

CB

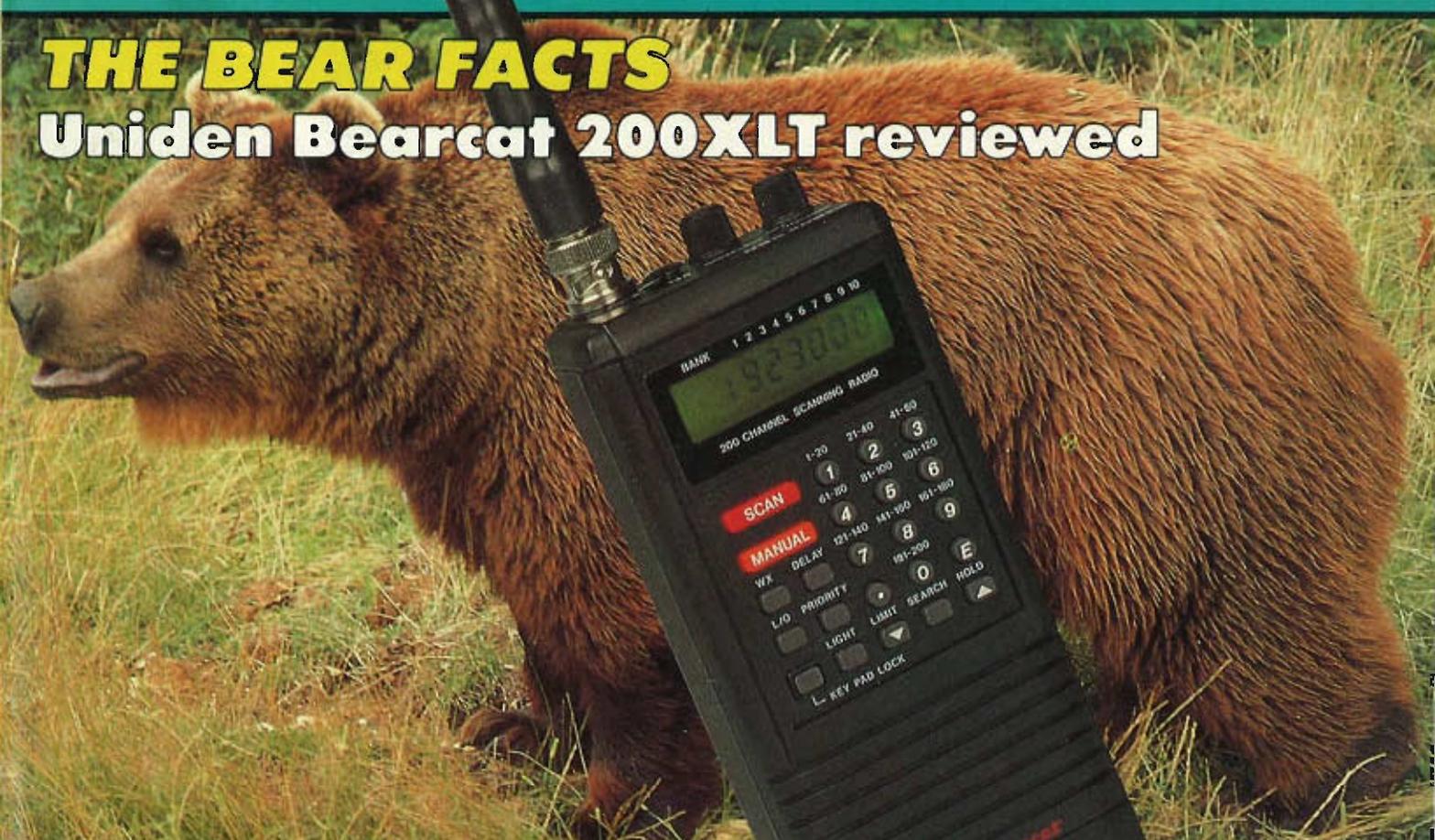
AN ARGUS SPECIALIST PUBLICATION

CITIZENS' BAND

FOR BRITAIN'S 250,000 CB USERS

THE BEAR FACTS

Uniden Bearcat 200XLT reviewed



SWR – THE FACTS

Getting a good match

CB:

Past, Present & Future

Latest equipment, clubs and QSL news

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Base for 1 1/4" diameter. Pole mounting.

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Power handling 500w wide frequency band covering 120 channels, low S.W.R.

Suitable for all models — AM, FM, SSB

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New Thunderflash Mobile (Centre Loaded)

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

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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 chrome 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.

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CB

CITIZENS' BAND

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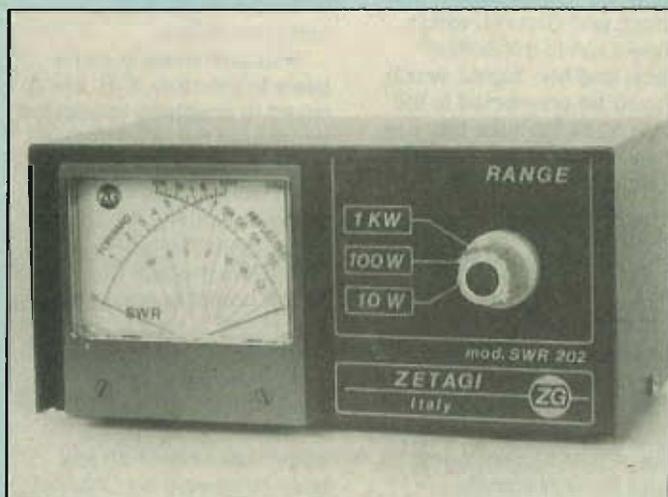
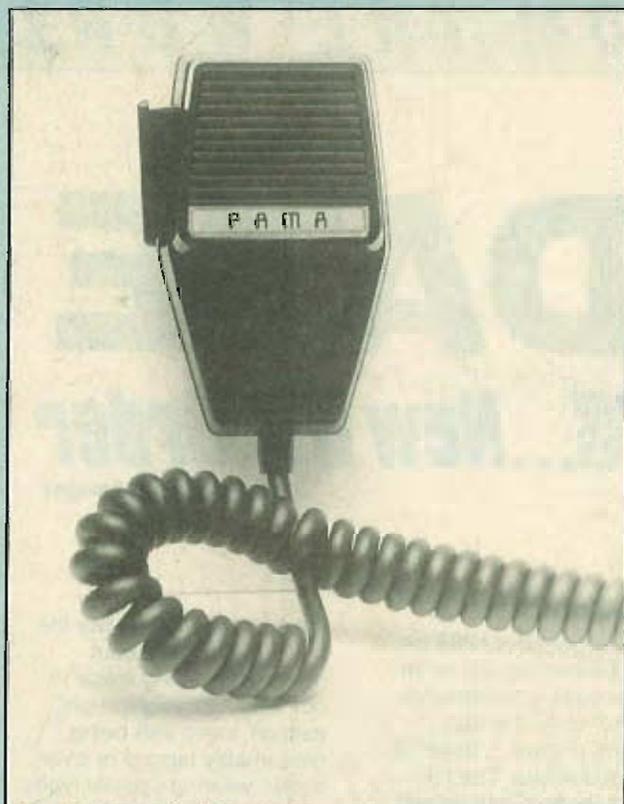
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UPDATE

STOP PRESS...New DTI Order

(See bottom of page)



Editorial

Hopefully it's over by the time you read this but the postal strike has been a real pain in the bum for everyone, not least us poor, hapless editors who rely on articles, letters, films etc. being conveyed via the UK version of Wells Fargo in order to get a magazine out on time.

The above paragraph may seem, to many of you, to be a

lame excuse for not replying to letters, queries etc, not forgetting our regular contributors' cheques which are yet to arrive (honest, lads and lassies, they're on the way). But, at the time of writing, the pillar boxes are still locked in central London so please bear with us.

On the subject of letters, could I make just one tiny request? In the last couple of months, I've received lots of letters which I would dearly like to publish but, unfortunately, could not decipher the handwriting. If you are one of those people whose handwriting verges on the hieroglyphic - and you can count me among this group - maybe you could use a typewriter or simply write in block capitals. Obviously, the more letters we can publish, the greater the communication between us and, after all, that's what CB is all about.

DIY Compressor

In our September 1988 issue, we published an article on how to build a compressor. Unfortunately, the last diagram (Figure 7, page 15) was incomplete. The mic socket (bottom left) should have two more connections. These are: Ground, which should run to the bottom track, and Mic Signal, which should be connected to the tenth track from the top. These descriptions apply to the diagram as you look at it. We apologise for any confusion and any delays in your building the compressor.

Kipper CB

Latest allegation about the waywardness of mankind, especially when equipped with hand-held C.B., suggests that mobile rigs are being used by illicit salmon poachers in parts of Scotland and other places with excellent mobile to base possibilities. It seems that the rigs are used (a) to communicate details of approaching bailiffs to the poachers, also (b) to mention which way the salmon are heading at any given moment. Along with these well-smoked and somewhat kippered yarns caught by the media during

the summer, there were the hoary chestnuts about restaurants being *made* to buy only 'officially caught' salmon, these fish being presumably tagged or even better, wearing special types of fish headphones designed to cut out illegal C.B. communications.

No doubt, there is some basis to the story, C.B. being linked to poachers in popular papers not only in Britain but in the U.S.A. and Australia. From time to time, one could read - during the 1970s - of the apprehension of smugglers through quick work on the part of scanner users and others of high moral tone. However, one cannot be sure of the reaction of any overworked U.K. police officer on being told that some kipper-snatchers had just been overheard on Channel 16. Try it, as they say, at your own risk. Riverside C.B. has been remarkably popular in the U.S.A., and among reports that splashed the C.B. journal pages a few years ago was one about C.B. use on the Mississippi, where barge-trains are now so long that back-to-front (i.e. rear-to-bow) communication had long been done by hand-held C.B. This was

New DTI Order

After a number of sudden 'raids' by DTI officials to various CB dealers throughout the country, we learn that the much-talked-about new Order came into force on 8th August this year.

Known as The Wireless Telegraphy (Citizens' Band and Amateur Apparatus) (Various Provisions) Order

1988. The order now restricts: manufacture (whether or not for sale); selling or offering for sale, letting on hire or offering to let on hire, or indicating (whether by display of the apparatus or by any form of advertisement) one's willingness to sell or let on hire; having in one's custody or control; and importation, of all apparatus which does not

conform to the specifications of MPT 1320 or MPT 1333.

The date the Order came into force coincided with Parliament being in recess, little or no publicity was forthcoming from the DTI regarding the date, although a press release was prepared for *Citizens' Band* which, unfortunately did not arrive at our offices. Hence, a lot of

people were caught unawares and those dealers who were raided and who were found to be in possession of the above items had a lot of stock seized.

We understand that similar raids are likely to take place in the near future. We hope to be able to publish more information about the Order next month.

mighty helpful, only sudden surges in the river meant that the rigs often went overboard. Said one hearty old follower of Mark Twain, the floor of the Mississippi must be well covered by rigs by now. This could also help explain why C.B. is getting a fishy angle. For if evolution has anything going for it, the fish could be evolving special fins that actually operate the mobiles. In short, all the press stories about poachers using C.B. may be slightly awry. It could be to do with the anglers communicating with the salmon on Channel 24, and asking if they are going to give up quietly – or else . . .

Those fishermen who operate legal C.B. and for that matter catch legal fish are naturally keen to get the poachers caught and given due punishment, e.g. made to listen to the kids and lids that get onto Channel during school holidays. Listening to *that* for three weeks should cure anyone of criminal tendencies. Poachers, however, say that their depressed economic state necessitates salmon-chasing, in order to provide food and drink for their families. Also the C.B. can help the cause of rural education, as when dummy calls are put out on wet nights, to prompt the bailiffs or other members of the establishment to tramp towards the river-bank in search of gents actually lucked up in bed.

Checking with U.S. sources reveals that C.B. has been blamed over there for all kinds of poaching, not to mention discouragement of Bigfoot, the U.S. version of the abominable snowman. When the papers run short of copy, it seems that some reporter of ancient memory writes up rumours of poachers ruining the prospects of the American buffalo, or failing that, The Ozark Auk. Since poachers certainly exist *somewhere*, the stories have some element of fact. Trouble is, the kids phone into the paper and ask how they can join the local C.B. Poaching Club, seeing that Ma just

bought them a second-hand rig.

Meanwhile, in Britain, massive technology has been brought in to trace The Loch Ness Monster though no-one seems to have thought of monitoring the C.B. channels in case Nessy, too, has taken

to Citizens Band. It's just a matter of time before, some character on the radio, stuck for a story, reports that poachers have just caught the Loch Ness Monster on a long antenna using C.B. licence forms and letters as bait. Asked for its views on

modern technology and the prospects for the U.K. economy, the Monster will blink fishily into the microphone and gulp: "How come I get such lousy reception of pirate radio?"

Poor fish – he was really tuned into Radio Three.

RSBG Exhibition

The Radio Society of Great Britain recently held its annual exhibition of Radio equipment at the NEC Exhibition Centre in Birmingham. This was the Society's 75th Anniversary and to celebrate, the show was opened by HRH the

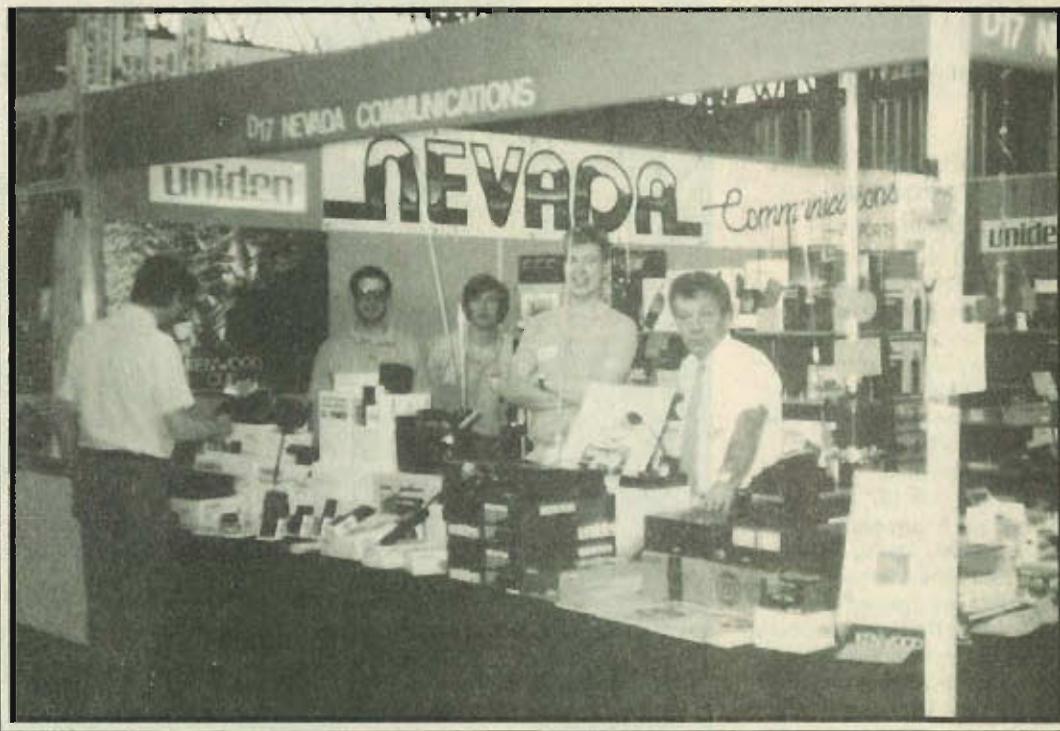
Duke of Edinburgh.

A wide variety of products were on display including Amateur Radio, Scanning Radios, Antennas, Towers, etc.

CB radio was represented by Nevada Communications who had on display all the latest rigs and accessories.

The photograph shows some of the Nevada sales staff just before the doors opened and the rush began.

The show was well attended and the stand attracted a lot of interest from visitors who were keen to see the latest innovations in CB and scanning equipment.



Book Review

Having read "The Screwdriver Expert's Guide" and the "CB PLL Data Book" I was most pleased to receive a copy of Lou Franklin's latest offering, "Understanding and Repairing CB Radios – For The Professional Technician." The book costs \$34.95 and runs to over 350 pages. They're good size pages too, and with copious diagrams.

The book starts with an introduction to servicing CB radios, covering the

equipment you'll need, some general technical information, and odds and ends like where to find spare parts. Lou then continues with some basic techniques for trouble-shooting radios, and the following chapters take a tour right through the radio, covering every detail. The final chapter is devoted to the much misunderstood subject of antennas and transmission lines, and there is some helpful information dealing with noise and interference at

the back.

Lou's style of writing is very readable, and he has covered every section of a transceiver in about as much depth as you could ever wish for. No complicated math has been included, and only simple calculations where unavoidable. You'll find information about every circuit you could ever want, including FM and SSB, and there are examples from various chassis throughout. In addition to the hard technical

facts, you'll find plenty of tips: why the Uniden Jackson distorts with very strong SSB signals and how to cure it, for example. If you read this book from cover to cover, and can understand everything you read, then you will sure know an awful lot about CB!

It is worth \$35? The answer to this question is an unreserved yes. It is a book you can read through gradually to learn from, and then keep handy as a reference as you need it. I can honestly say that this is the best book dealing with servicing CB radios that I have seen. If you're only ever going to buy one book about repairing CBs, then make it this one. Well worth \$35 of anyone's money. Thanks for another great book Lou!

