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NOVEMBER 1986

# CB

# Citizens' Band

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TO PLLs

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CB news stations



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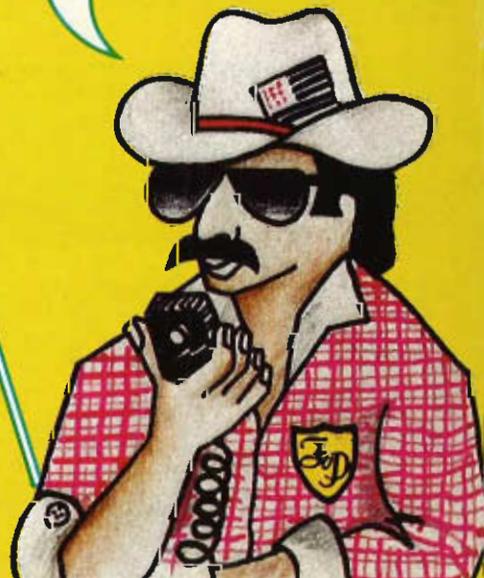
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WITH  
HELICALLY  
WOUND  
CENTRE-  
LOADED  
COIL

The III -  
One Step Ahead of  
the Rest!

"HI BREAKERS!  
Why don't you jump the skip  
and make the trip with the centre-  
loaded, helically wound  
THUNDERPOLE III"



# CB Citizens' Band

November 1988

Volume 5

Number 12

## C O N T E N T S

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**Update** .....  
News, gossip, scandal — you name it, it's always here in Update. You may also see the occasional new product.

**Back Chat** .....  
It only costs the price of a stamp to get the chance to air your views in Britain's only CB magazine, so why not nip straight down to your local Post Office now?

**Mack Chat** .....  
Aaargh! It's 'im, as they used to say about Jonah in The Beano. Yes, unfortunately, Mack the Hack takes time off from his taxi work to pen a few words for us.

**CB — A Look Ahead** .....  
Keith Townsend ponders about the past and, more to the point, the future of Citizen's Band radio.

**Safety First** .....  
Now you don't want to go blowing your-

self up do you? A few words to the wise from Paul Coxwell.

**Roundhead's Ramblings** .....  
Namechecks, namechecks and, yes, you've guessed, more namechecks from our seasoned traveller, Roundhead.

**PRS — An Alternative** .....  
A worry for many, it seems. We look at another possibility for PRS.

**DX — Hints and Tips** .....  
Just a few ideas on how best to achieve those long-distance contacts.

**Muddled Mikes** .....  
The perennial problem of matching mikes. Paul Coxwell makes it look so easy.

**From Crystals to PLLs** .....  
Basically, a look at the evolution of Citizen's Band radio in the UK. It's come on a lot, hasn't it?

**Captain Sparx** .....  
The venerable captain looks at an Orwellian prediction.

**QSL** .....  
David Shepherdson must spend a fortune on stamps, but at least it means he can let us know what's going on in the world of QSLing.

**News at Ten** .....  
This is David Harding, News at Ten, Citizen's Band magazine. Goodnight.

**Lady Breakers** .....  
Eerie. Weird. Extremely strange. No, we mean Filly's latest piece, not the girl herself!

**Truckstop** .....  
Big T tells us tales of tortuous travels — and other words beginning with T.

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NEW

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**£49.90**

Mod. 767

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### ACCESSORIES

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XETAGI 12101 - 10 Amp Supply	£65.10
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IMPORTANT All HF and VHF linears are intended for use by licenced radio amateurs on approved bands only, they are not legal for use on CB in the UK.

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A must for any rig doctor or serious enthusiast. Measures:-

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- Monitor facility
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(Incl. p&p)

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\*Designed to plug directly into the Cybernet Delta 1 934 Mhz transceiver.

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CB Log Book	99p
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(plus £4 p&p)

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**NEW**



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### NEVADA TC27 RXM Mobile Pre-amp

This is an extremely low noise amp with over 20dB's of gain - designed to boost reception on even the best rigs!

**£19.95** (Incl. p&p)



### NEVADA TC27 RX PRE-AMP

A base station pre-amp with adjustable gain from -6dB to +18dB's. Enabling peak reception from both weak and strong stations.

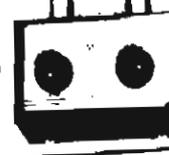
**£22.34**



### NEVADA TM27 Antenna Matcher

At last a matcher that really works and handles up to 100 watts.

**£11.64**



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A robust unit with unique double screening and low insert loss handling up to 200W.

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● High/low power ● Channel 9 selector

**£98**



**£69**



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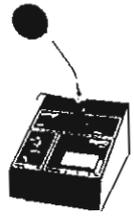
## MICROPHONES

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\*Switchable Roger Beep.

**£44.76**



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A microphone which is guaranteed to make your rig sound like a million dollars.

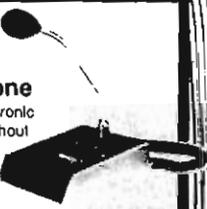
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### NEW SADELTA MB30 PLUS Power Base Microphone

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# NEWS FROM THE WORLD

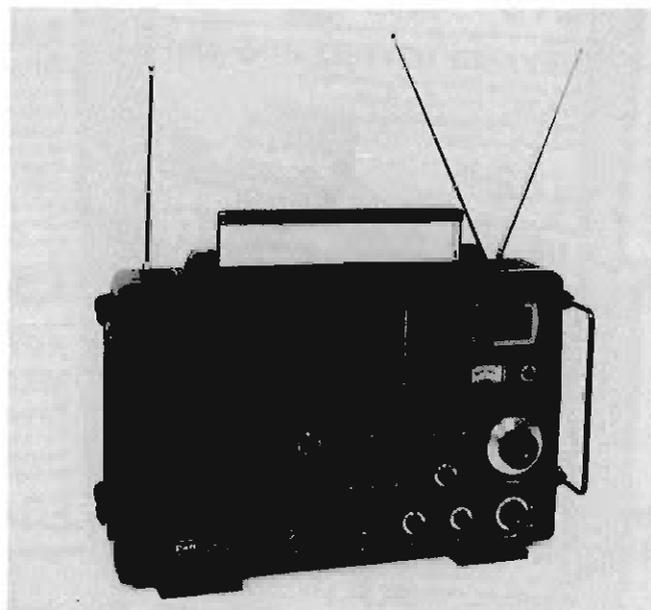
# UPDATE

**W**ell, the eagle-eyed amongst you will, by now

have spotted a few changes in the magazine this month. To be honest, you don't really need to be eagle-eyed to notice that the magazine has undergone a major re-design — I would have thought it's fairly obvious! Like many things, over a period of time CB has evolved from the early days when it was really a cult hobby, to the present time when it now numbers over 250,000 devotees. Similarly, our magazine is changing all the time to keep pace with our readers. You will have noticed more and more constructional articles in the magazine lately along with more emphasis on individual breakers and CB clubs. The new look of the magazine is just one more change in direction — and we hope you like it.

Another change which will benefit you directly is that, from next month, we will be awarding £10 to the writer of the best letter (Back Chat) and the best or most interesting, Q&A query will earn a year's free subscription. So, get your pens out, get your brains in gear and let's hear from you. The winner of each category will receive his/her prize a week after publication.

**Eamonn Percival**



## New Multi-band Receiver

Dave Taylor of 8 Emmerson Street, Crook, County Durham recently announced the availability of the new Crusader X multi-band portable receiver by Pan International. It enables you to monitor all kinds of radio activity including fire, police, ambulance transmissions, maritime communication, amateur radio and lots more.

Covering frequency ranges of 145-360KHz, 530-1600KHz, 1600-3800KHz, 3.8-30MHz, 30-176MHz, 420-470MHz, the Crusader X is available from Dave Taylor at a cost of £198.

## CB for the Blind

The introduction of new Citizens' Band Radio frequencies next year (1987) will bring a few headaches for a Scottish Charity Group which caters for those

---

**The Crusader X,  
now available from  
Dave Taylor**

---

to the recipient. Being registered blind and expressing a desire to participate in the system are the only requirements to qualify for action from the volunteers.

When they are notified of a person wishing a CB set-up, and having established that the person is on the blind register, CB Radio for the Blind will despatch a radio set and pack which is required to power it. The next step is to contact the local CB Club with a request that one of their members will go along and install the equipment and provide instructions and guidance to the new user. The only item the group cannot supply is the antenna, or aerial, since in most cases they do not know how or where it will be situated. However in nine cases out of ten the local Club come to the rescue and supply the antenna.

The member who was nominated or volunteered to install the equipment becomes an Associate Member of the group and as such ensures that the set-up is safe and legal as well as providing tuition on operating practices and procedures. The group would like to hear from Clubs who have trustworthy members willing to become Associate members.

When the new frequency sets are introduced it is envisaged that many members will wish to change over to the new system. At about £100

Registered Blind persons who wish to become part of the CB network. Volunteers with CB Radio for the Blind (Scotland) foresee a great strain being put on their already meagre resources when requests for new equipment are received from the 60 Registered Blind members they have on their records.

The group was formed by Ken Callow, better known to his members by his CB Handle Supertramp. He brought the idea with him from the South when he moved to Bathgate in 1981, and realising that there was no Scottish counterpart he quickly set about rectifying that position. Today the group is well known in CB circles but Ken no longer heads it. He returned to employment in London.

CB Radio for the Blind is a Registered Charity whose aim is to provide CB equipment for any registered blind person and to maintain and repair such equipment at no cost

Put pen to paper and win either £10 or a free subscription ■■ Good news for the blind, courtesy of CB ■■ The return of the K40 ■■ Natcolcibar speaks out ■■ Update on Medico 9 ■■ Uniace still alive

a time that could work out to be a heavy burden and the group would be extremely grateful for any donations received. Honorary Secretary John Loudon says, "It's not hard to see that we could need £6,000 and personally I reckon that we will need to aim a bit higher and say £10,000 and that will leave a little over for other things such as repairs etc."

The group is delighted that they have recently acquired a small number of Backchat units which 'speak' the channel numbers as the control is rotated. The design, components and assembly of these units were all donated and John adds "that they will have to be used for our members only."

Contacts: Hon. Sec. John Loudon, CB Radio for the Blind, (Scotland), 21 Kincardine Road, Carronshore, Falkirk, FK2 8AE

Tony Jaconelli, Chairman, SACBC, 73, Springboig Road, Glasgow, G32 0DB (041) 772 2484.

## Even More from Telecomms

Honest. Telecomms of Portsmouth haven't got shares in this magazine. They are not directly linked, businesswise, in any way, shape or form to *Citizens' Band*. The fact that you see their name cropping up regularly in these pages is simply because they are one of the most progressive companies involved in CB and are constantly bringing out new products. It is our job to report on these so here goes.

Telecomms recently announced the release of two new high power variable capacitors from their manufacturing division, Nevada Communications. The Nevada TC-250 is a 13 — 250 pF variable capacitor and has a breakdown voltage figure of 7.8 kV. It retails at £15.61.

The Nevada TC-500 is a twin 13 — 250 pF capacitor (7.8 kV breakdown voltage per capacitor) and sells for £19.50. Both prices are

exclusive of VAT.

The capacitors are British-made and were developed to satisfy the many requests worldwide for a low cost, high power variable capacitor from professional broadcasters, radio amateurs and CB enthusiasts. The units are available ready assembled or, at a lower price, in kit form to suit radio amateurs or CBers building aerial matching units etc.

The capacitors use a special acrylic perspex, 6mm thick, for the end plates capable of withstanding extremely high voltages and with excellent RF properties. For commercial broadcast equipment, there is also a version available with ceramic end plates designed to satisfy the most stringent of specifications.

The other big news from the same company is that they have just been appointed UK distributor for K40 International Products.

The K40 antenna has a reputation as the world's leading CB antenna, both in quality and volume sales. During the early days of legal CB, tens of thousands were sold out but, with the increase in the cost of the dollar, they disappeared.

The good news for existing owners is that Telecomms are now keeping the full range of K40 spares — right down to the smallest screws — so anyone with a defunct K40 can now resurrect the

antenna.

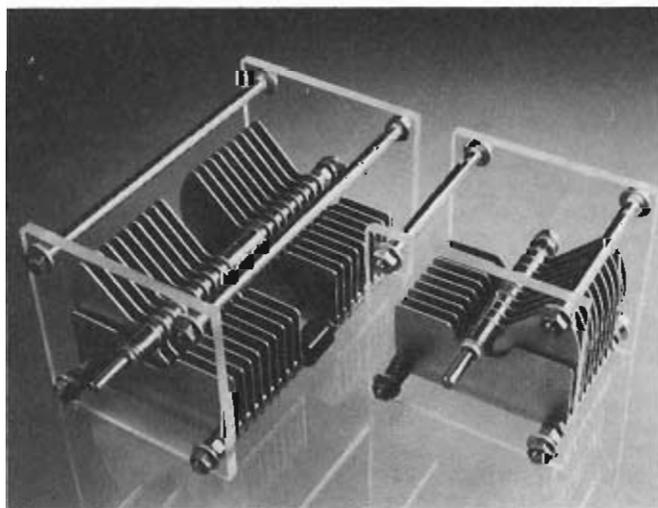
The latest model K40 has recently been further improved and uses polished stainless steel on the base to give better weathering. The new model will sell at £32.40 and the magmount at £14.66.

## Natcolcibar — an Update

It's been a fair while since we heard an official statement from Natcolcibar but now the wait is over. As we are the only remaining CB magazine in the UK, it is left to us to represent and support all breakers and CB organisations, and so we decided to run the following press release from Natcolcibar in its entirety.

As many breakers know, Natcolcibar was formed back in 1979 as the National Committee for the Legalisation of Citizen's Band Radio and was made up of clubs, groups and individuals from all over England and Wales. The fight at that time was to get CB legalised in the UK on AM/FM/SSB on the FCC specifications on 27MHz. The fight by all Cbers in those days was terrific — so loud and demonstrative that Government had to listen. But we were all so busy shouting "27MHz" that we were "misunderstood" and given the present UK FM system in 1981 — so different was it from what we wanted that at first even the Government was calling it "open Channel Radio" — not Citizen's Band!

Still it was a start, and much as the die-hards didn't like it (and many still don't — and won't use it!) it did give CB a foothold in



**Left: The Nevada TC-500 twin capacitor; Right: the Nevada TC-250**



# UPDATE

the UK. Something for us to fight to improve and to build upon.

