely and only requires a minimum amount of cutting on the right hand side to fully expose the side panel controls. The case is relatively cheap and can be obtained through your dealer from ALBA Ltd.

Simple modifications can be made to the DNT 4000 to fit an external aerial jack and a power jack to allow operation in a car. With its 4 Watt output, the mobile performance is equal to the DNT Contact 40 FM.

The extra parts are two jack sockets, one diode, screened wiring and a careful cut on the printed circuit.

I can supply full details, if this is of interest.

**S A E Barrow,  
Brook Cottage,  
Allotment Road,  
Niton,  
Ventnor,  
Isle of Wight**





**E**ver had the feeling you're being used? Exploited? I can't be sure, but I think people have been taking advantage of my (well-known) good nature.

I was listening to the woes of a nearby monitor (she'd had a particularly bad day with bucketmouths) when a friend of mine, Toothpick (he's a dentist), broke in. 'Hello, Filly,' he greeted me. 'Long time no hear. How's life in Little Puddlefoot?'

'Oh, bubbling along,' I said cautiously (dentists make me nervous). 'Well, more like a stagnant pond, actually. Er - I'm not due for a check-up or anything am I?'

'No, no,' he said airily. 'You're not due for an appointment with the drill. Not just yet, anyway. Actually, knowing how extremely well-informed you are, I wanted to ask you a question.'

Now, I'm not susceptible to flattery, of course, but it's nice to be told things like that, isn't it? I picked up the mic (I had inadvertently dropped it when he mentioned the word 'drill') and asked him what he wanted to know.

'Nothing much,' he said casually. 'I'd be quite interested to know when CB was - er - born. Came into being, you know.'

'Oh, is that all,' I said, wracking my brains.

'No, actually, it's not all,' he said. 'I'd also like to know when CB became legal in the UK.'

'Er -' I began.

'Also, what SWR stands for. I've always wondered.'

Here was safer ground. 'Standing Wave Radio,' I declared triumphantly. There, and you thought I wasn't technical, didn't you?

'Also, I'd like to know the names of three type-approved CEPT CB sets.'

Don't want to know much, do you? I muttered to myself. Aloud, I said: 'No problem. Thing is, I've got something in the oven - got to go. I'll get back to you in a few minutes, OK?'

I switched off the set and rushed to the filing cabinet, searching feverishly for back-issues of a certain CB magazine. It was all sure to be in there somewhere, I thought, scanning the contents pages. It didn't occur to me to wonder why Toothpick should ask such a strange set of questions. All that mattered was my reputation. If he thought I was well-informed, he must go on thinking I was well-informed.

In twenty minutes, I had the answers. I put out a call for him and he came on straight away.

'1958, 1981 and (names of three approved CEPT rigs),' I announced confidently. He was suitably impressed. 'Wow, that's great,' he said. 'How do you spell that last name?'

I spelled it.

'Thanks again, Filly,' he said. 'Now lay

# Lady Breakers

# Filling In

**Filly's dentist needs  
filling in on a  
few facts**

off the sugar and I'll see you next month.' And he signed off.

I sat staring at the set, suspicion dawning. What was he up to? There was a faint 'plop' from the hall as something dropped through the letterbox. Still

pondering the matter, I wandered out and picked up a leaflet. It was a promotion from one of our local dealers, the *Thrifty Truckstop*.

**GREAT SPRING PROMOTION, I read. THREE BRAND-NEW CEPT CB SETS TO BE GIVEN AWAY ABSOLUTELY FREE!**

What a coincidence, I thought. Toothpick had been asking about approved CEPT sets. I read on . . .

**THE FIRST THREE CUSTOMERS THROUGH THE DOOR WITH THE ANSWERS TO FOUR SIMPLE QUESTIONS WILL EACH TAKE AWAY WITH THEM A FABULOUS (name of set). A horrible suspicion seized me - I read the questions - and yes. Toothpick had stitched me up. He was presumably on his way right now to collect his free CEPT rig - unless I beat him to it.**

I grabbed my car keys and tore out of the house - realized I was only wearing a dressing gown and slippers, wondered about going back to change, decided Toothpick was not going to get away with it even if I did make a fool of myself in the High Street - leapt into the car and drove off.

Needless to say, there was nowhere to park. I wasted precious minutes squeezing the car into a space several sizes too small for it, leapt out and flew through the streets to the *Thrifty Truckstop*, ignoring the stares I collected on the way. No-one, but no-one, was going to do me out of my free rig.

There was the familiar blue door. I panted up to it and met - Toothpick, emerging clutching a snazzy box and wearing a complacent smile.

'Give me that box,' I said threateningly. 'That's mine, you - you Judas.'

He grinned at me. 'Hello Filly, love the outfit. Can't stop, I'm off to talk to the French.'

'How would you like that box stuffed down your throat?' I said menacingly.

'How would you like me to whip out my drill?' he smiled, with even more menace. I backed away hastily. He gave me an airy wave and walked off. I glowered after him.

Geronimo, the owner of the *Thrifty Truckstop*, came to the door and peered out. 'Hi Filly,' he said, eyeing the dressing gown and slippers. 'I see you got our leaflet.'

I scowled at him. 'You can take your leaflets and go jump in a lake,' I said crossly.

'What! Haven't you come to claim your free CEPT set?' he asked.

'You mean - they haven't gone?'

'No we've still got one left. Have you got the answers?'

I smiled at him sunnily. Amazing how fate can kick you in the teeth one minute then give you a bouquet of roses the next, isn't it?

But in future I'll be changing my dentist.



*Take note of this!*

# WE ARE MOVING!



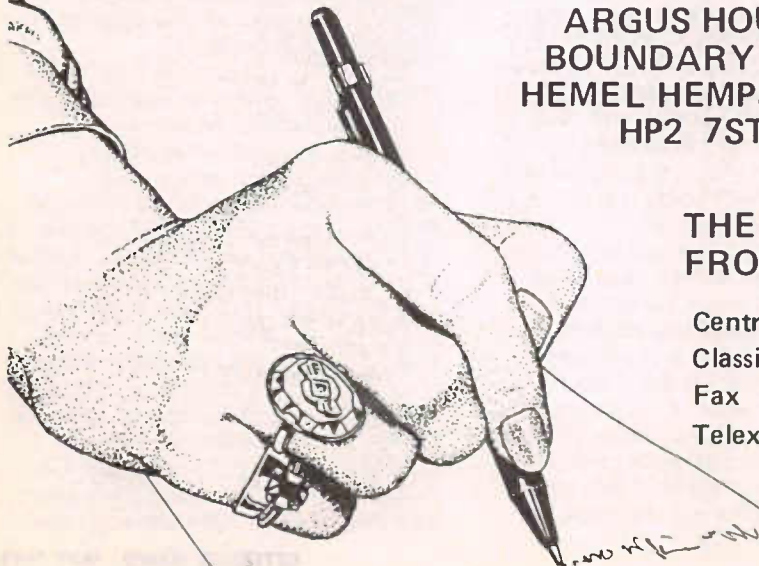
Argus Specialist Publications, Argus Books and Argus Specialist Exhibitions are moving from their existing offices to a new headquarters building at Easter.

FROM TUESDAY MARCH 28th THE NEW ADDRESS WILL BE:

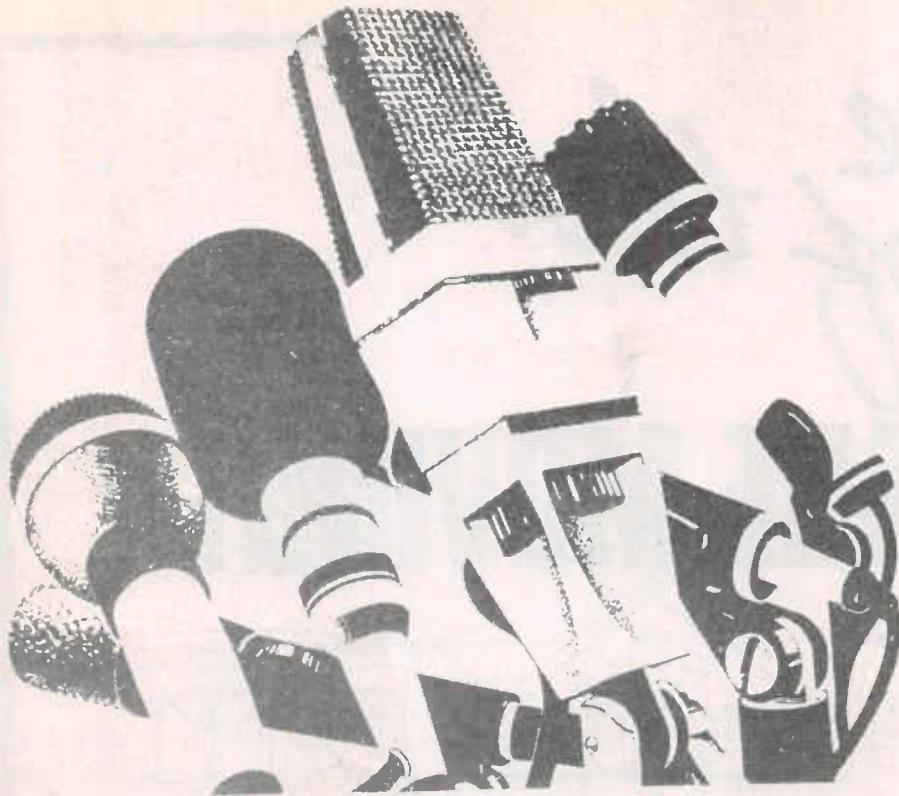
ARGUS HOUSE  
BOUNDARY WAY  
HEMEL HEMPSTEAD  
HP2 7ST

THE NEW TELEPHONE NUMBERS,  
FROM THE SAME DATE, WILL BE:

Central Switchboard	Hemel (0442) 66551
Classified Tele-sales	Hemel (0442) 66650
Fax	Hemel (0442) 66998
Telex:	827797







# OVER THE AIR

**M**y thanks to the many readers who took the time to write in about my 'open letter' to the RSGB. It seems that the majority agreed but, as always some felt that it was OTT (over the top). Stephen Dyke from Bedfordshire claims to be "active on all bands between 1.8MHz - 70cms" and says that "we should not expect to receive an answer from the RSGB unless we are members". He even went as far as to say that "Amateurs who buy ready made Yaseu's, Kenwood's or Icon's should be classed as CBers" as the aim of the Amateur is to build his/her own equipment. Stephen did admit to being a member of the RSGB and felt that the Society's attitude is "not so much anti-CB but apathetic towards CB". Sorry, Stephen, but I still believe that the RSGB should take more of an interest in what is happening around them and help anyone who asks for information and guidance; after all these

users could turn out to be future Amateurs.

I spent so much of last year touring around the country at some of the many eyeballs and events as well as helping on charity functions that 'er indoors is beginning to think of me as a lodger. The reason for explaining this will become apparent (I hope) in two ways. The first is to explain that my handle is derived from my other great interest (love) which is German Shepherd Dogs and nothing to do with chasing 'fluffy white things that go baa around fields', unless they happened to be called Sam Fox . . . Yes, we breed, show and work our dogs - well we used to before I started wandering off nearly every weekend! The second is to inform 'er indoors that we will be showing the dogs this year (sometime).

The reason for that statement is because she reads my column to find out where I've been or where I am going! Perhaps now she will believe me. PS. If you still fancy the idea of going back to your mother's - just leave me Sadie (the love of my life - our 10 year old GSD bitch) and you can take the others with you. But you can tell your mother that she can't have her broomstick back until she promises to stop flying around the airport and interfering with the planes!

Many clubs are just about to hold their AGM's being as it is once again 'that' time of year. Yet again, some will be faced with the idea of only allowing 'membership' to those who possess a current CB licence. Whatever your thoughts on this issue, it does have its good and bad points. I do have a licence and that is my own personal choice but it does not mean that I am 100% legal. It does, however, offer me the chance to

write in and moan about things to the DTI should I ever want to and it also gives me the chance to moan at or about those who abuse legal CB. These are two things that no non-licence payer can do, or should even think of doing, because I am paying towards your continued enjoyment of a legal system that you are pirating. In just the same way as those who do not buy a licence cannot afford to start moaning at the local 'muppets' who dead-key or play music. it is a bit like driving a car without a driving licence, insurance or road tax - illegal but, some may do it *until they get caught!* Much has been said in the past about 'the future of our 27/81 depending on the licence figures' and in some respects those who do not buy a licence could be helping this Government to decide on our future. No, I still maintain that I understand many people's feelings as to why they can't or won't buy a licence and in some cases I can respect their feelings . . . I think!

Many in the CB trade/industry are calling certain top of the range CEPT sets 'the second generation, providing added technology to the user'. So, why is it that the added technology that they have added and that many are paying for, may never (possibly years off) be used! Sel Call is one such item and I have it on very good authority that these will only be available on 'certain' sets and even then in very small quantities. Certain people in the industry are claiming that "CEPT sets for the UK has not been a great seller, and this means that we are not prepared to tie up our money in importing or stocking large quantities of add-ons that would take us a lifetime to shift". So, if you are intending to buy a CEPT set in the future - check out the "add-ons" situation first.

News from Uniden Co is that they are aiming to launch a new style of 2nd generation CEPT sets to replace the Uniden 400. They expect the new Uniden 450e to take its place and they plan to launch another two CEPT sets, as soon as they obtain type-approval (one being a homebase). Spares for the 400 will still be available in the future although they have already stopped the manufacture/importation.

**BE AWARE:** that is something that all CBers should remember when talking to or about someone else over our open frequency. It makes sense not to discuss the reasons why you or someone else are not, or will not be on channel at any given time. Things like "they have gone away for a few days" or "I am off on my holidays next week" can lead the way for your home to be broken into by the less than honest listener. Many may have read the national press (February) reports about a team of four men who procured young boys into a life of male prostitution and for their own sickening games. But, once again, CB radio came in for some bad press when they declared that "CB radio was used



to entice youngsters around to one man's home where they were abused by the men". It once again shows that bad press will sell newspapers even if the good side of CB is never given or reported on. Once again proving the need for us all to 'BE AWARE'.

From the Southern Eagles Marshalling Organisation comes the details of their first Charity Eyeball - in aid of the Imperial Cancer Research Fund. The two day event is being held at Rousden (Devon) on the 17th and 18th of June 1989. Stalls are available by advance booking by contacting: ESMO, 2 Marshalsea, Marshwood, Bridport, Dorset DT6 5QE. They would also like to hear from anyone who would be interesting in joining them in their work as a voluntary organisation.

The Mike Quebec 'Quinquennial' Charity Eyeball is being held at the Midland Sports Centre For The Disabled, Cromwell Street, Till Hill, Coventry, on the 3rd and 4th of June 89. Overnight camping available, Saturday night entertainment (ticket only - adults £3 children under 14 £1.50), club/trade stands available and much more throughout the day. For a map, booking form for tickets etc and further information, contact: Mercia QSL Club, PO Box 158, Coventry CV6 6BD.

Thank you to Gloria (*Foxy Lady*) for taking the time to write to me with information about the newly formed band of breakers who enjoy DXing and helping others. They go under the name of the Quebec Delta Sierra's and are holding a sponsored modulation on top of a local hill called Cairn o' Mount on the 19th, 20th & 21st of May to raise money for local nurseries. Please give them a shout or take the time to write to them via: PO Box 3, Brechin, Angus, Scotland. Good luck to all those involved and those who support this event.

Clyde Coast Search in association with 1st Radio Group are laying on the Seamill Convoy & Eyeball on Sunday 18th June 89. Plenty of things for the whole family as well as a large number of stands. The convoy leaves the Inverkip Social Club car park at 11 am (prompt) and end at Seamill beach. Traders wishing a stall and others who require information should contact: CS, PO Box 17, Greenock, Scotland. Breakers may also like to know that Clyde Coast Search can be contacted through Microlink mailbox (computer/modem) and their number is: 72:MAG32069. Ian McLean would like to hear from other monitoring organisations and feels that this type of computer contact could well aid the passing of emergency information throughout the UK.

My special thanks to Alice WM 97 (*Blue Eyes*) for the information about the 1989 Whisky Mike Eyeball on the 9th & 10th September at the GWR Sports Ground, Vallis Way, Ealing, London W13. Overnight parking available and



### A typical Eyeball?



club/trade stands welcome. Grand buffet dance and party with a live group on Saturday night (entrance by ticket only). For more information and forms etc contact: WM Eyeball, PO Box 23, Brentford, Middx. TW8 9NF. Those who know Alice will know how hard she works to help charities and others. Although she is confined to a wheelchair she still manages to get along to events throughout the year. Over the last 18 months she has crocheted 75 blankets, 12 baby romper suits and other items for "Save The Children". She collects old used postage stamps for a Scottish blind group on the Isle of Lewis and tinfoil for her own local church which goes for the blind. So, if you have any of the above items, Alice would be very pleased to hear from you and they will be put to good use. Send them to her. WM 97, PO Box 23, Brentford, Middx TW8 9NF.

BDX Print have sent me some samples of a special kind of 'Limited Edition QSL Cards' which are on a clear transparent celluloid material. Three sizes are available i.e. standard QSL, mini QSL and eyeball card. I am assured that with a special type of pen these cards can be written on (if you wanted to enter QSO details). I found them to be good quality and it is a nice finish to those special QSL packages that many CBers like to send and receive. It is something different for the '89 eyeballs. For further details and prices of these and other items send a large SAE to: BDX Print, PO Box 4, Coatbridge, Scotland ML5 2QA.

Brian Babington, the President of Natcolcibar (UK rep's to the ECBF), has asked me to pass on his thanks for all of the hard work that Peggy Tapper and David Tapper did over the past years as



Executive Officers of the organisation and for UK CBers in Europe. Although they are no longer executive officers he feels sure that they will continue to support CB in general and put their vast experiences to good use. He would like to welcome the new Vice President, Tony Jaconelli (Ch of S.A.C.B.C.). The new contact address is now: Natcolcibar, 44 Bath Street, Rugby, Warwickshire CV21 3JF.

Is there anyone person or group who collates information about eyeballs etc? If so, can they contact me asap. A number of pieces of paper arrive too late to give out information because of the eight-week delay between the copy date for Citizens' Band and the printed magazine reaching CBers. I feel sure that a number of clubs have details of their own events months before the actual date, and yet they often leave it until the last minute before sending anything out. Perhaps someone could collate 'all' event information and charge a small fee for sending it out to those interested CBers around the UK. I know for a fact that I haven't received some details and it's only when I contact other friends around the UK that I find out about them. Please let me have the information as soon as possible or perhaps give it some thought about setting up an Event Directory.