Paul Coxwell

Telephone temptations at Waterloo!

The kind of enchanted telephone booth likely to exist in Oz has just appeared at Waterloo Station, courtesy of Mercury Communications – and it could be a great temptation to any C.B. man not normally lingering at railway stations.

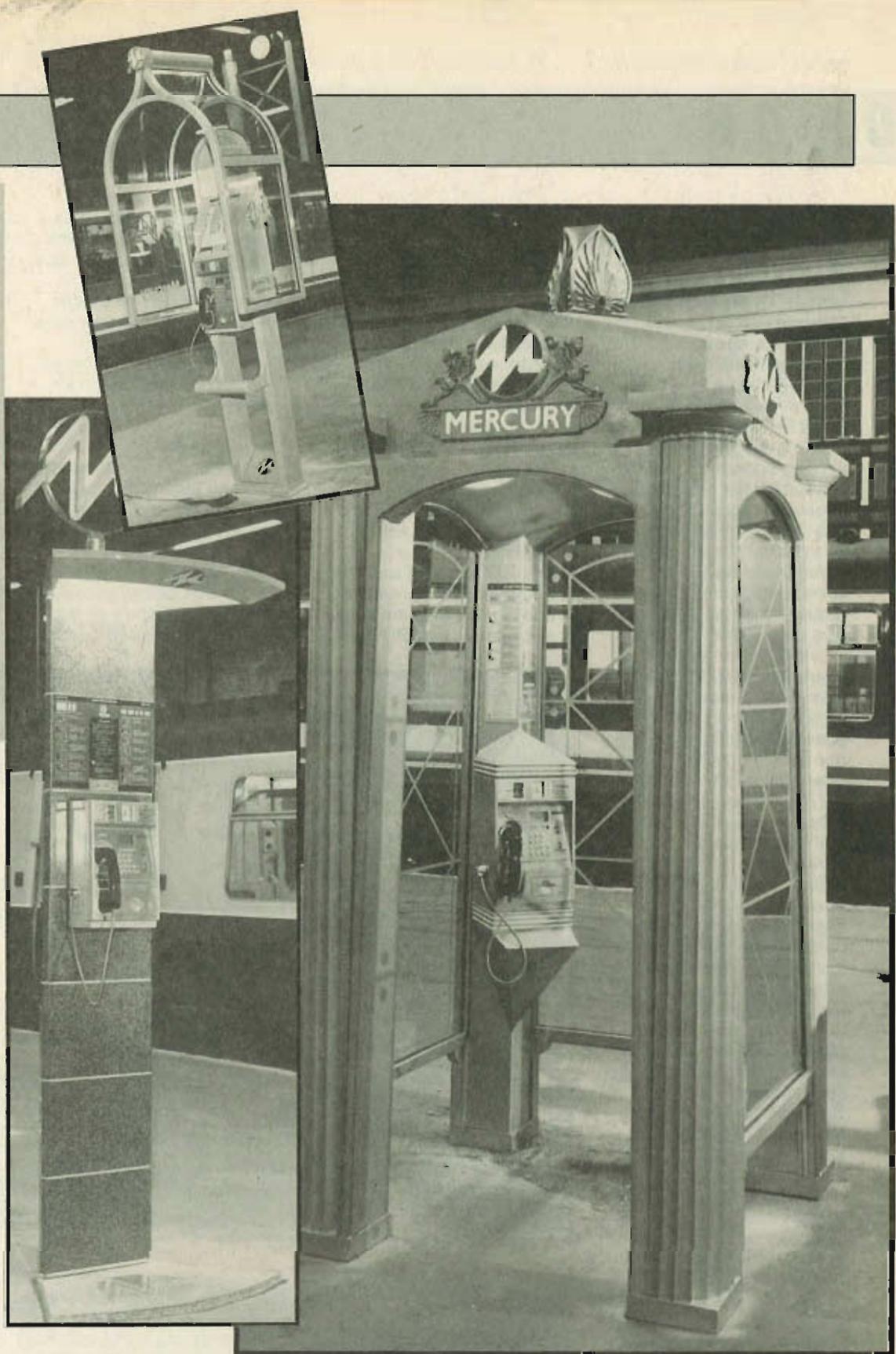
In late July (27 July to be precise) a new suite of three payphones, taking credit cards or the Mercury phone cards, was opened on the Waterloo Railway concourse, though without the benefit of a male choir from British Telecom. There are three payphones, described as classic, art deco and conservative, at least one looking as though it came from the greatest days of the Byzantium Empire. This is meant as a compliment: why should making a phone call be so much a utilitarian affair? Charges for the calls are somewhat less than British Telecom, at least at the time of reporting these telephonic wonders, and some 400 Mercury payphones are promised for the capital. It is said that these can be specifically designed to fit the local

environment, so the one at Paddington could be integrated with a statue of Isambard Kingdom Brunel, whose idea of a payphone booth would have been something along the lines of Temple Meads Railway Station.

Mercury, a very go-ahead organisation, has to use British Telecom lines for

much of its calls, though as Mercury exclusive lines, city to city, extend, British Telecom may not be so much involved. It is said that the clarity of reception along Mercury lines is noteworthy, even legendary – but try it for yourself before you think about trading in your C.B. for a year's supply of payphone cards. A smart outfit like this

could one day introduce an up-market C.B., of course, with rigs designed in the style of the Bauhaus and other whiz-kid industrial designers. When it happens, you will ream about it first in this magazine. Oh, yes, as befits the times, your editor now sits in a chair that is distinctly NAAFI 1953 (it goes with his suit!)

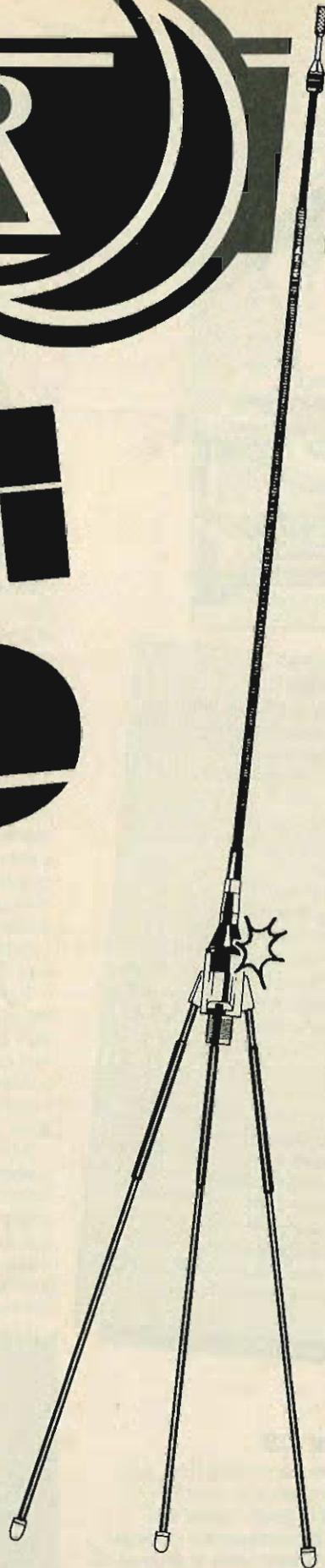


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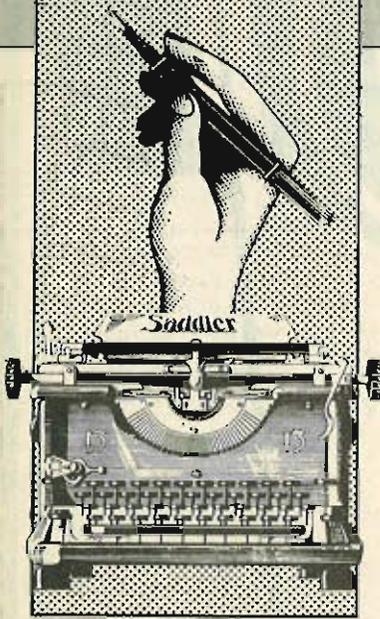
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Antenna Tip

On the Scrounge

I have been a regular reader of your magazine for about five years now and I feel it is going from strength to strength, although I would like to see more information from the DTI from time to time. I don't envy your reporters' jobs - it must be like getting blood from a stone, knowing government.

I would also like to add that I thoroughly enjoyed the October 88 issue. In particular, the front cover. Incidentally, what do you do with the old equipment like that wonderful selection of mikes on the aforementioned cover? In other words, can I have one? Just for my cheek?

**R Randall,
Devon**

You're quite correct in some respects regarding your comment about the DTI. However, hopefully you will have noticed a closer liason with them over recent months. Regarding your shameless request, unfortunately we are good little boys here and always return them to the suppliers who kindly let us borrow them in the first place. Nice try, though. - Editor.

intended for chatting up girls, being a disc jockey, displaying your knowledge of four letter words - or for DXing. It just degenerated into this as it has done everywhere else - Sweden being the exception which shows that real policing can work.

Now to the bit about 'naughty' or extra channel rigs. If the monitoring organisations and the DTI did their job, nobody would need extra. The reason most of my customers have them is because they don't want to hear music or bad language forced on them while they are trying to tell Joe that they need another bulk loader to offload the combine harvester, or would the wife ring the vet, and other such incidents.

It is a pity that lack of information or the weight of a lot of people who want to play radio ham without having to take a test (a very easy test) lumbered us with 27MHz instead of a VHF frequency. Yes, I know we have a UHF frequency, but have you tried using it lately?

Now then, could I deal with all those commercial users and radio telephone freaks. Have you look at the rules for using these sets? Firstly, you can't talk car to car - you must go through the base station. A bit long-winded if you just need the use of a particular spanner for five minutes. You can't talk to your

customer, he's on a different frequency and you can't move so you have no talk-through. Not very convenient, especially if you want to give advice to stabilise a situation until you can get to the job.

So now you see that not even cost comes into the matter. In fact many service vehicles today carry both CB and PMR. BRS recovery are often with both, as are many other recovery and salvage vehicles. Why? Because it gives everybody a common frequency with talk-through. I personally hope to see an increasing number of commercial users on CB. They are generally better behaved than a lot of other users, possibly because the gaffer or foreman may well be listening and continuing excesses may well result in the offender being asked to go forth to the labour exchange.

Once again, CB is not for idle chatter but for communication in the proper sense of the word - passing information. And, yes, I do hold an amateur licence. I couldn't pass my 11-plus but it wasn't difficult and - yes, we do have our music players etc. As a ps, I use CB far more than ham radio.

**J Halsey,
11 + 10 Radio Services,
York**

Commercial CB

May I take up the gentleman from the monitoring organisation in your Back Chat page, March 1988. Firstly, the original aims at the introduction of legal CB by the government were to provide a cheap, short-range (8 miles) radio service for use by the general public, with special mention of its use for small businesses and safety of life and property. If you read through the various pieces published at the time, I think you will find that I'm correct. It was never



Antenna Tip

A recent letter in Q&A concerning 'disguised' antennas prompted me to describe my experience of this type of antenna.

In 1981 I sought an antenna which I could use both for CB and for normal 'broadcast band' use. Choice was fairly limited and I settled on a Harada telescopic type as soon as the choice of UK frequency was announced. Later, however, it became clear that top-loaded antennas were prohibited so I had to remove the Harada. Incidentally, it worked well connected to a monitor receiver for 27MHz AM – but I was never able to try it on FM.

My next choice was the 'Antenna Specialists' MS 264; this cost about £22 and was a very neat wing-mounted 45in. steel whip antenna connected via a matcher unit to the CB and car stereo. VSWR was no problem either – just under 1:1.6 at band edges and 1:1.01 on channel 20. Performance was fairly good, with a normal 'monitoring' range of about 5 miles. In an effort to improve the range I could obtain, I removed the AS MS 264 and tried a variety of other antennas – some were awful and others

such as the Z27 gave good CB results, but not such good results on VHF or medium wave. Eventually I refilled the MS 264 MS 264 and first accepted the 5 mile range!

Having bought a new car in 1983, I discovered that the MS 264 would not fit the 'narrow wing' space of the car; I was lucky enough to discover a mint AV 241 gathering dust in a back-street electrical shop and fitted this to the car boot. As some of you may well know, this was a superb antenna – 1:1.2 VSWR across the band and a very neat design. Unfortunately, this antenna was damaged beyond repair in 1987 and so I wrote to Antenna Specialists to see whether I could obtain a replacement. They informed me that the AV 241 was no longer in product on but they sent me their current catalogue. The nearest design to the 241 was the AV 251 which, at 60in., was too long for my purposes; however, I discovered that a 'slimline' successor to my sadly-missed 264 was now available. This was the M-360 Tri-Band antenna.

I have been using this antenna with a Cybernet 3000 and have had excellent results – the range is down on what I used to achieve with the AV 241 but is

quite acceptable; about 5 or 6 miles under normal 'motoring' conditions.

When I obtained a CEPT transceiver I tried some experiments to obtain an optimum VSWR adjustment to cover the bandwidths of both CB bands; it is possible to achieve 1:1.5 or better or each band on its own but if the antenna is adjusted to cater for '80 channels' the VSWR at band edges rises to 1:2.7, which is somewhat high. However, 1:2.0 or better (up to 1:1.2) is available between CEPT ch 17 and 'UK' ch 20. With practice, however, returning the aerial matcher when changing transceivers is fairly simple.

With the fall in the value of the dollar over recent years, the cost of the antenna is quite reasonable (\$30) when you consider that this also includes a matcher unit and all necessary cables and mounting hardware. Unfortunately, they are not available in the UK – I bought mine directly from the manufacturers: Antenna Specialists (International Sales), 30500 Bruce Industrial Parkway, Cleveland, Ohio 44139-3996, USA. Their telephone number is (0101) 216-349-8400.

**N J Wilcock,
Oxon**

Avon Good Buddies

Thank you for a wonderful magazine, covering the hobby of CB radio. I have been operating CB radio for ten years, using both AM and FM and I would like to see the retention of the CB/27/81 frequencies and also the growth of the new CEPT frequencies.

I have recently spoken to European stations using standard, legal equipment. These stations are very strong both in strength and clarity, making listening very easy.

Around my own area – Weston-Super-Mare – it has gone reasonably quiet but, most importantly, CB is being used properly, being able to receive a radius of 50 miles. There is an emergency network around the south-west, named South Western Radio Volunteers and it is registered at the local council office. The emergency channel is respected most of the time around here and is monitored 24 hours a day.

The local club, the Delta X-Ray International Club, meets every second Thursday at the Grosvenor Hotel from 8.30pm until closing.

While writing, I would like to thank R'N'T of Bristol for their advice on which CEPT rig to purchase, after the trouble of the sets being legal or not and all the previous equipment which has been



good value for money and lasted without any problems. Also I would like to thank your magazine for your rig reviews which has lead me to a good and a legal rig.

Lastly, I would like to say hello to Blue Diamond (Tina) and Stuntman (Clive)

who will, no doubt, be reading this magazine.

Is there any chance of you publishing my QSL cards? Grovel, grovel, creep etc.

**Stray Cat
Weston-Super-Mare**



LIGHT PLIGHT

Shocking coincidence

Q I'm running a Cobra 21X FM rig as a base station. It's feeding a Thunderpole III attached to the outside of the house. The mike Astatic Silver Eagle and the power supply is a home-brew.

My problem is I'm getting fairly frequent shocks from the mike (which is all metal). Not exactly a jolt, just surprising, and sooner or later I'm going to drop the mike on my foot. Before you ask they're not mains shocks - I know all about them - in any case the PSU is built to a very

high standard and I've checked it out fully. It's probably not static either, and the carpets are woollen.

Quite frankly I've run out of things to try - have you come across any cases like this before?

**Mikeman
Norwich**

A There's no high voltages anywhere inside the rig or mike; from your description it certainly sounds like a static 'belt' to me, but please double check the mains PSU, or try your rig on a commercial power supply.

However, let's assume it is static - what sort of undergarments do you

wear, and what do you sit on? It's okay, I'm not kinky (well, not that way anyway). Believe it or not, if you sit on one of those stackable polypropylene chairs, and you're wearing knicks woven from man-man fibre then the constant friction between these two materials can generate a static charge of several thousand volts!

It will eventually discharge through your hand when you grab the mike (which is, or should be at chassis potential or earth). The nett result is you get an unpleasant shock.

If this is the case you have several alternatives: stop-squirming in your seat; earth yourself - a wire wrapped around your fingers, attached to a nearby radiator/water pipe etc; wear cotton underwear; buy a new chair.

Mikeman is having problems using a mobile as a base (see above)





Shock scream horror – see *Revenge of the TVI* (below)

Perk-up a portable

Q After an absence from the airwaves for several years – thanks to a certain person running off with my rig, and not paying for it – I have returned!

Anyway, at the moment I am using a *Harrier WTZ* hand-held; reception and transmission could be better, to say the least . . . What I would like to find out is whether or not I could use it with an external antenna. If so, what sort should I use? Any suggestions?

During my enforced absence I have rather lost touch with the CB scenes – to my shame I also stopped buying *Citizens' Band* – so I'm a little out of touch as far as recent developments are concerned. What is CEPT, has HM Government allocated us a new set of frequencies? Is this anything to do with the 1992 business? Paracelsus
Wolverhampton

A Welcome back! You could fit an external antenna to the *Harrier* but in our experience it rarely make much difference to the transmitter output, (though it may well help reception). These rigs are designed to work on untuned telescopic antennas, so fitting a pukker CB twig doesn't really help, unless you're able to re-design the output stage. In any case the TX output power is fairly low – save up for a proper base or mobile unit, or do a little debt collecting . . .