Natcolcibar are still fighting for AM and SSB — as we were first set up and constituted to do! But in 1982, when Natcolcibar members from all over the UK decided it was time to put together a Constitution for the future, support and improvement of the UK FM system became a very important vital part of Natcolcibar's aims and intentions. While we do still ask for AM/SSB and will go on doing so, together with the European CB Federation and all its members — if you saw the Agenda or minutes of the meetings held with DTI officials, it would be seen that the majority of points deal with improving and expanding the systems we have now — including of course 934MHz. These users are Cbers too; let's not leave them out. They also have problems to be sorted out.

There are problems that need to be tackled before we have a CB system in the UK that we can be proud of. The biggest worry to many users and officials alike — I think — are the abusers; the bucketmouths, the music players, the causing of unnecessary interference with other forms of communications! There must be better policing of the CB channels, to track down these idiots and put a stop to the nonsense.

Antenna heights is another bone of contention — the present legal maximum height for CB antennae is on a horizontal plane with most TV aerials — it's a miracle that there's not a lot more hassle with interference than there is!

Tests done in 1983 by expert engineers for Natcolcibar proved that the best position for the CB antenna is above and behind the TV aerial — *not* next to and level with!

934 have interference

from cellular radio/telephones which must be stopped! The CEPT FM 40 channels will be coming legal next year, and one of the worries about this is — how long will we keep the present UK FM system. Natcolcibar have asked the DTI for a minimum of five years for the two systems to run side by side. However the DTI are reluctant to put a time limit for two reasons (a) if they specify a minimum time, manufacturers will work towards that as the run-down date and stop production of UK FM sets for that time.

(b) They have stated that whether we keep the full 80 channels will depend on the licensed use there is — if the number of licences bought are sufficient, we will keep both systems; if not we will lose the UK 40 channels — and be worse off than at present! Can you imagine the majority of European Cbers all crowded into the CEPT 40 FM channels? Absolute chaos! Mind, who's to say what "sufficient" is, as far as the number of licensees is concerned, and what proof will we have either way? It's easy to give out *any* figure if it suits your purpose.

Protection of 09 as a emergency channel, and 14 (on the UK FM) 04 (on CEPT FM to come in line with the rest of Europe) as the calling channels and 19 for the mobile (truckers) channel — are vital! These must be clearly defined on the licence — so that we stop the often-heard answer "But we were given 40 channels to talk on, so why shouldn't I talk on 09/14/04/19" as the case may be. Most Monitors know the hassle when trying to deal with emergencies, breakdowns, accidents, road-works etc, and give the necessary help in the air — only to have idiots coming on the vital channel to have a

"wally-around", and think it's really funny that they are causing someone such headaches and heartache!

More support for monitoring organisations is essential. As is help for CB groups helping to set up rigs for blind and disabled breakers to help them feel part of the human race, instead of being isolated. All these and a lot more are being attempted by Natcolcibar, and being fought for very hard!

If you feel you want to help or just be part of all this by giving support, please write to the Admin Secretary of Natcolcibar, Mrs Peggy Tapper, 38 Amroth Walk, St. Dail's, Cwmbrian, Gwent, NP44 4NQ. She's waiting to hear from *all* CB users — clubs, groups and individuals (an SAE would help speed up a reply).

## Medico 9 still going strong

The Medico 9 Organisation was formed at the end of 1979 with CB in mind. It was the first Medical and First Aid

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### Medico 9 — still

*keeping up the good work*

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charity of its kind on the Citizen Band network.

Formally under the umbrella of the Thames monitoring service, it came under its own independent structure when it became a charity during 1982. The monitoring and rescue service of the Sutton Coldfield area offered its services to the organisation in 1981 and became part of the network earlier this year.

1984 saw the formation of the organisation's own First Aid section; this section provides First Aid coverage at events of all occasions.

The charity is a national one, but also has international connections and there are members in Canada, Holland, Finland and, recently, branches have been formed in Brazil and Australia.

The aims of the organisation are simple: To provide a professional Medical/First aid service to the motorist and general public. The assistance is given up to the arrival of the professional services and works in the following way. Mobile breakers passing an accident, call for assistance in the normal way. The monitoring services will answer and deal with the request for the emergency services. Any Medico breakers in the vicinity will reply and then proceed to the accident. The breaker reporting the accident should remain at the scene when-ever possible. If the emergency services arrives before the Medico 9er, the breaker can confirm and the Medico will automatically cancel his journey.

Further details can be obtained by writing enclosing a SAE 6x4 envelope to: The Secretary, The Medico 9 Organisation, 1, Hale Way, Frimley, Surrey, GU16 5HX.

## Uniace — An Apology

Uniace are alive and well, contrary to our report last month. In the October issue, we reported that Telecomms of Portsmouth were the only company in the UK still manufacturing/distributing 934MHz mobiles since Uniace had ceased manufacture of their 400 model. A worried Clive Kay of Uniace telephoned us to tell us that Uniace were, indeed, still manufacturing and distributing the Uniace 400 934MHz transceiver. We apologise for any confusion arising from this, and interested parties can contact Uniace at Unit 8, Conway Road Industrial Estate, Llandudno Junction, Gwynedd (0492-613232).



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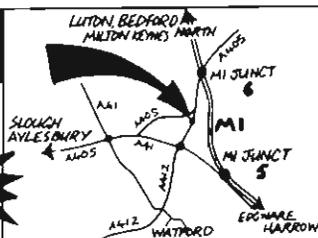


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26-page book includes PCM4015, PTBM12044X, PTBM13144X, PTBM13344X, PTBM12104X Models C04a GTL 150, 148GTL-0X (MKE), C01 320FM, 3200X 1200DX, 1600DX, 2000K, 2400, Excabur, Falcon 2000, Ham International Concorder II, Concorder III, Jumb III, Multimode III, MyGan 2795, 2795DX, 8795 (v), Intek 1200FM, Lafayette 1800, 2400 HB870AF5, Midland 7601 export, Meritage 2000, Palto 2000 Pacific 160, Palomar 2400, 5000, Starfire DX, Superstar 2000, 2255, Thunder 2004, T-Star 747, 777, 797. Written by Lou Franklin, this is the only service manual available for these radios. Complete specs, voltage measurements, theory, PLL charts, alignment instructions and layout, block diagram, large 11" x 17" schematics of each chassis.

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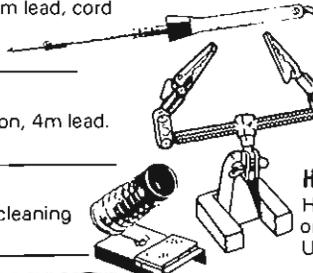
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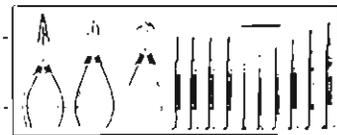
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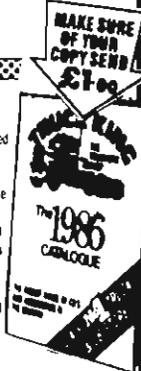
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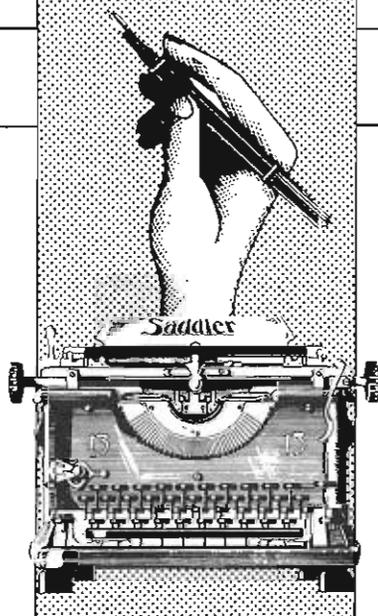
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# MORE ON APATHY



**Peggy Tapper of Natcolcibar comments on apathy ■■ Two truckers take issue with Big T's recent comments ■■ The argument about CB v Ham continues ■■ A new emergency service is founded**

**Peggy Tapper, admin secretary of Natcolcibar, has a few relevant points to make regarding what can be done to fight the disease of apathy**

With regard to the letter on "Apathy — Who Cares?" from Tony Bevington in the August Issue, I'm afraid that in some respects we are all members of "Apathy International" but mainly of "Apathy UK"! Although NOT just a British disease, it is definitely more noticeable in the UK than on the Continent — I wouldn't know about further afield, as I haven't been there.

But while I agree with Tony that it *seems* to be only a few doing all the fighting, I can assure him and others who feel the same, that these few "generals" have many "soldiers" among the ordinary CBers to support them and to keep alive the will to fight on — even in the face of the apathy of the majority; the majority who just sit back and moan that things are not right, things could be better, what do we get for our licence money, and so on. These are the people

who feel that they cannot alter things so why bother to do anything anyway? But let's be fair — you must take part in the fight for these improvements if you want them to happen. Even by just giving the so-called "generals" (Tony's expression, not mine) your moral support, by joining the national body NATCOLCIBAR — and letting them know how you feel about CB and how you want it to be improved — even if you do little more than that — at least you can feel you are doing something constructive for CB. If things go well and we get the desired improvements, you can have a lovely feeling of "I helped achieve that"; if things don't improve, at least you can feel that you tried — not just let apathy wash all over you!

The people who are on the Executive of NATCOLCIBAR are there because they feel that if you don't get involved you can't complain if you don't get what you feel is right; also that if someone doesn't put up the fight then the state of CB in this country will just go further downhill rapidly. This must *not* be allowed to happen! The "fighters" are the

important link between the grass-root CBER and Authority.

Contrary to what has been said, NATCOLCIBAR does have a lot of contact with the DTI — by letter, telephone and meetings; and I can truthfully say that they *do* ask our opinions and advice (whether they act on them remains to be seen) but at least we are *communicating!* That's something else that is absolutely essential to overcome this *apathy* disease.

It's by communicating — with each other, with your national representatives and — through them with the DTI, MPs, the UK government and the European Parliament (through MPs and Commissioners etc) — that things get done. Instead of sitting at home, in your car or truck grumbling over the airways about the sorry state of CB, contact NATCOLCIBAR through the Admin Secretary Peggy Tapper, 38 Amroth Walk, St Dials, Cwmbran, Gwent, NP44 4NQ — and find out just exactly what *is* happening and what we are trying to achieve for *all* CBers. Contrary to the

mistaken views of many, NATCOLCIBAR is *not* a body only interested in AM and SSB — but in *all* modes and *all* breakers.

Pull yourself out of the apathy doldrums and drop me a line today. The more I have to reply to, the quicker this disease will be reduced from epidemic proportions!

## Is Big T a Trucker?

**Paraffin Lamp from Bradford has some comments to make about truckers**

In reply to St Bruno from Huddersfield, I have the following observations to make:

1. Big T is not a trucker. Truckers use AM (lorry drivers use UK FM).
2. Big T is not a trucker. Truckers are helpful towards caravanners and never moan about them.
3. According to official DTI figures, the average truck travels at 58mph on the motorway. Very few can reach 70mph, never mind 80mph.
4. A Class 1 HGV licence is not easy to get, but it is very easy to lose.

If St Bruno wants to know how much time I spend in the 'choke and puke' or why I am never stopped by the police, I invite him to spend a week as a passenger in my cab. I strongly recommend this as it should take care of the mythical notions which he has about the distribution industry and its humble servant, the trucker. It may even surprise him to find that the trucker is a motorist and a caravanner on his day off.

Incidentally, if any reader continually comes into conflict with other road users, then it's time to take a serious look at the way they drive.

## I Disagree

**A Mr Beckett from Southport writes to take issue with a couple of readers**

Referring to September's issue of *Citizens' Band*, St Bruno from Huddersfield complains about truckers. Well, I agree with him to a certain extent even though I am a trucker myself. Not all truckers try to make caravans sway. If this annoys you so much, why not just use a little common sense and pull over slightly.

As for Mr Tait from York, whether or not an 11 metre radio society would be a good thing, only time will tell. Like a few other breakers, I have both SSB and FM radios and have been a regular breaker for quite a few years. Unfortunately, I don't agree with some of your ideas. For example, number one idea about having both the UK 40 band and the FCC band will be a waste of time until the idiots learn to behave — which, I doubt will ever happen. Idea number five, I believe, is worst of all. It will do nothing but create more havoc. The rest of your ideas speak for themselves also — in other words, a waste of time.

As for RB01, the same applies to him; useless ideas, apart from number four and I quote "nationwide body to monitor the use and abuse of the system". This so-called body should be each and every one of us who use this system.



I, for a start, when I get my DF gadget (which will be soon) will, to use a figure of speech, blow them all up.

## Amateur Radio or Radio Amateurs?

**White Eagle from Devon has an interesting overview of the CB/ham situation**

Phew! What an issue the September issue of *CB* turned out to be — Filly suffering verbal assault and persecution, several despairing letters about truckers, wallies and poor operating practices, and Keith Townsend trying to inject some sanity into the proceedings by telling everyone to give it all up and go amateur!

I came to CB some eighteen months ago through a friend and initially saw it as a useful means of local contact with home while on the road as a country GP. The bands are not too crowded in the country and contact is fairly reliable (so don't all go moving out here at once). Soon I realized other people were there also. At

first I was bemused by the music-playing, dead-keying and bad language of some "operators" but I soon learned that these were the "wallies" and even in our underpopulated area they seemed to become rapidly more numerous even during my short time on 27MHz (do wallies breed like rabbits or simply sound like them?).

I also got to know many breakers (by far the majority) who didn't sound like "Smokey and the Bandit", used phrases like "good afternoon" and didn't say "Roger-D" every other word. Through these new-found friends I joined the *Wishing-Well* breakers' club (plug-plug) and when some of the group arranged a course for the Radio Amateur

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## Truckers and caravanners — the debate rages on

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Examination, I took the course, sat the exam and passed. Suddenly, I have found yet another world of 'radio practice. Good manners and operating practices are the norm and all I have spoken to so far are keen to help a "new boy" find his feet. To some, the operating procedures may seem pedantic but at least if pedantic but at least if the general standard is high the occasional lapse is not too critical. And how many times do you wish people would give their callsign, handle or whatever, automatically so that you don't have to keep guessing who it is you're talking to (or, more to the point who that 'QSK' could be)?