CB is an open system which is without doubt a low-cost form of communication. Many thousands use it and a few abuse it. In some cases the abuse can, and often does, turn very nasty. So when does the actual verbal abuse become 'slandorous' and at what point, if any, do you or someone else have the right to seek legal advice with the view to some kind of legal action. The legal system surrounding this type of offence when connected to CB and other certain types of open communication is, to say the least, unclear. It is not unknown for some breakers to try and imitate voices sometimes even using tapes of recordings. Breakers have sometimes been known to even mistake some voices for others and in doing so 'claim' that certain people were on channel when they weren't. Even if it is you who is receiving this kind of verbal abuse, British courts will not allow taped evidence, so although you may like to keep a taped record, it can't be used.

It is impossible to prove that a 'certain' person is responsible when you are at the other end of the mike and therefore there can be no 'actual' witnesses to support the claim, except for the fact that they may have heard what was said in the same way as you are hearing it - over an open frequency and without the offender being physically present. But, as I have said before - voices can be misleading! At what point does the abuse become offensive? Who decides this moment in time? What may seem

offensive to some could very well be classed as nothing to others.

For instance, many breakers swear over CB and, to some, this could very well offend. It is very hard to prove that swearing over channel is an offence to anyone's morals when so much has now become second nature to many and is used as in normal everyday conversation. Are they committing an offence under the Wireless Telegraphy Act if used over CB? Well, even the DTI have found it hard if not bloody impossible to take anyone to Court for simply swearing over channel. They have claimed that they would need to prove that the language used was outside of that which is normally found on any street or in any public place. Hence the reason why our British bucketmouths get away with it. And if the DTI have these problems (with all their financial backing and top legal advice) just imagine what you or I face!

I am assured that if you use offensive language over a commercial frequency e.g. on Radio 2, the company can be held liable and, instead of the onus being on you to prove that the language offended your normal standards, it is down to the broadcasting company to prove that the language used 'was not intended to cause offence'. So perhaps a protected frequency offers a better deal in some ways! The other thing you must remember with a commercial broadcast is that you do not have to prove that a certain person said 'certain' things as it is the norm to accept that the person making the broadcast is who he/she says they are, otherwise the broadcasting company may well be held liable for false representation.

It is an area that is full of problems when it happens over our frequencies and in short there is no real answer. If you have thousands of pounds to throw away then you could try to take someone to Court but it is really down to what is offensive to you may not be offensive to me. The only time that you may have some kind of case is if someone makes a statement decrying your actual 'character' i.e. call you something that you can prove that you are not. And even then you would have to prove that a 'certain' person said it at the other end of the mike. It really is not that easy.

I look forward to seeing many of my friends again this year and I hope that you will take the time to come up and say hello, should you see me at an eyeball. It's always good to have a chat and listen to what others have to say. If you have something that you would like printed then let me have it written down on a piece of paper (my memory tends to lapse after a night on the booze) or let me have an eyeball card. My thanks to all those who take the time to write in with comments etc. Send them to me c/o: Shepherd Man, PO Box 429, London SW19 2UU.

## A Final Thought

### If You Are Unhappy

Once upon a time there was a sparrow who, being a non-conformist, decided not to fly South for the winter.

However, the weather soon turned cold and, reluctantly, he changed his mind setting off towards the South. In a very short time his tiny little wings started to freeze and he fell to the ground, and a passing cow dumped on him. This must be the end, he thought to himself, but, instead, the manure warmed his little wings thus making him able to fly. He was so pleased that he started to sing.

Just then a cat came by and, hearing the chirping noise, decided to investigate the sound by clearing away the manure and, upon finding the little sparrow, ate him.

Therefore, this story contains three morals:

1. Anyone who ...'s on you is not necessarily your enemy.
2. Anyone who gets you out of the ... is not necessarily your friend.
3. If you are warm and happy in a heap of ... keep your bloody mouth shut!

## EVENTS/EYEBALLS

**April 16th** Stanley "International Big Meeting" at the Stanley Youth Centre, Stanley, Co Durham. For further details contact: PO Box 5, Consett, Co Durham DH8 8NG.

**April 28th - 30th** Auchenlarie Eyeball Weekend at the Gatehouse of Fleet, Kirkcudbrightshire, Scotland.

**May 7th** Cheltenham Eyeball at the Swan Inn, Coombe Hill, Cheltenham, Glos. Details from PO Box 135, Cheltenham, Glos. GL50 1AA.

**May 20th** Tango Papa Charity Eyeball at the Floral Hall, Southport. Details from PO Box 13, Southport.

**June 3rd - 4th** Mike Quebec "Quinquennial" Charity Eyeball at the Midland Sports Centre For the Disabled, Cromwell Street, Tile Hill, Coventry. Details from PO Box 158, Coventry CV6 6BD.

**June 10th - 11th** WDX & QSL Group 2nd Eyeball at the Worthing Rugby Football Ground, Roundstone Lane, Angmering, West Sussex. Details from PO Box 404, Worthing, W. Sussex BN14 7EB.

**June 17th - 18th** Southern Eagles Charity Eyeball at Rousden, Devon. Details from SEMO, 2 Marshalsea, Marshwood, Bridport, Dorset DT6 5QE.

**July 9th** Warminster Eagles Eyeball at Longleat Safari Park, Wiltshire. Details from PO Box 13, Warminster, Wilts. WA12 9DZ.

**July 16th** South Coast "Seventh Annual" Eyeball at the Portslade Community College, Portslade, Brighton, Sussex. Details from Mike Oak Breakers, PO Box 161, Portslade, Sussex.



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## The VHF Marine Band

The International Maritime Mobile Band covers the frequencies 156 to 162MHz. It comprises 56 channels; 1 to 28 and 60 to 88, plus channel 'M' which is for British Marine use. The distress channel is channel 16 (156.800MHz). The Marine band channels have specific designations; Intership, Port Operations, Ship-to-Shore (Public Correspondence) and Distress, Safety and Calling. Channels must be used for the purpose allocated ie, you cannot use a public correspondence channel for intership use. This is in contrast to CB, where although the Licence Conditions Booklet and the CB Code of Practice state that operating conventions should be respected ie, channel 09 kept clear for emergencies, channel 14 for calling and channel 19 for mobile use, channel designation is not respected as much as 'responsible' CBers would like. Maritime VHF radio may be used on inland waterways as well as at sea.

## Enforcement and Regulations

The Department of Trade and Industry are stepping up their campaign against unlicensed vessels and operators, not only does the actual piece of radio equipment on board ship have to be licenced, but the operator has to hold a 'Certificate of Competence' and 'Authority to Operate'. There is a

provision in the regulations which permits VHF Marine Band radio to be used by an unqualified person, provided that he is supervised by a person who holds the required certificate and authority to operate. There is no need to dwell upon the potential hazards of unqualified and unsupervised people being let loose on Marine Band frequencies as it is obvious the havoc and danger that could be caused.

## Misuse on the Marine Band

There is misuse on the VHF Marine Band, but not to the same extent as those experienced on the CB frequencies. One of the main points to remember is that other than during 'ship to shore' telephone communication, marine radio traffic must be purely on the subject of 'ship's business'; 'chit-chat' is strictly forbidden.

## Examinations

Any person who wishes to obtain a Restricted Certificate of Competence in Radio Telephony (VHF Marine only) is required, under Section 7(1) of the Wireless Telegraphy Act 1949 and the Radio Regulations, to take an examination. The examination consists of written and practical sections and is conducted by the Royal Yachting Association on behalf of the Department

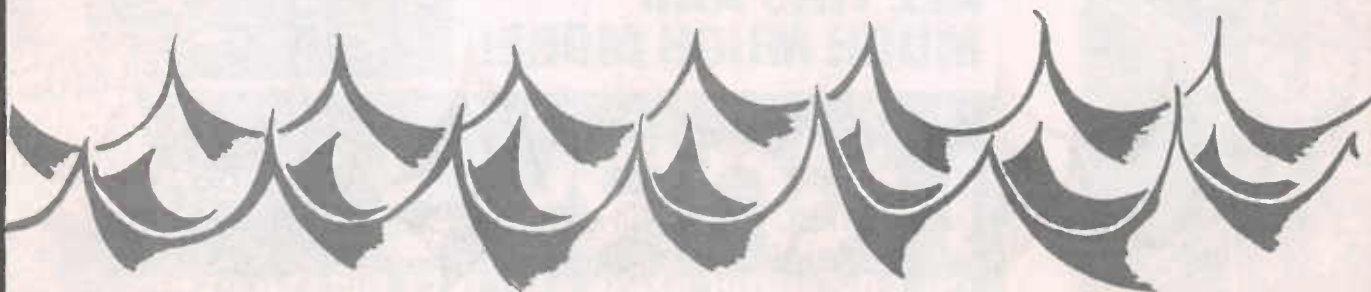
of Trade and Industry. A declaration to preserve the secrecy of correspondence has to be signed by the applicant. Although the examination is not difficult, there is a lot to learn so advanced preparation is essential. Great emphasis is placed upon learning the various emergency radio procedures and it is a certainty that the student will be tested on at least one of those procedures during the examination.

A number of Sailing Schools offer specialist 'one-day' VHF Marine Radio Operator courses which culminate in the RYA/DTI examination being taken at the end of the course. This is one of the best methods of obtaining a good grounding in VHF Marine Band operation and eventually obtaining the 'Certificate of Competence'. Most Adult Education Institutes offer VHF courses approved by the Royal Yachting Association. In addition to this, various books and videos are available for home study. The RYA also hold examinations on behalf of the DTI at the various boat shows throughout the U.K.

Whilst it is not suggested that CB could ever be an alternative to the VHF Marine Band, there are many ways in which, if used correctly, it can be of benefit for maritime use. The main limitations of the use of CB in such circumstances is that it is not officially monitored by HM Coastguard or any other emergency service. Citizens' Band radio cannot be considered an alternative to the '999' system or the

# Wavebands

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marine distress channel. Legally, CB stations can be established on a vessel only with the consent of the Master of the vessel. (See Section 7 of the CB Licence Conditions booklet).

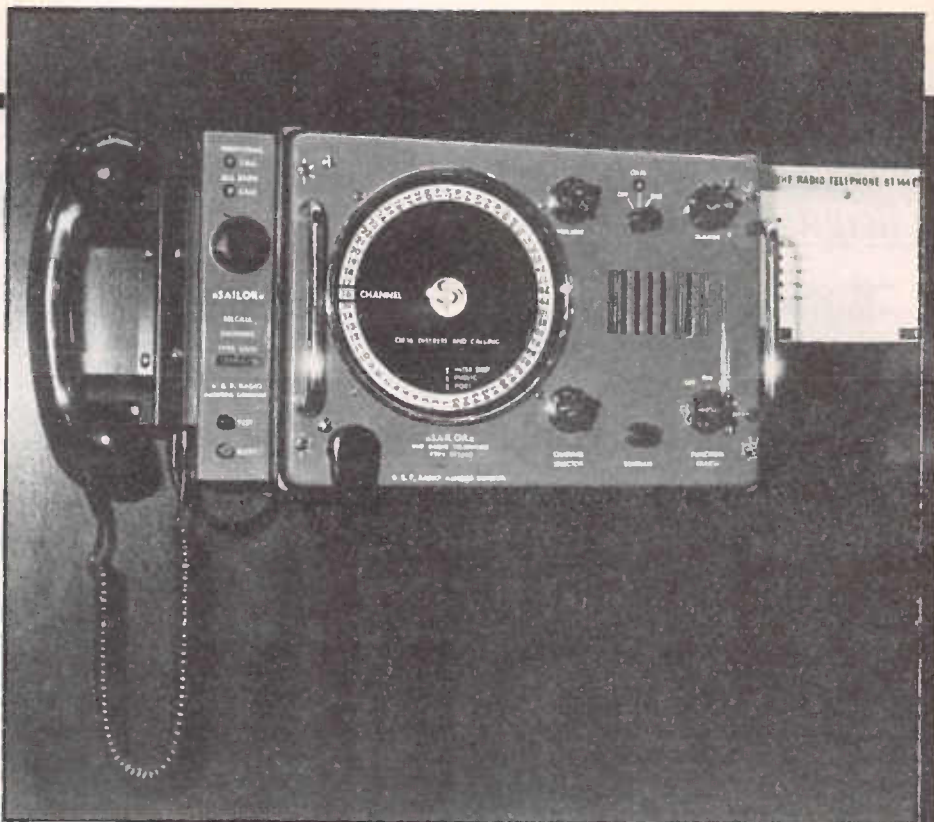
CB could, subject to having the Master's consent, be used for 'Intership' use on matters which would not have to be restricted to matters of ship's business. Contact could also be kept with shore-based CB operators. Operation of VHF Marine Band equipment on land is illegal (other than Coast Radio Station and HM Coastguard traffic).

Equipping your boat or inflatable with CB would provide an additional safety device, provided that you keep within a reasonable distance of the shore. No doubt an increase in the number of 'maritime CB users' would result in voluntary monitoring groups being established around the coast.

CB could also provide an effective short-range radio communication system that would be an asset to many boat users and boat clubs. For example, let us consider a medium-sized yacht club which is based on a large reservoir, say covering an area of 4 square miles. In all probability the club would not at present use Private Mobile Radio due to the prohibitive cost and the lack of free channels available. VHF Marine Channel 'M' would not be permitted as this can only be used by British Marinas.

This is an area where CB could come into its own. A CB Yacht/Boat Club radio system could be established as follows; a base station could be set up in the main club office and watchroom, this would be the 'Central Control'.

All initial communications, other than emergencies could be directed to the 'Central Control', ie the fact that an instructor is taking his students out on one of the training boats. This information, for safety purposes, should be logged. Most yacht/boat clubs operate a safety or rescue patrol craft, which could be fitted with CB. The safety/rescue patrol would then maintain a continuous radio listening watch on the CB emergency channel (9). The base station set could be fitted with a 'priority' switch set to channel 9 in order than emergency radio traffic could be monitored. The base station would have the responsibility of calling the



local authority public emergency services if required.

All requests for boat-to-boat or boat-to-shore transmissions could be directed in the first instance to the 'Central Control', the working channel of which would be advised to all members. The control operator could then check for a free channel and direct the units to it. It must be remembered that some of the channels may be being utilised by 'local breakers', so these channels should be avoided. In most areas of operation, even when there is a heavy concentration of CB users, there are usually sufficient free channels.

I think that a degree of local control over CB 'business' communications is essential and will ensure that maximum benefit is derived from the system. If CB is going to be used for business use, then within that area of operation there will have to be radio discipline.

Additional channels could be used by those involved in car park duties and security patrols at boat club premises. With the availability of 40 channels, the possibilities are endless. Range is not likely to be a problem and it may well be that if the area of operation is small by reason of geographic area, then 'low-power' mode can be used.

## Protective Equipment

Waterproof covers are widely available for use with hand-held radio units. The covers were aimed at the VHF Marine and PMR market, but are well suited for CB use. The construction and design of the covers is such that radio operation is possible even though the unit remains completely sealed.

## Conclusion

The use of CB for maritime use should be exploited. The system if used correctly, can provide an effective local communications network and an additional level of safety provided that adequate monitoring facilities are utilised.

Further information can be obtained from: Royal Yachting Association, RYA House, Romsey Road, Eastleigh, Hants. SO5 4YA.

## For VHF Exam details:

Ship Radio Licencing Section, Department of Trade and Industry, Radiocommunications Division, Room 613, Waterloo Bridge House, Waterloo Road, London SE1 8UA.



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#### MODEL GL-25

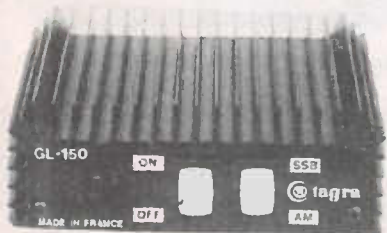
Entrée : 0.2 W. a 4 W. Max.  
Sortie : 25 W. Max AM/50 W. SSB.  
Consommation : = 4 Amps.  
Alimentation : 13.8 Volts DC.  
Interrupteur : On/Off. Permettant le fonctionnement.  
Dimensions : 35 x 65 x 125mm  
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Fréquence : 27 MHz  
Impédance : 50 Ohms

#### MODEL GL-50

Entrée : 0.2 W a 4 W. Max.  
Sortie : 35 W. AM/70 W. SSB.  
Fréquence : 27 MHz  
Impédance : 50 Ohms  
Interrupteur : On/Off  
Commutation : AM/SSB  
Alimentation : 13.8 Volts DC  
Consommation : 7 Amps  
Dimensions : 115 x 100 x 40mm

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  - OR GUTTER MOUNT WITH MOULDED P.L. LEAD
  - MAGS CHROME/BLACK .....
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#### MODEL GL-150

Entrée : 0.2 W. a 4. Max.  
Sortie : 80 W. AM/160 W. SSB  
Fréquence : 27 MHz  
Impédance : 50 Ohms  
Interrupteur : On/Off  
Commutation : AM/SSB  
Alimentation : 13.8 Volts DC  
Consommation : 12 Amps  
Dimensions : 115 x 120 x 40



#### MODEL GL-35

Entrée : 0.2 W. a 4 W. Max.  
Sortie : 25 W. Max. AM/50 W. SSB  
Fréquence : 27 MHz  
Impédance : 50 Ohms  
Interrupteur : On/Off  
Commutation : AM/SSB  
Alimentation : 13.8 volts DC  
Consommation : = 4 Amps  
Dimension : 115 x 60 x 40mm

Linear amplifier not for CB use



#### MODEL T24-12

Entrée : DC 14 Volts  
Sortie : DC 13.8 Volts  
Protection : Par fusible  
Stabilisé : Par IC  
Intensité : 8 A. Constant  
12 A. Pointe  
Dimensions : 130 x 100 x 65mm



#### ANTENNAS CONTINUED

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  - FLORIDA (FOXY) (C. LOAD) .....
  - PANTHER (B. LOAD) .....
  - STALLION (C. LOAD) .....
  - RATTLESNAKE (B. LOAD) .....
  - PHILADELPHIAN (PROFESSIONAL 27)  
BASE & CENTRE LOAD .....