While you've been away there has been a new allocation of frequencies – last September to be precise – and yes, it is all to do with European harmonisation (if that's the word). There's no need to junk your old gear just yet – the DTI plan to review the whole situation of personal communications in 1990. You can identify the CEPT rigs by a 'PR 27 GB' mark or label on the front panel.

Revenge of the TVI

Q I've got an unusual problem – our telly (made by Mitsubishi) interferes with my CB rig (Midland Power Max running base station). There's a terrible scream coming from the rigs speaker everytime the TV is switched on, even though it's in the other room. It seems worse on channels 18 to 30.

What can be done? Is the problem with the rig, or the TV?
Mark Dunstan
London E18

A What you're hearing is almost certainly **line whistle**, generated by the line-output stage of your TV set. This particular circuit, which drives a set of coils around the neck of the picture tube (to deflect the electron beam and produce a picture), oscillates at just over 17kHz – young people especially can sometimes hear the whistle – though the older you get the

less responsive your ears get. Anyway, to return to your problem, your rig is almost certainly picking up a harmonic of the line-output stage as RF breakthrough. This is quite rare, unless the two pieces of equipment are close to one another (two or three feet). You say the TV is in an adjoining room – is it immediately the other side of the wall? It could be getting in through the mains power supply, try changing to another wall socket. Does it happen on another make of rig? Try these things first, and let us know how you get on.

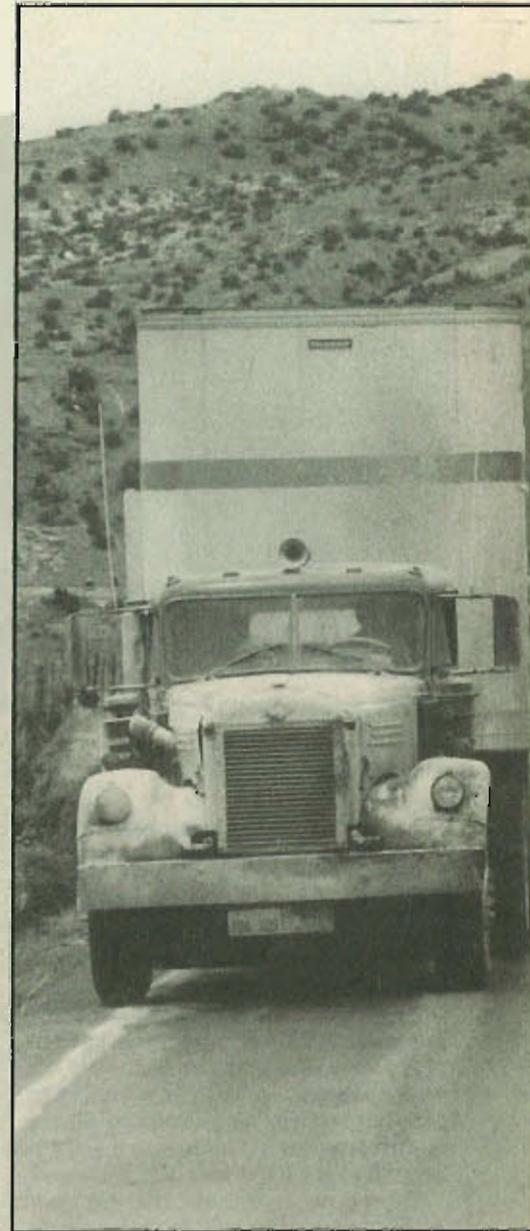
Light plight

Q My Cybernet Oscar has a sick channel display. The middle and upper right segments on the 'tens' digit don't light up any more. Is there a quick and simple cure that I could try myself, or is it a case for the local 'Doc'? Peeping Tom
Worcester

A 'Fraid so, Chances are the two light emitting diode (LED) segments have failed – a wiring fault (also quite common) would usually show up on other parts of the display – so too would a problem with the display driver circuitry. In any case there's not much you can do for yourself – unless you're handy with electronics – a competent Doctor should be able to fix it for your fairly quickly, and it shouldn't cost too much either. Tell him/her we said so!

CB.

Past, Present
& Future
(Part 1)



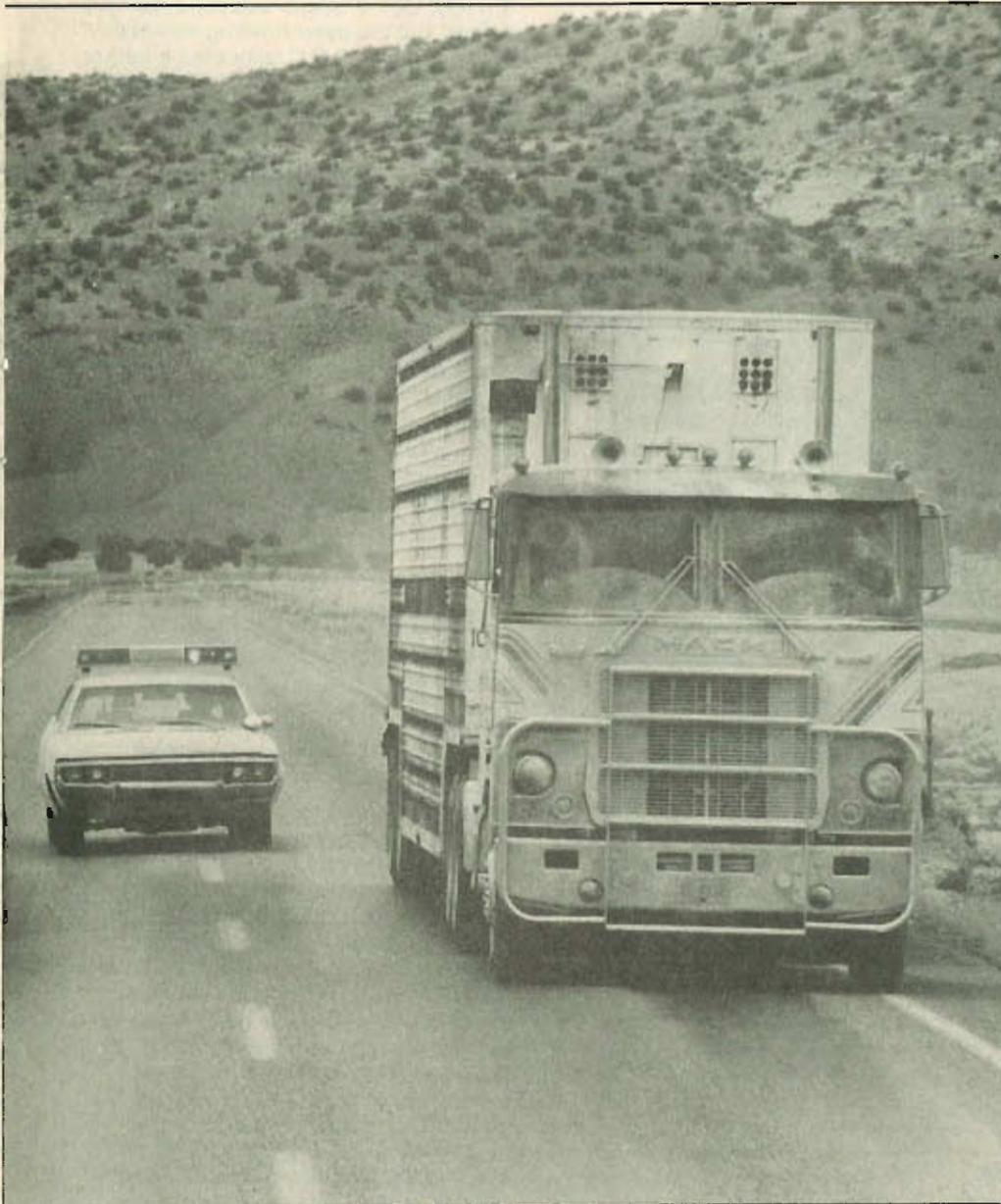
Paul Coxwell looks at the history and future of citizens' band radio

Some things released into society have a sudden impact and grow into an integral part of that society. Others form "crazes," are seen everywhere for a short length of time, and then disappear back into

near-oblivion. Then there are things that are relatively unknown at first, but slowly take hold until they become an established part of the world. CB radio seems to fall across two of these categories. When first introduced, it could hardly have been described as hard-hitting to most people. Indeed the

initials CB meant absolutely nothing to the majority of ordinary folks. Who could have forecast that some twenty years later it would become such a widely-publicised topic?

It seems now that we have passed that "craze" stage, and CB radio is settling down into maturity, if that is what its usage in some areas can be described as. Interestingly, computers seemed to follow the same pattern, at first being something of a mystery to most people - science-fiction stuff for white-coated boffins in microscopically clean rooms, then the home-computer period when everyone over the age of five must have one, followed by the sensible realisation that it's really too much trouble to use a computer just to keep track of the evening's television programs. Just as computers have now passed to the stage of being for more important things like accounts, word-



Movies like *Convoy* strengthened the 'cowboy' image of CB.

processing and so on, perhaps CB is now passing that "got to have one" phase and moving toward its originally intended purpose.

In the Beginning . . .

A long, long time ago, before the world knew of Citizens' Band radio, there was a void. The only realistic ways to communicate over the air were to take the amateur radio examination, or get a private mobile radio license. Then the F.C.C. said "Let there be CB radio." And so it came to pass that in 1958 Citizens' Band radio was born.

Before that time, if you were an ordinary person looking for a way to use the airwaves to communicate you were stuck. Private mobile radio equipment and licenses were far too expensive,

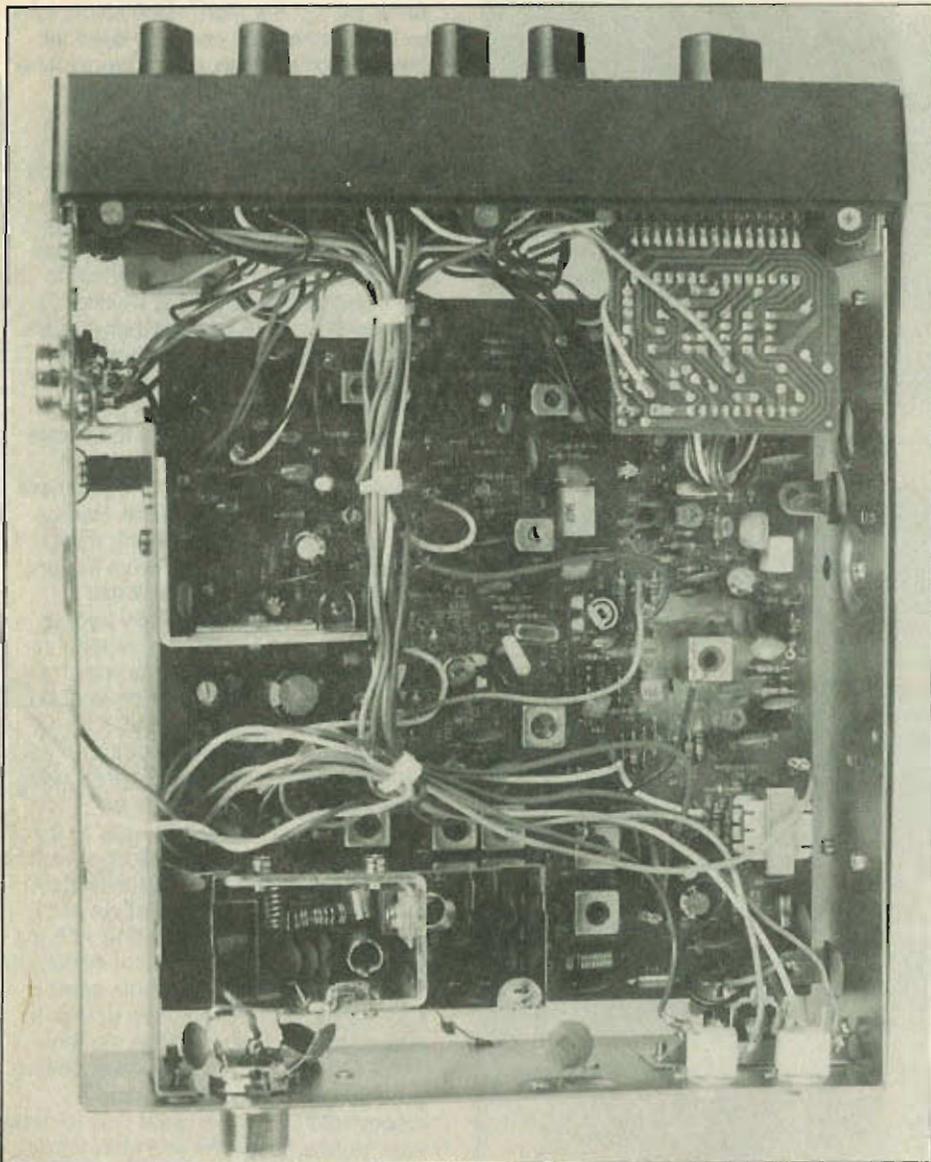
and although there was an allocation that could be used by private citizens, it was unrealistic, mainly for cost reasons. Transistors had only been invented ten years before, and were still relatively rare in most consumer equipment such as radios and televisions. The equipment for two-way communications was simply out of the reach of most people. When the 11-meter band was given over to CB it meant that for the first time people could afford the luxury of communication by radio. CB in those days was very different; the F.C.C. intended it for brief, local contacts – the type of messages that are almost extinct on the band today. To set-up a radio you had to get a class D radio license. No technical examination was necessary; all that was needed was a straight fee.

Call-signs were allocated to each station so they could be identified, and radios covered by the same license

would use the same call designation. Stations could use any of 23 channels for communications between units of the same set-up, but there were restrictions on which channels could be used for inter-station working, i.e. communication between units of a different callsign. Channel 9 became the official emergency channel, for use by any units. Strange as it may seem to many of us here in England today, there were limits on how long you could occupy a channel for any one stretch. This was intended to allow others a chance to use the frequency if they were waiting. To the majority of CB users either outside the United States, or who have only been in the CB world a short length of time this may seem a rather peculiar rule with so many channels to choose from and so little activity back then. However, much of the early equipment did not cover the whole band. Radios had a channel switch, offering maybe 4, 6, or 8 positions, and you went out and bought crystals for the particular channels you required. Many people only requiring basic communications from home to work or similar may have had only one or two channels to choose from – it was all they needed.

As time went on, the crystal synthesizer came into widespread use. This enabled a clever piece of electronic wizardry to generate all 23 channels from just 12 or 14 crystals; the earlier system required two crystals for each channel. Production costs of CB equipment started to drop, and with the gradual influx of the transistor through to the late sixties radios became smaller, less fragile, and more suited to mobile applications as well as base stations. The 11-meter band activity was getting greater all the time. People had discovered CB was a great way to make new friends, or just have a chat about the world in general, as well as providing communication between families and businesses as originally intended. Radio experimenters could have a great time when conditions brought in signals from many hundreds or thousands of miles away.

As the demand for a product rises, and sales increase, so do production costs come down. Technological advances now meant that a clever piece of design called a phase-locked loop enabled all 23 channels to be generated with just one or two crystals. Because the crystals in a radio circuit are one of the most expensive parts, this was obviously a great saving. Anyone who drove the highways of America with a CB in their car found they could get advance warnings of accidents, hold-ups, and so on, and guesses could only be made at the number of lives saved by the use of CB radio. Truckers, who make a living by delivering anything that can be delivered in as short a time as possible, soon found that CB in their cabs could speed them to their



The phase-locked loop meant fewer crystals.

destination. In a strange town they could ask for directions, which is slightly preferable to getting lost down some back street and then finding there's no place to turn around an 18 wheeler. In their business speed is everything. A succession of fuel crises were just around the corner. CB was about to boom.

The Citizens' Band Rush Hour

Trouble in the middle-east (when isn't there?) sent fuel prices soaring skyward, with many garages having an almost permanent closed sign up. Cheap gas was gone, and drivers turned to CB to help find gasoline, and to avoid wasting it by getting advance warnings of the conditions ahead. Truckers of course required mostly diesel fuel, but the same problems arose. The introduction of a

national 55 mph speed limit, the dreaded "double nickel," indicated imminent disaster for many. After all, with a wide open straight road a tight delivery schedule who wouldn't be tempted to stray a little over 55? CB became a necessity to avoid being pulled-up by speed cops, and the black-box in the cab became the driver's best friend. Besides the help with the job, the drivers could actually talk to other human beings, something which becomes a slight luxury when you spend most of your time behind a steering-wheel.

By around 1976, the channels had become extremely crowded, especially around the big cities, and many people had taken to having their radios modified to operate on frequencies outside the legal band. For the earlier types of sets it meant nothing more than plugging in a couple of crystals to get a little privacy. Band-planning and certain channels for use between units of the same station

had become unworkable, and call signs were an exception rather than a rule, especially as many didn't have licenses anyway! Use of single-sideband also helped, but the overcrowding was still obvious, so the F.C.C. allocated a further 17 channels, providing a total of 40. At the same time the technical specification for transceivers was tightened-up, thus forcing manufacturers to be a little more careful with the quality of their transmitters. A ruling was made that 23-channel radios to the old specification must be off dealers' shelves by a certain date. This resulted in a panic sale of old stock, presumably on the grounds that it's better to sell it and make less profit than wind-up with thousands of dollars worth of radios that can't be sold at all. The result was that old-specification 23-channel radios were so cheap that everyone could afford one, if not several, so they went out and bought them.