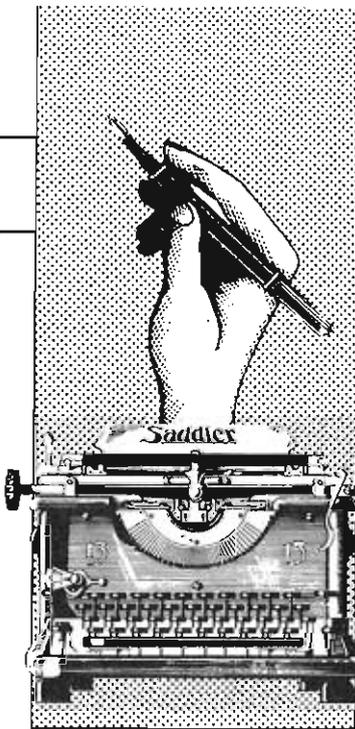
I remain a keen CBER and I shall certainly not chuck my 27MHz rig away, but I shall seriously think whether I invest in a new one come the CEPT frequencies.

Both Harry Tait ("11 metre society") and RB01 ("A better system") suggest in effect some sort of parallel amateur set-up, something which could only prove divisive. RB01's suggestions in particular are already alive and well on the amateur bands. The band plans, special and emergency frequencies etc (only suggested allocations) are adhered to by the operators themselves without the need for unenforceable, nebulous "legislation".

And why? We are all radio "amateurs" after all (when did you last get paid for chatting on CB?). Perhaps part of the answer is this; I was proud to receive my amateur callsign. I felt I had



# BACK CHAT



achieved something more than just paying £12 to the Secretary of State. I suspect that all our wallies and many others besides, if they have a CB licence at all, regard it as a mere tax on something which they feel should be "free" — perhaps a reaction to the TV licence debate. What if the CB allocation were to come under some sort of "novice" amateur licence with a basic radio competence exam? The idea is not new but would achieve liason between CBers and hams through interest in the "new" bands. I do not think it would result in a "loss" of the bands to the amateur service as CB'ers outnumber hams by some five-to-one in the UK (and the amateur has access to the bands with a CB licence in any case at present). This could open the way for legal SSB, better antennas etc, while keeping some of the power restrictions for those who wouldn't know a spurious emission if it hit them in the Yagi, and would bring CB under the protective umbrella of the amateur organisations which have an established bargaining relationship with central government. And as for the wallies, they could QSB into the QRM from whence they came; Roger-D good buddy?

## Breakers on Official Duty?

Bill Laurens of the Emergency Planning Section of Taunton

The air-waves over sleepy old Somerset have been breathing strange language this last year or two.

"West Hatch, this is Taunton Control: How do you read me?"

"Williton Control: This is Crowcombe."

"Wedmore, this is Sedgemoor Control: Advise numbers still in need of shelter."

Breakers in the West Country who have heard, listened in to and perhaps been interrupted, (although we hope not) by such unusual official sounding exchanges deserve an explanation. Blame Somerset County Council if you like — but the voices are, were, genuine 'Breakers', some one hundred and eighty of them who have come to the aid of the County Emergency Planning Officer. They range from dedicated operators: Club members, REACT operators, Tidewatch monitor groups and such, to farmers with a set on the tractor for 'lunch calls' only and youngsters feeling their way into CB.

What they all have in common is their willingness to make themselves and their

equipment available for real emergency communication. It all began some three years ago when the County saw the need to set up an emergency network capable of linking County and District offices and depots to the public as part of 'Emergency Planning'.

One problem was that each council already had its own radio system, each on a different frequency, even a different wave-band. Another was that there was no contact with the public in the event of telephones being put out of action. Radio amateurs helped overcome the first (a word of thanks here to all the RAYNET members who give up much of their spare time testing and operating links on our behalf) but how do you put 32 main centres in touch with 300 or so small towns and villages?

So we bought some rigs — Maxcom 20Es and Westward PT 2s for our main centres and asked Parish Councils to find local operators to man t'other end. This is the *only* commitment the volunteer breakers have; they neither pay or receive fees, have no Club nights, rallies or whatever. Each is registered at County Hall and two, possibly three

times a year, receives a call from County, asking him/her to take part in a Communications Test of perhaps an hour's duration or, once a year, in an exercise lasting probably two or three hours, with the Parish Emergency Committee. The County Council clears this activity with D O T & I Radio Investigations Branch who co-operate by monitoring and we do ask other CBers to bear with us if we tend to dominate one or two channels for these short periods. Please remember that fellow breakers are involved who might well have been using the channels anyway.

To date we have concentrated on three of the five areas in Somerset, each of which has had an exercise blending District Council radio, RAYNET and CB. In the autumn, we break new ground with a test in South Somerset on 15th October and in Mendip area on 22nd October. This means that by spring of next year, the network will have expanded to cover the whole County.

Any breaker who would like to know more, please give me a landline on Taunton (0823) 55535 or write to: Emergency Planning Section, County Hall, Taunton, Somerset.

Alternatively, if you pick up one of our tests, wait until it is officially over "All stations — test end, thank you for your co-operation" and then come in on the side.





# FLATSIDE ~ THE ANSWER ?

**Mack the Hack carries on with his crusade for the use of horizontal omnidirectional antennae for 934**

**A**ll this fresh air must surely be doing me some good. The fresh air that I am getting is caused by my attending this year's mobile eye-balls, rallies or, as the latest one was called, 'Local convention' organised by the 934 club UK. The aim of this day, Sunday 17 August, was for 934 users to go as a local group to a high spot and make contact with other such groups on their hills through 934 radio. My venue for the day was the same as last year. A field that the club had rented for the day on a hill, of course, behind the 'Halfway House' on the A127 Southend arterial road. It was, as I said, supposed to have been a 'local' do but people from as far as Brighton and Reading attended this meet.

For people attending this site for the first time, a talk-in station was in operation. But many just homed in on the smoke beacon that came from Mary Machin's barbecue.

I don't think many people tried any radio communicating as more were interested in chatting eyeball-to-eyeball to the stations that we would normally chat to over the air. For the first time at this convention was a bring and buy (or as some people call it, a junk sale) with lots of used goodies for sale.

Many people approached me with questions about the Omni-V antenna that Tony Wood and I wrote about a couple of issues back. Fortunately I had the foresight to take one of the originals along. Although the dimensions were given in this magazine with the article, people were surprised at the antenna's small size. I would take this opportunity to tell you that mention has been made about the method of joining the coax as Tony suggests using N or BNC plugs. Other methods tried that eliminate the costly plugs include splicing the cables, but surgical care must be taken doing this, or making copper T-pieces out of thin tube. Possible but difficult. I found splicing was easier. Many people have told me that they intend building this

antenna, so it seems that flatside working is on the move in the right direction.

It is a known fact that some people cannot even mend a fuse or even fit a plug so I am sure that 934 users out there wish that they could buy a ready-made horizontal omnidirectional antenna. In reply to those that have asked me if and where can they get them, well as far as I know, to date, you can't. But if there is any manufacturer out there that plans to produce such an antenna and lets me know then I will certainly pass the information on to you, the readers.

I have heard over the air and during discussions with others that "I have tried flatside for a time but could not hear any other stations". How long is a time? A day, week, month? More likely days or even a few hours. As an example of what could happen, station A puts up a horizontal antenna and listens around and gives a few calls but has no response from other horizontal stations. So whilst station A is climbing his pole to put his antenna back to vertical, station B a few miles away is also up on their roof putting his antenna flatside in an attempt to find some other horizontal stations. So when stations A and B hook up again on the vertical polarisation mode they agree that flatside is dead. Lack of communication is what has happened in the past and the answer is that a period should be set that those wishing to experiment with horizontal antenna systems may do so knowing that others are also giving this mode a try.

So, it has been agreed at the 934 club eyeball by some of the enthusiasts that a date should be decided. The first Sunday in November for the remainder of the week will be known as the Flatside Working Experiment week. Hopefully by the time you read this, you should have a couple of weeks to try and organise a horizontal antenna of some sorts whether it be a beam or one of the Omni Vs. Of course, you don't have to take part in the experiment but if

you are one of the many stations that are suffering from the cellular phone problem then this is the opportunity for you to try the cure that many others have found for the problem.

There are still some areas that still have not suffered mobile phone interference. Lucky you, I say, and I would not wish it on anyone. On my odd weekend trips to Clacton in Essex I find very little interference so I can use vertical polarised antennas satisfactorily. But a little bird told me recently that these mobile phone people plan to erect their repeater stations around the coast of this island so that boat users can take advantage of the cellular phone system. Although it's a curse to our 934 CB I would be the first to agree that the cellular mobile or the portable phones are a fantastic idea but still very expensive. Recently when the engine of my works motor decided to take an unscheduled stop on the M4, I wished that I had on board some form of communication equipment such as a cellular phone. But fortunately I managed to stop just a few yards from a motorway phone that worked.

As mentioned in this magazine by myself and others, the DTI are studying the idea of a personal radio system for this country. For small business use is the claim made for the introduction of such a system in this country. But, as I am sure you would remember and agree, that was what they said about 27MHz and 934. I know of a local driving school that has 27MHz fitted in its cars and we have had a few other examples of business users on 934, so why introduce yet another system? Who is a small business user? Building sites come top of my list where new estates are being built, but how many of them are there around? Large factories, farms, local taxi firms or, again, driving schools, clubs that specialise in field events, and I am sure you could think of many others. If these people needed short range communications why didn't they try the 934 CB?

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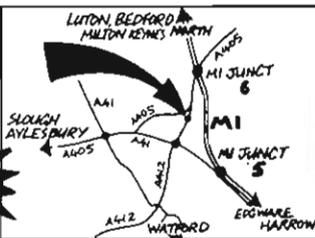


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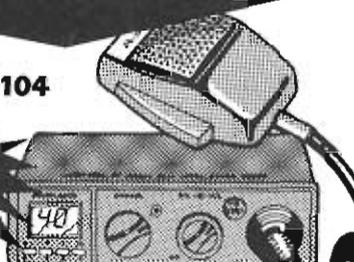
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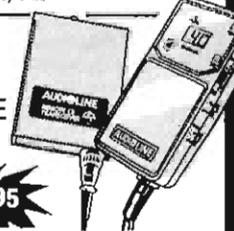
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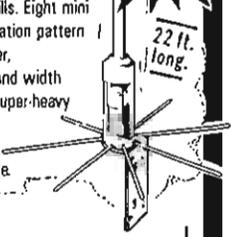
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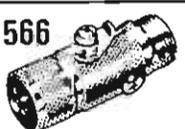
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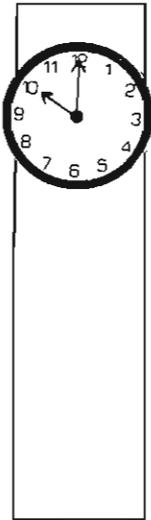
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David Harding reports on how CB can be employed as an alternative to community radio

# NEWS AT TEN

Left to right: Yachtmaster, Raydah and Little Dragon during a recent KCM news broadcast



**"H**ere is the news..." These were words frequently heard on various channels in the more rural communities in many parts of the country. No more so than in East Kent where, during the year following legalisation, it was possible to pick up news broadcasts from no less than fourteen locations: Westgate, Margate, Broadstairs, Ramsgate, Eastry, Kingsdown, Dover, Dymchurch, Ashford, Faversham, Camber and no less than three from Deal! Today all that remains is one club station and a monitoring group.

Before these stations pass into oblivion and become CB history, we ought to record a tribute to those who have run them. In doing this, who knows? Maybe it might even inspire other operators to try their hand at it.

Some of the broadcasts were excellent others inevitably rather poor. The best ones had a huge following of listeners in their heyday. One specialised in a bedtime story for children; one defied all the rules and played pop requests, first on AM then a repeat programme on FM; one risked broadcasting Bible readings and was hilariously heckled by witty breakers. But the majority concentrated on news of local events, supplemented by announcements of club activities for the information on members.

Were these transmissions within the terms of the licence? Well, this

question was studied carefully by a number of legal men, and guidance was sought from the DTI, and the conclusion was that it fell into one of the many "grey areas". If a station had a musical logo, which was short and repeated each time, specially composed and played for each individual station, then it seemed to fall between a legal "station identification" and the illegal "playing of music". If the news concluded with a "radio check", where the listeners could come back with comments and reception reports, then it seemed an acceptable "two way communication" which is the essence of CB.

Would these transmissions have been tolerated in big cities? It is rather doubtful. Channels are at a premium in crowded urban areas, and the space would probably not have been left clear for long. Breakers in the country tend to be more tolerant. They love a bit of local fun, and have a better sense of community.

So, let us profile two of the News Stations to save their efforts from being forgotten. "Deal Twenty Breakers News", run by Jelly Bean for nearly five years without a break,

Christmas Day included! In view of the enormous work involved, preparing the programme and never having a free weekend, Jelly Bean decided to give up as recently as July this year, and nobody could be found to take it on. "Kent Coast Monitors' News", run by Raydah, which started around the same time, is still going strong.

Both were heard by more or less the same audiences, and the two transmissions followed each other on a Sunday evening, with DBC going out at 8.30 pm and KCM at about 9.20 pm, using Channel 30, from Deal and Kingsdown respectively. In addition, KCM's news is relayed to Dover and Thanet by the simple expedient of sending the programme down the telephone. CB sound quality is very similar to telephone quality, and many people do not notice the difference. Dover takes the news in advance, and transmits it at 8 pm on Channel 05. Thanet gets it simultaneously with Kingsdown, at the new time of 9 pm, and puts it out on Channel 35, which is the local network frequency. There was a time when it was relayed by Faversham simultaneously on Channel 30, and this was quite exciting, as a

mobile could leave Dover and cross Kent on the A2 and M2, with almost continuous coverage of the broadcast on one channel until he reached Maidstone!

The Deal Twenty Breakers' News was a relaxed, cheerful weekly get-together. It was compered by Jelly Bean, who shared the microphone with Live Wire and a few other breakers, whilst Supervisor manned the telephone in case there was any late news coming in whilst the programme was on the air. The script was written on a word-processor for flexibility, and other contributions were recorded in advance on tape. Just before 8.30, the local breakers on the network handed over to Jelly Bean, who played a tape of the tuning signal, followed by a signature tune. This was a March, composed and played by a local breaker, and based on the rhythm of the Morse letters CQ, and the musical notes DBC. On his mixer unit, specially built for the set-up, Jelly Bean then faded down the tape recorder and brought in the two microphones, one for himself and one for Live Wire.

Local news and one or two interesting features of a magazine nature would then be followed by the weekly Quiz. Three questions were set, and the first person to ring in with correct answers would win five pounds donated by Deal Breakers Club. Then came the announcements for club members, which gave publicity not only to the one we have already mentioned, but also to four or five other clubs in the area. Breakers' News came next, collected by members of the team or contributed by the listeners, and this could vary from the hilarious (such as the "Wally of the Week" spot), through personal messages often only understood by the people involved, greetings (73s and 88s) and even, on occasions, tributes to breakers who had passed away. The regular weekly recipe by The Chef, followed by the weekly gardening notes by Mister Eric came next. These had been pre-recorded, and gave the news-readers a chance for a break and a drink. There might also be studio guests, such as Winemaker talking about his self-evident hobby, or the late Big Bear who would sing a song or two in his rich, sonorous voice to guitar accompaniment.