#### MODEL T24-13

Entrée : DC 24 Volts  
Sortie : DC 13.8 Volts  
Protection : Electronique contre toute surtension et par fusible  
Stabilisé : Par IC  
Intensité : 14 Amps Constant  
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Dimensions : 130 x 200 x 65mm

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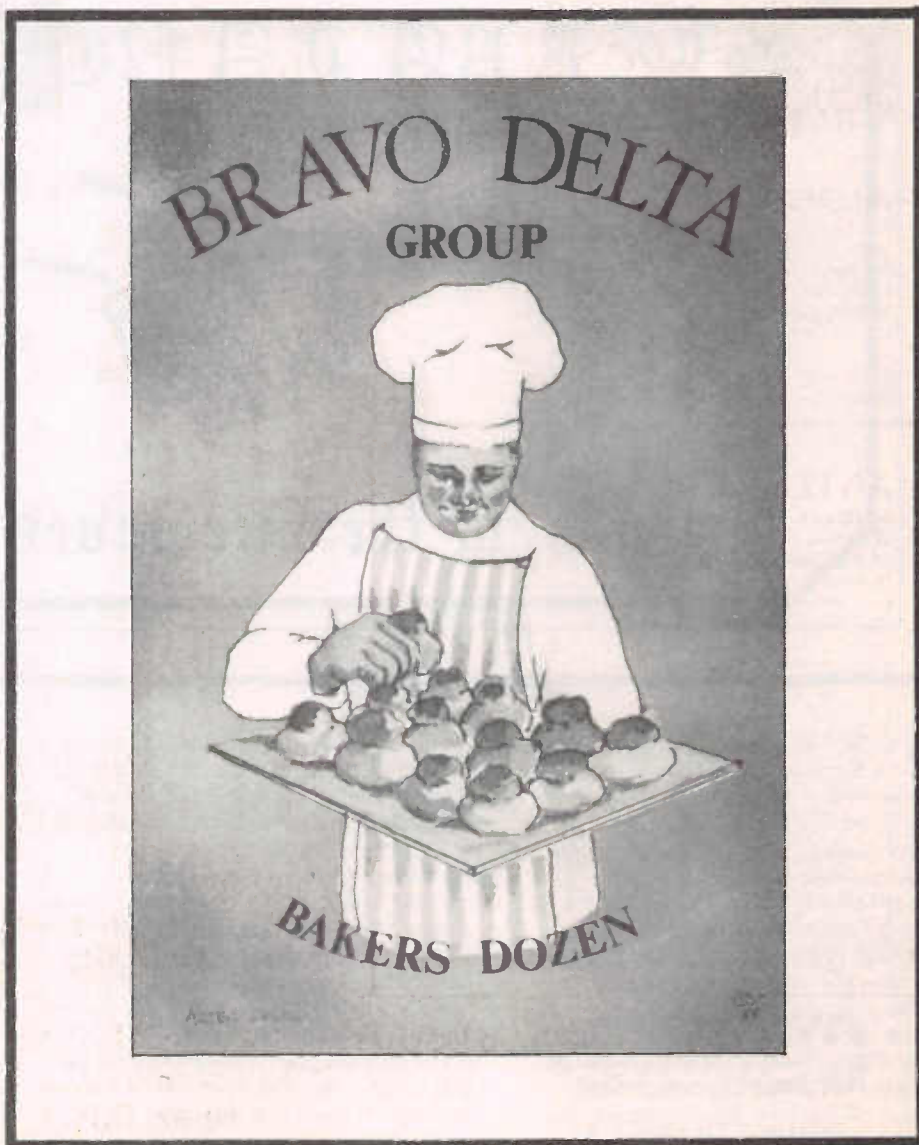


## More names and addresses from QSLers all over the world, courtesy of David Shepherdson

**A**s usual, I'd like to start off this month by giving some details on the forthcoming Events for which I have some details. Depending on just when you get this magazine you may have just in time! It is the GBQDC Fifth Annual Meeting held on the 16th of April at the Stanley Youth Centre, Stanley, Co Durham. Times are between 11am and 4pm and is held indoors so, as the leaflet says, the weather is unimportant.

The following week (22nd April) the Lichfield & District CB Club is holding the first of two Country & Western Nights and will be held at the Memorial Hall, Rugeley Road, Burntwood. Admission tickets £1.50 and fancy dress is a C&W theme would be preferred. The following weekend, on the 29th April between 12 noon and 11.30pm, the Cardiff Radio Operators Club are holding their Cardiff Eyeball. There will be trade stands, as indeed there are at all the events I have details on this issue. Also, live entertainment, separate lounge & bar, refreshments etc.

On the 13th of May there is the Mike Alpha DX Radio Group's 1989 Grand Eyeball which is held as usual at the Three Rocks Holiday Centre, Ladram Bay, Otterton in Devon. This runs from midday through to midnight and includes a country & western evening. With it being in a holiday camp, there are camping and caravan facilities available. Then, on May 20th, there's the Tango Papa (83) Group's Charity Eyeball 1989





### QSLer Addresses:

Len ( <i>Len The Zen</i> )	PO Box 77, Douglas, Isle of Man
Brian ( <i>Road Runner</i> )	PO Box 105, Northampton, NN3 1YY
Paul ( <i>Tweedledee</i> )	PO Box 8, Southampton, SO9 7AJ
Mark & Ann ( <i>Red Baron</i> )	PO Box 105, Northampton, NN3 1YY
Tony ( <i>TD</i> )	22/6 Wattisham Square, Castle Vale, Birmingham B35 6JL
Bob & Audrey ( <i>Innkeeper</i> )	PO Box 803, Kirkham, Lancashire

Heidi Collector Series ~ No. 364

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# SIERRA TANGO DX CLUB



## Friends of the Airwaves

held at the Floral Hall, Southport. Tickets cost £1 for either the daytime eyeball, or the evening entertainments, or a combined ticket is available at £1.50. There is also a council charge for car parking. All proceeds to the Club's chosen charity which this year is the St John's Ambulance. This one's a Saturday event by the way, so it is also possible to have a gander around the shops in Southport.

The same weekend, but the Sunday (21st May), the Southern Counties CB Rally is held at the Oakdene Holiday Village off the A31. Another event new for this month's list is the Kendal &

District Breakers Club Charity Evening Eyeball being held at the Netherfield Football Club, Parkside Road, Kendal between 8pm and midnight. Admission tickets cost £2 and include supper. There will also be a Miss Eyeball contest, raffle, stalls etc. The next one is a June event, this being the Sierra Tango DX Club's 1989 Mass Eyeball held at the Rhyl Football Ground. The fun starts at 10.30 with stalls and games. There is also an evening of entertainment planned; admission £1 & 50p for children. I've been asked to point out that (1) there is a new date and venue from last year as the Club does

not wish to clash with another local-ish Club's event which last year was held over the same weekend! Also (ii) the Club has not folded and shows no signs of doing so despite some malicious rumours which are apparently being spread round. Anyone writing to the ST Club for information will also receive a complementary tourist info package thanks to the local Tourist Boards.

Held over the weekend of 10th & 11th June is the Sea Smugglers' International Card Swap & Eyeball at the Granville Hotel, Sea Road, Bexhill-on-Sea; admission 50p per day with Saturday night entertainments (£1).



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A55 close to "Marble Church" over the weekend of 9th & 10th of September from 11am to 5pm. There is also an evening function on the Saturday from 8pm 'til 11pm, including Club & trade stalls, raffle, refreshments etc.

Over the same weekend as this is the West Middlesex Radio Group's 1989 Eyeball being held at the G.W.R. Sports Grounds, Vallis Way, Ealing, London. Saturday's evening "do" costs £3 for a Grand Buffet Dance and Party with live group and is by ticket only. Sunday is the Eyeball itself with Club & trade stands, raffles, tombola fun and all sorts of card swapping actively encouraged.

The last one for this year on which I do have details on is the Warwick Kingmakers' Eyeball held at the Warwick Race Course over the weekend of 17th & 18th of September. Last year the Club managed to raise some £1,300 for equipment for the Warwick Hospital's Childrens Ward. Contact addresses for all clubs mentioned in the "Record Card" somewhere in these pages.

Now, as I just said, I've still not received any written details about at least one Eyeball this year and I know from talking to one person that written details were sent to me late last year, so that I would have details good and early for this year! The person in question was quite miffed that I hadn't included the details in the mag at the time we spoke. I know also that details which were sent to me last year regarding the Romeo Hotel Club of Manchester never got to me either. At the time of my writing this month's pages, I've no details as yet about either the Trailblazer's Annual Poma Card Swap or the Solway Pirates Mega-Weekend. The Trailblazer's is held in Wolverhampton in (usually) August, though I have said somewhere following rumours I had that the venue would be changing. I've since heard that the venue will still be the Old Vic, but as yet no details about this year's do. The Solway Pirates' Annual event is usually held at the Southerness Holiday Village during early October. Regarding events which were held last year and would probably be held this year, as yet I have not received any info on the WDX Eyeball in Worthing, Sierra Bravo, Southampton and the Lucky Horseshoe CB Club's Eyeball in Burton on Trent, all held during June last year. At this time I must apologize to the Breakaway's CB Club in Swadlincote for not including their Eyeball but details finally reached me just in time for *this* issue which of course comes out after the eyeball was held.

Some time back I did promise that if any QSL/CB clubs or QSLers on the Isle of Man or Isle of Wight would get in touch, I'd do my best to include an "Island Special" in a future issue. Then, after a few months, I mentioned it again and still waited for some response. I've now heard from one club on the Isle of

### QSL Services Addresses:

Aztec Design	2 Brook Cottages, Kings Sombourne, Nr Stockbridge, Hampshire.
Charlie Cards	26 Edward St, Hartshorne, Burton-on-Trent, Staffs, DE11 7HG.
Currie Cards	89 Derwent St, Blackhill, Consett, Co Durham, DH8 8LT.
Scottish C.B. Newsheet, C/o 'Arnail', Patison, Neilston, Glasgow, G78 3AT (one year's Subscription £2.70).	

The following weekend (18th) the 1989 Sheffield Charity Gala and Eyeball is held at the British Steel Sports Ground on Bawtry Road, Tinsley (near Junction 34 on the M1). Clubs are welcome to attend and bring a stall; cost £5 for a 12-foot plot, and £10 for trade stands. On the 25th of June, there's the Kilo Mike Eyeball at the Kirby Muxloe Sports Ground, Ratby Lane, Kirby Muxloe, Leicester, and it is held in association with the Currie Card Collectors Club/Bank.

Moving into July, I've still only a few details on the 7th South Coast Eyeball held at the Portslade Community

College, Mile Oak, between 10.30am and 5.30pm on July 16th. Admission free. Unfortunately I've no other details bar a contact address as the promised written details still haven't managed to get through the post to me! Moving on a little later into the year I've some details about the Triple City 3rd Eyeball at Barton Village Hall, on the A6 near Preston on 19th August between 10am and 5pm. Club and trade stands (£3) will be there and admission is 50p.

Following this, there is the North Wales Breakers 2nd Annual Charity Eyeball held in the Bodelwyddan Community Centre and Field, just off the



Man and one QSLer who has sent me details on what must be every club on the Island! Thanks Len (*Len the Zen*) for all the info, I will be using it shortly. If any club, group or QSLer on the Isle of Wight cares to send details of their club/group or their individual QSL package, I'll be very happy to feature them in another issue.

From Northampton hails Brian (*Road Runner*) who has a bundle of new cars including a superb full-colour set of four wagons. All these are in the Currie Collector Series of cards while a pile of Aztec cards come in from Paul (*Tweedledee*) of Southampton. Paul asks that I mention that as a lot of his post was going astray, he has had to change his PO Box and now use PO Box 8, Southampton, SO9 7AJ. He has also started up a DX Group called the Bakers' Dozen and membership is limited to thirteen and he is in fact one of the people who are organising the Southern Counties CB Rally in May.

A few more names now starting with Mark (*Red Baron*) and Ann (*Disco Lady*) of Northampton who have Currie Cards and look forward to hearing from anyone wishing to swap with them. A new address in from Tony (*TD*) who is another Currie Card Collector, while from Lancashire comes a set of Heidi Collector Cards from Bob (*Innkeeper*) and Audrey (*ABC*).

Just a little room left so this month's more detailed examination of a club's package looks at the Whisky Tango CB Club of Burnley. Membership to this club costs £1 (cash), a large SASE stamped with two first-class stamps and between five and ten of your personal QSL cards, each signed and dated, plus one for the Club's file. For this, you receive your WT Unit Number, certificate, a mixture of the President's, Committee members' and members' cards, welcome letter, pen, WT invites and invites to other clubs, along with local info leaflets and 20 Club QSL cards and 10 stickers. There was also a Good QSLing Gulde, a price list of the Club extras and a log sheet. The cards in the review package were mainly Heidi designs but I have been informed that the Club now also has Currie Cards. These are available at £3 per 100 including UK postage.

Next month, I hope to give some details on a few different, and some new clubs, so keep this month's issue to hand if you are planning on going to any events as next month's listing will be cut right down to give me a little more room! That's it, if you want a mention then please drop me a line direct to 3 Tarn Villas, Cowpasture Road, Ilkley, West Yorkshire, LS29 8RH and *not* via the mag as this can take several months to get to me! 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.




## RED BARON

MARK "HOTEL 60"

## DISCO LADY

ANN "HOTEL 61"  
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NORTHAMPTON  
NN3 1TY  
U.K.



Currie Collector No. 1300

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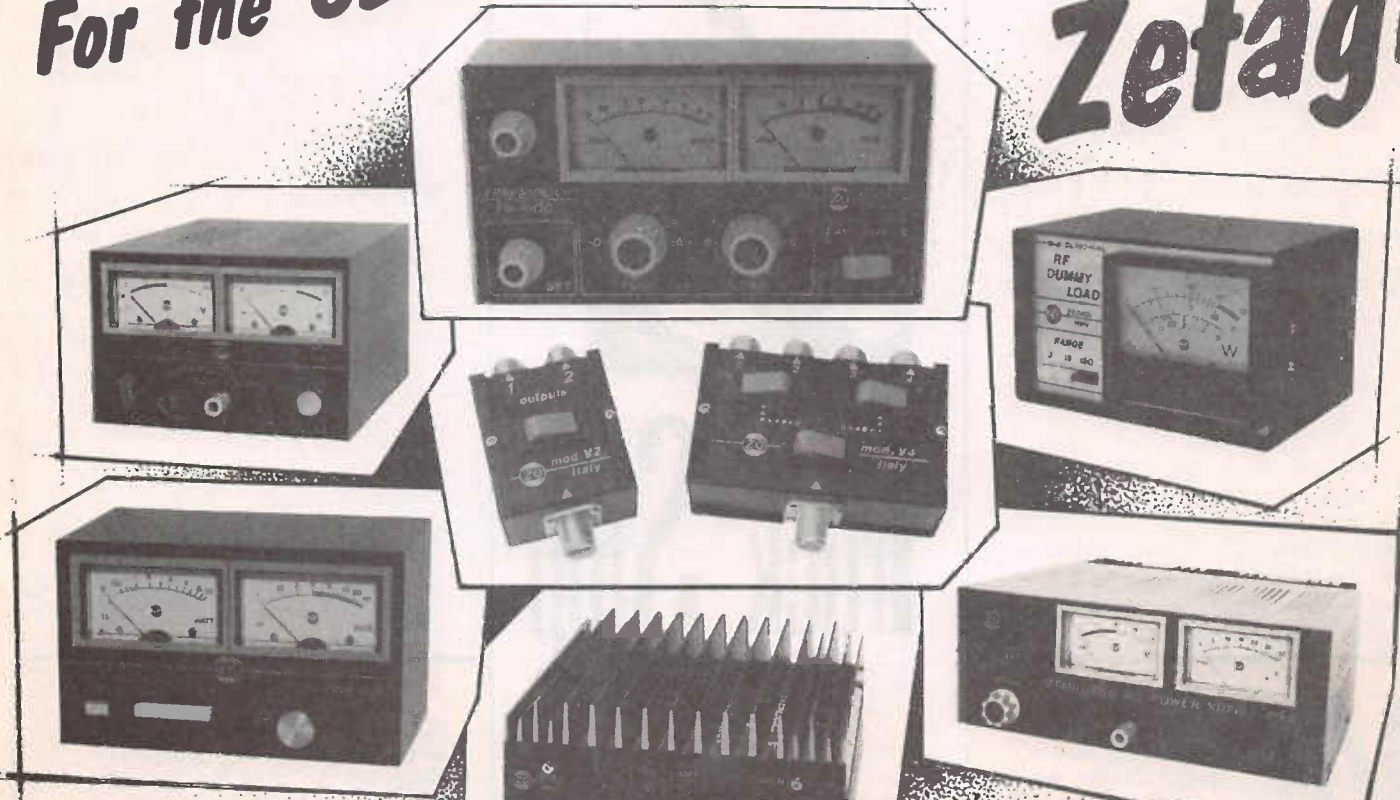
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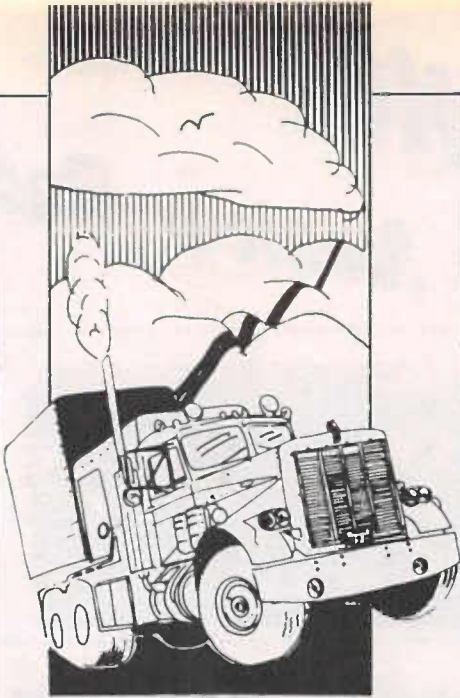
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# Truck Stop

**W**ell Spring is nearly upon us – but what has happened to the terrible winter that we were promised? Up until now, it's been mild (even warm!). No snow, no ice and no fog. I still think that we've got it to come, we'll end up with a snow-covered Easter, or a foggy May. After all, all those berries on the trees can't lie can they? Let's just keep our fingers crossed that we have escaped the forecasted bad weather and also the inevitable motorway pile-ups that always seem to come with the bad weather.