CB in England

It was about this time that there was an arousal of interest in CB across the pond in England. CB had something of an image of fun, daring, and us-against-them, "them" being the Radio Department of the Home Office. This image was strengthened by movies such as *Convoy*. People started asking awkward questions of the government, wanting to know why we couldn't have a similar service in this country. Other places throughout the world had already legalized CB, often in response to public demand, as in Australia. Feelings ran mixed, with illegal users demanding legality, and the rest of the general public getting occasional newspaper bulletins of what phrases like "10-4 good buddy, we got a bear in the air," actually meant in English. To one side it seemed that ordinary folks should have the right to be able to use their own world's airwaves to talk to each other, and to the opposing side it seemed that these "breakers" were an unruly mob who delighted in interfering with paging systems and crashing model airplanes. To be fair to both sides it should be stated the main channel of communication between the CB world and everyone else was incomplete, inaccurate newspaper stories. It is not fair to say that most people wanted to prevent others from talking to each other, just as it is unfair to say that CB users went around deliberately doing their utmost to cause chaos.

So it went on, until November 1981 when CB became legal in Britain. It was tears and roses combined however, with the government authorizing FM as opposed to AM and SSB, and on frequencies slightly removed from the almost universal F.C.C. allocations. Some users had got what they wanted, a legal way to communicate. Others felt



These breakers finally got their wish in November 1981.

their demands had not been fully met, and still petitioned for an AM/SSB system along the American lines. The opinion of many outsiders, who knew nothing about AM, FM, frequencies and so on, was simply "They've got it legalized and they're still not happy."

Was the frequency and mode choice wise? Well, that largely depends on individual circumstances, from the user's point of view. To the person in Britain who just wanted a short-range radio link, it was fine. To the person who wanted to be able to talk legally across the Atlantic to the States, as they had done a couple of years previously during a sunspot peak, it was bad news. Their American friends were mostly a few hundred kilohertz down the band, and using AM not FM. The British channels were unique; no other country in the world had our peculiar allocation, although many operators with multimode, multiband transceivers could be found on our channels. Indeed, many had been there for a great many years before British authorities allocated them to us, and may have looked on the island inhabitants' signals midway between their channels as an invasion, even though they were using the frequencies illegally. There were a great many "scare stories" put around shortly before

legalization that FM was vastly inferior to AM, and that range would be practically useless. The fact is that both have their own advantages and disadvantages, and which is best for any one person depends on their requirements. It should be pointed out however, that a good number of transceivers brought into the country from Europe were basically AM types with a rather crude FM section added. The FM side of these radios often left rather a lot to be desired, and their performance was in no way indicative of that obtained with a radio designed for FM from scratch.

Introduced at the same time in England, but largely ignored, was a UHF service at 934MHz. Various other countries also have a VHF or UHF allocation for CB, often under a different name. The 934/81 allocation, to use its full designation, offered 20 channels, way up beyond television frequencies and out of the way of long-distance signals, except in the rarest conditions. It would seem ideal for those wanting to get away from the crowded 27MHz band with its transcontinental signals coming in regularly. Range is reduced somewhat however, especially for people in unfavourable locations, such as valleys, the middle of a city, automobiles etc.

The main drawback to most people, however, is the cost of equipment. Not only is the transceiver itself more expensive, but quality is essential at these high frequencies, so it can be nothing but top-notch coaxial cable and connectors. 934MHz has also suffered from interference from the growing cellular telephone network, some of which may well be attributable to the CB radios themselves. The bottom line however is that someone spending hundreds on such equipment expects more of it. The UHF band is likely to remain relatively uncrowded until (if) the government discontinue it around 1992.

The next significant development to the case in England was the introduction of the CEPT specification in 1987. Most European countries were already using the American channels for their own CB services, sometimes all 40 channels, sometimes just 22 or 23 channels. Some countries opted for FM, some for the AM/SSB system, others a mixture of both. The aim of the CEPT proposal is to get all members of the common market using the same standard - 40 channels FM. Britain's adoption of the CEPT sets brings into question what will happen to CB radio in general in the future. How will it develop? Join us next month for some thought-provoking ideas.

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COMMUNICATION THE

QSL WAY



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

This month I've a fair few things to get through so it's straight down to business with a reminder that UK postal charges have gone up (September) so do remember to make sure that your QSL packages are correctly stamped for the right weight! A single first or second class stamp only covers a measly 60 grams of weight, and that's only within the UK! Overseas, the limits are a lot less weight for a lot more money! Check it and be safe, don't send a heavy QSL package out "understamped" as it's not a nice thing to receive an awaited QSL package only to have to pay the postman to receive it.

A new address for the Blue Star DX QSL Club has come my way recently; this has moved from PO Box 1, Cramlington, to PO Box 11, Cramlington, full address in the usual place! Robin Hood, also known as Gordon of London has ceased QSLing and did have the last few of his cards (Currie Series No. 604) available for the asking and a SASE (Self Addressed Stamped Envelope).

Okay, a few names now starting off with that of Dave (*The Old Timer*) of Wales who sends out a bumper package of Currie, Heidi and miscellaneous other types of cards plus a bundle of local info leaflets. A card from down under (G'Day) comes from Scott (NGC916) of New South Wales, and also a bundle of all sorts of personal cards in from Bernard (*Tobacco Man*) of Coventry. Now, I've had a letter from Bob (*White Bandit*) who asks for QSLers everywhere to drop him a line and as he himself says, one of the purposes of CB is to help. Bob is, in fact, in HMP



QSL Services Addresses:

- | | |
|---------------------------------------|--|
| Gordon (<i>Robin Hood</i>) | 13 Stanbrook Road, Abbey Wood, London, SE2 9XR; |
| Dave (<i>The Old Timer</i>) | PO Box 4, Tredegar, Gwent, NP2 3XA |
| Scott (NGC916) | 6 Cheryl Close, Elermore Vale, Newcastle, NSW, Australia |
| Bernard (<i>Tobacco Man</i>) | MQ 177, PO Box 158, Coventry, CV6 6BD |
| Bob (<i>White Bandit</i>) | T01522, Stoker, HMP Frankland, PO Box 40, Finchale Avenue, Brasside, Durham, DH1 5YD |
| Steven (<i>Foxhunter</i>) | GB 420, PO Box 5, Consett, Co Durham, DH8 8NG |
| Brian (<i>Sunray</i>) | PO Box 15, Kirkcudbright, Scotland |
| Paul & Joey (<i>Tweedledee/dum</i>) | Mike Hotel 5, PO Box 83, Southampton |

Frankland so when you drop him a card or three, it is imperative that you put his surname and prisoner number on the envelope. Thanks in advance for anyone who does send for his cards.

I've been passed a letter from Bruce of Swindon who praises "Charlie", a local help and information group who uses Channel 3 in the Swindon area. Drivers from all over are helped and are guided to just where they want to be; even the size of the vehicle is taken into consideration. Well done to the group!

Whilst on the subject of being passed items, I've received a set of photocopied sheets bursting with information about REVCOM. This is a national voluntary communications organisation which has teams all over the country. Each team consists of volunteers who provide a variety of services using both CB and a private VHF frequency. Team members monitor CB Channel 9 (Emergency) providing a link between those who need help and those who can give it. As they say, picking up a microphone instead of searching for a telephone which has not been vandalised can and does save lives by saving those vital seconds.

The monitors handle a wide range of calls from giving directions to lost motorists to multi-vehicle crashes on a motorway. In the community, the teams provide safety communications and marshalling at events such as marathons, fun-runs and suchlike, logging the progress of the runners/riders etc through checkpoints, calling medical assistance when needed and so on. If you wish further info on this group, or want to join or give support, then send a SASE to the National Contact Address:- REVCOM, 3 May Road, Turvey, Bedford, MK43 8DY.

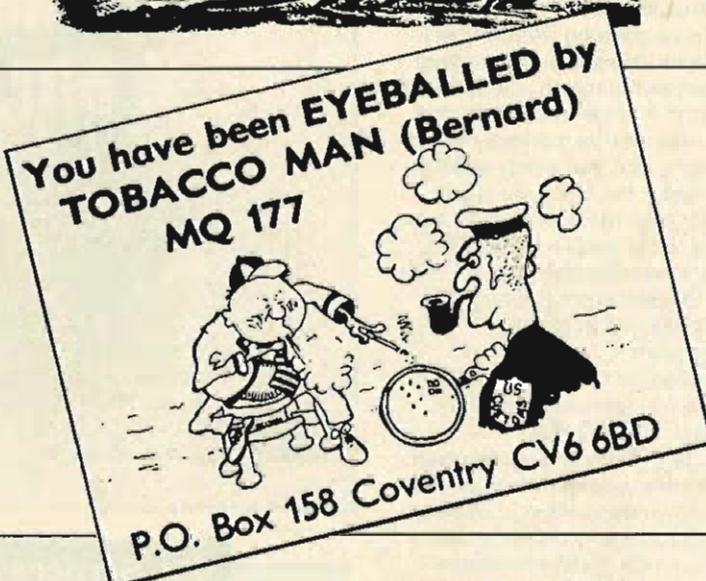
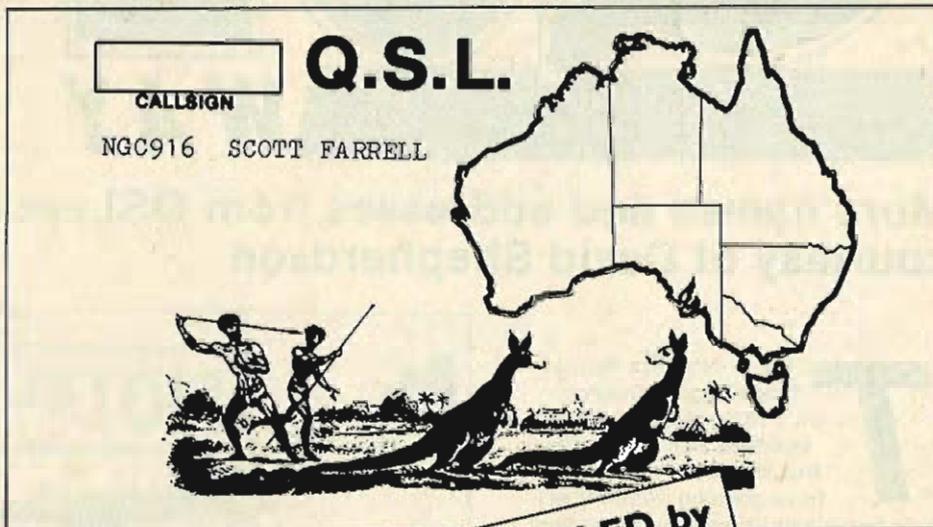
A local club which is also open to national and international members is the Hampshire and Wiltshire DXers of Ringwood. Membership cost £2 for life membership and one year's use of the PO Box (providing a supply of SASE's is provided by you). After this time, the cost of £1 per year for continued use of the PO Box. For your £2 you get your HW Unit number, a welcome letter, a number of HW invites to pass on and a members' handbook. This last consists of the Constitution of the Club, Club extras price list (available items include four types of Club QSL cards, badges, rubber stamp, pen, stickers etc), members' roster, which shows handle, first name and locale only. Then there's a Ten- and Q-Code, Phonetic alphabet, frequency chart, a number of sign-offs and a form which doubles as an amendment-cum order form.

A few names here starting off with Steven (*Foxhunter*) of Consett who now has several "Currie Series" cards, and Brian (*Scots Cavalier*) who sends out a massive bundle of cards and info leaflets plus a whole load of club invites

QSL Club Addresses:

Blue Star DX QSL Club Hampshire & Wiltshire DXers Midlothian Amateur Twenty Four Kings Int DX-QSL	PO Box 11, Cramlington, Northumberland, NE23 9JW PO Box 73, Ringwood, Hants., BH24 4JW PO Box 99, Musselburgh, East Lothian, EH21 8ER, Scotland PO Box 19, Coventry, CV6 6ND
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When writing to any QSL club or firm, always include return postage to assist with their reply, it does help.

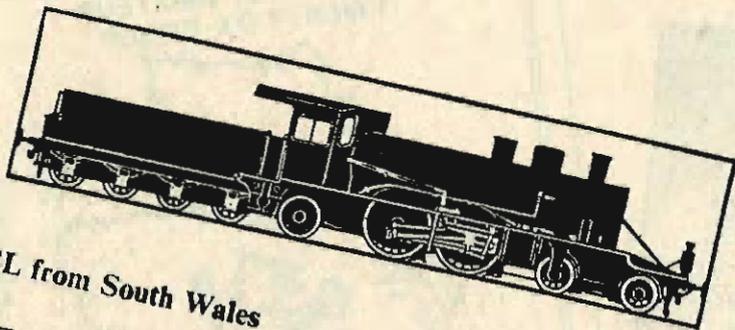


"FOXHUNTER"
STEVEN SPENCE - GB 420
PO BOX 5, CONSETT, CO. DURHAM
DH8 8NG, ENGLAND, U.K.



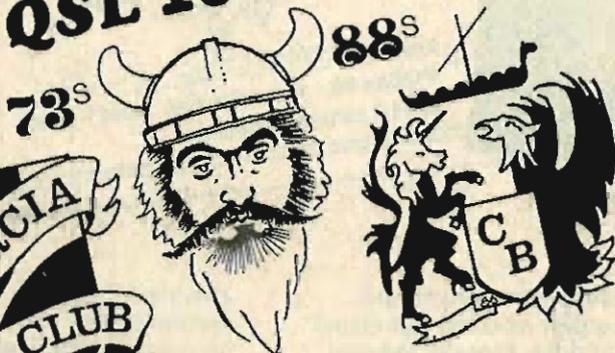
QSL - THE OLD TIMER

Operator :- David



QSL from South Wales

WE QSL 100% 1.4.1.



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COVENTRY CV6 6BD

MQ 177

QSL Services Addresses:

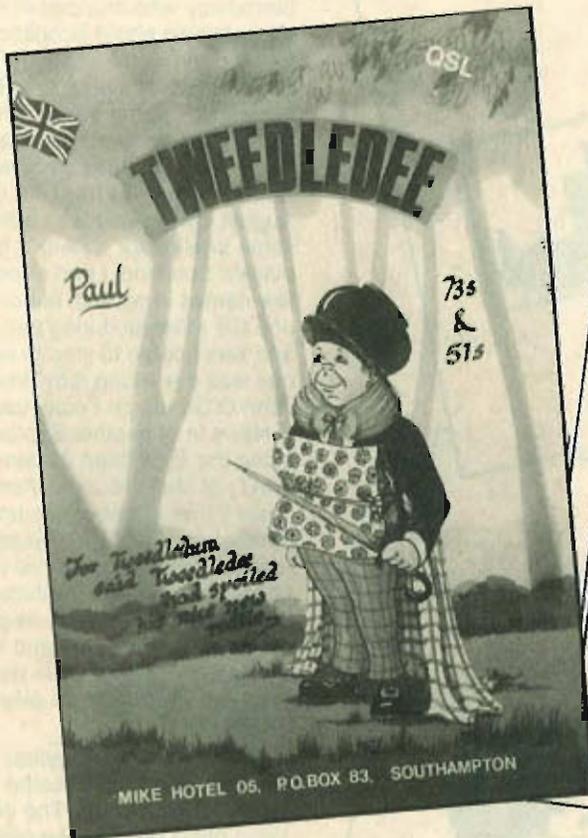
Aztec Design	2 Brook Cottages, Kings Sombourne, Nr Stockbridge, Hampshire.
Charlie Cards	26 Edward Street, Hartshorne, Burton-on-Trent, Staffs., DE11 7HG.
Currie Cards	89 Derwent Street, Blackhill, Consett, Co Durham, DH8 8LT
Ensign Cards	58b Market Street, Ashby-de-la-Zouch, Leics.
Impact Graphics	57 Moor Street, Earlsdon, Coventry, CV5 6ER.
Sharp Graphics	PO Box 3, Grangemouth, FK3 9BD. (0324-473432)
Scottish CB Newsheet, C/o 'Arnail', Patison, Neilston, Glasgow, G78 3AT One year's Subscription £2.10	

that he recommends. He's in London, a Scot in exile as it were. A couple of other Scots I was able to meet earlier this year are another Brian (*Sunray*) of Kirkcudbright, and Jan (*Superman*) of Stornoway who dropped in a while ago. While talking about Scotland we mustn't forget Bunny who writes the excellent SCBN which is available at £2.10 per annum (the same Bunny who writes *The Scots Connection* in this magazine). My apologies to anyone who had been waiting for a reply from me during August, by the way, as I actually took some time off for a week's hols in, of all places, Scotland! I had hoped to spot a few names in person, but only spotted one CB antenna during the whole time and was unable to stop to say "Hi". That one was the young lady driving into John O'Groats on Friday the 12th.

News in of another Scottish Club, being the Midlothian Amateur Twenty (MAT) of Musselburgh. Membership costs £1 for membership and unit number only, or £8 for membership, unit number, certificate, 50 hot-foil QSL cards (from Sharp Graphics), mounted rubber stamp, MAT key-ring, roster, news sheet and cards and info from Scotland. The Club does not accept cheques, only cash, so please send via Registered Post.