A few jokes, a few words of advice on how to get the best out of CB, and then came the football news and the angling news. These were of particular interest as they were very topical; they were specially written each week, and beat the local paper by four days! Finally, there would be any late news items, and then would come the radio checks. On an average night, they could number anywhere between thirty and fifty, coming from as wide an area as Clacton in the north, Canterbury to the west, Folkestone in the south, and Calais across the English Channel. But for every one who succeeded in getting his call through the clamour, one could always reckon that there were five or more other listeners

earwigging.

One might think that DBC had said it all, and that there was nothing left for Kent Coast Monitors. But this was the strange thing. KCM began in a very small way, with a ten-minute up-date of current developments in monitoring and emergency work, together with information of a local and changing nature which an efficient monitor needed to keep by his rig. Then, as an increasing number of monitors became Radio Amateurs, the news expanded to include recent developments in CB, the Ham Bands, SWL-ing, and DXing.

In an effort to give monitors a better understanding of their work, interviews were recorded with police officers, coastguards, firemen, and ambulance



crewmembers dealing with health, safety and crime prevention. One ambulance man recorded a twenty-part series on First Aid. With the advent of the Neighbourhood Watch Schemes, special features were prepared explaining what it was all about. There was also a Technical Section run by Yachtmaster, a lecturer in Dover who provided the local RAE courses. Monitors sent in questions about licence regulations, radio propagation, how to reduce interference, how to insure equipment, how best to deal with an unusual type of emergency; and sometimes the questions would range even wider, including how to cope with a teenage daughter on drugs, or when to inoculate a pet kitten. In each case, one of the team would research the subject and contact the relevant authority, so that a reliable answer could be given.

To their surprise, KCM found that they had developed an even bigger audience. This was partly due to their news being transmitted from several locations which widened the range, but also because many people found the information useful or interesting. This is not to say that it found universal acclaim. At one time, seven editions were being put out on a Sunday, but this period only lasted for a few weeks. Towns like Ashford reacted violently; what we call "The Big City Syndrome", where Channel Nine is not respected and monitors are treated with contempt. The news was jammed out, and the relay base

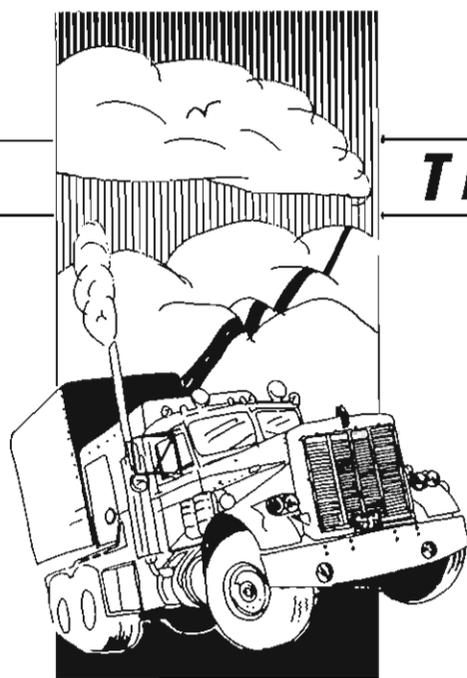
operator threatened. Towns like Faversham reacted with simple apathy, which made the exercise a waste of time. Areas like the Romney Marsh liked the idea, but preferred independence rather than news piped down from another part of the county, so they began a weekly "Monitors' Forum" on channel. What KCM regarded as its sincerest tribute came from Dover, where a local group of ne'er-do-wells were so worried that CB Channel Nine posed a threat to their efforts at mugging, house burglaries and car thefts that they jammed the news to try and weaken the monitoring organisation. Most of these characters are at present behind bars, so the Dover outlet is getting a clear run again!

The present format has been slightly influenced by the closing down of the DBC news, though in essence the style is the same as it has always been. KCM has its own logo (recorded by local schoolchildren) and signature tune (composed and recorded by a local organist). Normally, three newsreaders are on duty each week, and the regulars are Raydah, Yachtmaster and Little Dragon. That leaves Green Fingers, Moonwalker, Hot Dog and Delta Lima as reserves or special reporters.

The first section is a magazine of general items of interest, with a leaning towards radio communication, emergency work, health and safety. Then comes a summary of forthcoming local events, followed by information for monitors. This includes stolen vehicles to watch for, roadworks and traffic holdups locally, a specially prepared local weather forecast for farmers and mariners, a list of late chemists, and high tides for fishermen. A particularly useful feature is a summary of petrol prices in the area; at times when competition is high, some garages have been known to drop their prices when they found that CB was being used to spread the word!

At this point, each transmitter unhooks from the network, with Coinhunter or Second Hand Shop continuing for Thanet, and Robin Redbreast or Jock Strap continuing for Dover, whilst the main studio deals with matters in the Central Area. This will consist of Breakers' News, Local News and any Special Announcements of local interest. Each region then does its own radio checks, before handing back the channel to the local network.

Of course, if anyone is thinking of trying out the idea for themselves, one cannot deny that there is an enormous amount of work involved. Finding the information, writing the scripts, and developing the necessary mike technique takes a lot of time and practice; but once the right team has been recruited, it can also be good fun, and can often be well appreciated by the breakers who tune in to earwig. The pity is that this kind of activity is becoming rarer and rarer on CB, though one hopes that it will never die out altogether, as it can provide a valuable service to the community.



## TRUCK STOP

# KINGS OF THE ROAD

**Our resident big-wheeler, Big T from Telford, reports on one of his favourite cafts, a local eyeball, general driving standards — and his vocal abilities**

available. You can give Carmen a shout on channel 19 (Hot Cuppa).

The last time I went into the café my breakfast was bought by my old mate Dave (The Poser), Electron. Dave was telling me he fishes for the England Disabled Team and this year they are the champions. Well done, Dave and your team mates, and thanks for the smashing meal and the pleasant forty minutes company.

The Tango Tango Club, of which I have the honour of being chairman (eat your heart out Filly!), have started a long distance section and at the time of writing this article, we have 72 members from 25 different counties plus George (Onchan Man) and Malc (Soldier Boy) from the Isle of Man. It is my personal ambition to have members in every county of the British Isles so to all our 72 long distance members, thanks, and there is definitely no truth in the rumour that I am only looking for somewhere to stay on my nights out!

In the July issue of our magazine, I see that Golf Romeo 03 (Gordon) Roadliner has been complaining about my singing on my travels through the county of Gloucestershire — well Gordon, any time you would like to challenge me to a singing

contest, I am willing as long as we can make some money for charity. I would also like to point out that there is a petition being sent to the magazine (as soon as I have finished forging some signatures); seriously though, I must be one of the luckiest people I know to have so many mates to talk to and I would like to let Gordon know that I am learning the words to 'My Way'.

On Sunday 20th July, myself, Dragonfly and about forty more of Telford's CB fraternity went to Church Gresley, near Burton on Trent, to their eyeball/carnival. We arrived as we thought early at 10am and were pleasantly surprised to find the main field already full of stalls, club tents, etc so we erected our tent on an adjacent field. We had a walk around and renewed many old acquaintances with many of our friends already there, the Kilo Bravos from Sheffield, the Tango Tangos from Burton on Trent, the Whisky Novembers from Wolverhampton and the Poppa Deltas from Birmingham together with many more clubs from all over the country.

During the day we were entertained by a dog obedience show, marching bands, a lug-of-war and 12 gorgeous young ladies doing their keep-fit dancing routine (I had to turn my pacemaker up two notches!). Whilst all this was going on, we were, as usual, ably entertained by Jim (Baby Allis) on the Tanoy system. A great day was had by all the people who attended and I am sure that everyone would wish to join me in thanking the organising club.

To end this month, I would like to say how much I have enjoyed writing my Truckstop page — I have now been writing this for one year and would like to say many thanks to all the breakers who send me QSL cards telling me they enjoy my efforts and look forward to the next twelve months.

Just one small postscript — Roger (Headstone) from Telford, beware of horses!

**Big T**

**T**his last month we truckers have really been getting some flack from the TV and newspapers about our standard of driving and I must admit there is some truth in the criticism. Every day I run up and down our motorways and the driving standards certainly leave a lot to be desired and it is not unusual to see up to eight trucks nose-to-tail with only inches between them. I dread to think what would happen if one of them had any problems.

In my opinion, most of the blame for these standards lies with the driving hours we are allowed which, as I have mentioned before is eight. Most firms seem to want more work in too short a time, hence high speeds and many chances taken. I am also of the opinion that car drivers, too, must drive with their eyes closed with so many trying to overtake even when your flashers are going and when you say "naughty boy" (or words to that effect), they tell you "I didn't see your signals" — well I suppose they wouldn't really, my lorry only has six flashers on it! Let us hope that things will improve in October when our driving hours are increased — I believe we shall have nine hours driving a day with two (not consecutive days) at ten hours, but I expect our Transport Manager will want lots more work doing.

For this month's café I have chosen Carmen's Café which is situated near Abingdon, one mile off the A34 at the turn off for the Milton/Wantage road (A417). Although the park is very small, holding only about six to eight trucks, the food and service certainly make up for this. Carmen, who owns the café opens early at 5am until 6pm Monday to Friday only — it is very unusual for cafés to open so early but most truckers do like early starts and a cup of tea is the perfect start to my day. Evening meals are by order up until 5pm and the food is very good — the café is spotlessly clean and telephone and washing facilities are

# COMMUNICATION THE

# QSL WAY



**This month, David Shepherdson (Dragonrider One) brings news of QSL/DX clubs old and new, plus names, cards and addresses from Staffordshire to Scotland.**

**T**his month I'd like to start off with a few personal messages to various people if I may. First of all, congratulations to Melvin (Snake Bite) of Woking in Surrey who has just got married to the lovely Lesley who is also interested in CB radio! I think the marriage was only the other week so do allow a little extra time before you should expect a reply to any QSLs sent. My next message goes to Fred (Gardener Fred) of Southampton, who has been mentioned in these pages before during this year. Fred has been in hospital recently after a stroke and, as he's 86 years old on the 1st of November, I'd like to take this opportunity to wish Fred both a happy birthday and well wishes, hoping you are getting on okay by now.

Every now and then I get a request from a QSLer asking me to say thanks in the mag to a printer or QSL firm for excellent service or assistance. Well, this month I'd like to say thanks to Watford Electronics, not a QSL service, not connected with CB at all really, but they helped me out when my computer printer went wrong. My computer gets its most use as a word processor so a printer is essential. At the time my printer threw its wobbly, "we" had received a new model printer which, in addition to having the facilities I needed, had a very good launch price, all of which merit my thanks, but the best thing of all was that I ordered one on Thursday afternoon, and received it on Monday morning! Thanks Watford Electronics.

Okay, down to business again with a request from Gordon (Disco 3) of the Galaxy & Zulu Whiskey Clubs in Brighouse for me to mention that the Clubs have a selection of "Currie Full

Colour' Club cards available. These are in the Currie Collector Series and so are numbered, like the POMA FCC ones (among others). These cards are naturally available *only* to members and are available from Gordon. For costs of these please contact Gordon at the Club address and please, don't forget to enclose a SASE for his reply! Also, members can have personal cards done in batches of 500, the last price I read for this was £24 but please do check first. Also, some time ago I mentioned that the Zodiac Club in Spain was closing at the end of

1986, but then I got a message that all the Club items had been sent to Galaxy Group. Well, it's a bit late now, but it appears that *most* of the Zodiac items had been sent, with Lluís retaining enough to supply anyone sending either applications to join, or one of those cards which were circulating during 1985. Those cards should have been sent to Lluís in Spain, by the way, and not Gordon as some people did. Anyone joining Galaxy will receive membership to Zodiac but Zodiac membership is not otherwise available now. To join the Galaxy Group costs £5 plus one *personal* QSL card, and not a club card or photocopy but a genuine printed card. This is because the Galaxy Group is a DX radio group rather than a QSL club though QSLers are welcome and if 5-10 of your own cards are sent then you'll get a bundle back in exchange.

Names now, starting off with Bob (Orphan) of Romford in Essex — isn't that where Steve Davis comes from? Anyway, Bob says he has been using CB for about two years now and really enjoys it. He also writes with news of his local CB club (Ford Sierra CB Club) which meets every Thursday night (7.30 — 10.30) at the Ford Sport & Social, Wood Lane, Dagenham, where they get some 50-60 breakers most nights. From Richard (Hot Rod) of Harrogate comes news of a problem he and other members of the November Yankee Club have had. Because of ill health, Richard couldn't get in to the Club meetings to collect his mail and thus one or two people got a little upset at the apparent lack of QSL, but the then Secretary was asked to forward all cards to members. However, unfortunately, this didn't happen. Now, there's a new Secretary



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**COLLECTORS CLUB**

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WASHINGTON, TYNE & WEAR

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Currie Collector Series 110 G.C.C. Club 3

## QSL CLUB ADDRESSES:-

and Richard assures me that he and all the QSLing members of the NY Club QSL 100% and he is looking forward to getting plenty more various QSLs!

As it's getting nearer and nearer to Christmas once again, can I remind you about the Romeo Delta X-Ray (RDX)/RNLI appeal for used stamps which are collected to help raise funds for new boats. Don't forget, last year QSLers helped to raise enough to buy an "Atlantic M.P.E. Lifeboat". All this fund-raising activity is, of course, co-ordinated by Ann (Devil Woman) of Stornoway, and if you can help this very worthy cause by sending her any of your spare used stamps, she and the RNLI will be extremely grateful. A representative from the RNLI has also requested that I pass on his thanks to everyone who helped raise funds and hopes that you will continue to do so! A quick note here to let me know of a change of address, and would I pass it on, from George & Ann (Snake Bite & Firelady) from 163 Borough Road, Middlesbrough; new address at the end.

Another change of address just in from Paul (Wolfman Jack) who has a new two part card which he will swap with anyone writing to him with their

Galaxy/Zulu Whiskey

Romeo Delta X-Ray

Voice Of Amsterdam

Dragonrider One

PO Box 14, Brighthouse, West Riding of Yorkshire, HD6 2SE.  
10 Wallace Street, Rutherglen, Glasgow, G73 2SA, Scotland.  
PO Box 32063, NL-1003 HB Amsterdam, Holland.  
3 Tarn Villas, Cowpasture Road, Ilkley, West Riding of Yorkshire, LS29 8RH or via the mag.

stickers. A club stamp is also available at \$3, and Club QSLs at \$3 for 50.