Why do people insist upon hugging the rear lights of the person in front? Why do they insist upon travelling through contra-flows at seventy miles an hour? Why are people in so much of a hurry that they must risk their own and other peoples lives to just get there that little bit faster? I proved a point a few weeks ago; I was driving in my new car down our horrible A444 Foleshill Road into Coventry, not listening to my man telling me stropilly to "Change lanes here – get into *that* lane – Why are you sitting in *this* lane" etc, from a back-seat driver, and I noticed that at every set of lights I was level with a maniac, revving the engine, who kept accelerating past me on the amber lights. I stayed in the

**Brandybird offers  
a few thoughts  
about road safety**

'slow' lane, kept my patience (surprisingly with the nagger sat next to me!). After umpteen sets of lights we eventually reached the ring-road island and I was *not* surprised to see the maniac, two cars *behind* me. He'd probably wasted a gallon of fuel, revving and trying to get past all and sundry and yet at the end of the road, I'd got there before him. It just shows – patience wins through in the end.

Can I just apologise to all of you out there who have got fed up trying to contact me on Junction 3. I still live there (well, near) but just don't get the opportunity to switch my rig on these days. I don't know whether I ought to pack my job in, I'm missing my CB and my friends, so sorry if you've been trying to reach me and I haven't answered. It's all the fault of this Hydrainer Pump Company in Bayton Road, who just won't let me put a rig next to the work's radiol! I've told them that the rig will get out further than these stupid radios that they all moan about.

Back to business; I notice that there aren't many brave people out there who are eager and willing to take on writing this page. I don't really want to finish doing it (or writing the page) but, not being able to get on the rig, I just don't hear the gossip, and no-one's written to me lately (sob, sob).

Well that's about it for yet another month; please drop me a line to: Brandybird, PO Box 158, Coventry CV6 6BD, or volunteer to write this page and give those hard-working truckers some abuse.

Stay lucky all, drive carefully, and stay safe.

**Brandybird**



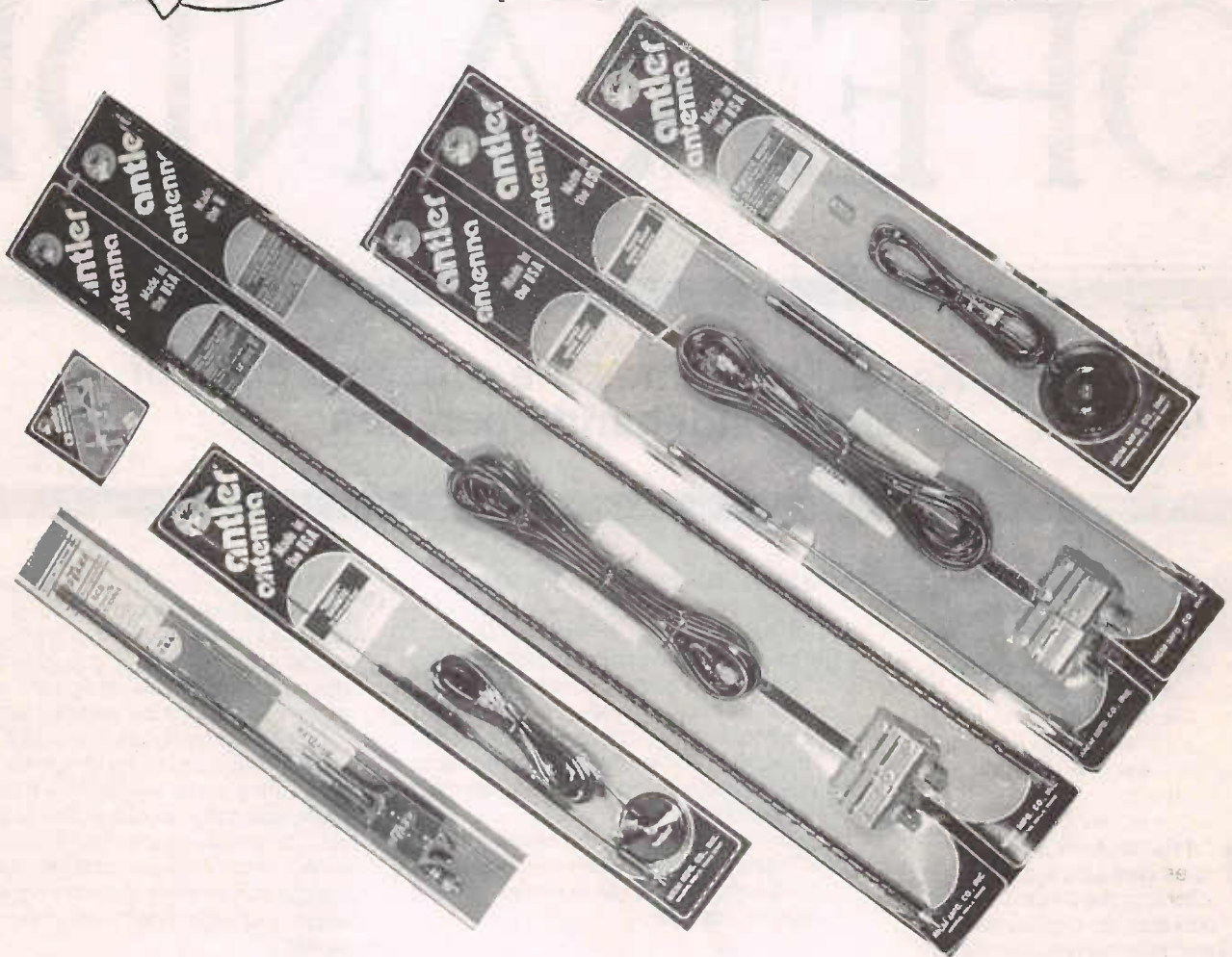
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# MODUS OPERANDI

**Brian Kendal examines the pros and cons of single sideband operation**



In last month's article, we discussed the technical aspects of two of the three modes of operation commonly used for radio telephony transmission, Amplitude (AM) and Frequency Modulation (FM). In this article we will discuss the third, Single Sideband, commonly referred to as SSB.

Single Sideband is a form of amplitude modulation in which all surplus radiation is eliminated. From last month's article, the reader will recall that an amplitude modulated signal comprises a carrier wave of unvarying strength plus two sidebands, which carry the transmitted information, each of which is a mirror image of the other. From this it is obvious that the carrier wave provides nothing towards the transmission of information, whilst, as each sideband

radiates identical information, one is superfluous.

If, therefore, the carrier could be eliminated, then a considerable saving in transmitted power could be achieved, whilst, as the sidebands are identical, if one could be dispensed with, a further increase in efficiency would be possible. This is precisely the principle of Single Sideband Operation.

The penalty for this increased efficiency is, as may be expected, a considerable increase in transmitter and receiver complexity.

## **The SSB Transmitter**

A typical SSB transmitter may be considered to comprise three sections: the SSB generator; the frequency converter and the power amplifier.

## **Sections**

The first of these generates an SSB signal on a fixed frequency which is heterodyned to the output frequency in the succeeding frequency converter stage. At this point the signal level is quite low, in the order of a few tens of milliwatts.

This is then used to drive a linear amplifier whose output is a highly amplified replica of its input signal. The output power may be any level from a few watts for portable equipment to many kilowatts for commercial stations.

In the SSB generator the output of the oscillator and the audio frequency modulating signal are fed to a Balanced Modulator stage whose action is to simultaneously amplitude modulate the output of the oscillator and then balance out the carrier wave leaving only the upper and lower sidebands in the output signal.

The two sideband signals are then applied to a very selective mechanical filter which only permits one to pass, reducing the strength of the other by a factor of 10,000 or more. The remaining sideband is then amplified to a suitable level to drive the frequency converter.

## **Converter**

The action of the frequency converter is exactly the same as the frequency changer in a receiver. The incoming SSB signal is heterodyned with a locally produced oscillation, which may come from a crystal oscillator or a frequency



synthesiser, to produce the required output frequency. At this point, a further stage of amplification increases the output power to a level suitable for driving the linear amplifier.

The purpose of the linear amplifier is to increase the level of its input signal to that required for the service which the transmitter is required to perform. In commercial service, the input level is often in the order of 50 to 500 milliwatts, whilst the output power may be anything from 100 watts to 50 kilowatts. At other times, the linear amplifier may be an "add-on" to an existing transmitter or transceiver in which case it will be designed for an input level of between ten and a hundred watts.

The signal gain necessary can very rarely be obtained in a single stage and therefore the equipment often comprises a series of amplifiers of increasing power. Where output levels of above 500 watts are required, such as in a commercial station, a pair of even the most powerful present day transistors are not capable of providing sufficient power. It is therefore the current practice to combine the output of several identical output stages, operated in parallel and driven from a common source, to provide the required output power.

This technique provides a further advantage, for in the event of the failure of a module, this can be removed for maintenance leaving the remainder of the equipment serviceable, albeit at a slightly lower output power.

## The Single Sideband Receiver

If a single sideband transmission is received on a normal AM receiver it will only be heard as a series of squawks rather reminiscent of Donald Duck. The problem is that, although all the information necessary for speech transmission is present in the single sideband radiated, the demodulator of the receiver requires a reference in order to reconstitute the speech waveform. It is therefore necessary to provide a substitute for the original carrier by switching on the Beat Frequency Oscillator.

In SSB only equipment, however, this will be in operation all the time, and to resolve the incoming signal, it is only necessary to ensure that it is operating on the correct frequency. If mistuned, the speech will sound either higher or lower than the natural pitch, but a slight adjustment of the BFO tuning control (sometimes called the clarifier) is all that is necessary.

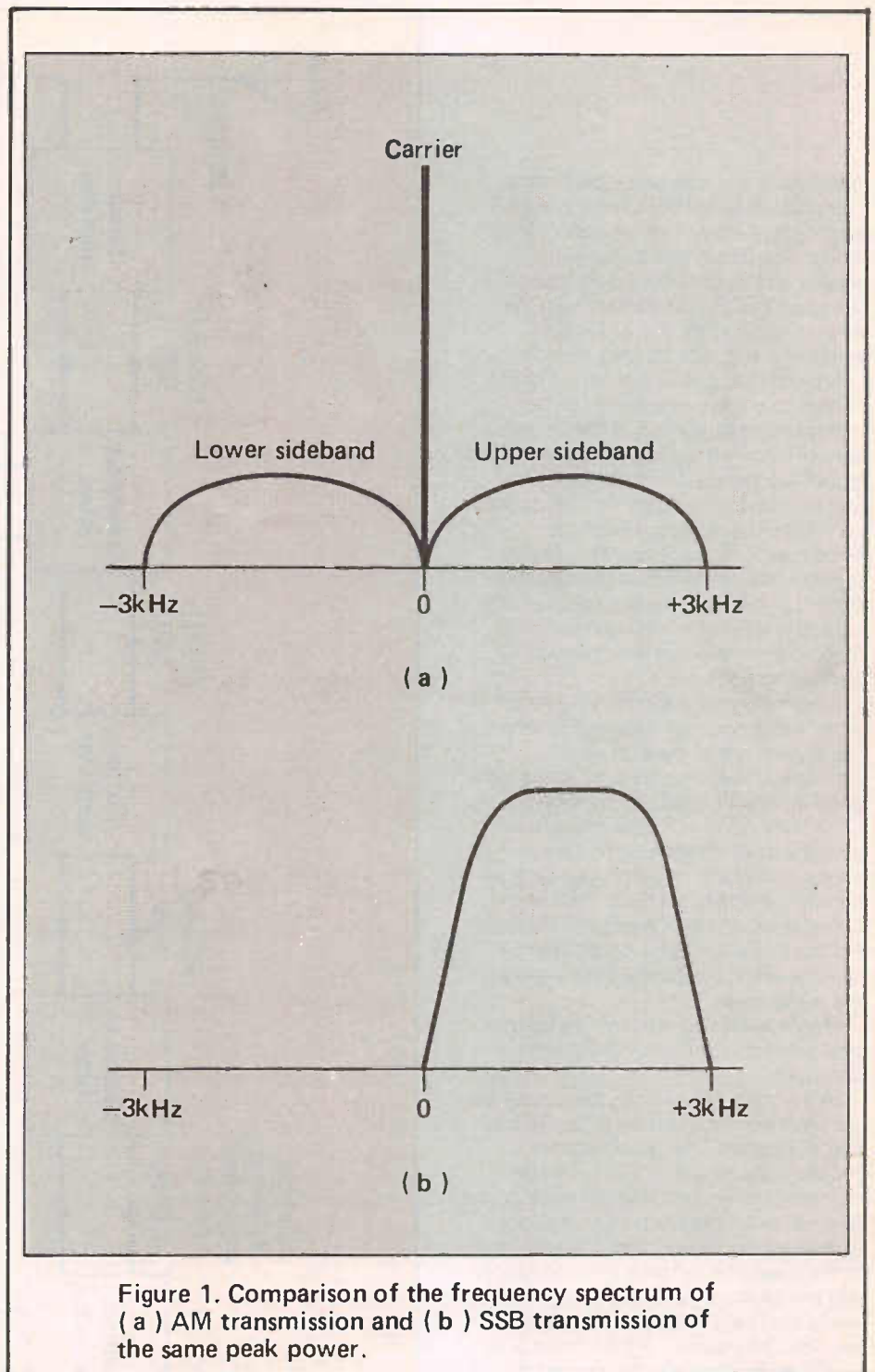


Figure 1. Comparison of the frequency spectrum of (a) AM transmission and (b) SSB transmission of the same peak power.

Sometimes, when listening on a receiver not specially designed for SSB operation, it may be found almost impossible to clarify very strong signals and, at best, they sound extremely distorted. This is almost certainly due to the incoming signal overloading the receiver, but if the RF gain is reduced, it should then be capable of clarification. When receiving SSB, it is always a good policy to reduce the RF gain as far as possible, as this will help to reduce interference from adjacent signals.

## Performance

The technical characteristics of the

three transmission modes, FM; AM and SSB, ensure that the performance of each is noticeably different. To make an assessment of which is best is impossible, for each is the best under different circumstances.

The 27MHz CB waveband is intended as a means of inexpensive short range communication, with particular consideration for mobile operation. For this purpose, I doubt if FM could be bettered.

The technical requirements for the transmitter and receiver are far less severe than for the other modes and the system is, or should be, insensitive to signal strength variations and slight



inaccuracies in frequency calibration. The capture effect of FM can ensure interference-free communication, even though there may be other, weaker signals on the channel. Nevertheless, it is a good practice to confirm with the weaker station that you are not interfering with him (or her).

Against this, due to the nature of FM transmission, the adjustment of the transmitter is critical for, if the deviation control is turned too high, the level of the higher sidebands will increase rapidly and serious interference can be caused on adjacent channels. Under no circumstances, therefore, should any breaker attempt to adjust the deviation control of his equipment. Setting up this control is a task for a competent technician with accurate deviation measuring equipment.

Amplitude modulation is very much on a par with frequency modulation when the signals are of equal strength, although, unless the receiver has a very good automatic gain control system, more fluctuation in signal strength will be noticed when working mobile stations. In many cases, however, it will be found that AM systems have a superior weak signal performance than FM but this will only be noticeable on signals which are barely breaking above the noise level.

Single Sideband provides by far the best performance for long distance operation.

In a simple AM system, the output, as we have seen comprises a carrier and two sidebands. The relationship between the power in each of these components is such that the peak power of each sideband will be equal to one quarter of the power of the carrier. Thus, in the case of a ten watt fully modulated AM transmission, only two and a half watts are really necessary to pass the required information. If the carrier and one sideband are eliminated and the power of the remaining sideband is increased to the original ten watts, a power gain of four (i.e. 6dB) will be immediately realised.

In the receiver, as the transmission now only takes half the bandwidth of an AM transmission, a much narrower filter may be used. As noise is spread more or less evenly across the spectrum, the narrower bandwidth will accept less noise and the signal to noise ratio of the system will be improved by a further 3 dB.

Further advantages accrue due to the absence of the carrier. Effective speech processing can easily be applied to the transmitter, giving still further gain, and in the receiver an interfering signal on

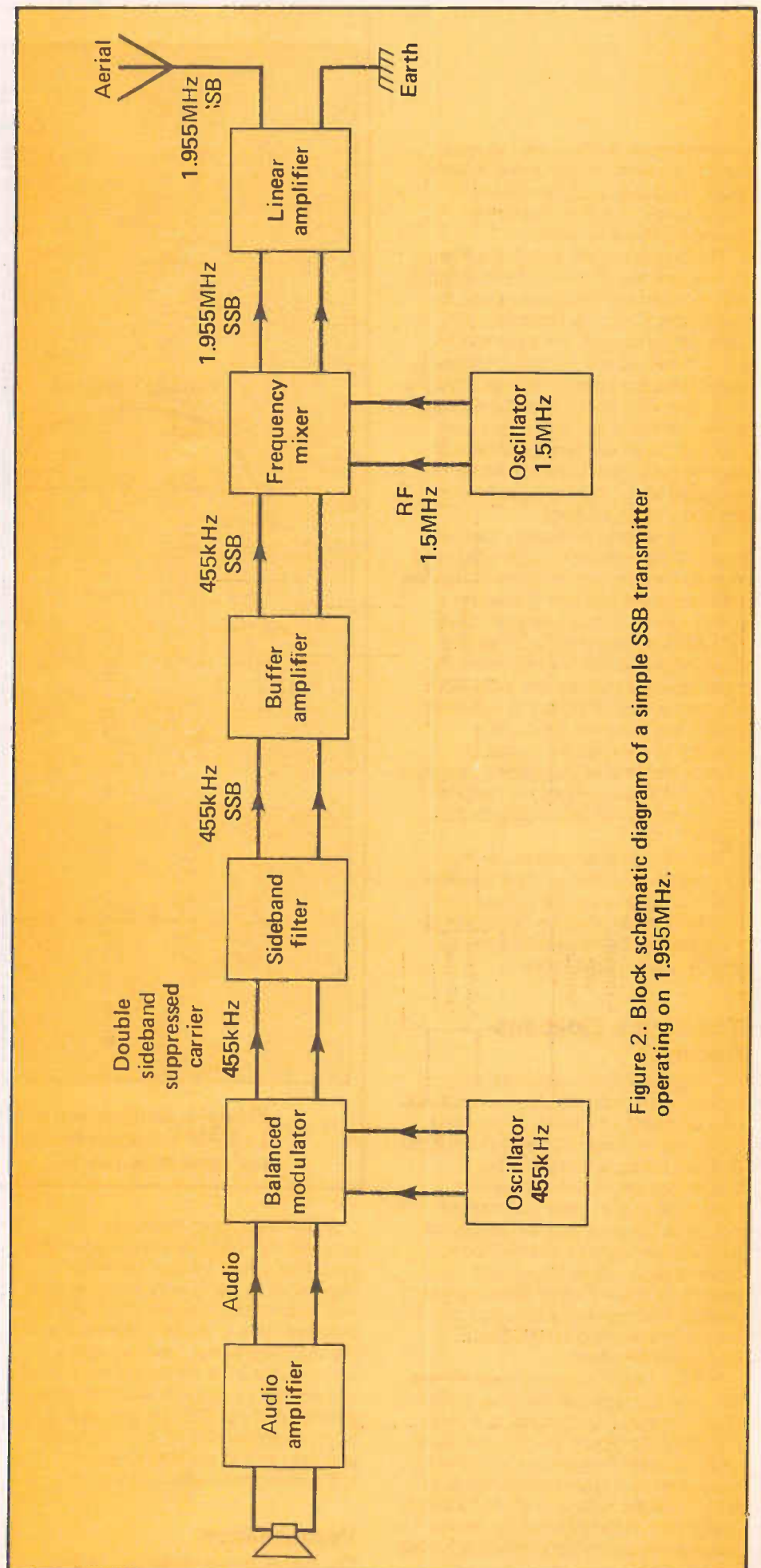


Figure 2. Block schematic diagram of a simple SSB transmitter operating on 1.955MHz.