From Paul (*Tweedledee*) and Joey (*Tweedledum*) come some of their new Aztec "photo" cards. The new ones they swop only QSO, but the older Tweedledum & Tweedledee are available to any QSLer who sends them a QSL package! They raised a point earlier this year which reminds me that not is the time for all event organisers to think very seriously about putting the details of their 1989 events down on paper and sending them off to me as soon as possible please! I know it's a bit early yet, but if you know just the date and venue of your 1989 event, then please do let me know! It's no use letting me know just a couple of weeks before the day as that is too late. Remember, the sooner you let me know some of the details, the sooner I can start to help you publicise your event. Then, as soon as you have fuller details, let me know them too! As well as including the details in this column, I also include all details on all events I receive in an information sheet I include with my own club's package.

A last few names for now but first a reminder to any QSLers or QSL clubs on the Isle of Man or the Isle of Wight. Please do get in touch with details of your club; you know the sort of thing, a current application form and QSL card and a little info on your club. For individual QSLers on either Isle, if you could be bother to send me a QSL card, or QSL package of yours and perhaps a little info, I'll see about including you in a future "Island Special" in the New Year as promised last month. I know that



there are a couple of clubs on those islands but have no details on them bar name and address so please do get in touch soon!

This month, I think that there is both room for (and it's time to fit in) another Browse Through a Club's Package. Just a reminder that it isn't a "Club of the Month Slot" but it's where I examine a Club's package in more detail than I normally have room for. This month it's the turn of the Four Kings International DX-QSL Swap Club of Coventry (to give it its full title) as run by Don (Copycat). Membership costs £5 along with 10 of your personal QSL cards, each signed, dated and showing your full return address. For your £5 you can expect a very solid envelope packed to the brim with lots of goodies! It starts off with your FK Unit Number and ID Card and A5-sized certificate and a brief welcome letter. There is a selection of Club cards, both in "textured" and full colour gloss, a selection of Don's cards, a bundle of members' exchange cards (over 30 in the review pack), more exchange cards from non-members, a very fancy leather (I think) key ring, a club pen, a number of log sheets, various club stickers in white and gold, a number of FK club forms to pass along, and a large number of forms for recommendable clubs. Then

there's various tourist information leaflets, a quality mounted club stamp, Q- and 10-Codes, phonetic alphabet, and a bound roster. Also, your XYL/YXM gets free membership, ID card and certificate thrown in as well.

That's it, no more room again but I'm finally making an impression on the piles of your cards and letters! If you want a mention in the magazine, then put pen to paper and get writing! But please do

remember that if you need a reply, do include a SASE and if I can't read it, I can't use it! Also, especially where a forthcoming event is concerned, please do allow plenty of time, not just a few weeks! Please do not send via the mag, but direct to 3 Tarn Villas, Cowpasture Road, Ilkley, West Yorkshire, LS29 8RH, UK. That's it, catch you again next month, so 'til then, do take care.

Forthcoming Events

November 16th-20th – Merseydee Breakers ("Mike Lima's") are holding a 75 hour Sponsored Modulation in aid of Children In Need 1988. This runs from 1300 hrs Wednesday through to 1600 hrs Sunday and is held half up the Horseshoe Pass, North Wales. All donations will receive a special QSL Package and it is hoped that Father Christmas will be calling in to chat on the air with the children! Contact: ML 24, P.O. Box 24, Birkenhead, Merseyside, L42 9GE. 1989!!! Advance Notice 1989.

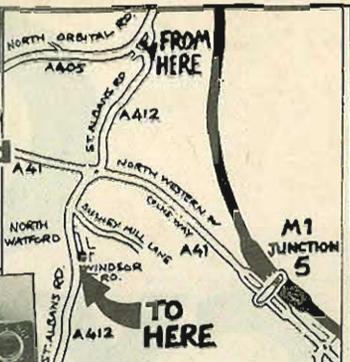
April -- Stanley BIG Meeting, a must for Currie Collectors!

May 20th – Tango Papa Charity Eyeball, Southport.

When writing for details on any of the above, don't forget to include a suitable SASE for the Club's reply. Also, should you send monies to book, don't forget a SASE if you require a receipt.

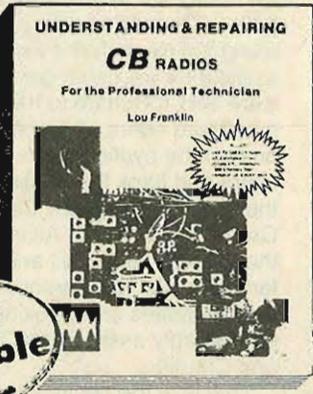
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Lou Franklin writes in a very informal, down-to-earth style which has made his previous CB technical publications the "bibles" of this field. There's no complicated electronic theory here; just practical, common CB circuits explained in the simplest possible way. Hundreds of schematics, charts, and drawings help make this the most complete reference available on the subject.

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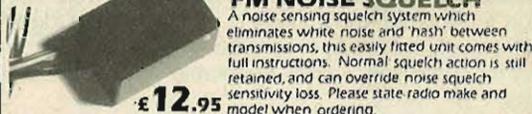
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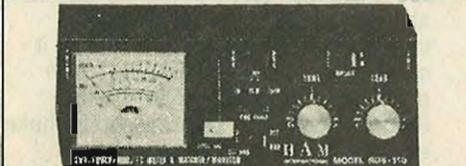
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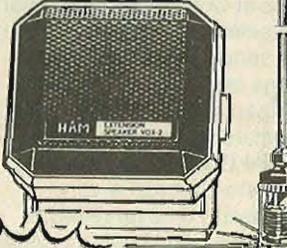
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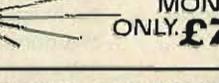
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CB CYCLES

Shepherd Man reports on a very special sponsored cycle run – aided by CB, of course

To get an insight into this event I went along to interview David Bedward, the National Operations Officer for Monitoring Service of Great Britain, who put together a team of six cyclists and a support team of 12 to complete a 250-mile cycle ride in April to raise money for some very worthy charitable causes.

with Guide Dogs For The Blind because both groups support a special part of the community.

With the first stages organised, we were left to sort out the team of riders, put together a support team, book camps and organise other things like food, radio support, bike spares etc.

Q So David, tell us about how this idea came together and why did you pick CB 4 The Blind (Brighton) & Guide Dogs for The Blind.

A Well, since the beginning of MSGB back in 1983, we have spent a lot of our time supporting others to raise money. So we felt that it was about time we did something in a direct way. From the outset we wanted something that would test our ability and set us a good challenge. All this was just after Christmas and it took around 3½ months to put it together. First we had to decide on a course, and for this we felt that it would be a chance to go via areas where we knew we had CB friends, taking into account the time available. So we settled for starting and ending in Surrey whilst riding through Kent, East and West Sussex. Then we had to contact the different police forces, our CB friends, go over the route, get the sponsors and send out the paperwork. As for the charities, this was in many ways not so easy, as there are a number of very worthy causes. However, we are actively involved with CB 4 The Blind and we have first-hand knowledge of the work they do. This, we felt, had a link

Q Outside of your own main ride and direct sponsorship, what other support did you receive?

A People were only too happy to offer help. The New Addington Carnival Committee held a car boot sale at the start and gave us a fantastic send-off with the local carnival queens and a marching band, plus the chairman joined the beginning of the ride dressed up as a clown on a small cycle. Elite Communications of Elm Road, Kingston, played a very special part in laying on everything at the finish. That included laying on raffles and donating prizes, supplying us with extra radio equipment, getting sponsors and sponsorship and much more besides. Independent Monitors at Box Hill held a four-day sponsored copy and managed to contact over 1,500 breakers.

Knights donated a Moonraker Major and a homebase antenna as the two main prizes for one raffle. Whilst Nevada Communications and Truck King donated some prizes for our second raffle. We even had a sponsorship from *Citizens' Band* magazine. Then there was the help we received in getting the sponsorship forms filled by our friends.

Q Tell us about the support team and their duties during the ride.

A We wanted to make sure that we had enough to ensure the safety for the riders, and not too many that it caused a hazard to other road users. So we settled for twelve. Most of our members are trained first-aiders which meant that we had cover in this area and, to make sure, we arranged with some clubs along the route that if we required extra assistance we could get it via them. We were very fortunate to have four motorbike riders whose job it was to protect the cyclists from other road users and flank the cyclists throughout the route. These were Clive, Lee, Graham and Martin. All in all, they had the hardest task of all and they did a fantastic job. The person in charge of the campsites and cooking was Bill, and he was ably assisted by Cindy, Vikky and Charlie.

To follow the cyclists from behind and to carry out running repairs, we had the 'terrible two', Colin and Steve. Apart from repairing the bikes, they also made the cyclists forget the aches and pains by telling jokes and egging them on. Last of all was Brenda and myself in another vehicle. Our job was to check out the roads in front and pick up any bodies or administer the Ralgex spray.

Q What about the actual ride itself?

A I think that we were all relieved to get under way and we had a good send off from New Addington – even the sun was shining! By the time we had gone through Sevenoaks and Maidstone, it soon became clear that some of the riders were not that fit. The smell of Ralgex filled the air and we had to make extra stops for more Lucozade and glucose tablets, and you could see the pain on the cyclists' faces as they endured the 'bicycle-seat problem'. Still, we pressed on down towards the East Sussex coast and our first campsite (donated by the Eastbourne & Dist Scouts) just outside Polgate. The evening was spent enjoying the company of some friends who had journeyed to the camp to see us, whilst we repaired the cycles ready for the next day.

Although we had allowed for a number of spares to be carried for the trip, by the second day we had to make an extra stop in Worthing to pick up some more, which gave the team the chance to spend some extra time with members from CB 4 The Blind at our scheduled stop in Wild Park (Sussex), just outside of Brighton. Then we

pressed on down the A27 into Arundel for the second campsite at Slindon. By this time many of us had gotten used to the smell of Ralgex. Although, it was hard to determine if it was mist that hung over the camp as we awoke to greet the start of the third day! The cyclist team (Bill, Lee, Ian, Clifford, Darren and Ian) had given up moaning about tired muscles, as nobody was taking any notice except to suggest that the ride should be re-named "the 250-hill cycle ride". The team's spirits sort of lifted as they got nearer to the third camp in Shere - although we did lose one rider for a time in Crawley (Clifford decided to take in the sights!) Upon our arrival at Bentley Copse Scout Camp (donated by Surrey Scouts), we were informed that they had shower facilities which appealed to everyone after having to wash in cold water. But someone who shall remain nameless beat everyone else to it - and used *all* the hot water!

Joined by some more friends in the evening, we presented Cindy with her birthday cake before she went off with her family to enjoy a night out at a local restaurant. Colin and Ian took the chance to go and visit Independent Monitors at Box Hill and the rest of us just collapsed out as the evening wore on.

We all had a lay in on Monday morning until around 7.30am before starting off on the last day and back into

Kingston to the finish at Elite Communications. As we turned into Elm Road we were greeted by an enormous crowd of CBers and this made the whole thing worthwhile, and to declare the ride officially ended was the Mayor of Kingston Councillor, Jenny Philpot (who's brother John Brown wrote a CB Bible back in the early days). The raffle prizes donated by Moonraker were won by Chop Suey and Red Rover.

Q So what about the cheque presentations?

A With the very kind permission of New Addington Carnival Committee, we presented the cheques to CB 4 The Blind Chairman Dave Cruttenden and Guide Dots For The Blind representatives Mr and Mrs Sherrington (who came along with their guide dogs) at the Carnival Dance on the 30th May. Mr George Hattley, our National Finance Officer, presented both parties with a cheque for £1,000 each and Guide Dogs For The Blind presented us with a bronze cast statue of a guide dog.

Q So what about next year?

A That hasn't been decided yet although we had one or two suggestions from the riders during the actual ride. These included a swim across a pool of sharks, hang-gliding off the White Cliffs of Dover and hi-jacking the Isle of White ferry. But I am sure that we will come up with something!

Q Would you like to add anything before we finish?

A Yes, we would like to thank everyone who helped and supported the ride and in particular those who sponsored it. Knights Nevada and Truck King for donating raffle prizes, New Addington Carnival Committee, Independent Monitors, the Wardens and Scout Groups who donated the camps (Eastbourne & Surrey), Scottish CB Newsheet and Natcolcibar plus *Citizens' Band* magazine and E Warner & Son Cycles. But most of all Elite Communications (Jill, Jim and friends) for everything they did to help make this event possible.

Please note that we are still collecting in sponsorship forms and monies, so that we can pay out any balances to the charitable groups. So if anyone has a form etc, can they send it back a.s.a.p.

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BC212/L	07	BF199	.09	2N3773	1.40	2SC1972	8.25	HA1319	2.16	LM329	.46	TDA1512	3.12	
BC213/L	10	BF200	.21	2N3819	3.5	2SC1973	.58	HA1322	1.82	LM380N	1.32	TDA1515	3.71	
BC214/L	08	BF244	.39	2N3866	1.10	2SC2002	25	HA1338	2.31	LM383	3.50	TDA1803	3.2	
BC238	06	BF245	.29	2SA473	.46	2SC2028	1.26	HA1339A	3.80	LM384N	2.90	TDA2002	63	
BC308	06	BF255	.05	2SA564	.11	2SC2029	1.12	HA1342A	3.80	LM388	1.15	TDA2003	76	
BC327	06	BF258	.31	2SA608	.11	2SC2078	.55	HA1366W/WR	1.72	LM387	2.10	TDA2004	1.68	
BC328	11	BF259	.25	2SA673	.13	2SC2088	.49	HA1367	2.64	LM3900N	.78	TDA2005	1.40	
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BC547	05	BF337	28	2SA683	.20	2SC2097	21.09	HA1374	2.11	M51513	1.86	TDA2020	1.81	
BC548	05	BF422	23	2SA684	.28	2SC2099	19.26	HA1377	1.73	M51514	1.71	TOA2030	1.06	
BC550	14	BF423	23	2SA699	.66	2SC2106	.83	HA1388	2.77	M51515	1.94	UPC1028	98	
BC558	06	BF469	.18	2SA733	.13	2SC2238	.28	HA1389	1.39	M51516	2.22	UPC1032	73	
BC638	11	BF470	.45	2SA956	.28	2SC2290	23.61	HA1392	1.90	M51517	2.08	UPC1181	2.05	
BC640	10	BF90A	.80	2SA999	.10	2SC2312	.25	HA1394	2.72	M83712	1.22	UPC1181/2	.99	
BO124P	50	BFY50	45	2SA1012	.67	2SC2314	.30	HA1397	2.55	M83730	2.06	UPC1185	1.75	
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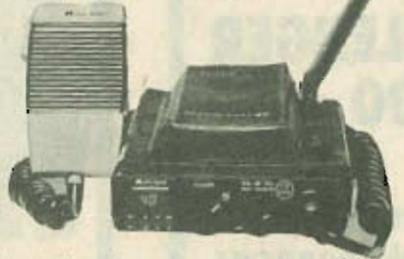
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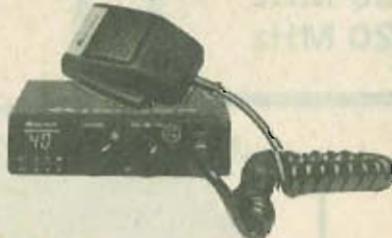
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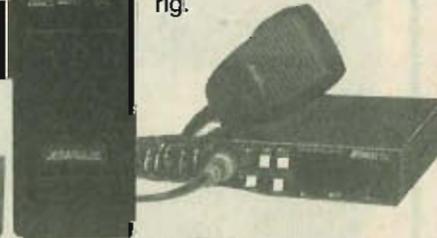
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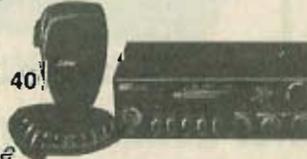


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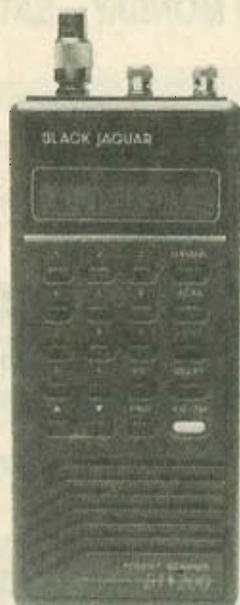
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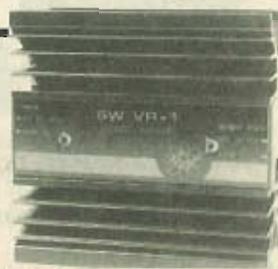


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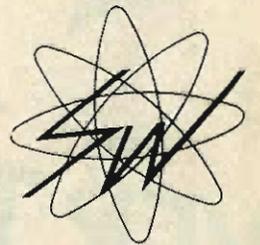
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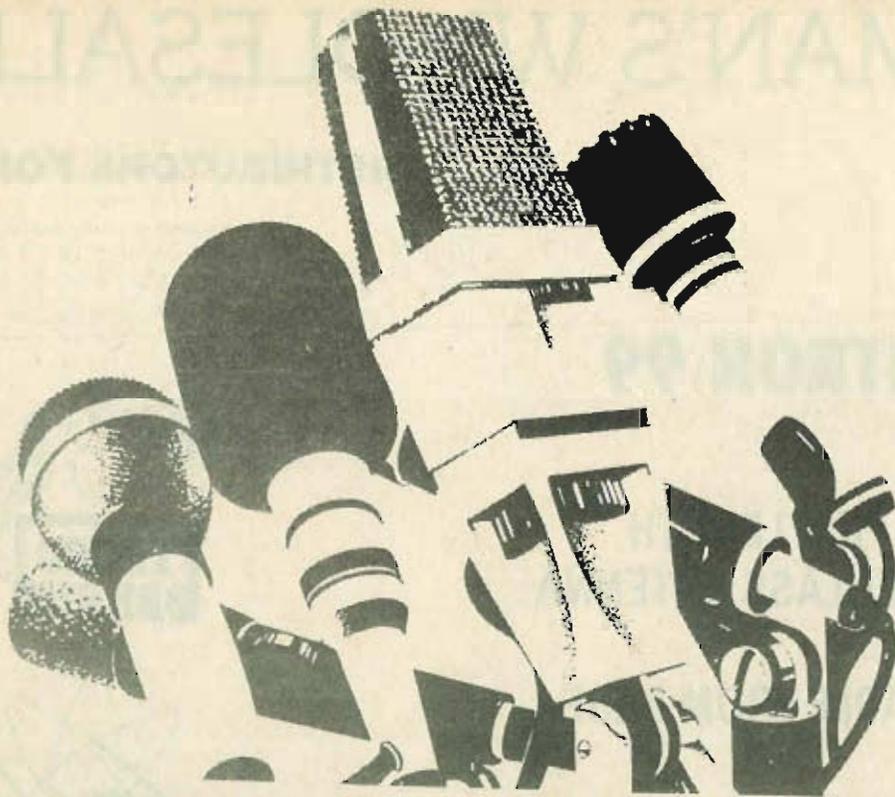


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SHARMAN'S WHOLESALE



OVER THE AIR

Shepherd Man has been a busy man lately and here tells tales of cycle rides, eyeballs – and more

I have just finished reading a couple of this month's (August) amateur radio type magazines. Once again the CBers are getting stick from some of these hams. Once again we are being called everything and being blamed for most things (including half of the stories that appear in The Sun). It seems that many Amateurs are against this idea of a

novice licence, and say that it would bring their standard of radio down to the level of CB. Oh no, it bloody well won't! Before these users start slinging the muck at everybody else I suggest that they look towards 'some' of their own users and certainly to the RSGB. Please stop having a go at us and put your own house in order. Many of the problems that we have are caused through the stupidity of the DTI. If they had put more thought into CB before it became legal, and offered help to rid us of the music players etc, perhaps we would have a better service.