When you send money through the post, you should always make sure it won't slide about inside the package as, with some envelopes, a coin can break through and get lost in the post. With the UK one pound note being a very rare item nowadays, we have to either use £1 coins, or buy enough club items so as to use a £5 note (or £10). With a note it is safer to put this between a couple of cards or suchlike.

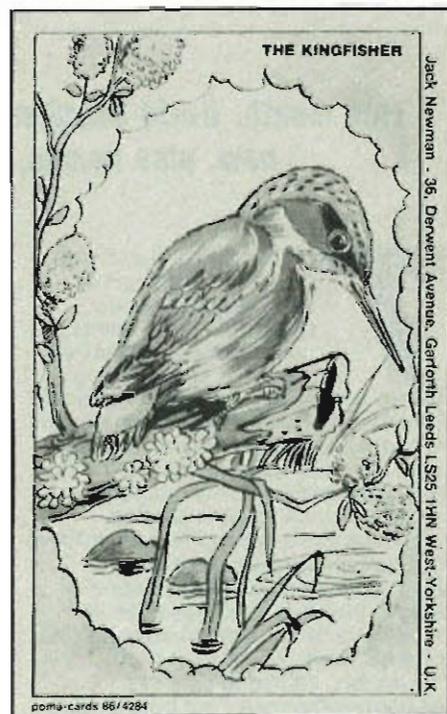
When sending coins use some sellotape to secure the coin(s) to one of your cards, (or some stiff cardboard) and then pad the envelope with a couple more cards so that the coins

## FORTHCOMING EVENTS:

22nd & 23rd November — Waterlooville Breakers Club "International Swap Meet" to be held at the Mary Rose Hotel, 21 South Parade, Southsea, Portsmouth, Hants. Times: Sat — 9am to 4.30pm, Sun — 9am to 2pm. Admission 50p per day includes evening entertainment and a "raffle with a difference" (it says 'ere). Contact: YF3, International Swap Meet (Portsmouth), P Q Box 2, Portsmouth, Hants, PO7 5SL. (Cheques should be to Waterlooville BC).  
4th/5th April 1987 — Cutty Sark 3rd Annual QSL Swap Meet at the Falcon Hotel, Cliftonville, Margate, Kent. Costs: £16 per person, includes dinner, overnight accomm, Breakfast, disco. £5 non-refundable deposit to Dave Bradshaw (CS003), 16 Bradenham Ave, Welling, Kent, DA16 2JG.

cards. From Farnborough comes a bundle of cards from Jim (Sweet Pea) with a little extra in the QSL package. Last name for just now comes from an excellent "Charlie" photo/hot foil card being that of Elizabeth (Domino) who I've a feeling is in fact "Mrs Charlie".

Of late all the names and clubs I've mentioned have been UK ones, well, just for a change I've a little news of a Dutch one. This is the Voice Of Amsterdam International DX Group. Membership of this excellent club costs a mere \$2 (US), and they even accept Sterling equivalent, but cash only, no cheques! For your \$2 you get your VA No, ID card, certificate, stickers and QSL card, with a few other items included too. Extras new to the club include 3cm round stickers, in fluorescent colours at \$2 per 125



P.O. BOX 20,  
FARNBOROUGH, HANTS  
GU14 9AT, ENGLAND.

do not show through. When sending cash abroad it is always a good idea to send this by Registered Post and when sending outside Europe, Airmail is a lot quicker too! To send money by Registered Post you *must* use the Post Office's own special packaging or else it won't be covered!

Okay, bad news round-up time now! A long time ago, Jorgen of the Toucan Club of Venezuela was taken very ill and people who sent off for membership didn't hear from him and some of them wrote off their money after several months. However, since then, the majority of these people did receive their packages. In the last year though, Jorgen seems to have dropped out of OSling as I and several other people have not heard from him at all. If anyone has news of Jorgen could you be bothered to put

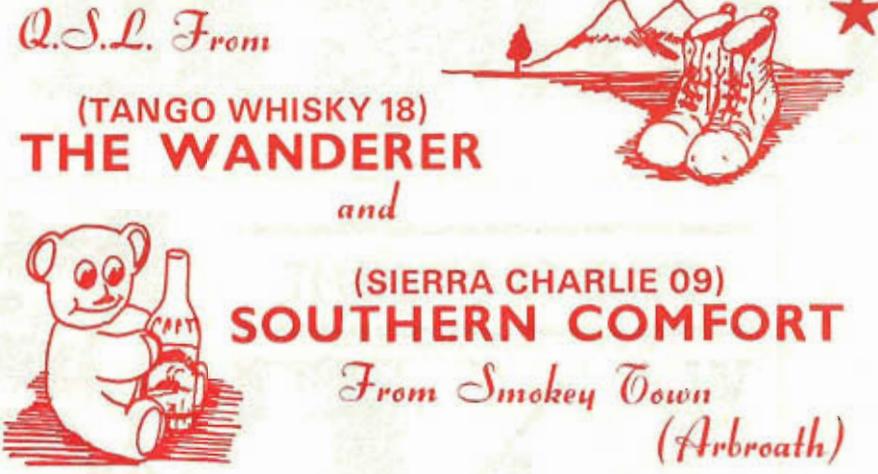
*Q.S.L. From*

(TANGO WHISKY 18)  
**THE WANDERER**

and

(SIERRA CHARLIE 09)  
**SOUTHERN COMFORT**

*From Smokey Town*  
*(Arbroath)*



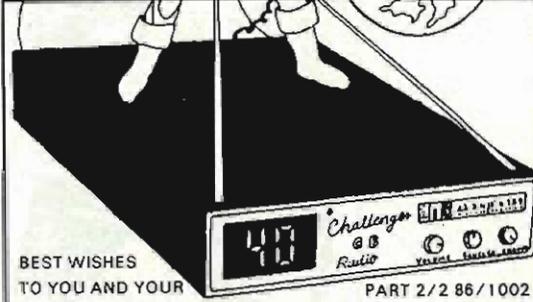
### QSL SERVICE'S ADDRESSES:-

Charlie Cards

Currie Cards

Ray (UK POMA Rep)

26 Edward Street, Hartshorne,  
Burton-on-Trent, Staffs., DE11  
7HG.  
89 Derwent Street, Blackhill, Co  
Durham, DH8 8LT.  
PO Box 106, Canterbury, Kent.



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Radio

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pen to paper and let me know? Ta. A warning from Ray (RSE & UK POMA Rep) about Sundown; both the Club and the Colour Card printers. With reference to the Sundown Club, Ray has been trying to get either his Club pack or a refund since November 1984! Also, anyone sending for cards is unlikely to get much joy as (and I quote) "They have only managed to print cards once in a year!". Ray's letter has jogged my memory of something I did a couple of years ago. I myself wrote to Sundown asking for info and costs, and eventually I did get a reply. I then sent off a design and a deposit and never heard from them again!

A letter from Jack (King Fisher) of Leeds brings a warning about the Roman City DX QSL Club of Chester-le-Street in Co Durham. This Club has featured in these pages over the last couple of years since it was founded in April 1984. Jack applied to join the Club and got his application back with a note from Guy Davidson stating that due to pressures of work he has had to close the Club. So, if you have any application forms for the Roman City, please don't pass them on now. Sorry to hear about this, it's always a shame when a good Club closes. At the same time Jack sent one of his super new POMA cards, this one is in the Collectors Series, no: 86/4284 for those who are interested. Jack says that QSLing is a hobby he never gets bored with and he looks forward to the

postman arriving each day with more QSL's. I think that this one is going to be the last name for this month and it's that of Phil and Linda (The Wanderer & Southern Comfort) of Arbroath with a great little card!

That's it, no more room once again. Next month I'll try to fit in a browse through a club package, some news

on a couple of clubs who want to do a directory of QSL/DX etc clubs, and more information. If you want a mention or are organising a "do" please do drop me a line via the mag or direct to my home AD. That's all, catch you next month, do take care!

### QSLer ADDRESSES:-

Melvin (Snakebite)

Fred (Gardener Fred)  
Bob (Orphan)

Richard (Hot Rod)

Ann (Devil Woman/RDX  
Appeal)  
George & Ann  
(Snakebite & Firelady)  
Paul (Wolfman Jack)

Jim (Sweet Pea)

Elizabeth (Domino)

Jack (King Fisher)

Phil & Linda  
(The Wanderer & Southern  
Comfort)

PO Box 83, Knaphill, Woking,  
Surrey, GU21 2NP.  
37 High View Way, Southampton.  
PO Box 4, Romford, Essex, RM7  
0LQ.

Home Farm, Heyshaw, Dacre,  
Harrogate, North Riding of  
Yorkshire, HG3 4HD.  
PO Box 5, Stornoway, Isle of  
Lewis.

18 Rulland Court, Middlesborough,  
Cleveland, TS1 2SL.  
33 Silverhill Road, Derby, DE3  
6UL.

PO Box 20, Farnborough, Hants,  
GU14 9AT.  
26 Edward Street, Hartshorne,  
Burton-on-Trent, Staffs., DE11  
7HG.

36 Derwent Avenue, Garforth,  
Leeds, West Riding of Yorkshire,  
LS25 1HN.  
PO Box 4, Arbroath, Scotland,  
DD11 1HS.

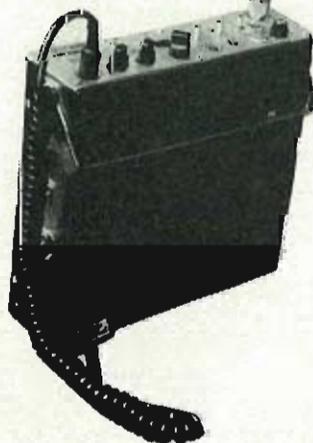


# CB CITIZENS' BAND

By now you will have noticed the new design and layout of *Citizens' Band*. We have all put a lot of time and thought into updating your favourite magazine and we hope you like it.

But — there's more to come! Next month, which is, incidentally, our sixth birthday issue, sees the introduction of our new title logo (see above) which appears on the front cover. Pause for a fanfare of trumpets. We're letting you know in advance so you know what to look for when you sprint down to the newsagents every month — which we know you all do!

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North West: D.A.S. 58 Lark Lane, Liverpool L17 8YA Tel: 051 7276013.  
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**A**s 1987 approaches, just about everyone with any interest in CB Radio is getting excited about the prospect of Britain becoming the first country in the world to licence an eighty-channel service. Even Uncle Sam, who would have us believe that he invented CB, only permits the use of forty, although there have always been rigs capable of transmitting on many more. But what will it mean? Will we be able to take full advantage of the fact that, for the first time, frequencies in common use in neighbouring countries like France, Belgium, Holland and Germany will be legally available to us, or will we be swamped by high powered Italian stations? Or will the sheer volume of traffic make the whole thing unworkable?

For five years we in Britain have been obliged to make use of a set of frequencies which, although they offered the advantage that they were not being constantly bombarded with signals from overseas, set us apart from the rest of the world and created problems for both manufacturers and users. To those involved at the time it came as no surprise when we were allocated this unique part of the band. The Home Office, in those days the licensing authority, had always been reluctant to even consider 27MHz as a possible site for CB, regardless of the fact that it has become universally adopted by every other country with any form of CB service and, public opinion having forced them to reconsider, they took the near-sighted view that since CB was intended only for short-range communication there was no need for standardisation with similar services in neighbouring countries.

To be fair to them, they were also obliged to consider the very genuine needs of those users such as radio paging, model control and remote control devices which were then located within the bottom half of the 27MHz band and for which no immediate alternative was available and it is conceivable that legalisation might have been delayed by anything up to a couple of years but for this compromise.

Although their somewhat eccentric choice of a five digit offset appeared illogical to everyone but themselves, manufacturers soon overcame their initial objections and it has to be said that the service based on the old specification has served us well, so long, that is, as we remained within our own shores. The real problem has, of course, been the fact that our one-off system was unacceptable to the licensing authorities in every other country throughout Europe. Admittedly there has, until now, been little in the way of consensus among European regimes when it came to CB but our system made it virtually impossible to travel overseas with a CB rig in your car or truck. International travel became a nightmare as truckers and holidaymakers alike facing irate Customs officials, many of whom

# A LOOK AHEAD

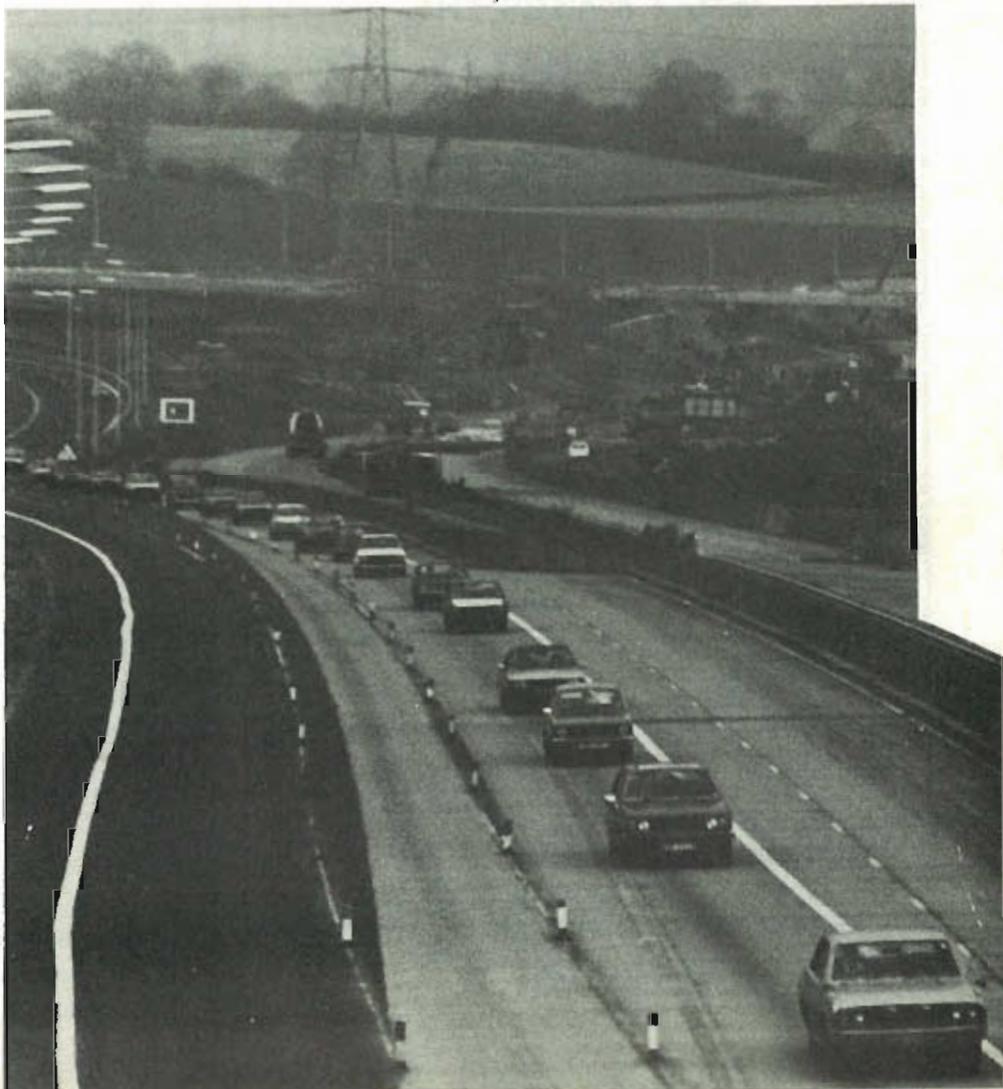
## Keith Townsend peers into his crystal ball to take a look at what may lie ahead for CB in this country

seemed just as unsure of their ground as their hapless victims.