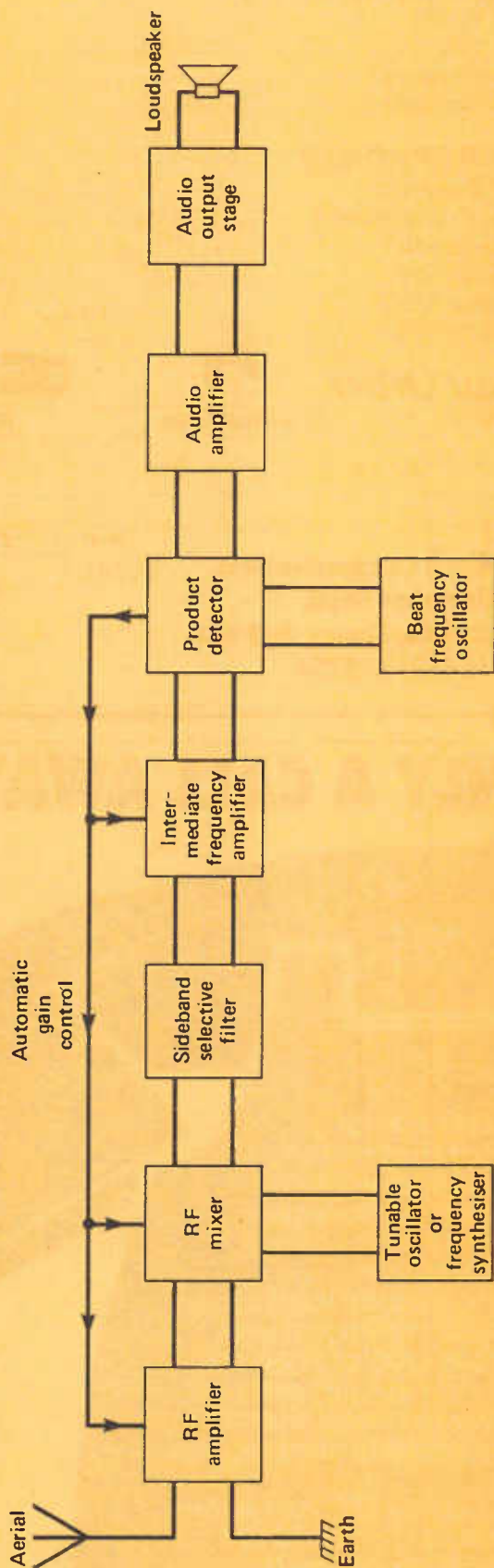


Figure 3. Block schematic of a simple single sideband receiver.

the channel will not cause an annoying heterodyne whistle.

A final advantage is that, due to the narrow bandwidth of SSB transmissions, at least twice as many stations can operate in the same waveband as for other modes of operation.

Overall, in comparison with AM, SSB will provide a gain of at least 9 dB and more if effective speech processing is used.

Notwithstanding the efficiency of SSB operation, FM can still prove an effective mode for many purposes. At the peaks of the sunspot cycle, when the Maximum Usable Frequency (MUF) is higher than 28MHz, there is no reason why inter-continental contacts should not be possible using this mode.

*Please note - it is illegal to use SSB in the UK.*







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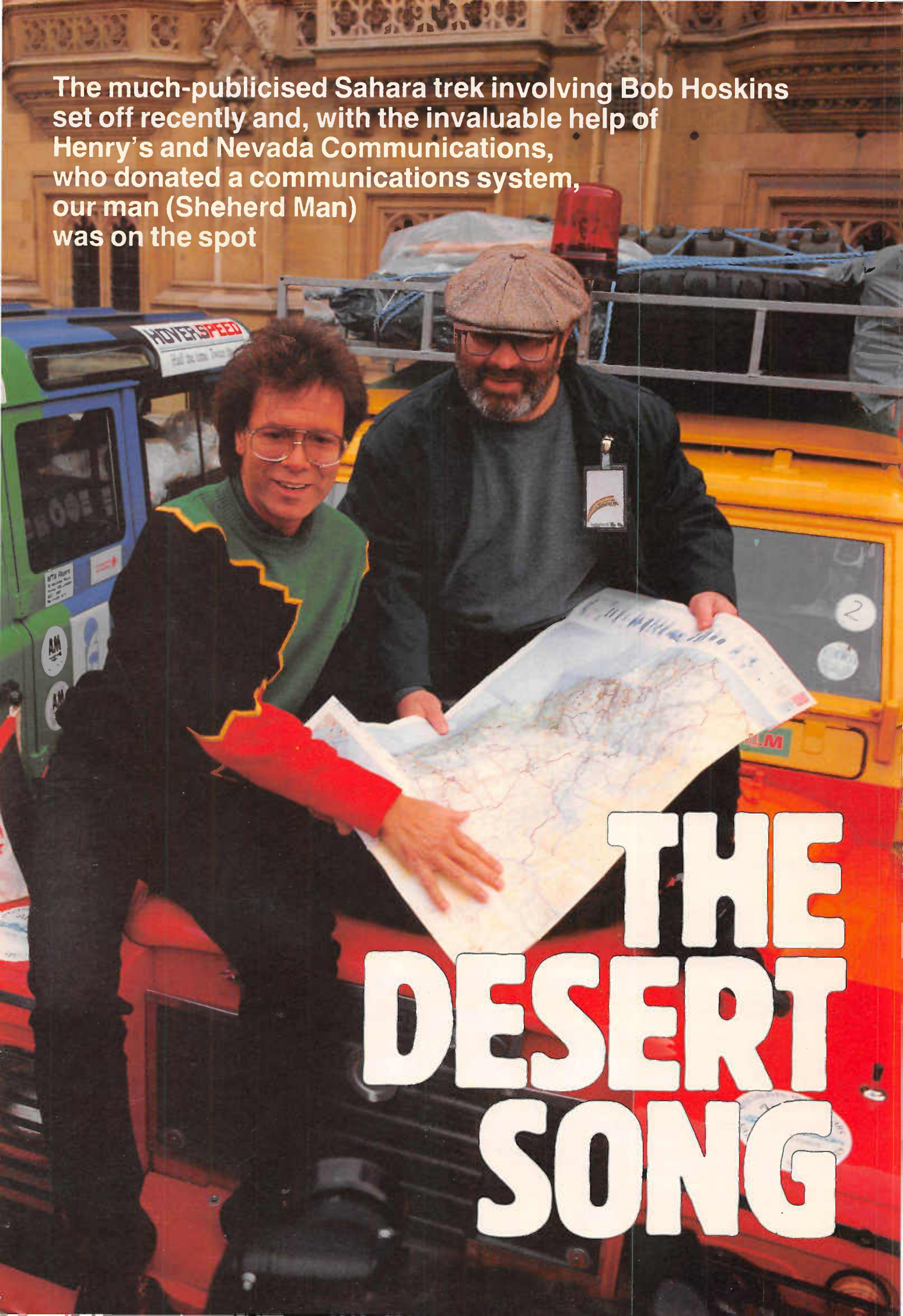
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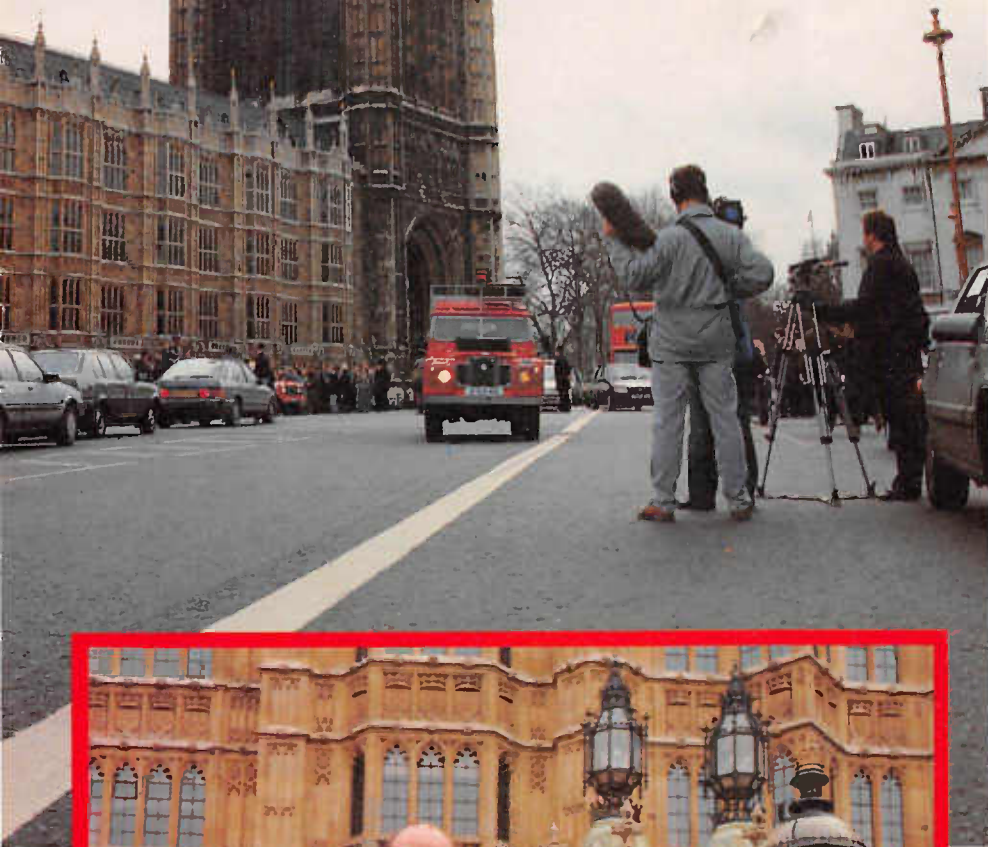
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O

n Sunday 19th of February 1989, a convoy of Land Rovers, ambulances and a taxi set off from the House of Lords in London to travel

some 2,000 miles to the town of Tindouf in southwestern Algeria. The convoy, named The Rainbow Rovers, was the brain child of the Earl of Winchilsea & Nottingham to raise funds for the newly-established Saharawan Aid Trust, founded back in June 1988.

The plight of some 200,000 Saharawi refugees started 13 years ago when the Western Sahara was invaded by Morocco. Many thousands were killed, maimed and wounded by the invasion which was particularly brutal because the Moroccan airforce used napalm, phosphorous and cluster bombs. Their land became uninhabitable so those who were left set off on a 700-mile journey into the newly-independent Algeria. Many died on the journey and amongst these were a great percentage of children and babies. They have now set up four camps around the town of Tindouf each holding about 50,000 people.

The Saharawis, as they are known, are a non-violent race who, even after





all of their suffering, do not believe in any form of terrorism and condemn those who do. A Code of Conduct for the purpose of unification was formed, and in doing so, they have created a State in Exile. The camps themselves are kept very clean with great importance given to both hygiene and refuse collection. An efficient but rudimentary hospital and health programme has been set up to cope with the many needs as well as to teach such things as adult education, pre- and post-natal instruction, preventative medicine, a day-centre for the elderly and a special facility to cope with under-nourished mothers who give birth to premature babies. As you can imagine, this is not an easy task when you stop to consider that only eight doctors take care of the 200,000 refugees.

Like many other poor countries, these people have suffered from diseases such as polio, measles and whooping cough. In particular, the very young suffer from a disease which causes respiratory problems – and the latest in a long line of health problems is an increase in ophthalmic outbreaks caused by microbes in the sand which are blown around in the high desert winds. A programme has been set up to combat and prevent these arising in the future, and it is high on the list of major priorities but, apart from physical help, they need financial backing.

A complete educational programme has been set up for the children between the ages of 4 to 16 and the current role who attend is in the order of 20,000. Through their own achievements, the Saharawis have converted over 150 acres of once barren desert into an area that now grows fresh vegetables which provide nutrition for the young, elderly and weak. Deep wells have been dug to feed the area that grows the vegetables and also supply the camps with fresh water. The Dutch Government have helped to establish a herd of Friesian cattle which are very healthy and supply fresh milk. Using International Aid, three deep-litter chicken houses have been built capable of holding 75,000 chickens (although they only have around 25,000 at present) and these ensure a reasonable supply of eggs.

All of the vehicles used in the Rainbow Rovers convoy will be left to provide much-needed transport for the camps, and each vehicle has been specially adapted to carry out specific tasks. Before leaving from the House of Lords, each one was packed out with





medicines, pharmaceuticals, educational supplies and sporting equipment for the refugees, all of these being donated by various companies. The Land Rovers have themselves been converted by the charity group 'Echo' who are also responsible for a complete repair vehicle which will double as a mobile garage in Tindouf. The Jersey Overseas Aid Committee has donated a complete dental 'pod' (with all of the equipment needed) surgery which fits on to the back of a Land Rover and comes complete with its own generator. They have also paid for a dentist and his wife/nurse to stay on at the camp for an extra four months.

From the London Ambulance Service comes a 10-seater ambulance and from the Heron Corp Suzuki UK comes a Suzuki Jeep for the specific needs of the doctors. Other Land Rovers have been donated and sponsored mainly by record companies, entertainment business and food and drink businesses. The Liverpool Taxi Drivers' Association have donated a 'black cab' which has been earmarked by the Saharawi people to ferry foreign dignitaries around and collect relief workers from the Algiers airport.

Three Land Rovers and one ambulance have been fitted with TRX 404 CEPT sets complete with a short centre-loaded antenna. These were donated and fitted by Henry's (Edgware Road, London) and Nevada Communications (Portsmouth). Many UK users will already be aware of the advantages in using CB radio when faced with an emergency situation, and it is felt by the organisers that these will be very valuable to the people in the camps, as well as the doctors and relief

workers.

Phil Jeffery (Commercial Manager) from Nevada Communications said that our industry does a lot for charities and helping worthy causes. He added that "Causes such as this one with international support justifies any cost involved. UK breakers are always the first ones to support good causes".

Lord Winchelsea made it clear in a statement to the press that this is a non-political effort from the United Kingdom. And he was very concerned that a Moroccan Embassy Official had telephoned many of the sponsors asking them to pull out because it was an attempt to put political pressure on the Moroccan Government. He strongly denies this claim and invited us to inspect the supplies that they are taking out, to prove that these were all supplies very much needed by the refugees.

Many celebrities were on hand to watch the convoy set off. Amongst these were Cliff Richard and the Rt Hon David Steel. I asked Cliff to comment on the work of the Aid Trust. He said, "The main sufferers of this kind of tragedy is felt by the young children and the Aid Trust has made people aware of the needs of those in a far-off country who were forced to take refuge in another land. We must do everything that we can".

Bob Hoskins, who has volunteered to drive one of the Land Rovers said that his involvement started when he was asked to take part by his old friend, actor Allan Talbot. He was then sent a video filmed by Lord Winchelsea last year which has helped him come to terms with what to expect and to see when the convoy arrives. He said: "I am sure that the sights that I will see during my stay

will be something that I will carry around with me until the day I die".

The convoy will travel via the European Parliament (Brussels) where a number of MEP's will join the party before continuing onto Marseilles and the ferry to Algiers. Then there will be a final three-day drive through the Sahara desert. Both the Algerian Government and International Agencies have been supportive during the past 13 years and, in fact, the Algerians donate a large portion of their National Budget to help the Saharawis. After many years of wrangling, King Hussan of Morocco has agreed to a referendum on the future of the Saharawis and the Western Sahara. The UN Secretary General has even now only just endorsed a UN report calling for such a referendum.

That referendum is still some way off and even then these people will still need a lot of financial aid. Food is very basic and none to spare. What little food there is offers no variety at present; this in the main offers very low protein, vitamins etc and increases the need for medical help. There is a need for medicines, pharmaceuticals, clothing, shoes, horticultural equipment, educational supplies, spare parts for vehicle already in use and much more besides.

These refugees need and deserve help, particularly since they have done so much to help themselves. They have not sat around waiting but have got on with the job in hand. The Saharawan Aid Trust is a registered charity. So if you or your club would like to make a donation please make the cheques etc payable to the Trust and send them to: Rainbow Rovers, 320-322 King Street, London, W6 0RR.