Many of you will already know that the

"Switch your CB radio on to channel 9 and place on the floor"

new Order under Section 7 came into effect on August 8th. I would have liked to have brought you this news sooner but, like the rest who scrib for this mag, I am around two to three months inbetween writing and publishing. Still, we will have to wait and see what results this new law will make towards the use of CB. Although I have said it before, I will say it again. Please try and get hold of a copy of MPT 1367 (Code of Practice). It could help many breakers to understand the laws regarding powers of search etc.

Some months back I was invited to attend and witness a surprise birthday present for Jim (*Hustler*) at a local CB Club. The present was from his wife Jill (*Toffee Apple*) and came in the shape of a 'Police-a-Gram'. Jim took it all in good spirits even when the young lady asked

him to bend over, and produced a plastic truncheon. A few breakers told her what she should do with her plastic toy, but she felt that these suggestions would do nothing to improve the way Jim walks – and declined the suggestions. So I thought that readers might like to see a picture of the 'Birthday Boy' and the full (well almost) delights of his body. I told him that I would publish a picture of him, and so guess who got the custard pie in the face!

Sunday 14th August saw the annual cycle ride from Richmond to Brighton – you can read all about it in a future issue, although be warned, if you come across a white Mitsubishi 4 WD – don't lean against it, as the owner gets very touchy about his little broom-broom.

I have heard a little rumour that the DTI are about to issue an information Sheet called: "The Use Of CB Radio During A Nuclear Attack". I have managed to sneak a look at this sheet and the following is what's printed in case of attack:

1. Stay well clear of all doors and windows.
2. If possible paint all external windows white.
3. Do not hold any objects in your hands.
4. Switch your CB radio onto channel 9 and place on the floor.
5. Stand well away from all furniture etc.
6. Empty all objects from your pockets and remove glasses if worn.
7. Upon seeing the brilliant flash of light from the Nuclear Bomb, bend over. Grasp your arms firmly around your knees, thus placing your head between your legs.
8. Then kiss your backside goodbye.

In case you haven't realised it, the last paragraph was a joke.

Marathon Man Two (Tom), the Group President, has informed me that the Sierra Lima DX Group are opening their limited membership up to 40 and they have ordered another numbered Currie card – 2 coloured gloss finish type. These should be available asap. For more details write to: PO Box 55, Aldershot, Hants, GU11 7YX.

Alistair McCulloch (1 BDX 01) has started up a small printing firm and hopes to be able to offer CBers some good quality goods at reasonable prices. He is also selling copies of The CB Recipe Book at 40p per copy. All proceeds are going to Guide Dogs For The Blind. Please address all enquiries to: PO Box 4, Coatbridge, Lanarkshire, Scotland ML5 2QA.

I have picked up some superb QSL cards from various CBers around the UK and they have been designed and printed by Moonshine Designs. These can be either double or single-sided embossed black-on-white card. For more details: PO Box 12, Workington, Cumbria CA14. They do a numbered collection but it is not a 'swap for swap' collectors' series.

Monitoring Service of Great Britain have been presented with a cast statue of a guide dog from the Guide Dogs For The Blind Association. It was presented on the 4th August in gratitude for the

"Is there a CB manufacturers' association . . ."

money raised so far to help the Charity. Mr George Hattley, the National Finance Office of MSGB, thanked the Association and added his thanks for all those who helped to raise monies through their recent 250 mile cycle ride. He added that they hope to do something else in '89 provided that it does not clash with the organisation's heavy commitment to assisting others throughout the year.

Solway Pirates Secretary, Sunray (Brian), would like to advise breakers to book early for the 1989 Southernness Eyeball, as many were disappointed at not being able to get a caravan for this year's event. It would seem that breakers are already booking for '89, so send off now for details. The address is: PO Box 15, Kirkcudbright, Scotland DG6 4DH.

All those people who are ardent 'scanner freaks' like myself will be pleased to note the following information gleaned from the September issue of Ham Radio Today (another ASP publication): "A few months ago it was reported that in Luton Crown Court, Judge David Rodwell ruled that car telephones fall outside of the Telecommunications Act 1985, suggesting it may now *not* be illegal to listen in on carphones using a scanner".

I visited the CB 4 The Blind Event at Stanmer Park on 28th August. Thanks to everyone and a report will follow in a future issue and . . . not a Mitsubishi in sight!

A friend of mine who lives way out in the country told me an unusual story about a young breaker who, all of a sudden, came up on channel in his area. It seems that this young lad was very polite and local breakers came to like and respect him. It was noted however, that he only came on during the day and never at weekends. When questioned about this he always maintained that he



(Above) Jim and his special birthday present

was on a sort of extended holiday and staying with his father. He had brought the equipment with him and his father would only allow him to use it whilst he was at work.

This seemed to go down well with the locals and, although the young lad had been invited to come along to the local CB club, he said that his father would not take him. After about four weeks of daily chats the lad disappeared. Some felt that it was a shame and hoped that he would again return. But this did not happen. Instead, they read in the local paper that a young boy had been found using a CB set in a car situated in a station car park and that the car belonged to a commuter who travelled into the City each day. The owner of the car said that he was surprised to find the boy using his CB when he returned home early one day from work. He added that the young boy had not caused any damage to the car and left everything exactly as he himself had left

"Think about the harm you are doing . . ."

it, even to the extent of locking up after he had finished using the CB. The young boy was found to have been bunking off school for around five weeks and was told not to get into any more trouble by the court.

I had a telephone call from a lady breaker around the middle of August. For her sake I will not mention her name

or handle - but she lives around the Norwich area, and is disabled. It seems that a few of her local breakers are giving her some 'stick' because of a number of things, but in the main she gets insulted because she has moved into the area i.e. she was not born in that part of the country. As she is 99% housebound, it seems to upset the locals even more, as she is unable to go anywhere to meet them. One 'kind' gentleman breaker has even made a point of seeking her house out and, because she wouldn't invite him in for a cup of tea, has taken to abusing her and keying her out on every channel she goes on. And he is not the only one. As always, these people remain 'heroes' behind their little plastic mikes and don't give their handles. So, if you are one of these pathetic small-minded people, think about the harm that you are doing to someone else and perhaps try to sort out any problems you may have. If that doesn't work, then leave the lady alone and go to another channel.

Is there a CB manufacturers' association and, if so, do they meet with the DTI? If not, why not? I am sure that we users would benefit from some kind of meetings. For a start it would stop all these problems we are having from people trying to flog us illegal equipment, saying that it is legal. It could even help us to get a better standard of equipment! It may even help us to save money. Oh yes, breakers may be interested to know that the Satcom handheld has received type-approval (August). This is the first Satcom to be type approved for CEPT use within the UK.

"The figures for CB prosecutions have fallen . . ."

On the 17th August I received my copy of the DTI Annual Report for 1987/88. This revealed that the CB Licence Fee Income over the past year has increased from £1,284,000 (86/87) to £1,339,000 (87/88). This has to be down to the Licence Fee increase, as the Licences issued for CB have fallen from 126,696 (86/87) to 108,665 (87/88).

In the case of Amateur Licence Revenue, this has also increased from £671,000 (86/87) to £734,000 (87/88) but they have had an increase in licences issued from 57,692 (86/87) to 58,170 (87/88). This now means that if you take a percentage ratio between both groups on licences issued, we have slipped from 2.10 (86/87) to 1.86 (87/88).

As with last year's Annual Report, we still remain the second largest group for licence revenue behind PMR (land) and remain the largest group for licences

issued. Two other groups listed have recorded a drop in licences issued over the past twelve months. These are given as 'Aeronautical' and 'Other'.

Very little space in the actual Report is given to CB and what they do say is nothing new, or anything to get excited about. The RIS section states that in 'one' of their local campaigns to counter CB licence evasion and abuse, they caught 93 unlicensed CB users who were 'mobile' stations. However, it does not state how many of these and others caught without licences were prosecuted.

The figures for CB prosecutions on both AM and FM has fallen. These are given as CB AM 108 (87/88) and CB FM 96 (87/88). The CB FM includes one person who was sentenced to 6 months imprisonment - suspended for one year. Total amount of fines imposed for AM offences was £11,890 and for FM offences £9,525. Added to both sets of figures, the costs awarded for the DTI Legal Representation was between £4,500 and £5,000 respective (in total). The number of forfeiture orders were: CB AM 102 and CB FM 44, and warning letters sent were CB AM 118, CB FM 1,118.

During the year the RIS received complaints from 2,349 business radio users about interference from outside sources other than their own systems.

130 users paid the standard £41 per man/hour consultancy charge for the RIS to advise them about problems in their own radio systems and on measures needed to comply with regulatory requirements on interference.

The RIS also received 625 requests accompanied by the standard fee of £21 from householders to visit them to diagnose the cause of reception

"CBers do it with more frequency"

difficulties. In addition to this the RIS received 4,147 reports of possible illegal transmitters and other interference sources, which they claim to have helped target some of the enforcement work.

The Annual Report also makes the following statement: "Regulations making it an offence to transmit messages that are grossly offensive or of an indecent, obscene or menacing character were introduced on 17th February 1988. New regulations on control of interference from CB radios were introduced at the same time as the CB Order mentioned above. It is intended that regulations removing the need for licences for receiving radio

messages (apart from the need for a broadcast reception licence) will be introduced. It will remain an offence, however, to use any information gained through receiving radio messages which one is not authorised by the sender to receive and deliberately to receive those messages.

"Ministers have announced that they intend updating the provisions of the Wireless Telegraphy and Marine ect Broadcasting (Offences) Acts to strengthen enforcement powers. This will be done in the Home Office's forthcoming Broadcasting Bill".

Before we leave the DTI Annual Report, readers of the aforementioned document and avid collectors of old copies of *Citizens' Band* may like to note that the picture that they have used showing a male Cber fitting an RT 852 into his Capri, is from the front cover of the June 86 issue of this magazine. So perhaps the DTI do read it after all!

In my campaign to find silly car stickers, I have come across the following: "CB'ERS DO IT WITH MORE FREQUENCY". So if you know of or have seen other CB car stickers like this one, let us all know about it! Or perhaps you would like to make your views known or air your feelings. If so, write to me c/o Citizens' Band, ASP Ltd, 1 Golden Square, London W1R 3AB.

Shepherd Man

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10 Watt £25.00 100 Watt £110.00

15 Watt £30.00 100 Watt Bass £150.00

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25 Watt £40.00 200 Watt Bass £300.00

30 Watt £45.00 400 Watt £480.00

40 Watt £50.00 400 Watt Bass £600.00



THE BEAR FACTS

This month, Saul Wright gets a chance to play with the Uniden Bearcat BC 200 XLT

Let's get the disclaimer out of the way first: in the UK the *Wireless Telegraphy Act*, sections of the *Official Secrets Act* and various bits of legislation make it illegal for you and me to listen to certain (rarely specified) civil, military and Governmental radio communications. We can't tell you what they are, or what frequencies they're on, (so you can avoid them . . .) – that would be illegal too – so please take it as read that The **Uniden Bearcat BC 200 XLT** is almost certainly capable of receiving a wide range of restricted frequencies, as well as plenty of perfectly innocuous broadcasts. It's legal to buy, to own and to use, and we're certainly not about to encourage you to break the law – so be warned – if you hear any secret messages, switch off fast! There, that should keep us out of jail . . .

Bearcats are widely regarded as one of the best makes of table-top scanners on the market. So how does the

US-based brand fare when teamed up with the far-Eastern company **Uniden** and, more importantly, can their undoubted expertise be crammed into a pocket-size unit?

The short answer is yes; but you've paid your £1.40 and you deserve a fuller explanation, starting with a brief guided tour. First the price – this little gadget will set you back around £249 (all inclusive). Now for the physical data: it measures just 200 × 35 × 67mm. That's pretty small and it'll easily slip into the average coat pocket. The *rubber duck* antenna adds another 170mm to the overall height. All-up weight, including the rechargeable battery pack is 1.2kgs. Power comes from a clip-on pack of ni-cad rechargeable batteries (a charger/adaptor is supplied) that will power the unit for up to five hours on a full charge. Also included with the outfit are a soft carry case and earphone.

Most of the BC-200's controls are grouped together on the front panel, just below the illuminated LCD display; they

include a 0-9 numerical keypad and a dozen or so function and mode keys. The display shows frequency, function, low-battery, channel and memory section. There's a pair of rotary controls on the top panel, for volume and squelch, an earphone socket and, last but not least, a power socket and LED charge indicator on the battery pack. The rubber antenna clips onto a BNC socket, next to the squelch knob.

So much for the exterior; inside the BC-200 is a powerful microprocessor-controlled, programmable scanner receiver capable of memorising up to 200 individual frequencies. The BC-200's memory is split into ten sections, each with 20 programmable channels. Here's the really good bit - FM coverage extends from 29 to 956 MHz, covering 11 bands in 6 frequency groups - a full list is shown in the 'specifications' at the end. In addition, seven frequencies around 162.45MHz have been pre-programmed into the BC 200's memory - these are intended for reception of US NOAA weather data - unfortunately it's not much use this side of the big pond.

The BC 200 can scan through memorised frequencies at the rate of 15 per second - it will stop scanning when a signal breaks through the squelch setting. A two second delay can be programmed into any channel, so that a second signal, on the same frequency can be heard. There is also a *lockout* function that can be used to switch out any programmed channel, and a *priority* facility which instructs the scanner to return to specified channels every two seconds, no matter what else it is doing.

The BC 200's frequency search feature is fairly straightforward - it will automatically step between two pre-set frequencies until it detects a transmission.

Programming

With 200 memories to play with it's just as well that the set-up procedure is simple to master. The first step is to call up a memory location - a number between 1 and 200, then enter in the frequency, using the numerical keypad. Press the 'E' button and it's stored. Incidentally, the memory is protected against power memory chips, should the power pack have to be changed for any reason.

Setting the search function is also simple - the lower frequency is entered, and the 'limit' button pressed, do the same for the upper frequency, then press the 'search' button. The tuner steps in 5, 12.5, and 25kHz steps (depending on the band in use). The tuner steps through frequencies at the rate of 25 per second.

In Use

So much for the theory, how does it

work in real life? The BC-200's most limiting feature is its antenna - it works as well as can be expected but it's no substitute for a good outdoor twig. However, that's not what this scanner is about - it is designed for portable use, so that's how we've reviewed it - just bear in mind that there's a whole lot more it could pick up, given half a chance!

Provided you have a fairly good idea of what you're looking for the BC-200 is easy to get on with - old hands will soon have those 200 memories filled. Less experienced *scannerists* will have to rely on searching through the bands until interesting transmissions are found - then noting the frequency or entering it directly into the unit's memory. It doesn't take long to build up a fairly extensive selection of channels. Before long the value of the *lockout* facility becomes apparent as you really can have too much of a good thing.