Hopefully the introduction of a common standard will make such problems a thing of the past, or will the whole point be frustrated by just one or two countries failing to fall into line? The outlook is far from certain. Not every European administration appears committed to the new standard and even those which are have different views when it comes to

choosing a start date.

As for channel overcrowding, I can see a return to the days when the DX enthusiasts were prepared to sit through the watches of the night in the hopes of a contact with that rare distant station, many more of which should be available under favourable conditions. Even though the skip is generally at a pretty low ebb these days there have been some fairly impressive lifts of late and a little patience can have its own rewards.



The real danger lies in the possibility that there may be those who lack the patience to wait for an opening and we may well see a resurgence of the use of burners, as the power crazy minority try to create their own conditions. The use of power amplifiers has always been contrary to the terms of the licence but only the most naive among us do not realise that they are in still in use. Surely the time has now come when a really effective means of prevention must not only be devised but rigidly enforced if the genuine breaker is to share in the full potential of the enlarged band.

Conditions will, of course, rise over the next few years, as the sunspot cycle returns to something approaching its pre-legalisation height and although CEPT envisages only the use of FM we must not forget that some European countries, notably France, currently allow the use of AM. Unlike Britain, where its use has steadily declined as the result of continued prohibition, France has a sizeable contingent of AM users and even if their rules are changed you can bet your bottom dollar that its use will continue, which might lead to a fair degree of interference to FM transmissions, a factor which has decreased significantly over the past few years. Figures recently released by the DTI show that the number of prosecutions for using illegal rigs has continued to fall steadily since licences were first issued.

Conversely, the number of breakers convicted of abuses of licenced frequencies has risen sharply, showing that maybe the RIS is doing more in this respect than is generally given credit for. In reply to a recent Parliamentary question on the subject, Department Minister, Geoffrey Pattie revealed that although 2274 convictions had resulted from the use of AM rigs in the twelve months following legalisation, this figure had dropped to 471 in 1983, whilst the same period had shown an increase in FM related convictions from a mere 25 to 461.

Also of interest was the fact that the figures given demonstrated the consistently high success rate of the RIS in mounting prosecutions. For example, out of a total of 2335 prosecutions in 1985, 2299 resulted in conviction. 1983 saw 1472 cases brought before the courts, of which 1445 ended in conviction. In 1984 only 10 out of a total of 1170 cases ended in acquittal, whilst last year the RIS lost only 7 of its 942 cases. It was also interesting to note the fact that in all this time only 7 people had been found not guilty of charges relating to FM rigs. Commenting on these figures, one senior RRD official speculated that the trend showed a greater willingness among CB users to accept the rules, as well as a dying interest in the use of AM.

One major departure with tradition which will accompany the new licences will be the introduction of type approval. On the surface this is more of matter for manufacturers, who will no longer be able to issue their own certification of the fact that their product conforms to the specification. The DTI see this as a major advantage to potential British manufacturers who will, in their opinion, be able to compete fairly for a share of what is expected to be a huge international market on a scale which will ensure economic production. We are also assured that the man in the street will gain the advantage of knowing that his rig is manufactured to a consistently high standard.

With the matter of type approval in



mind, we asked the DTI to outline its current thinking on the subject of conversion boards designed to allow a single rig to operate on all licensed frequencies. We were told: "There are a number of problems in this area, not the least of which is the fact that new sets will be required to exhibit a greater degree of suppression of harmonic and other unwanted frequencies than is required by the current specification, MPT 1320. We feel that it would be impractical to attempt to modify existing models to the point where they were likely to meet the new specification and it is unlikely that any conversion which attempted to do so would receive type approval."

Nevertheless there is a fast growing concern that it will be impractical to try and use two rigs and there is a strong case, as well as a potential lucrative market, for manufacturers being prepared to build a combined rig to the higher standard. On this subject, MP, Sir Patrick Wall told us: "Surely they do not expect everyone to carry two rigs wherever they go? I realise that there may be technical difficulties in meeting all of the legal requirements of both the old and new specifications within a single box but I refuse to believe that these are insurmountable and I shall shortly be writing to the Minister, asking him to give careful consideration to the very real difficulty which the need for two separate rigs would create for the

user."

Asked about the international status of combined rigs, he said: "Since the rest of Europe will be restricted to their present forty channels, I presume that an eighty channel set would still be unlicensed everywhere other than here, at home. A lot has been done to bring about reciprocal licensing arrangements throughout CEPT countries but it is difficult to predict anyone's attitude to a hybrid."

One very important factor which the DTI seems to be hoping we will all overlook until it is too late is the possibility that they might bring in only some of the expected new channels during next year, leaving the remainder until they have sorted out what they describe as the last remaining technical problems. To justify this possibility they cite the fact that the introduction will, in any case, have been achieved in a far shorter space of time than is normally allowed for such events but this view seems to us to take no account of the potential chaos which such a move would cause for manufacturers. Who, in their right mind, would even consider spending the vast sums required to mass produce half a product? If the DTI do indeed follow this course we might well face the spectre of paying a licence fee for the use of frequencies for which no rigs are available. Furthermore, since European and Japanese firms will be producing the real thing, will someone please tell me just how they think they might prevent the use of those channels which they have chosen not to release? I realise that the possible dangers of harmonic radiation have to be overcome but I feel certain that the technical wizards have no real choice but to pull their collective finger out, so that we are not left in a vacuum.

Despite my misgivings over the very real problems which are still associated with the introduction of an enlarged CB service I am still convinced that the changes will be to our advantage. There are, of course, fears for the future of the existing channels but government sources have repeatedly assured us that there are no plans to reallocate the frequencies, or to set a date after which they would no longer be available to us. If this policy is to be continued we must continue to make use of the existing band. How often have I heard the phrase 'use it or lose it!'. My personal view is that we may well find the old band a welcome occasional respite from all that spaghetti.

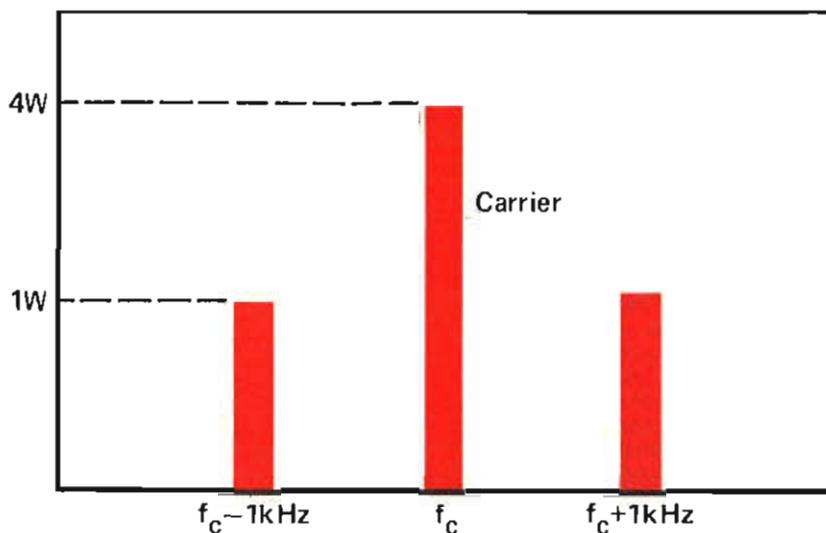
Of the new frequencies, remembering that these were precisely what the early 27MHz campaigners meant when they referred to 27MHz, I look forward to the right to take my car almost anywhere in Europe, without having to worry about whether I was infringing some foreign equivalent of the Wireless Telegraphy Acts and to the occasional opportunity which a bit of DX would allow, to put a little oil on my rapidly rusting European languages.

## Citizen's Band radio has naturally evolved over the years — but how? Paul Coxwell takes a close look

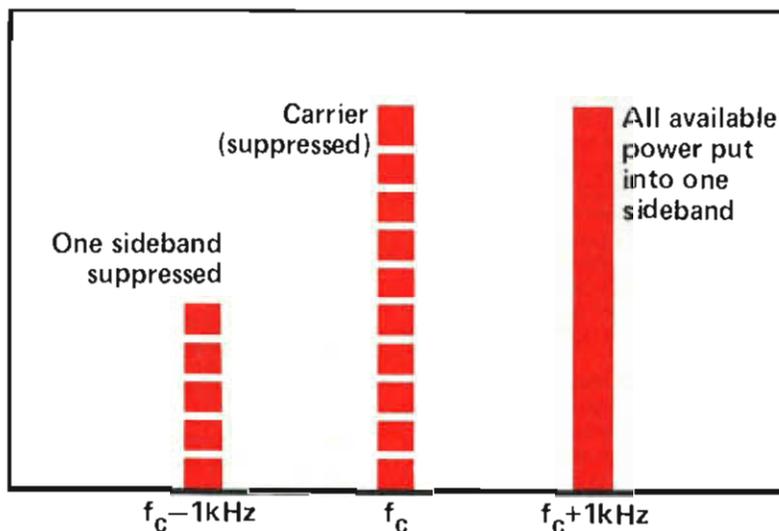
**C**B sets purpose-built for the UK market, having been around for only five years, are all relatively modern and use the latest circuit techniques. It has taken much longer for CB circuitry to evolve into its present form as most people know it in this country. The 27MHz band was allocated to CB in America back in 1958, when much electronic equipment used techniques different to those in common use today. Let's have a look at how the changing times have affected our little corner of the radio world.

Going back to those early days of CB in the States, almost all domestic radio gear was considerably different to that found now. The expensive radios were built in polished wood cabinets, unlike today's chromed hi-fi units. Circuitry used those things called valves — many younger people in 1986 seem to have never seen one and look on them as some sort of electronic dinosaur! The fact remains that valves (called vacuum tubes, or just simply tubes in America) do have some advantages over transistors — though it is easy to start an argument over this with the confirmed solid-state maniac. Solid-state, by the way, seems to be a much misunderstood term — for intentions here you can substitute the word transistorised.

The disadvantages of valve equipment are that it generates heat, requires fairly large amounts of space on a chassis compared to transistorised gear, and for mobile installations requires power supplies that are awkward to get. (Often 6.3V AC and 200V or so DC). Advantages,



( a ) AM signal, modulated to 100% with a single tone at 1kHz



( b ) SSB signal, carrying a 1kHz single tone

Figure 1. AM versus SSB

# FROM CRYSTALS TO

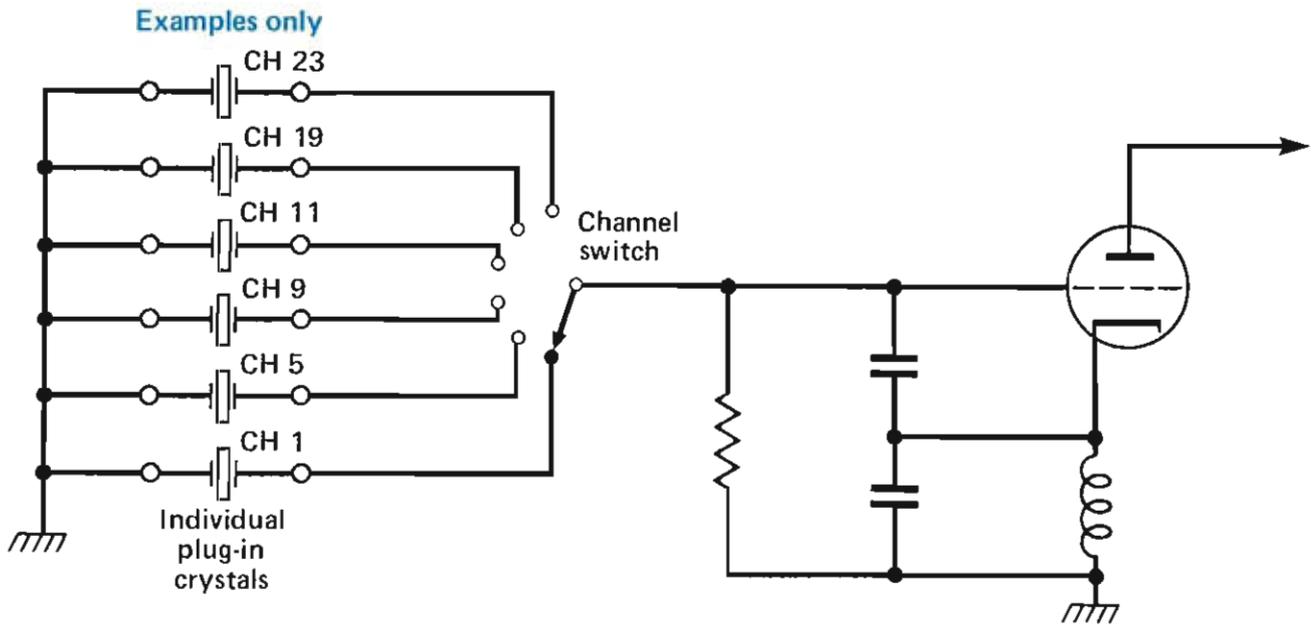


Figure 2. Crystal-controlled oscillator

however, include electrical ruggedness (a valve output stage for example will withstand a mismatched antenna far better than a transistor), some circuits are much easier to arrange with valves and in some applications valves simply work better. Just in case you're interested in such things, in the event of a nuclear war it is quite possible that a valve set will still be working when its transistorised cousin has malfunctioned due to radiation! To sum up then, whilst valve equipment these days would be expensive to produce and somewhat bulkier than solid-state gear, it would give good performance so long as the design was sound.