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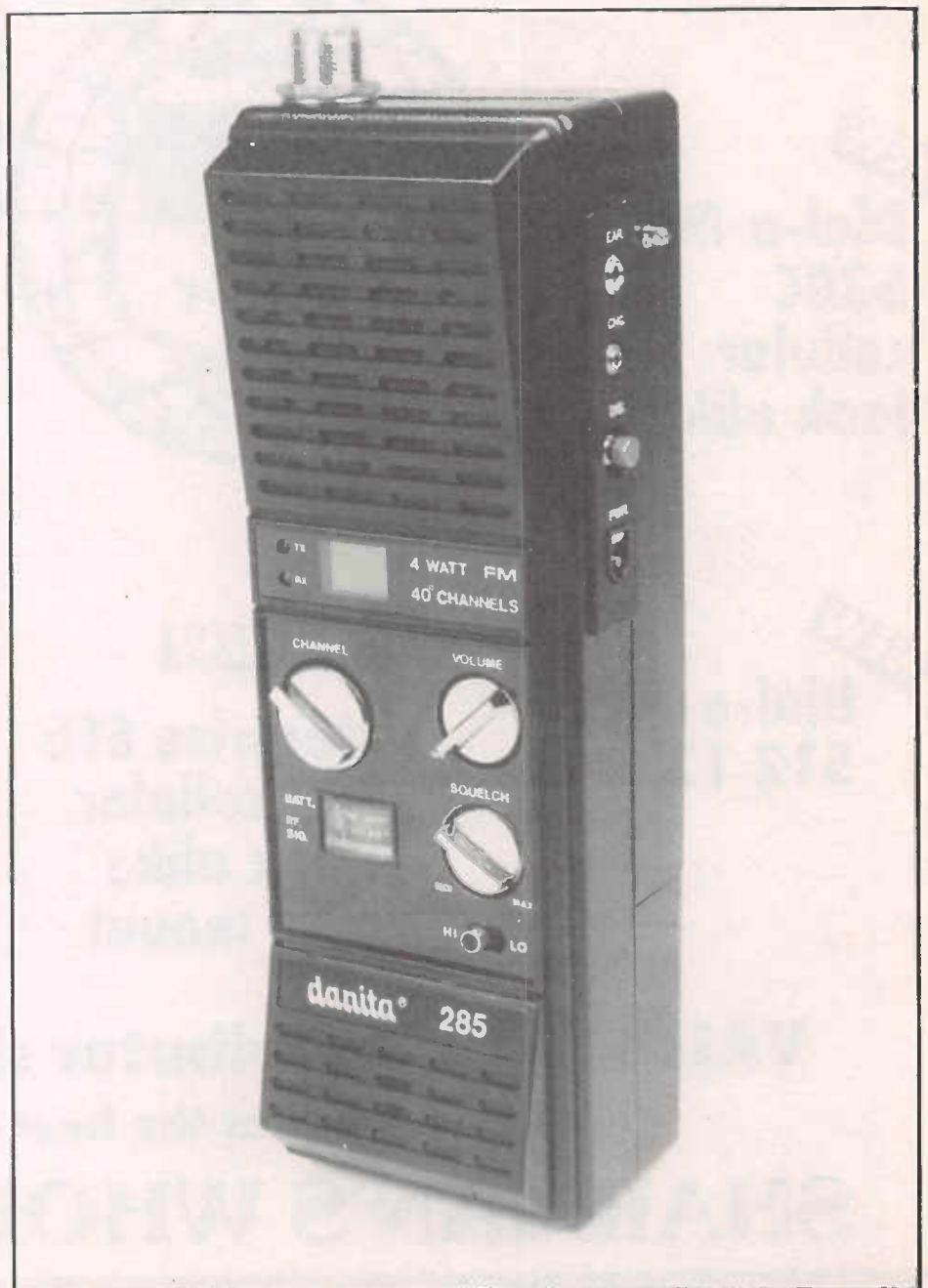
# HANDY MAN

Saul Wright has been going out and about with Danita – it's okay, it's a purely platonic relationship . . .



Somehow you expect rugged hand-held transceivers to have evocative-sounding names that conjure up images of the great outdoors; names like Ranger, Bearcat and Thunderflash – you know the sort of thing. So what on earth is a **Danita 285**? It sounds like a cross between a cheap 1950's record player and a noisy moped. The *Oxford English* dictionary isn't much help either, if it was there it would be sandwiched between *dangle* and *dank* . . .

Ignoring for a moment the rather weedy name let's take a look at this





otherwise very competent rig. It's a full-spec 40-channel CEPT design with as near as dammit 4 watts output. The casing is mostly metal, which goes a long way towards explaining the all-up weight of 1.1kg (with a full load of batteries). More importantly, a metal case means strength! We can vouch for that; our review sample took a nasty tumble – the sort of fall that would have cracked a plastic case wide-open – with little more than scuff or two, and it still worked . . . The 285 has three power supply options: 8 alkaline batteries or nicads; 12 volts DC from a mains PSU, or 13.8 volts DC from a car battery. A cigarette lighter adaptor and lead is supplied with the rig. Whilst we're on the

subject of accessories it also comes with a soft leatherette carry case and strap, earphone and screw-on rubber-duck antenna. Before you ask, the whole caboodle will set you back around £99.95.

As is customary at this point, a brief examination of the controls and socketry is in order. At the top there's a standard SO239 antenna socket – handy for connecting to a normal CB antenna. As it happens the socket looks like a bit of an afterthought, and the hefty nut holding it on seems a little crude by comparison with the rest of the design. The front panel is dominated by three very shiny knobs, these are concerned with channel change, volume on/off and

squelch. There's a useful assortment of displays. A two-digit LED shows channel number. This is normally off but can be illuminated by pressing a push-button on the side, this is to save power. Next to the channel display are two LED indicators – red for transmit, green for receive.

Below the channel change knob there's a tiny edgewise meter for signal strength and Tx output. Curiously, the panel is also marked 'Batt', suggesting that it also shows battery condition, though there's no mention of it in the (very) limited instruction leaflet. Just below the squelch is a two-position switch for selecting high and low output power. On the right-hand side there's three sockets for earphone, charger and DC power, as well as the aforementioned display button. On the left hand side, just where it should be, is the PTT button.

A quick word of warning here – the external power connections are a little confused. The cigarette lighter lead, for instance is wired so that the red lead is negative and black positive. Moreover there was a handwritten, and none too clear change to the polarity diagram for the charger socket on our instruction leaflet. Check first if you're powering this rig by anything other than batteries.

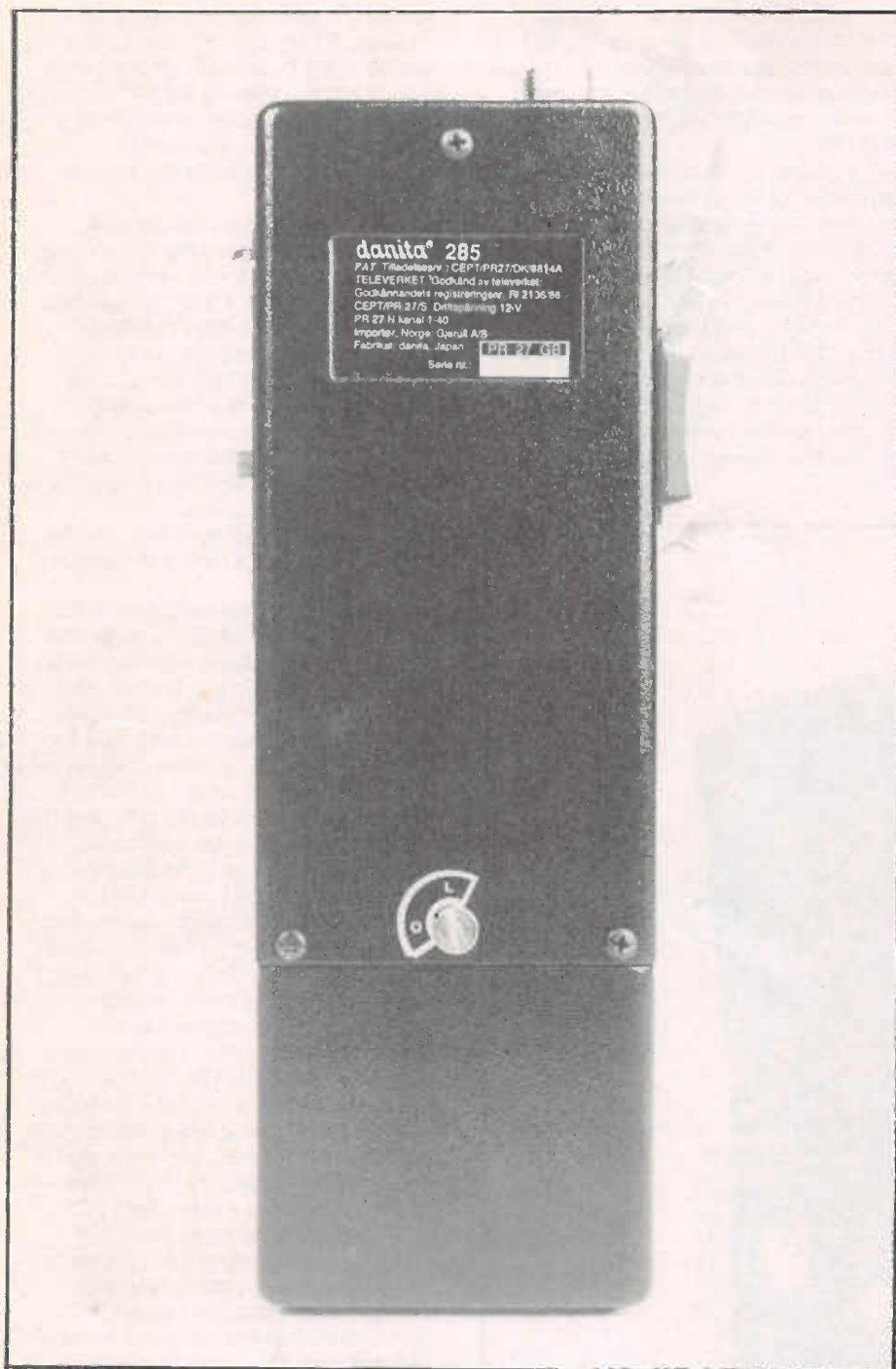
Just before we get to the tests proper, we took a quick peek inside the box. The first pleasant surprise was the fact that the lid was held on with only three screws, and didn't involve a fight with a tangle of wires. For some strange reason one of the screws was a self-tapper, clearly the wrong sort as it had been forced into the threaded pillar. We hope that this is because someone else has been poking around inside and lost the correct screw, and not a sign of sloppy manufacture. The electronics are neatly mounted on a glass-fibre PCB, which is more good news for those liable to bash this rig around. It's pretty densely packed but everything's accessible so it shouldn't pose rig-doctors too many problems. Most of the semiconductor components look fairly conventional too, so spares should be relatively easy to find.

## In Use

There's only one major criticism – changing channels can be a clumsy, not to say frustrating business. The trouble is the LED display is only illuminated when the red 'dis' button on the side is pressed. As a power-saving technique it's difficult to fault, but as a matter of convenience it's rather annoying. Other rigs of this type normally have a simple delay circuit so that whenever the channel is changed the display comes on, and goes out after a few seconds. With the 285 you have to press the button, and twiddle the knob – in short it's a two-handed operation, unless you







can remember the channel you're on, and can count the clicks as you turn the knob . . .

One other minor quibble – the signal strength meter could do with some illumination too – surely it would be a fairly simple matter to tie into the LED circuit?

### On Test

You should all know by now that hand-held rigs are nowhere near as efficient as a well set-up mobile or homebase installation, so don't expect the kind of range you can get on an in-car rig. On the other hand this is a rig for the great outdoors – in the open, with few obstructions to get in the way of the

signal a hand-held like the 285 can give a very good account of itself. Our sample managed a reliable contact with a mobile some four miles away in the Sussex countryside. In town we did well to keep in touch with rigs less than a mile away. Much of this is due to the relative inefficiency of the rubber-duck. Connect the rig up a decent mag-mount, or homebase twig and it's a very different story – rig to rig contacts improved dramatically and compared favourably with less portable equipment.

Now it's important to say that these tests were conducted using several sets of alkaline cells – a big mistake in view of its hunger for power – at full tilt the current drain is around 1 amp . . . Our sample could drain four quids worth of

Duracells in less than a couple of hours. There is a very strong case here for investing in a set of re-chargeable batteries. Running the rig from the cigarette lighter lead or a mains PSU, when not on the hoof also makes economic sense.

Transmitted copy was found to be average to good. The mike is pretty sensitive, so there's no need to put your mouth too close, on the other hand wind noise could be a nuisance. Received audio quality is good; the speaker is a little bigger than those usually found on hand-helds, and the quoted audio output of 1 watt meant that there was always plenty of volume in reserve. The squelch action was a little on the 'choppy' side but most of the time, with local communications, it didn't matter too much.

### Summary

A chunky, sturdy rig that's not going to win any prizes for lightness or elegance but that's a minor consideration. What really matters is what's under the skin, and there you'll find as workmanlike a hand-held as you could wish for. The 285 is for those who need a rugged rig that can take the knocks and bumps, and don't want to compromise on versatility or reliability.

### CB Specs

Make/model:	Danita 285
Channels:	40 FM CEPT
Controls:	rotary volume, on/off squelch & channel change, hi-low output power, display on
Displays:	2-digit LED channel display, Rx & Tx indicators, signal strength/Tx meter
Power supply:	8 x AA cell (alkaline or ni-cad), 12-14 volts DC
Power consumption:	60mA standby, 1 amp max
Dimensions (mm):	248 x 90 x 70 (ex antenna)
Weight (kg):	1.1 (inc. batteries)
Price (£):	99.95
Supplier:	Pama & Co, Pama House, 433 Wilmslow Road, Withington, Manchester M20 9AF. 061-445 8918
Tx quality:	[★][★][★][ ][ ]
Rx quality:	[★][★][★][★][ ]
Ease of use:	[★][★][★][ ][ ]
Construction:	[★][★][★][★][ ]
Value for money:	[★][★][★][ ][ ]



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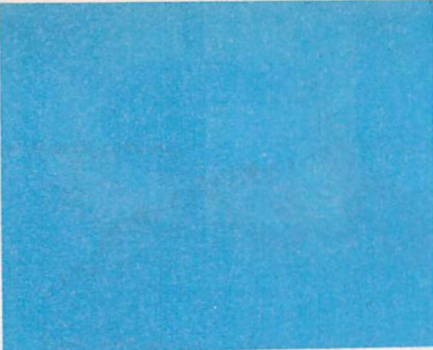
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**Y**ou know it's surprising how many people don't know the basics of electronics," mused Danny to his assistant.

"I must admit that when it comes to some of those calculations I get a little lost," said Ritchie, eager as always to start a technical discussion over lunch. "What sort of things were you thinking of?"

"Oh, just simple little circuits involving basic electronic theory. Want me to show you?"

"Sure," replied Ritchie, pulling his stool over to Danny's bench. Danny proceeded to sketch out a simple circuit on his notepad (fig. 1).

"Here we have an extremely simple circuit, but you'll often find folks getting in all sort of trouble over working out the voltages and currents flowing." Ritchie remained silent, so Danny continued. "Let me ask you some questions. First of all, what current flows through each of the three resistors?"

"That's easy," scoffed Ritchie. "You just add up the resistor values and divide the result into the supply voltage. The total is 3000 ohms, which gives a current of 100 milliamps with a 300-volt supply."

"Good. Now what voltage appears between ground and points A and B?"

"Well, we have 100 milliamps flowing through 500 ohms, which gives 50 volts at point A."

"Yes."

"And for point B, the total resistance to ground is 2500 ohms, which will give 250 volts."

"Good," commented Danny, "I can see you're pretty good at mental arithmetic on these simple figures."

"Thanks."

"There are actually several ways of performing the calculation you just did. They all involve calculating the voltage dropped across one or more of the resistors. Having worked out that 50 volts were dropped across R3, you could have said that R1 is the same resistance value and has the same current flowing through it, so therefore it will also have 50 volts across it. Its top end is at 300 volts, so its lower end must be 250 volts. See?"

"Of course," replied Ritchie, "it does save another calculation."

"True," agreed Danny. "There's another way of getting those voltages too."

"There is? How?"

"By using proportions. You don't need to calculate the current flowing through the resistors either." Danny scribbled once again on his notepad. "Assume that 'p' represents a partial voltage or resistance, and 't' the total voltage or resistance. Let's calculate the voltage across R3. The total resistance is 300 ohms, and R3 is 500, so the left hand side of the equation becomes 500 over 3000. Okay so far?"

"Yep."

"The total voltage is 300 volts, so the right hand side becomes  $V_p$  over 300. Yes?"

"Yes," agreed Ritchie, slightly less confidently than before.

"Rearranging the equation you'd get  $V_p$  equal to 500 over 3000, multiplied by 300. Okay?"

"I think so. Let me see now - 500 over 3000 is one sixth. Multiply that by 300 and we get 50 volts. Hey it works!"

"Of course it works," replied Danny calmly, "It's supposed to! In practice of course you should be able to look at the first part of the formula and straight away see that 500 over 3000 is obviously equal to 50 over 300, without having to rearrange and calculate the whole thing. For this circuit we can say that every ohm of resistance will develop a voltage drop of 0.1 volts. A 500-ohm resistor will have 50 volts across it, the 2000 ohm resistor will

have 200 and so on."

"And it stays in proportion because the current is constant through all resistors in the chain?"

"Correct." Danny paused for a moment, as if dreaming up another problem for his assistant. "Right," he said finally, "Here is another problem along similar lines." He hastily started drawing again (fig. 2). "Here we have a voltage divider network feeding a piece of equipment. The supply delivers 1000 volts when it has a load of 200mA, so it's a fairly hefty unit."

"Like maybe a big transmitter?"

"Could be. Whatever it actually is, it doesn't matter for our purposes. Now this transmitter, or whatever, needs 1000 volts at 100 milliamps, 600 at 30 milliamps, 275 volts at 40 milliamps, and 100 volts at 100 milliamps to feed all its various circuitry. Okay?"

"I think I'm with you so far Danny."

"Right. Your task is to calculate what value resistor to use for R1 through R4. I'll give you the fact that the basic bleeder current through the chain will be 20 milliamps. It's normal to draw off about 10% of the total current through such a divider."

Ritchie looked blank for a moment.

"How am I supposed to start doing *that*?" he inquired with mock disdain. "I don't know where to start." Danny remained silent, a smile being his only reaction to his assistant's plight. Ritchie examined the drawing closely, frowned, and then looked up, a gleam in his eye as if he had unmasked a great clue.

"You say that the basic current through the chain is 20 milliamps?"

"Yes."

"So if I start with 1000 volts over 20 milliamps, I get a total resistance for the chain of 50K. Am I on the right track?"