A couple of minor niggles about the controls - accessing an individual memory location is unduly complicated

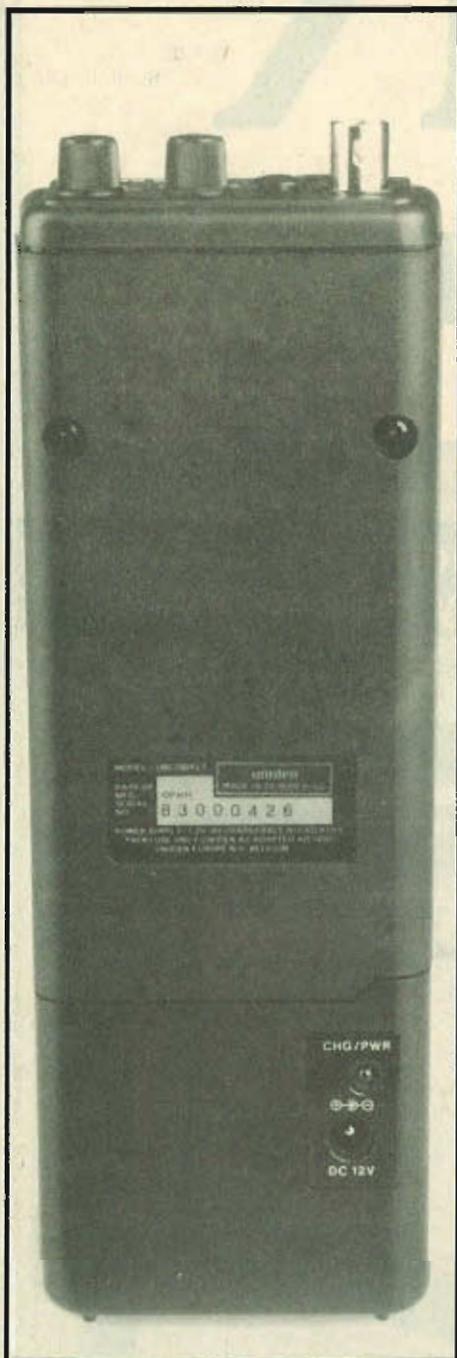
and moving from one mode, scanning say, to search, takes quite a few prods of the keypad. The keypad is quite small and fiddly, especially for my fat fingers - larger buttons would have been welcome.

Audio quality is fine, in spite of the itchy speaker. There's plenty of volume in reserve so no complaints in that particular department. During our tests, conducted for the most part in the London area, the BC 200 gave an extremely good account of itself. Admittedly London, especially in the south, is simply buzzing with radio activity, everything from the two main London airports to an unbelievable amount of commercial two-way traffic - from cabs to couriers. Unfortunately we can't really tell you about the more interesting bands - suffice it to say that reports that the cellular radio network is alive, well and doing exceptionally good business are easy to believe . . .

Selectivity appeared to be very good - transmissions from nearby cab firms, (which manage to break through on



virtually any piece of electronic equipment – including my granny's hearing aid), were effectively screened out by the BC-200. Equally, sensitivity (taking into account the limitations of the antenna) was surprisingly good and transmissions from Gatwick and Heathrow control towers, some 10-15 miles from our main test area came in loud and clear.



Summary

The BC-200 is one of the best pocket scanners we've used for quite a while. Frequency coverage (800-956MHz coverage is particularly rare) and the 200 programmable channels combine to make this a very useful little gadget. It's not cheap, and you can buy more comprehensive table-top units for not much more – but how many of those will fit into your pocket?



Specifications

Make/Model:	Uniden Bearcat BC-200XL.T
Freq. Coverage:	29.9 – 54.0MHz 118 – 174MHz 406 – 512MHz 806.0 – 823.875MHz 849.0125 – 868.9875MHz 894.0124 – 956.0MHz
Prog. Channels:	200
Scan Speed:	15 per second
Search Speed:	25 per second
Sensitivity:	0.4 – 1.0 microvolts
Selectivity:	-55dB +/- 25kHz
Audio output:	480 milliwatts
Battery life:	5-hours cont.
Re-charge time:	10-16 hours
Dimensions (mm):	200 x 35 x 67
Weight:	2.4kg
Price (£):	249
UK Distributor:	Nevada Communications, PO Box 70, Portsmouth PO2 9AP (0705) 662145.

SWR

— THE FACTS

In the jargon-filled world of Citizens' Band radio, the three letters 'SWR' must be the most feared, and most misunderstood abbreviation of all. You can be guaranteed of hearing the biggest load of garbage about SWR just by tuning around the CB band any evening in all but the most isolated areas, and it is unfortunate that so many newcomers to the field take this nonsense as the sacred scriptures of CB without stopping to check it out for themselves. Whenever any of us enter an unknown realm we rely on others already present to instruct us. It is a pity that the number of CB users who know about SWR is very small indeed. So, if you want the low-down on CB's most mystical subject, read on.

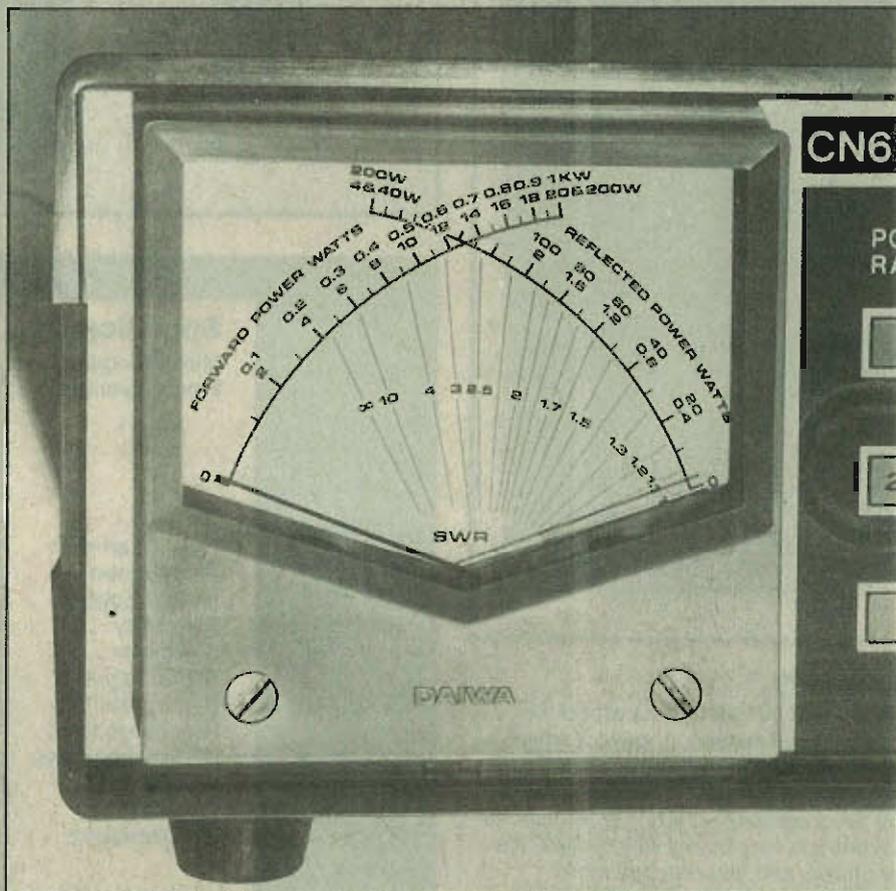
Firstly then, what do those mysterious initials stand for? SWR is *Standing Wave Ratio*, and the extended abbreviation you may sometimes see, *VSWR*, means *Voltage Standing Wave Ratio*. It is the voltage SWR that most CB-type SWR meters measure, so for the rest of this discussion we will just use the general term, SWR.

To understand SWR, you must first have a rough idea of transmission lines and antennas, and how they interact. In a CB installation there are basically three units involved: the transmitter, the antenna itself, and the transmission line that connects the two together. Each of these items has a characteristic known as *impedance*. Most CB equipment has an impedance of around 50 ohms. There is no particular value of impedance that is "best". Your hi-fi speakers may have an impedance of 8 ohms, the input to your television may be 300 ohms and so on.

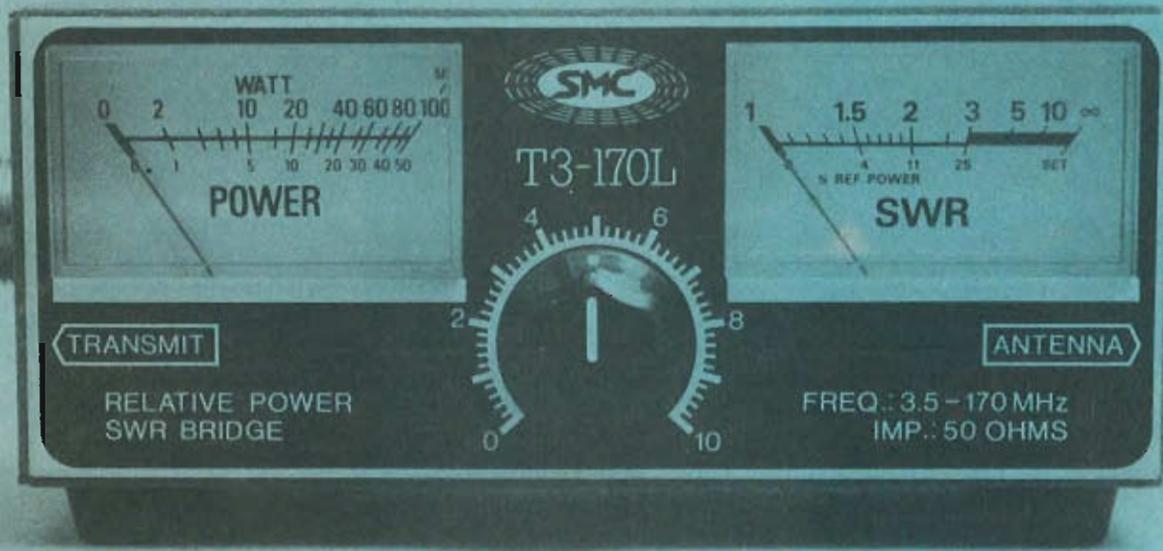
The mysteries of standing wave ratio are explained here by Paul Coxwell

What is important however, is that the items linked together have the same

characteristic impedance. With a 50 ohm transmitter, your feeder and



SWR - Standing Wave Ratio



A power/SWR meter

antenna should also be 50 ohms. In this state the items are said to be *matched*. The closer the match, the more efficient the transfer of energy along the chain. With a perfectly matched system, the radio-waves sent down the feeder (your coax) reach their destination and are then radiated from the antenna. The waves moving along the cable are called *travelling-waves*, because the peaks and nulls in the wave travel along the length of the feeder, just like the crest of a wave moving along water. If, however, the antenna is mismatched to the feeder and transmitter (it has some slightly different impedance), then some of the energy reaching it is reflected back along the cable.

This energy is a travelling-wave going in the opposite direction to the first. The effect is similar to a wave of water hitting the side of a swimming-pool. When the two travelling-waves interact with each other, we find that the peaks and nulls combine in such a way as to set up a stationary wave along the transmission line. This is called a *standing-wave*. If you ever tied one end of a rope to a door handle and then tried to get a wave standing still on the rope by moving it at the right frequency, you've already demonstrated how a forward and reflected travelling-wave can create a standing-wave. Things are somewhat more complicated by the fact that the reflected wave, upon reaching the transmitter, can be reflected forward again! The mathematics involved with standing-waves are rather complex, and we do not have space here to go into too much detail. Suffice it to say that these standing-waves are something we want to minimize to the best of our ability by making sure that the characteristic impedance of each item in the chain is the same as all the others.

"Sure, doesn't everyone know how to set impedances?" You may well ask. The chances are that you already do know how! Let's examine what we have. We have a transmitter with an impedance of 50 ohms. It was designed and built that way so we must assume that our entire installation must therefore be set to 50 ohms. If the transmitter is 50 ohms, then the feeder must be too, so we buy 50 ohm coaxial cable. No problem so far. That just leaves that rod of metal stuck on the roof. Most all CB antennas are designed to have an

"The closer the match, the more efficient the transfer of energy along the chain."

impedance of around 50 ohms, but we must adjust them slightly to get them as close to that figure as possible. That is what you are doing when you alter the length of your antenna - you are adjusting the impedance. The closer your SWR meter gets to the magical figure of 1:1, the closer your antenna is matched to the rest of your installation.

That's why you adjust it for the lowest reading you can get. Now comes the crunch from the annoying law of diminishing returns. You may spend 15 minutes getting your SWR down to 2:1 and make a very worthwhile improvement. You could then spend another hour reducing it down to 1.2:1 or similar, with nowhere near as much relative improvement for your time. Put simply, it is a waste of time trying to make everything too perfect.

So now we have a basic idea that by matching everything as closely as possible we reduce standing-waves,

thus improving efficiency. An SWR of 1:1 represents a perfect match, and an SWR of infinity the ultimate mismatch. Neither is found in practice, so if anyone tells you they have a "perfect" SWR, they are sadly mistaken. They may well have an SWR that is perfectly acceptable, and so low as to be insignificant however. Now for the "magic" numbers to work to. Most SWR meters have 3:1 around mid-scale, with markings at 2, 1.9, 1.8 etc. down to 1:1. They often have a second scale which shows the approximate power loss at specific values. At 3:1 the loss is 25% for example. Losing a quarter of your power may seem very wasteful and likely to reduce your signal tremendously, but in fact it is barely noticeable. On average it takes double or half the power to make a worthwhile difference at the distant end, so if you're radiating 3-watts instead of 4-watts, it isn't really all that bad! A 2:1 SWR isn't twice as bad as 1:1. It is perfectly normal and acceptable. Extra complications arise with very high values of SWR, and you try to reduce your SWR to below 3:1 for these reasons. If you can get it below 2:1 right across the band(s) you use, then it simply isn't worth worrying about reducing it any further. Cheap SWR meters aren't very accurate anyway, so don't believe the guy who says his SWR is 1.05:1, because the meter that cost him every bit of £29.95 at a clearance sale says so. When the meter says 1.05 it probably means the *real* value is 1.2, or 1.3, or higher.

Now, what about the mystery of the SWR that changes with the length of the cable? Did you know that you probably don't have your SWR meter in the most ideal position? When you adjust the length of your antenna, you are trying to match the antenna to the feeder and



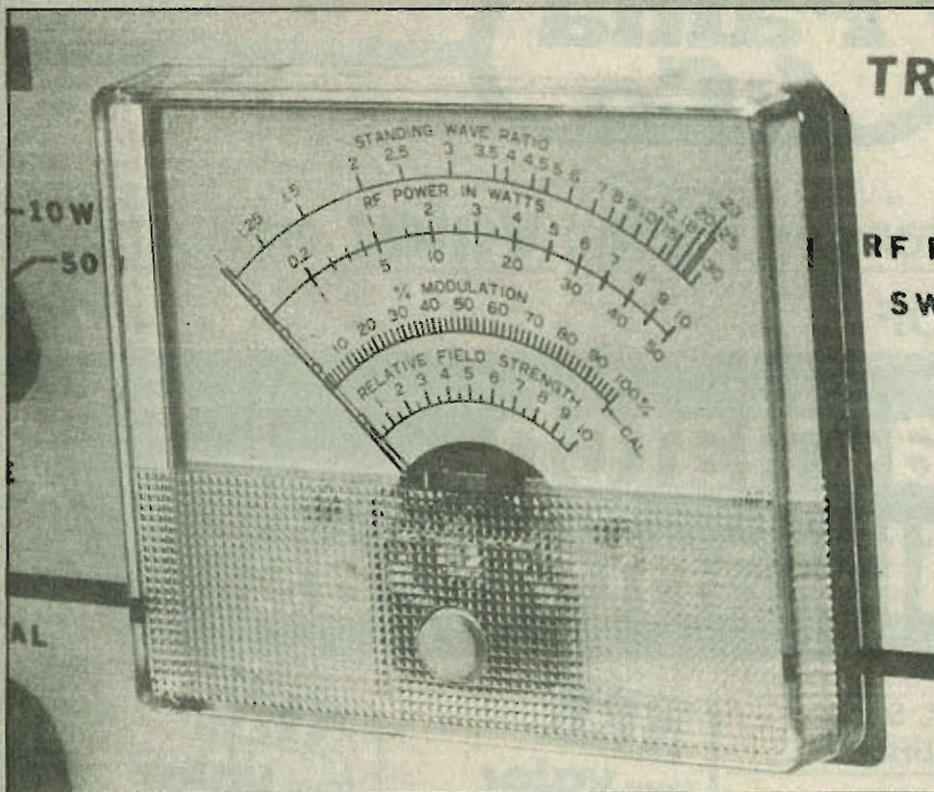
There are numerous SWR meters on the market

transmitter. These are both already 50 ohms; it is the antenna that needs matching to them, so the best place for the SWR meter is at the antenna end of the coaxial cable. It is often extremely difficult to balance on a roof, use a test-meter and reach inside the rig all at once, which is why the meter usually winds-up indoors with the rig itself. There is nothing wrong with this, so long as you realise that it introduces its own little batch of complications. This is where the various stories about how something affects something else start to get a little muddled, so let's start over. There is one fact that is a must to accept: lengthening or shortening the coax will make absolutely no difference to the SWR at the antenna. The feeder has an impedance of 50 ohms whatever length it is; if the antenna is not adjusted to be 50 ohms it is mismatched. Period.