Those early CB rigs were AM only. AM receivers and transmitters are easy to align and use and this was the standard mode of transmission in those days. Some radio amateurs (hams if you prefer) these days have called AM (Amplitude Modulation)

Ancient Modulation. Whereas thirty-odd years ago AM was in common use on the ham bands it has now declined to the point where the main use is for local chats on a Saturday morning when everyone gets together to talk over their latest designs or whatever. On the shortwave bands SSB rules the airwaves from the amateur point of view — it is far more efficient than AM at getting a readable signal to the other end, it doesn't need such hefty power supplies for the transmitter and it uses up far less of the limited frequency space available. Against SSB is increased complexity of the set and a need for careful tuning for best results.

Why has SSB come out on top? Fig. 1 compares an AM signal to that from an SSB transmission. At (A) we have an AM transmitter sending out a single tone at full modulation. The carrier power is 4W — this is what you would see on a power meter when keying-up with no modulation. A fully-modulated AM transmitter increases its output power by 1.5 times above a plain carrier. So the overall output is 6W, 4W in the carrier and 2W in the sidebands. However, this 2W is distributed between both the upper and lower sideband, so each sideband has a peak power of 1W. As the two sidebands are a mirror image of each

other, one is superfluous. The carrier holds no voice content and is therefore also a waste of power. So to get 1W of signal conveying all the information we need, we're sending out 6W in total.

By suppressing the carrier and one sideband all the available power can be put into the other remaining sideband — obviously a much more efficient way of using the available power. As you know, British CB is FM which is different again. FM has gained popularity over the years with more demand for compact portable equipment, such as 2m band handhelds. FM equipment does not have to be so complex as SSB, so miniaturisation is easier to achieve. A 4W FM transmitter doesn't consume as much power as a 4W AM transmitter — remember that with AM the output increases as you speak — so FM is ideal for cheap battery power gear.

Apart from changing from valves to transistors, just about the biggest other change in CB sets has been the way in which all the different channels are generated. Early sets often had just 6 or 8 channels accessible from the channel switch. They used a separate pair of crystals for each channel, these being switched into use individually as required.

Fig. 2 shows a typical circuit — don't worry about those resistors, capacitors etc. You can see that each channel uses its own crystal, usually a plug-in type so that they can be

# PLLs

changed. Two such circuits are often found, one for the transmitter, one for the receiver and the switch is a double pole type. To get six channels therefore, twelve crystals are required. Sets could be supplied with just a couple of channels fitted and the user could then add crystals for his favourite channels when needed. Before 1976/77 America had 23 CB channels so to build a set to cover all channels would take 46 crystals!

Unfortunately crystals are one of the most expensive parts on the circuit board and in such a set the cost of these could easily equal the rest of the thing put together — not to mention the space they'd use up. Obviously another way had to be found to make compact, cheap 23 channel rigs. The result is frequency synthesis, and fig. 3 shows such a scheme in block form. Whenever two frequencies are mixed together there are four basic resultant signals — the two originals, their sum and their difference. This is used to great advantage in many radio circuits. Let's see what happens on channel 1. Oscillator A is switched to 23.29 and oscillator B is switched to 14.95MHz. These two signals are mixed together giving a sum of 38.24 and a difference of 8.34MHz. We are only interested in the 38.24 signal, the other being filtered out. On transmit, oscillator C runs at 11.275MHz, which is mixed

with the 38.24 from above. The sum is 49.515 which is removed and discarded. The difference frequency is 26.965MHz — the frequency of channel 1 (note that American channels bear no resemblance to the frequencies of British channels). Now if we switch to channel 2, oscillator A runs at 23.29 and oscillator B at 14.96, giving a sum of 38.25MHz. Mixed with 11.275 this gives us 26.975MHz — the frequency on channel 2 and so on.

When the rig is switched to receive, oscillator C runs at 11.73MHz which causes all the frequencies to be 455kHz (0.455MHz) lower than for transmit. Why? Going back to the switched crystals of fig. 2, you'd find in these sets that the frequencies of the receive crystals are either 455kHz higher or 455kHz lower than the channel frequency for the same reason. Receivers convert the signal down to 455kHz where most of the amplification is applied. Let's take channel 1 — 26.965MHz. A signal 455kHz above or below this frequency will give the required 455kHz signal when mixed with it. So we could use either 27.42 or 26.51MHz. In the scheme used in fig. 3 you'll find that the output on channel 1 receive is 26.51MHz; this is mixed with the received signal to give the 455kHz signal needed.

Right, you can put away your

pocket calculator for a while now. The scheme described is one used in many older 23-channel American sets, and a quick count will reveal that 12 crystals allow transmission and reception on all 23 channels. Another similar scheme uses 14 crystals and just two oscillators to achieve similar effects. These two arrangements constitute the majority of 23 channel mixing schemes. The later 23 channel sets started using more sophisticated ways of generating the frequencies, and when 40 channel rigs appeared these circuits were invariably used. Imagine trying to build a 40-channel set using separate crystals for each channel — you end up with 80 crystals at a cost of probably a couple of hundred pounds. Even using crystal synthesis like the older 23-channel sets, you need quite a few more crystals to get all channels and once again space and cost make the idea uneconomical. So in came these Phase-Locked Loop contraptions you've probably heard about.

Fig. 4 shows a typical loop from a CB set. Get that calculator ready again! Starting at the top left a crystal oscillator provides a stable reference signal. This is invariably 10.24MHz. The reason for this may not be immediately obvious, but if you're a computer fiend you'll realise that it is very easy to divide by 1024 with digital circuits (divide by two 10 times).

To crystals

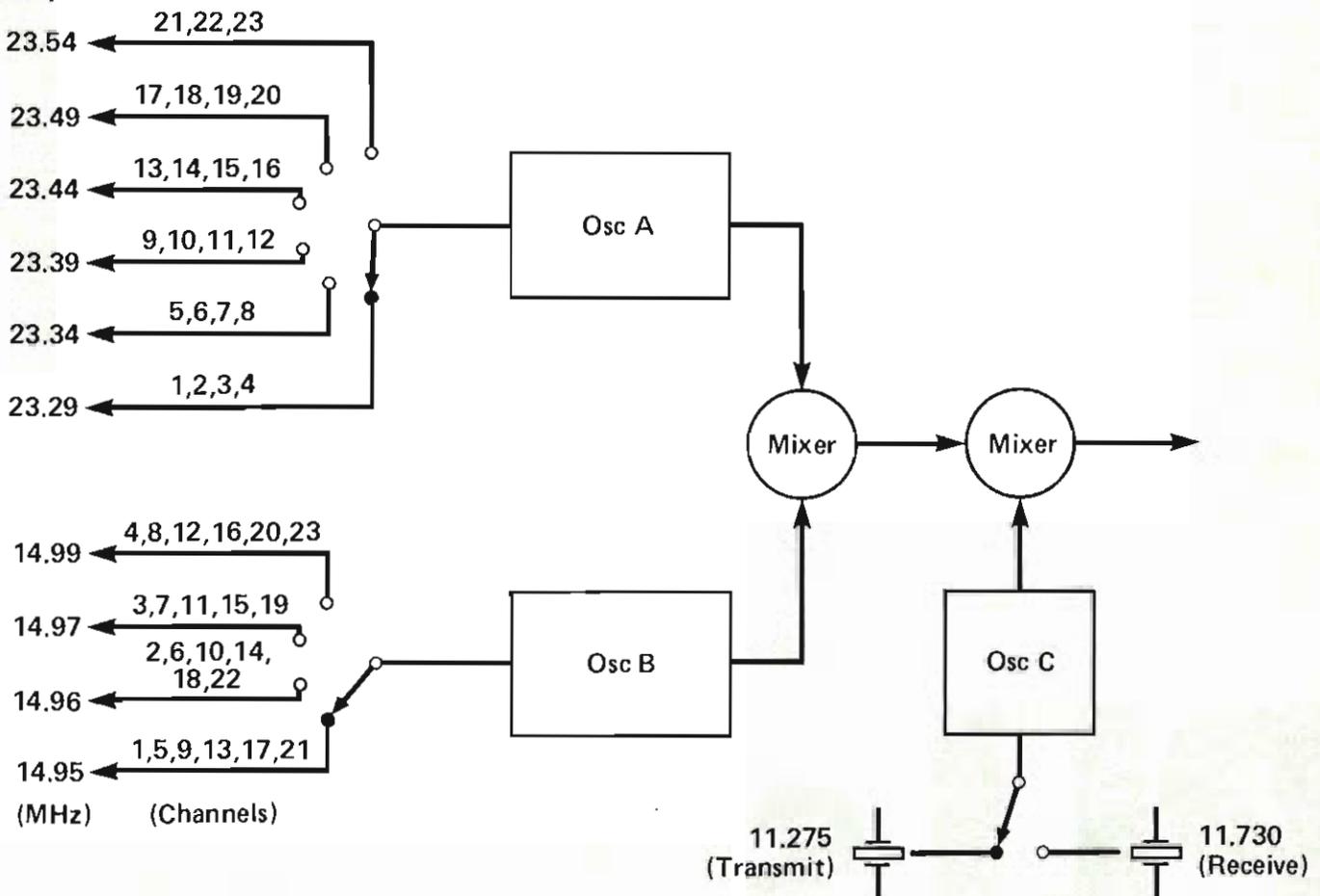


Figure 3. Frequency synthesis

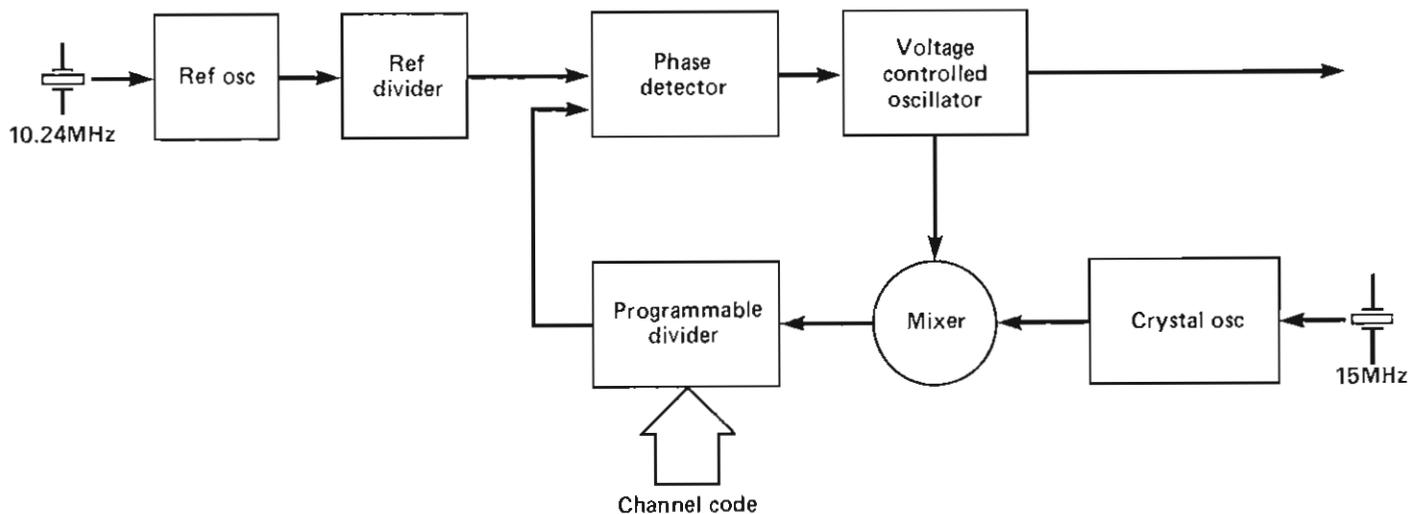


Figure 4. Simplified phase-locked loop

This is done by the reference divider, and the resulting signal is an accurate 10kHz. If you're wondering why we don't just generate the signal at 10kHz in the first place the reason is that it is a lot easier (and therefore cheaper) to make 10MHz crystals than 10kHz crystals. Even with the extra divider circuitry. That 10.24MHz also comes in handy for other uses in the set as well. Remember that CB circuit designers always have one thing in mind — think cheap. If they can use one part of circuitry to do two or three jobs they will. Back to the PLL. One input of the phase detector now has a stable 10kHz signal. Now the idea of the loop is to have another similarly accurate 10kHz at the other input — only this one comes from the oscillator that will feed the rest of the set. If this signal tries to drift either too high or too low, the phase detector senses this and adjusts the VCO (Voltage-Controlled Oscillator) to compensate and bring the signal back to the right frequency. The oscillator may run at typically 16MHz or so and therefore must be divided down to give 10kHz. The early PLL devices couldn't cope with such high frequency inputs so a mixer was inserted in conjunction with another crystal oscillator to lower this frequency to one more suitable for the PLL chip.

An example or two should help. Let's assume that for channel 1 the oscillator must run at 16.27MHz. This is mixed with a constant 15MHz source giving a "downmix" signal of 1.27MHz (16.27-15). This feeds into a programmable divider, which is a clever piece of digital circuitry that allows division by whatever number you feed into it. For channel 1 the channel switch will give a code of 127. So 1.27MHz is divided by 127 which gives an answer of 10kHz. Just what we wanted! Switching up to channel 2 causes the code to change to 128. The oscillator is now made to run at 16.28MHz so the downmix becomes 1.28MHz so keeping the divider output at 10kHz. Pretty nifty eh?

Newer PLL devices gradually appeared that could handle the higher

frequencies of the VCO, so that the intermediate stage of mixing with another crystal signal became unnecessary. By this time there was great demand for extra channels to be fitted on sets, and it obviously didn't take long for people to start modifying sets to do this. The earlier crystal-synthesis sets just needed a crystal or two changed to allow operation on maybe 5 or 6 new channels.

The PLL units brought with them much easier modification, as changing that 15MHz loop crystal allows another 40 channels. It is also possible to change the code fed to the divider by the channel switch, which gives the same end effect. The loss of the loop mixer with the newer devices meant that this was the only reasonable way to expand rigs.

## Converter

The newest PLLs used have a ROM code converter built into them. Once again computer hardware nuts will know exactly what is meant, but for all you others in this application the ROM just converts one set of numbers to another. Just like having two columns of figures on a chart and looking up one from the other.