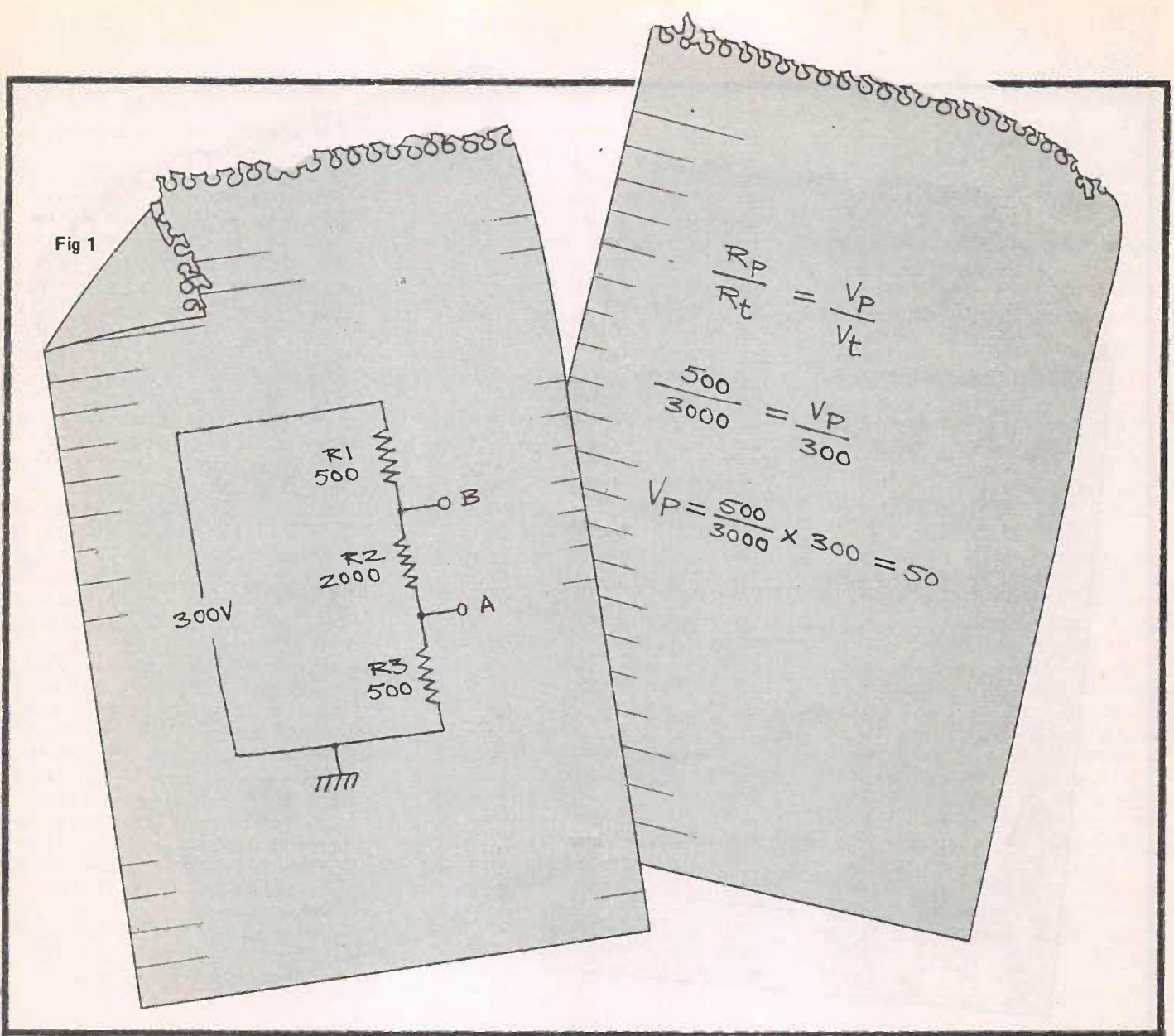
"To put it mildly, you're going in totally the wrong direction. If *all* the resistors only have 20 milliamps flowing through them, where is that 30 milliamps for the 600-volt outlet going to come from? Or the 40 milliamps for the 275-volt tap?"

"I hadn't thought about that. Give me a clue."

## Danny and Ritchie try to come to grips with the ill-informed

# CB BENCH



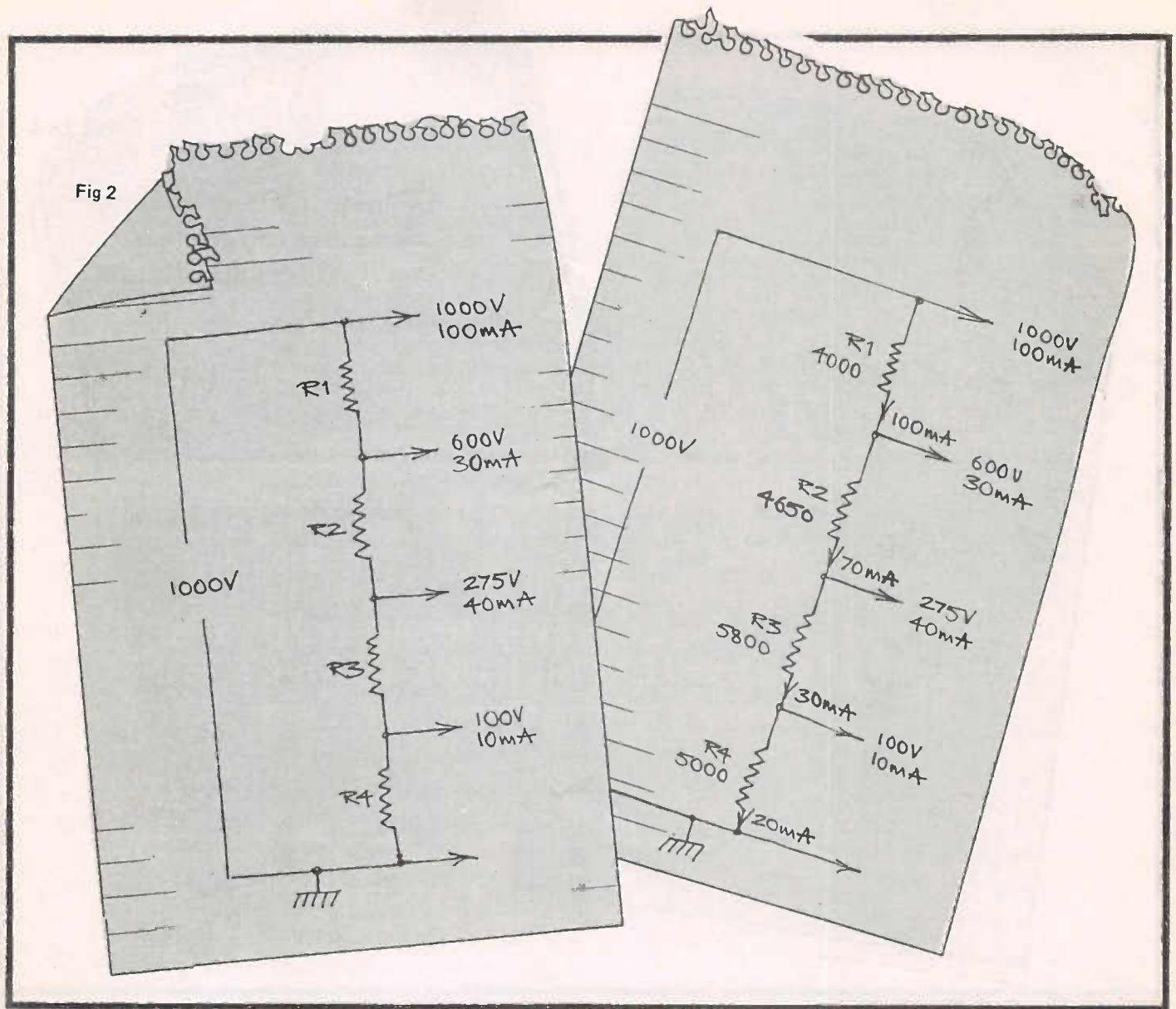


"R4."  
 "What about R4?"  
 "That's your clue: R4!"  
 "R4?" Ritchie pondered on this cryptic clue for a few seconds. "Do you mean I should start by calculating the value of R4?"  
 "I do."  
 "Okay then. I know that it will have 100 volts across it, so I need to work out how much current will flow through it." He paused again.  
 "Go on."  
 "I'm trying. Will R4 just carry the 20 milliamp bleeder current?"  
 "It will. All the other taps draw their current through one or more of the other three resistors."  
 "So R4's value is just 100 volts divided by 200 milliamps. I make that 500 ohms."  
 "I'd go along with that," replied Danny, adding the value to his drawing. "Now calculate R3." Ritchie looked puzzled.  
 "What current actually flows through R3?"  
 "What do you think flows through it?"  
 "Well . . . There'll be the 20 milliamps

that goes to R4, plus the 10 milliamps drawn off at the 100-volt tap."  
 "You got it. The total current through R3 is therefore 30 milliamps."  
 "And it needs to drop 175 volts. I think I'll use my pocket calculator for this one!" So saying, Ritchie pulled his calculator from his pocket, and started punching at the buttons. "It comes to 5.83333333 thousand ohms!" he announced.  
 "I don't think we need be quite that accurate! Let's just call it 5.8K," responded Danny, adding the second figure to his drawing. "Now do R2."  
 "I'm already working on that one!"  
 "I can see you've got the hang of this pretty quickly."  
 "I make the current in R2 come to 70 milliamps, 30 from R3 and 40 from the 275-volt tap. The difference between 600 and 275 is 325 volts, so the resistance would have to be 325 divided by 70. That comes to around 4650 ohms." Ritchie reached over to write the figure on Danny's drawing. "I'll do R1 next."  
 Danny sat back, watching his

assistant competently perform the final calculation.  
 "4000 ohms," stated Ritchie with authority. "There's 70 milliamps from R2 plus 30 milliamps from the 600-volt tap, which totals 100 milliamps. With 400 volts across R1 that gives 4000 ohms."  
 "Very good," commented Danny. "It didn't take you long to get the idea of these calculations did it? I can see I'll have to make the next one more complicated."  
 "Like how?"  
 "Well, I suppose asking you to work out the power dissipated by each resistor in that chain would be too easy."  
 "Cinch. Power is voltage multiplied by current, so for R1 it's 400 times 0.1, which is 40 watts."  
 "Thought that would be too easy. Right then, I'll have to do better than that." Danny thought hard. He ripped the top sheet from his pad, and starting drawing once again (fig. 3).  
 "Here is the filter section of a small power supply. At point X we have a DC voltage of 300 volts, upon which is an AC ripple of 24 volts. Given the values of





the R and C in the filter, what ripple voltage will there be at point Y?"

Ritchie looked totally confused. "I haven't got a clue how to even start working that one out Danny! What are you trying to do to me?"

"Just get you to work out a very simple circuit. There are only two components there you need concern yourself with - the 1000 ohm resistor and the 16 microfarad capacitor."

"Well, I don't have any idea where to start. You'll have to explain this one to me."

"Okay," replied Danny, anxious to impress some new knowledge on his assistant for future use. "You need to know about reactance."

"That's the impedance shown by an inductor or capacitor," interrupted Ritchie.

"Correct," agreed Danny. "Now, do you know the formula for finding the reactance of a capacitor?"

"It's one of those complicated ones involving pi, isn't it?"

"It's not all that complicated. The

reactance of a capacitor," stated Danny with authority, "is equal to one over two-pi times frequency times capacitance." He wrote the formula below his schematic. "C must be in farads, and f is the frequency of the AC signal we're dealing with," he continued.

"So C will be 0.000016," said Ritchie. "That's right. It's 16 times ten to the minus six."

"That too," said Ritchie sarcastically.

"And what do you think the ripple frequency would be, given that we're running this supply from a standard 60Hz line?"

"Well, 60Hz of course." Danny stared at Ritchie blankly. "Isn't it? What else could it be?"

"What happens when we pass AC from the transformer through a full-wave rectifier?"

"The negative half-cycles get turned upside-down."

"Very scientifically put, I must say. Nevertheless, an accurate description of what happens."

"Ah! I forgot. The ripple will be double

the input frequency because of that. It'll be 120."

"That's more like it. Now substitute those values in the formula, and see what the reactance of that capacitor is." Ritchie punched away at his calculator.

"Approximately 83 ohms."

"Good. Now can you see what you have to do?" Ritchie looked at the diagram once more, and performed another calculation, writing under Danny's circuit.

"1.84 volt ripple," he announced.

"Sorry; it's not," replied Danny. "Even though your figure would probably be close enough for many practical applications, you've done it wrong."

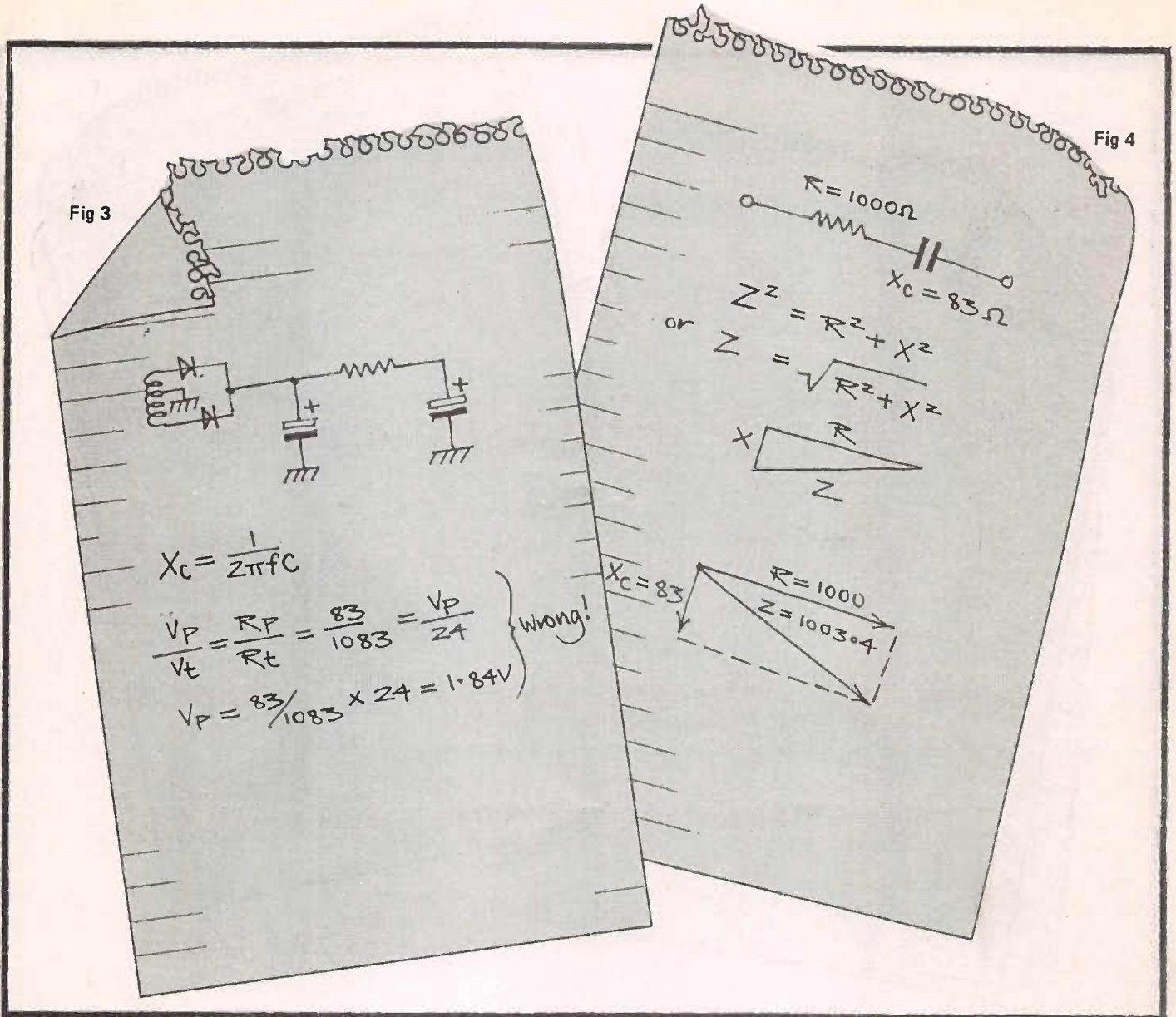
"How come?" replied a bewildered Ritchie. "I used your proportion formula like before. See?" He indicated his notes on the pad.

"Oh there's nothing wrong with your arithmetic there. It's just that that formula doesn't work with capacitors."

"Now he tells me. Why not?"

"Because it applies to resistance. Here we're dealing with a mixture of





resistance and capacitive reactance. They're two different things." Danny added another drawing to the crowded sheet of paper (fig. 4). "Here's a resistor and capacitor in series. We'll assume the same values as we just had. What's the total impedance of that series circuit?"

"I'd have said 1083 ohms, but I think you've just told me that that's wrong!"

"It is I'm afraid. You can't just add resistances and reactances together. You need another formula."

"Another one?! It's all formulas!"

"True. But they're not too bad to remember. The one for this circuit you probably learnt at school."

"Sure Danny, they taught us all about impedance and reactance in the second grade!"

Danny smiled to himself, and added yet another formula to his notebook.

"Look familiar?" he asked, pointing to his latest writings.

"Not really." Danny added a drawing under the formula.

"And now?"

"Hey! It's that Greek guy or whatever he was!"

"You mean Pythagoras. He stated that the square on the hypotenuse is equal to the sum of the squares on the other two sides. In our case, the hypotenuse is the total impedance, with the other two sides being the resistance and reactance, so we get the square of the impedance is equal to the sum of the squares of the resistance and reactance."

"Phew! That's a mouthful!"

"It is rather. Makes the formulas look simpler, doesn't it?"

"I guess it does. Would I be right in saying then, that R squared is one million?"

"Yes."

"And X squared is . . ." Ritchie engaged the services of his electronic enumerator once again. "6889," he concluded. "And the square-root of 1,006,889 is 1003.4," he finally announced.

"That sounds more like it," said

Danny. "In practice when you have a largish resistance and a small capacitance, the reactance of the capacitor adds little to the overall impedance of the circuit."

"Why does it work this way?" Danny glanced up at the clock above his bench.

"We'd better not go into that question now," he said. "We only have five minutes left before we start work again. Capacitors and inductors do all sorts of things to the voltage/current phase relationship. We'd better have another session on that sometime."

"Okay. It's sounds fairly complicated."

"It is a little involved," agreed Danny, "but you soon get the hang of it. Incidentally, it's more usual to draw the three values involved in the form of a vector diagram, rather than a triangle, but you can see that it's the same thing." Danny added another sketch to the others.

"So how do we apply that lot to your power filter circuit?" asked Ritchie.

"Now you can use the proportion



Fig 5

$$\frac{X_c}{Z} = \frac{V_c}{V_t}$$

$$V_c = \frac{X_c}{Z} \times V_t = \frac{83}{1003.4} \times 24$$
$$\approx \underline{1.98V}$$

$$\frac{R}{Z} = \frac{V_R}{V_t}$$

$$V_R = \frac{R}{Z} \times V_t = \frac{1000}{1003.4} \times 24$$
$$\approx \underline{23.92V}$$

formula. The voltages on a resistor/capacitor combination follow the vector diagram we just saw. So the reactance of C over the total voltage. Here are the final results." Danny turned the page, and scribbled his final notes on the subject (fig. 5).