"Lengthening or shortening the coax will make no difference to the SWR at the antenna."

"So why does the reading change?" you ask. Recall that we said the SWR meter measures voltage on the line (VSWR meter). Now those standing-waves set-up due to any mismatch have peaks and troughs. They're sinewaves, and have a positive maximum, negative maximum, and a zero point. These points remain at a fixed position on the cable, so by moving the meter closer to, or away from the antenna, we are measuring the voltage at a slightly different place on the standing-wave. That is why the reading alters. If you had a second SWR meter at the antenna-end of your cable, you would find that you could get two different readings! Hard to accept, and it probably goes against everything you've ever heard on the air, but it is true. You may come to the conclusion that the answer is to develop a liking for balancing on the roof to take SWR readings, or throw the meter away! This is where those cable lengths come in handy. We must get one myth out of the way first: except for a few specially-designed antennas, there is no feeder length that is somehow "best" at giving you greatest efficiency. There is nothing to be gained operation-wise by having "magic" lengths. The general rule of the shorter the better applies; coax isn't perfect, so the more of it you have the more loss is introduced. However, because standing-waves have a predictable frequency (and therefore a predictable wavelength) we can minimize errors in SWR readings by making sure that the meter is at a similar point on the standing-wave that it would be on if placed directly at the antenna.

To achieve this, we need the meter to be an odd multiple of a half-wavelength



If the SWR is below 2:1 be happy

away from the antenna. Skipping the math, we find that a half-wavelength is around 17 feet. Before you go measuring off odd-multiples of 17 feet, there is one more thing to take into account: the *velocity factor* of the feeder. Radio-waves are slowed down a little when travelling through coax as opposed to free-space, so the length of a half-wavelength of cable is somewhat less. For regular CB-type coax the velocity factor is 0.66, so we have half a wavelength of cable as approximately 11 feet at 27MHz. Phew!

If all this sounds very complicated, it is, and we're barely scratching the surface in the short space available here! Let us stress again: it does not matter what length your coax is, but at certain lengths outlined above you will get roughly the same SWR reading at the rig end of your coax as you would at your antenna. Just to confuse things further, the "odd-multiple of a half-wavelength" rule breaks down at very high SWR values, because of all those travelling and standing-waves interacting with each other. The theory gets terribly complex, looking more like an advanced math problem all the time, with the result that you can't trust what the SWR meter says anywhere but at the antenna itself. So even those "magic" lengths don't always work!

Enough complex theory - what is the practical solution to all this? Many antennas are already manufactured to be very close to the ideal 50 ohm impedance, and only require minor adjustment. These include most base antennas, 1/4-wave, 1/2-wave,

5/8-wave and loaded types, 1/4-wave mobile whips, and good-quality loaded whips. The important point is that they should all be properly and carefully mounted. If this is done you should have little difficulty in making a couple of small adjustments to reduce the reading to below 2:1, and that's all there is to it, regardless of your coax length. So with these types of antennas, simply install them properly, run the shortest length of coax you can back to your rig, adjust for minimum reading on the SWR meter (remembering that taking six hours to move the needle down by a hair's breadth is pointless) and that's that. If the SWR is below 2:1 be happy.

"Some types of mag-mounts have special requirements for cable length."

The preceding advice actually covers the biggest majority of antennas. Some base antennas don't even have provision for adjustment, so there's little for you to do except make sure you take your time installing them, get every connection good, clean and tight, and everything securely fixed. Some antennas may require more careful adjustment however, the most fussy being beam antennas. If you plan to use one of these, the range of adjustment provided on them means that unless you are very lucky you'll be way off the 50 ohm mark at your first attempt. Because this may cause a high value of SWR the

odd-multiple rule won't work very well, so the best bet is to get some help and adjust the antenna with an SWR meter *at that end* of the coax cable. This will entail an endless stream of shouting from roof to helper to energize the transmitter for a few seconds every so often, but it is the easiest way in the long run. If you're a long way away from each other a couple of portables would be a great help - or at least one on the roof so you can say "transmit for ten seconds" or whatever. It is perfectly alright to leave the receiver on whilst adjusting the antenna, and this will cause no harm to either you or the rig. You'll probably need to use an SWR meter at the antenna for home-built experimental antennas too, because they're unlikely to be anything like closely matched at your first try.

Some types of antenna are notoriously troublesome. Those two-foot long "bargain" antennas for example. Avoid these if at all possible - they're inefficient, often are badly mismatched even when properly installed and adjusted as well as possible, and are a complete waste of money. Stick to better-quality types; it's false economy not to.

One final note, some types of magnetic-mount antenna do have special requirements for cable length because of their design. (More exceptions to rules!) For this reason, don't shorten the coax on these antennas.

SWR is an extremely complicated subject, and can get very involved. The basic advice to the majority of users with "regular" antennas is install it, adjust for minimum reading on your meter and if it's below 2:1, stop worrying! If you have installed an antenna of one of the types mentioned earlier that are already close to the 50 ohm impedance by design, and you get an extremely high SWR reading, then the most likely cause is a bad connection somewhere. Check for badly soldered braids and center-pins on coaxial plugs, offcuts of braid laying inside plugs and causing a short-circuit, any places where the cable may have been crushed and damaged and so on. Check also that you have explicitly followed the manufacturers instructions for assembling the antenna and mounting it. One piece in the wrong place can play havoc with that delicate impedance matching!

The final thing to remember is that it doesn't matter what those other people say about SWR. It makes no difference whether your SWR reading is higher or less than theirs, partly for the reasons outlined in this article, and partly for other factors that we must leave until a later date. In short, set-up your antenna as best you can, then get on with the all-important task of putting it to good use and don't worry about SWR.

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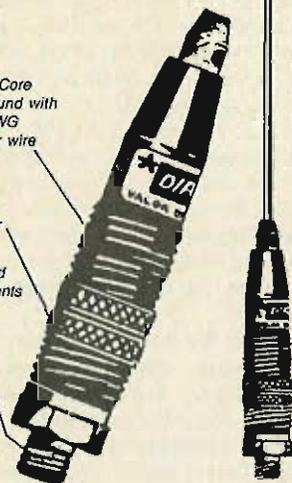
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This month, I'm going to tell you an eerie tale. Really spooky, this is, so if you're of a nervous disposition, read it with the lights on and a friend nearby.

It was Friday night and we were driving down quite late to spend the weekend with friends. Once we'd got off the motorway, the roads were almost deserted, and although I wouldn't go so far as to say it was foggy, there was this odd mist swirling around at bends and in dips in the road. There was no moon and it was very dark. I'd like to say there were bats wheeling above us in the night air, but there weren't, so I can't. All the same, you can take my word for it, it was creepy.

There had been plenty of lively chat on the airwaves while we were on the motorway, but now there was hardly anything. Once or twice we caught a conversation between truckers, obviously at a distance. It was so silent and so deserted winding our way through the dark, empty fields and damp-smelling woods I would almost have welcomed a wally to annoy us with imbecilic chat or even music. At least it would have been human contact . . .

There were no streetlights, of course, just the lanes unrolling ahead in our headlights, and pretty soon we were lost.

Naturally. My husband insisted on driving - he always does when we're in the car together - even though he knows I'm the world's worst map reader. Not that Magellan himself could have navigated through that black, mist-shrouded countryside, I'm convinced.

When we caught the dark figure in our lights, standing patiently at a crossroads with a bag, my nerves had deteriorated to the point where I almost screamed. As it was, I let out a sort of muffled yelp which irritated my husband.

"For heavens' sake, it's only someone who wants a lift, and I don't blame him!" he snorted, slowing the car down.

"He - he's wearing some kind of a robe!" I whispered nervously, peering through the window. "Don't stop! He might be a mugger or - or worse!"

"He's a monk, you silly woman. You wouldn't refuse a lift to a monk on a night like this, would you? He might lay a curse on us if we don't," said my husband cheerfully, and pulled up beside the waiting figure.

I was about to demand to know how he knew the person was a monk - anyone can dress up in a habit, after all

Lady Breakers

MONKEY BUSINESS

As the nights draw in, Filly's imagination tends to get the better of her

- but it was too late. The monk was already opening the rear door. I glanced fearfully over my shoulder, convinced I would see something ghastly - his cowl would slip back to reveal a grinning skull, something like that - but in fact all I saw was a youngish man with an ordinary sort of face settling back on the seat. He said softly, "Thank you very much," smiling as he saw me peering at him.

If he wasn't a monk, he gave a very convincing impression of being one. He told us he was on his way back to his Franciscan monastery and seemed happy to go along with us as far as our friends' village. More important, he knew where it was and undertook to direct us. I relaxed. I even nodded off . . .

When I woke, the car had stopped moving. Oh, we're there, I thought blearily and looked around. Outside, it was pitch dark - really dark, black as pitch.

And I was alone in the car.

Now, I won't say I panicked, but - oh all right, I panicked. My disordered nerves screamed at me. I was convinced the 'monk' had taken my husband off and murdered him. Perhaps, even now, he was coming back for me, dripping sickle raised high . . .

I pulled myself together. Come on now, I scolded, it's the dark that's upset you. There could be a million reasons why the two men had gone off together. I needed light. I reached over to switch on the headlights.

The lights didn't work.

Still refusing to give in to panic, I switched on the rig. Surely I must be able to raise someone, even at this time of night . . .

The radio was dead.

I looked round. This unnatural, Stygian blackness . . . and through the open window, a horrible smell of damp and decay . . . icy fingers played down my spine . . .

The door on the driver's side opened suddenly and I almost shot through the roof.

"Oh, you're awake!" said a breezy voice. My husband. He clambered in beside me. "This is a blasted nuisance, isn't it? All the electrics have gone - just as we entered this dratted tunnel, too. Pretty damp and dismal, isn't it? Still, we knocked up someone at a garage about half a mile along the road and they should be here in a few minutes. Thought I'd better come back to let you know."

"Very kind of you," I said coldly.

"Where's the monk?"

"Oh, he decided to stay at the garage. Lucky we picked him up, eh? I wouldn't have known there was a garage there."

I looked at him.

"So the two of you just went off like that, leaving me alone in this car in this beastly black tunnel without telling me or even *waking me up*?"

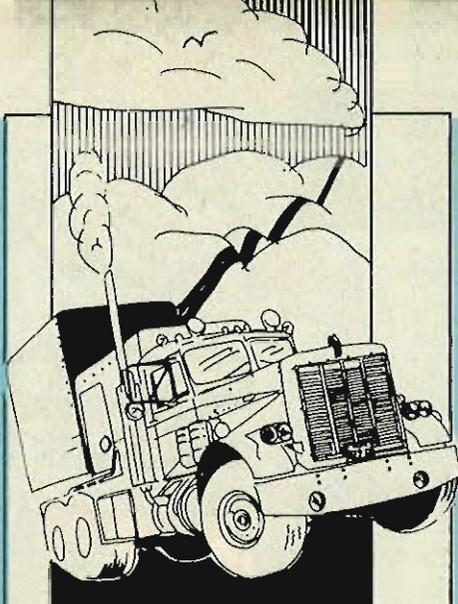
"Well, you were tired - seemed a shame to wake you - our monk friend thought you might be nervous, but I said, No, not Filly, she'll work out what's happened - hey, what are you doing - Ow! Get off me, woman!"

If the man from the garage hadn't driven up at that moment, there really would have been murder done in the tunnel that night . . .

Hello again. Since my telling you several months ago, that I never received any letters from truckers or otherwise, I've been inundated! Many thanks to all of you who took pity on me and did bother to write. I've really enjoyed reading all of your moans and groans. I will, wherever possible, give all of you a mention. But please, do be patient - it could take months!

This month, I want to have another moan - mainly because a lot of my mail has been adding to what I have already been on about. Some time ago, I mentioned the lack of common courtesy and consideration on the road, and the bad name that truckers have now got, because of the 'loud' minority. Well, you lot didn't like what I had to say - A.E. Paske, alias Ely (sorry, no A.D.), tells me that truckers do not consider other road users, so why should they consider truckers? Yes, truckers do tend to use far too many four letter words (I do agree) but, I'm afraid that I take the excuse that truckers are working whilst they are talking to their workmates. What factory, garage or whatever can you enter without hearing the odd foul language? Fair enough, the majority of men do try to tone their language down when there are women or children present - but . . . As I have been working in a garage, I told the lads explicitly that I didn't like, or use bad language myself. But, as I was trespassing on their territory, I did not expect them to tone down, or to apologise for using it. There is no need to use bad language over the air or in person - I have always said that people who need to swear every other word must have a very bad command of the English language, and so just use the words that they know. Adding to this, I have just been listening to someone who, I assume, imagines herself to be a young lady on the CB, telling everyone who tried to speak to her to f*** off! I put it all down to the way parents are now bringing up their kids. When I was a young girl, my parents ensured that they did not swear in front of me (they only used the odd "bloody" and "ruddy" anyway). If I was heard to utter one of these words, I was immediately clipped round the ear. One one occasion, after referring to someone "who didn't have any parents", I literally had my mouth washed out with soap - I didn't use that word again for a long long time! Today, parents use their colourful language in front of the kids, and then they aren't bothered when the kids copy them. I often wonder what this world is coming to.

Talking about common courtesy and consideration - there isn't any, any more! Recently, I was waiting at a bus stop on the busy A444, two solid lines of slow moving traffic, when a little old lady



Truck Stop

Common courtesy costs nothing - as Brandybird points out

on the other side of the road tripped (or fainted) and was flat out on the pavement. I risked my life dashing over the road to assist her, get her on her feet, brush her down and stood with her until her bus came. *No-one else bothered to stop.* I was totally disgusted with the human race. I missed my bus and was late for work, but I just could not fathom out how so many people could see this old lady fall over, and not even hesitate before continuing on their way.

We are exactly the same on the road whilst driving. I often wonder if I'm the only person left on the road who stops to consider other people. At cross-roads, I'm renowned by my friends and relatives for waving those on the other side to come out first. (I'm not stupid; if I try to pull out, they, not looking, pull out as well and only by my quick thinking manage to miss an accident!) When seeing a truck waiting to get onto the main road on which I'm travelling, I watch in amazement as other drivers put their foot down to get past before he

pulls out, in case he will slow them down. This always amazes me, as most trucks can travel at twice the speed of the cars anyway! I always slow down and flash them out. I've had horns honked at me on numerous occasions by annoyed motorists behind me for doing this. I don't care though, I was brought up to be considerate to other people, and to treat others how I would like to be treated . . . and I shall go on doing so, regardless!

Enough of that, let's mention a few people. First of all, hello to Patchwork (Grace), previously well-known to drivers around Hatfield, Herts. Patchwork had to move home in rather a rush, and didn't have the chance to let all her CB friends know. So if you've spoken to Patchwork before, she's now back on the air, but up in Darlington. So don't forget to give her a call. Despite only being up there a short time, she has managed to get to know the area pretty well, so she will gladly give directions and help where she can. Talking of Darlington, a very old friend of mine lives up there now. Queen of Hearts (Betty), who was known to many truckers in the AM days, around junction 2 of the M6, sends her love to all who knew her, and would love to hear from you all again.

Jackpot (Stephen), of the Whisky Novembers, sends the club's regards to all Mike Quebecs that are reading. Sorry I got the bit about ERF wrong, Jackpot. Not one of my favourite trucks, and not receiving much info (if any) from ERF, I cannot really cover them - if they don't want me to, then I won't.

Red Cavilier, (I. Savage) from Nottingham, is a relatively new breaker, who recently took my advice, and actually named the place he was looking for when calling for directions. As I said previously, it really does work. There are a lot of shy people out there, who dare not ask where you want, in case they look stupid by not knowing. If you ask for directions to a particular place, then those who do know it will help you.

Finally another mention for the Scottish CB Newsheet, a really informative newsheet, printed by Bunny (Evelyne). Priced 35p, it's available by writing to P.O. Box 337, Neilston, Glasgow, G78 3JP. Thanks very much for the copy sent to me. For those of you who would like a list of breakers in various areas, this is the Newsletter to buy.

Well, it looks as though I may have overrun my space again! So, thanks again to everyone who did take the trouble to write. I do read all the letters and will try to mention all of you. For those who would like to write, send your letters, moans and groans to me, Brandybird, P.O. Box 158, Coventry CV6 6BD and please enclose an S.A.E. if you would like a personal reply.

Brandybird

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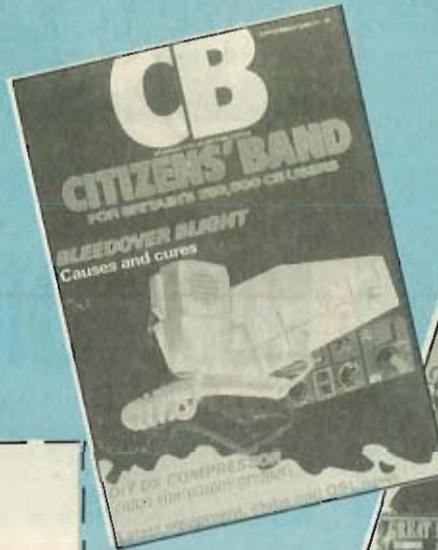
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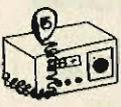
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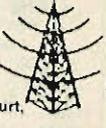
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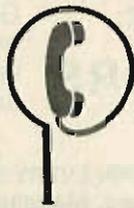
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