"There's something wrong here," said Ritchie concernedly. "The ripple

voltages across the resistor and capacitor total more than the ripple we started with!"

"That's right."

"How can that be?"

"Don't forget all those phase shifts because of the capacitor. Capacitors hold a charge remember, so the voltage held by the capacitor can combine with

the supply voltage to give that result. Anyway, that must be it for today; it's after one o'clock.

"Just like that. No more?"

"Not for now; look." Danny looked toward the rack full of radios awaiting attention. "We'll have a session on capacitance and inductance sometime soon."

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AD162	40	8D508	87	TIP29C	26	2SC1413	3.50	3SK97	1.86	TA7120	.58	TA7227	2.07	
AF124	42	8D529	54	TIP30C	29	2SC1674	15	40673	1.30	TA7130	.46	TA7270/1	1.98	
AF127	33	8D530	89	TIP31C	28	2SC1675	13			TA7137	.61	TA7274	1.90	
AF239	32	8D901	46	TIP32C	33	2SC1678	1.07	IC'S		TA7204	1.38	TA7274	1.86	
8C107	11	8D902	49	TIP33C	67	2SC1815	10	AN240	1.13	TA7205	.96	TA7580	2.31	
8C108	07	8F115	.36	TIP34C	67	2SC1909	.91	AN6551	.73	TA7208	1.40	TA7310	.91	
8C109	13	8F173	.26	TIP41C	27	2SC1923	13	AN7131	1.37	LC7120	2.75	TA75902	.97	
8C114	09	8F180	12	TIP42C	27	2SC1942	1.98	AN7140	1.18	LC7130	3.26	T8A800	1.38	
8C141	26	8F184	32	TIP47	62	2SC1945	3.63	AN7178	2.47	LC7131	2.88	T8A810T	4.9	
8C142	19	8F195	24	TIP120	38	2SC1946	12.62	BA402	.59	LC7132	2.89	TC8108	4.31	
8C147	11	8F191	11	2N3055	28	2SC1947	3.78	BA521	1.35	LC7137	3.15	TC8109	5.46	
8C170	11	8F195	06	2N3054	95	2SC1957	5.6	BA656	.92	LM301	.56	TDA1010	1.10	
8C182/L	06	8F196	09	2N3055	42	2SC1969	1.58	CA3086	.91	LM311N	.56	TDA1011	1.37	
8C183/L	07	8F197	15	2N3771	1.16	2SC1970	1.48	CA3089	2.45	LM317T	.78	TDA1028	1.99	
8C184/L	10	8F198	06	2N3772	1.31	2SC1971	2.82	CA3240	1.39	LM324	.41	TDA1510	3.18	
8C212/L	07	8F199	09	2N3773	1.40	2SC1972	8.25	HA1319	2.16	LM328	.46	TDA1512	3.12	
8C213/L	10	8F200	21	2N3819	35	2SC1973	5.5	HA1322	1.82	LM380N	1.32	TDA1515	3.71	
8C214/L	08	8F244	29	2N3866	1.10	2SC2029	1.25	HA1338	2.31	LM383	3.50	TDA1903	3.21	
8C238	08	8F245	29	2SA473	46	2SC2028	1.25	HA1339A	3.80	LM384N	2.90	TDA2002	.63	
8C308	06	8F265	05	2SA584	10	2SC2029	1.12	HA1342A	3.80	LM386	1.15	TDA2003	.76	
8C327	11	8F266	31	2SA608	11	2SC2078	5.5	HA1366W/WR	1.72	LM387	.78	TDA2004	1.68	
8C328	11	8F269	25	2SA673	13	2SC2086	.49	HA1367	2.64	LM3900N	1.12	TDA2005	1.40	
8C546	06	8F324	22	2SA678	38	2SC2092	1.32	HA1368/R	1.63	M51102	1.85	TDA2006	.76	
8C547	.05	8F337	28	2SA683	20	2SC2097	21.09	HA1374	2.11	M51513	1.86	TDA2020	1.81	
8C548	05	8F422	23	2SA684	28	2SC2099	19.25	HA1377	1.73	M51514	1.12	TDA2030	1.06	
8C550	14	8F423	23	2SA699	66	2SC2166	.83	HA1388	2.77	M51515	1.94	TDA2811A	.86	
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8D201	33	8U406	.63	2SC828	10	2SD325	.36	LA4201	1.73	MC1302	1.05	7808	.34	
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8D241	34	8U508D	1.11	2SC1060	.59	2SD837	.79	LA4420	1.32	NE555	.16	7908	.49	
8D242	33	8U526	1.11	2SC1061	.57	2SD880	.36	LA4422	1.02	NE556	.56	7912	.49	
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# Speech Therapy

**Used correctly, speech processors can be a valuable aid for DXers. Saul Wright has been trying out a new model from J.D. Custom Electronics, designed to give base and mobile rigs an extra 'punch'**

**L**et's set the record straight – speech processing is a well-established technique in telecommunications. It's a term that covers a number of technologies but its main aim is to improve legibility over what they may be a noisy or weak communications link. It has nothing whatsoever to do with echo boxes, reverberation circuits and 'Mickey Mouse' noise generators. For economic reasons most CB rigs have only rudimentary processing facilities though, to be fair, most of them do a fair job in the circumstances.

So how does a speech processor actually work? There are several methods, but the one we're concerned with here – used on the **SP 2000DX** from *J.D. Custom Electronics* – is built

inside a module that connects between the microphone and the rig. In essence it operates like a fast-acting gain control, constantly monitoring and varying the signal level going into the rig, amplifying quiet sounds, and attenuating loud ones. The overall effect is to 'compress' the speech so that all of the vocal sounds stand an equal chance of being heard. This is important because some sounds, 'sss' for instance, packs more of a punch than the quieter 'aaa' sounds. Thus the more that gets through, the better it will be understood at the other end.

That's the theory. In the case of the SP-2000DX the practical result is a small box with four knobs, two LED indicators, a couple of plugs and sockets, and a DC power lead. The controls are very straightforward; from

left to right there's a three-position rotary switch for power off, straight-through, and processor on. In the centre position there's no processor action but the Mike Gain control, which controls the level of the incoming signal is still operational. Next to the mike gain is the Limiter control – this controls the gain of the processor circuitry, in effect setting the point at which the internal amplifications begins to distort the audio signal. The last control is labelled Level – this sets the amplitude of the signal fed to the rig. It's a once-only adjustment intended to match the processor's output to the rig's input circuitry. The price, in case you're wondering is £39.95 or £44.95 by post. Both prices are inclusive of VAT.

The two LED indicators show power on, and limit. The latter blinks on whenever the processor is doing its





business – clipping the noisy 'spikes' in the voice. Also on the front panel is a standard four-pin mike socket. It's factory-wired to the standard Cybernet configuration, that is (clockwise from the pip), transmit, receive, chassis & audio. J.D. can supply non-standard sockets to order. Around the back there's a flying lead, terminated with a four-pin mike plug, and a pair of red and black leads for DC supply. There's no fuse protection, so take care when wiring it up.

Inside the box there's a great deal of empty space; all of the clever stuff is mounted on a small hand-built printed circuit board in the middle. It's bristling with components, including a couple of chips, all of which seem to be purposefully employed. In short it's fairly well built and looks as though it will stay the course.

### Plugging In

It's a very straightforward piece of equipment – simply plug the mike into the front panel, the flying lead goes into the rig's mike socket and the power leads go where power leads normally go – to a 12-14 volt DC supply.

There's one or two preliminary adjustments to be carried out before the processor can be used. It's important to enlist the help of a nearby CBer, to monitor speech quality. First the rig's input stage should be checked – this involves running the unit in the 'straight through' mode. If all is well, the sound

quality should be unchanged from normal operation. The next step is to switch on the processor. Now with the helper monitoring, slowly turn up the level control until the speech distorts – then back off slightly. That setting should be marked as the only reason to change it will be if it's connected to another rig. Next, set the limit control – this is easy, just turn the knob until the LED blinks on during peaks in the speech. That's all there is to it.

### In Use

You, of course won't notice any difference but for the person at the other end speech now has a slightly unusual, not to say unnatural quality. However, the nett effect is that it should be more understandable. It is, but it may take some people a moment or two to get used to it, that's if they're aware of it.

The instructions suggest that higher settings of the limit control are acceptable on distant copies – we found that this sometimes led to distortion and re-setting it often proved more trouble that it was worth.

### Summary

Quite frankly if most of your time is spent chatting to the CBer down the road, and you can both understand each other, then a processor is probably unnecessary. If, on the other hand, you're constantly frustrated by those distant copies that you can hear, but

they just can't seem to make you out, then a processor such as this may be what's needed to give you the vital edge in the intelligibility stakes. It's not the universal cure to poor transmissions – it can't make a badly designed rig work any better and there's still no substitute for an efficient antenna and good quality mike, but if you're running a basic rig with little or no processing of its own then the SP-2000DX might prove quite useful.

### CB Specs

Make/model:	SP-2000DX
Controls:	on/off/direct, mike gain, limit, level
Displays:	LEDs – limit & power
Connections:	standard 4-pin mike socket and plug, power
Power supply:	12-14 volts DC
Dimensions (mm):	140 × 50 × 160
Price (£):	£39.95 (£44.95 inc. postage)
Supplier:	J.D. Custom Electronics, 18 Deans Way, Edgware, Middlesex HA8 9NL. 01-906 1225
Tx quality:	[★][★][★][★][ ]
Ease of use:	[★][★][★][ ] [ ] [ ]
Construction:	[★][★][★][ ] [ ] [ ]
Value for money:	[★][★][★][ ] [ ] [ ]



# DATA SHEET

## 27 MHz CHANNEL ALLOCATIONS

Column C is the regular FCC allocation, now legal in England under the designation of CEPT. Note the 20kHz jumps between channels 3/4, 7/8, 11/12, 15/16 and 19/20. These channels (often referred to by CB users as 3A, 7A etc.) are allocated to other services. The peculiar out-of-sequence numbering around channels 22 through 26 came about when the FCC expanded the band from 23 channels to 40 channels in 1976. Channels 24 and 25 just happened to slot into the vacant space between 22 and 23.

When manufacturers started making "export" radios with 80 or more channels, they first added frequencies above the regular band (column D). These appear as channels 41 through 80 on some radios. 120-channel transceivers started going two separate ways. Some manufacturers, notably Cybernet, kept going upwards (column E), labelling their low, mid, and high bands as shown in the table. Others started going downwards as well (e.g. Uniden), using channels below the legal band (column B). Most people refer to the bands by the "Uniden" designations, i.e. column B low, column C mid, and column D high band. Many such radios have been modified to include even more channels (columns A and/or E) and these may be referred to as super-low, high-high etc. Different people have different names - be careful!

The extreme right-hand column shows the British "CB 27/81" band. Note the continuous allocation with no gaps for other channels between. Notice too how these channels overlap the bands listed in columns D and E, which is why some, if not all the U.K. channels can be received on many multimode export radios.

To set the legal record straight: In the United States you may use frequencies in column C only, with either AM or SSB; in England you may use column C or the U.K. band - FM only. Other countries have various permutations of AM, FM, and SSB, usually based around all or some of the channels in column C.

Uniden Cybernet Channel	A	Low B	Mid Low C	High Mid D	High E	U.K.
1	26,065	26,515	26,965	27,415	27,865	27,60125
2	26,075	26,525	26,975	27,425	27,875	27,61125
3	26,085	26,535	26,985	27,435	27,885	27,62125
4	26,105	26,555	27,005	27,455	27,905	27,63125
5	26,115	26,565	27,015	27,465	27,915	27,64125
6	26,125	26,575	27,025	27,475	27,925	27,65125
7	26,135	26,585	27,035	27,485	27,935	27,66125
8	26,155	26,605	27,055	27,505	27,955	27,67125
9	26,165	26,615	27,065	27,515	27,965	27,68125
10	26,175	26,625	27,075	27,525	27,975	27,69125
11	26,185	26,635	27,085	27,535	27,985	27,70125
12	26,205	26,655	27,105	27,555	28,005	27,71125
13	26,215	26,665	27,115	27,565	28,015	27,72125
14	26,225	26,675	27,125	27,575	28,025	27,73125
15	26,235	26,685	27,135	27,585	28,035	27,74125
16	26,255	26,705	17,155	27,605	28,055	27,75125
17	26,265	26,715	27,165	27,615	28,065	27,76125
18	26,275	26,725	27,175	27,625	28,075	27,77125
19	26,285	26,735	27,185	27,635	28,085	27,78125
20	26,305	26,755	27,205	27,655	28,105	27,79125
21	26,315	26,765	27,215	27,665	28,115	27,80125
22	26,325	26,775	27,225	27,675	28,125	27,81125
23	26,355	26,805	27,255	27,705	28,155	27,82125
24	26,335	26,785	27,235	27,685	28,135	27,83125
25	26,345	26,795	27,245	27,695	28,145	27,84125
26	26,365	26,815	27,265	27,715	28,165	27,85125
27	26,375	26,825	27,275	27,725	28,175	27,86125
28	26,385	26,835	27,285	27,735	28,185	27,87125
29	26,395	26,845	27,295	27,745	28,195	27,88125
30	26,405	26,855	27,305	27,755	28,205	27,89125
31	26,415	26,865	27,315	27,765	28,215	27,90125
32	26,425	26,875	27,325	27,775	28,225	27,91125
33	26,435	26,885	27,335	27,785	28,235	27,92125
34	26,445	26,895	27,345	27,795	28,245	27,93125
35	26,455	26,905	27,255	27,805	28,255	27,94125
36	26,465	26,915	27,365	27,815	28,265	27,95125
37	26,475	26,925	27,375	27,825	28,275	27,96125
38	26,485	26,935	27,385	27,835	28,285	27,97125
39	26,495	26,945	27,395	27,835	28,295	27,98125
40	26,505	26,955	27,405	27,855	28,305	27,99125



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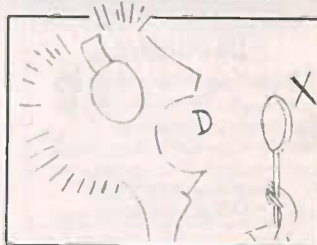
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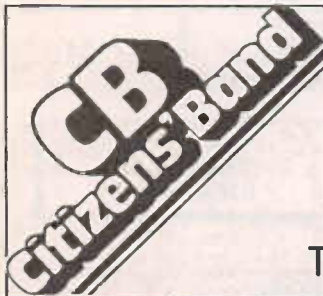
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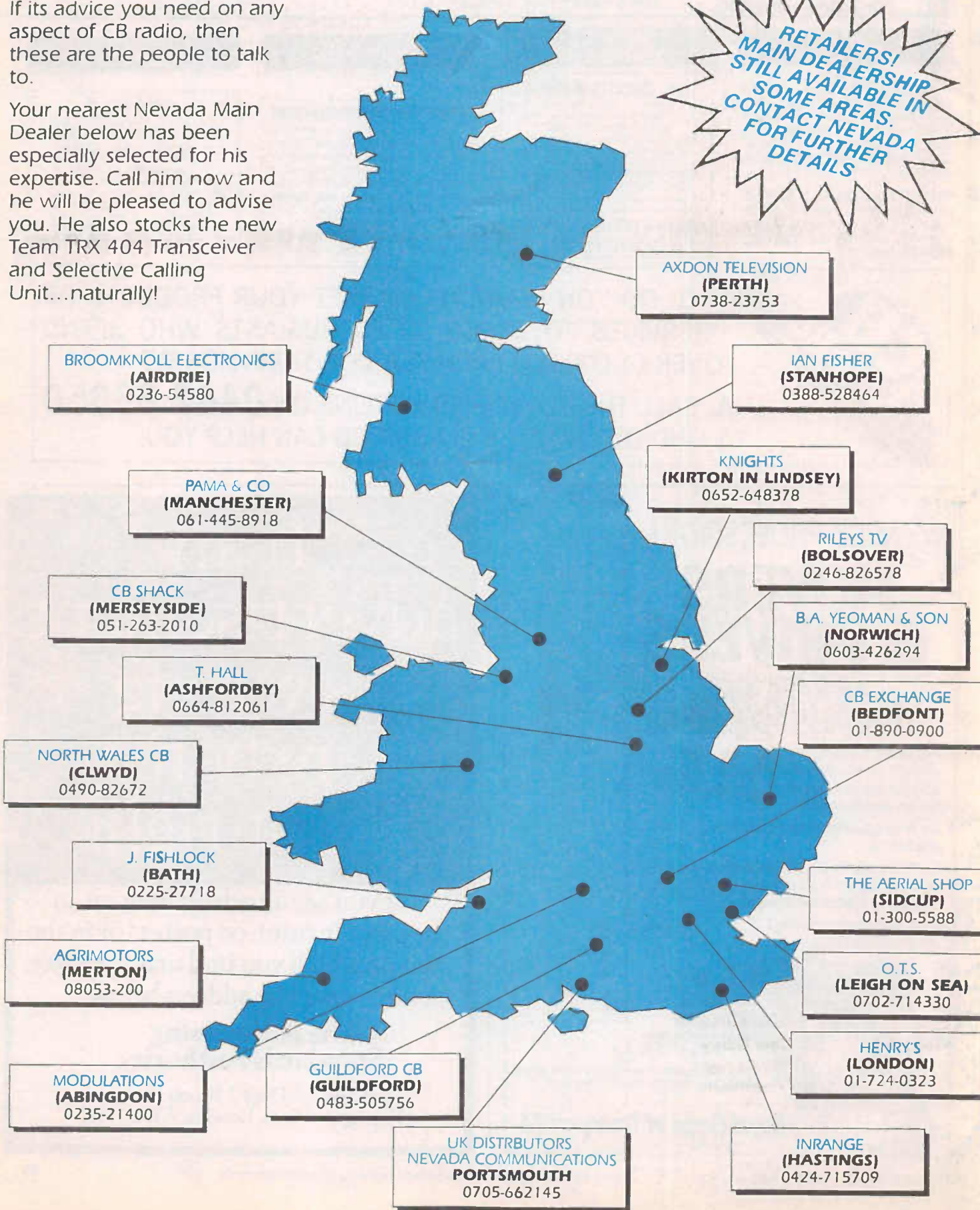
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