These modern PLLs have the reference oscillator/divider, phase integrated-circuit, so getting at the PLL is very difficult. This integration meant rigs could be made nice and cheap with just a couple of crystals in the whole set. These PLLs are nearly impossible to modify so that getting extra channels on such sets is simply not worthwhile. Many authorities throughout the world now require newly designed CBs to use such circuitry — just to stop operation on unauthorised channels.

Most UK sets fall into this category, but curiously the British government have not yet made such a rule. The reasons for using these circuits are those already given — low component count and cheapness. The I.C.s are identical except for different programming to give the different channels. And here we must leave the fascinating subject of phase-locked

loops, though there is much more that could be said.

Other changes in CB technology have been more gradual and subtle. Sets moved from valves through to transistors to integrated circuit designs. Modern sets often use integrated circuits for the audio output and often in the IF/demodulator section of the receiver. Sometimes you'll find them in the microphone amplifier or transmitter (on multimode sets). Most other parts of the board still use discreet transistors but in the future we'll probably see more and more integration into "silicon chips". The outer appearance of sets has changed just like that of all electronic gadgets to keep up with the times. What else is possible now for CB users? Many additions to CB sets are possible now, but nobody in the CB world seems to use them. Just about every teenager now has a home computer even if it is only a cheap plastic doorstop type! Why not get together with a few friends from school and use your CB for exchanging programs over the air, or for playing some interactive games. Chess could be played on air with each move being transmitted for the distant system to display on its graphics screen. Perhaps you'd prefer a two-player adventure game, or even a multi-user set-up like computerised dungeons and dragons. These aren't visions of what may be available in the future — this is all possible on CB now.

What of the future? Large Scale Integration of components onto chips means that more and more circuitry can be crammed into smaller and smaller areas. Scanning receivers are now very popular for VHF bands — and maybe the idea will eventually catch on for CB as well. And how about the CB picking up data from voluntarily set-up stations providing digital control of a readout for local directions and traffic information? Whilst technically possible at the moment the future may hold all manner of such systems. The future development of CB is being founded by the work going on now ...

As we all know, anything electrical is prone to occasional failure. Paul Coxwell looks at CB set-ups in particular

# SAFETY FIRST

**S**top! Before you turn the page and move on to the next article just stop and think for a moment. Do you have a safe CB installation? Yes? Perhaps there's something you've overlooked, that's just waiting to happen at the worst possible moment. Or maybe the installation is safe, but the way in which it was set up is not. Safety comes in many forms, and we'll take a look at safety to yourself as an operator/installer, safety to other people and safety to your own equipment. Please take the time to read on, and let's hope you learn some of these points by reading and not by experience.

Right, let's start off at the rig itself and associated power supplies. Assuming you run your home-base from the mains supply, we have a problem area straight away — mains plugs and fuses. Hands up everyone who doesn't know how to wire a 13A plug? With a cord grip at the bottom, the blue (neutral) wire goes to the left, brown (live) to the right and the fuse, and the green/yellow (earth) to the top. Leave the earth wire with some slack so that if the cable ever gets wrenched out of the plug it will be the last wire to be disconnected. Similarly the live wire should be shortest so that it will disconnect first.

With the relatively thin cables used for CB power supplies it is often best to double-over the end of each wire. Strip off about a ½-inch of insulation and fold the bare wire back on itself. This gives a better grip once tightened in the screw clamp. One other point — don't try to tighten everything too much, you'll just start cutting the wire and make things worse. Make sure the wires are gripped firmly, but not to the point of having strands of wire cut. If you're using the type of plug which has nut and washer to clamp the wires down, wrap the wire clockwise around the pin so that when tightening the wire doesn't get pushed outward. If you want to, you can form the wires into a loop and tin them with solder before fitting the plug. Tighten the cord grip over the outer insulation of the cable. If the grip is broken, as often happens with cheap plugs that have been used a few times, either replace it or find some other method to clamp the cable. When the thread in the clamp goes it is often possible to replace the two self-tapping screws with some 6BA nuts and bolts. In any case the cable should be held firm to prevent pulling on the connections.

So now there's just one more thing before replacing the cover — the fuse. Just because it's a 13A plug doesn't mean it needs a 13A fuse, as some

people would have you believe! Unless you're using a very big linear amplifier (and I mean very big — a kilowatt or so) or a 3A fuse is plenty. In many cases the smaller 1 or 2A fuses will suffice, but these are in short supply these days. There is one exception to this rule — some power supplies use a special type of transformer which has a high switch-on surge, i.e. it takes a lot more than its normal current for a fraction of a second as you switch on. All transformers do this to a certain extent, but the construction of these toroidal transformers means the effect is much more noticeable. In such cases you may need a 5 or 7A fuse in the plug. Power supplies using such devices will incorporate a smaller anti-surge fuse in the unit itself to protect everything.

Many units of the standard type also have a fuse on the unit itself, usually rated at 1 or 2A. Don't replace these with silver paper and bits of wire wrapped round the burnt-out fuse! Fig. 1 shows the action of fuses. Suppose an internal fault in the transformer causes a short as shown dotted by (a). A much greater than normal current flows, causing the fuse wire to get hot and melt, cutting-off the power and protecting the circuitry.

Now what happens if you've bypassed the fuses with bits of wire?

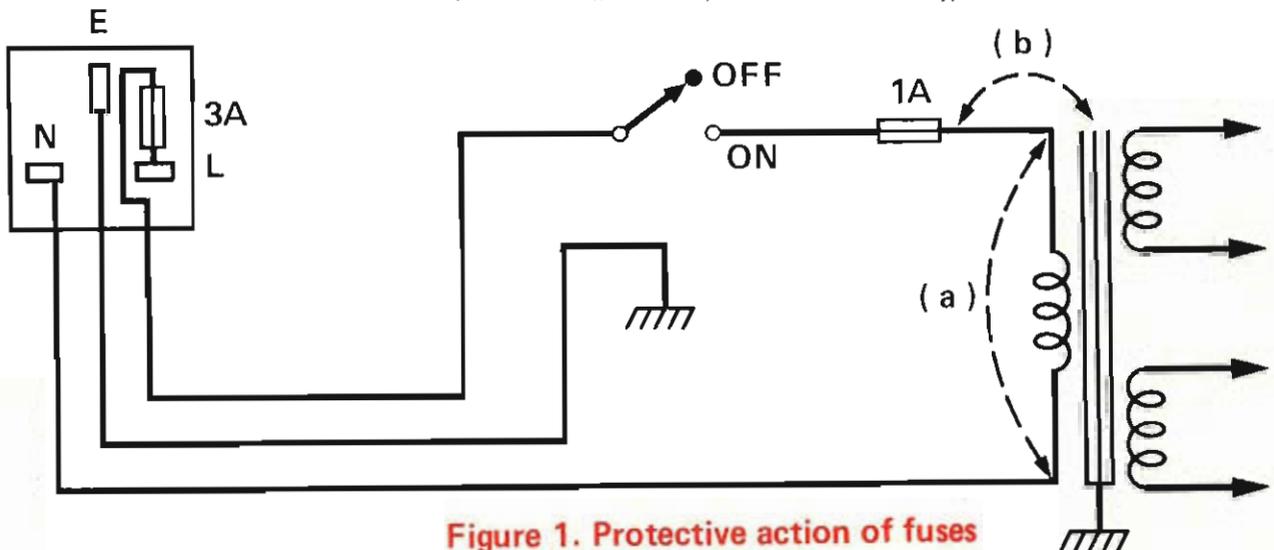
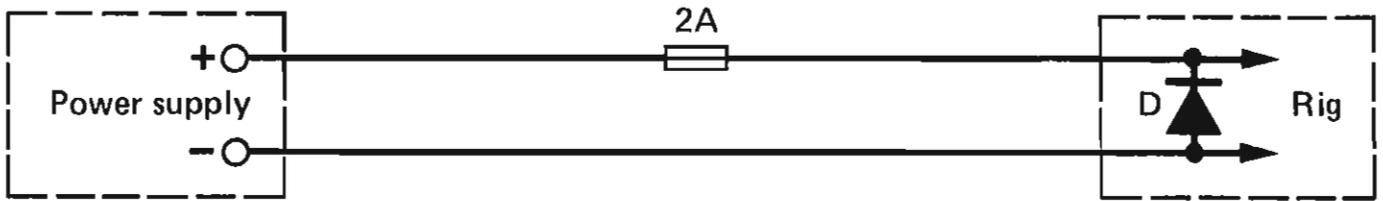


Figure 1. Protective action of fuses



**Figure 2: Protection diode in rigs**

OK, I hear you shout, there's a fuse at the main fuse box feeding power to the sockets, won't that protect everything? Afraid not. That big fuse is likely to be a 30A device, or at best a 15A. What if that short in the transformer winding causes, say 12A to flow? No house fuse will blow and even a 13A fuse in the plug won't either; it actually takes much more than 13A to blow a 13A fuse. The result — the transformer and power supply wiring starts getting hot and eventually will melt insulation and quite probably start a fire. There is a story about that says the first ever fuse was invented right after the first ever short-circuit was discovered!

Now look at the fault shown at (b) in fig. 1. In this case, a fault has caused the live side of the winding to short to the metal core of the transformer and therefore the metal casing of the power supply. Not shown on the diagram is the fact that the neutral of

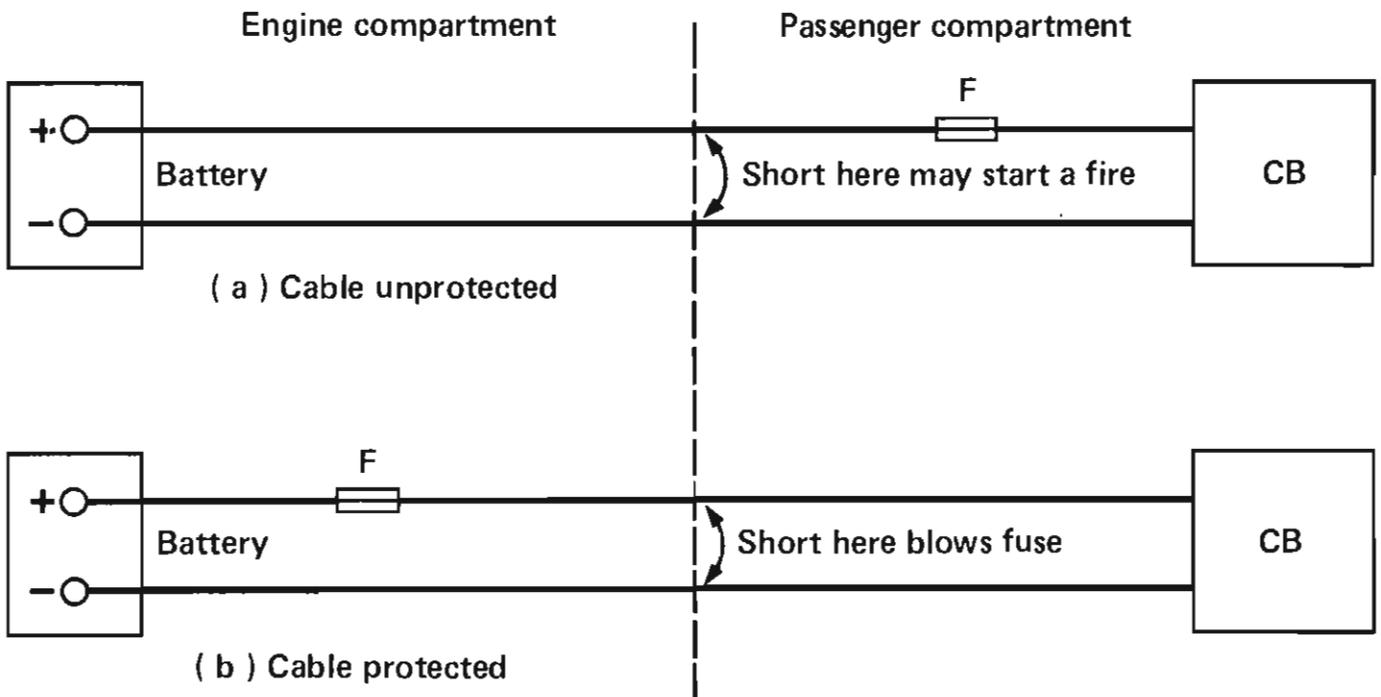
the mains supply is earthed by the electric company, so the live wire is not only 240V above neutral, but also 240V above earth. So the short causes a similar result to that already described, and the fuse blows.

### Dangerous

Now for a really dangerous situation — what if somebody didn't connect the earth wire in the plug and this fault occurs? There is no circuit back to earth for the fault-current, so the supply will carry on delivering its 12V output. However the entire casing of the supply will be at 240V, and anyone unfortunate enough to come into contact with it may well get zapped! Maybe you've connected yourself across 240V dozens of times with no serious effects, but there's always the first time. And what if the kids happen to be the ones who discover the fault? People's reactions

to electricity vary enormously, and plenty have been killed from touching 240V. Voltages as low as 35V have been known to kill in the right (or should it be wrong?) circumstances. So check all your mains plugs — the comments here apply equally to all household gadgets.

Before leaving the subject of power supplies, there were a number of rather dubious quality units around a few years ago, and many of these must still be in use. Some had poor quality transformers that overheated, others used power switches unsuitable for our 240V supplies, some had fuses in the neutral and so on. (Just think of the effects of a fuse in the neutral when a live-to-chassis short occurs). Unplug your power supply, remove the cover and trace the input wiring to make sure the fuse is in the live and also check that the earth wire actually connects to chassis. Make sure you securely replace the cover before



**Figure 3: Location of fuse on mobile set-up**

reconnecting. If you don't feel competent enough for such things then take the thing along to someone who is.

One last thing — if you need a longer cable, either replace the entire length with one longer or use proper plugs/sockets or cable joiners. Please, no "chocolate-block" screw connectors or wires twisted together with PVC tape — these are just asking for trouble.

OK, on to the low-voltage side of the supply. Some fuses are incorporated in power supplies in the low-voltage side and the same points regards use of the correct values apply here. Follow the recommendations given in the unit's handbook or on the panel. Connect your rig to the supply using an in-line fuse of around 2A. This should adequately cover all UK rigs and multi-mode sets. Larger fuses will only really be needed for feeding linear amplifiers. Here is where we meet up again with safety of your equipment. Connecting transistorized equipment to a supply the wrong side round causes rather nasty things to happen to the circuitry resulting in it not working! Because it is well-known that people have a habit of so connecting equipment, many sets incorporate a reverse-polarity protection diode in the rig (see fig. 2). Under normal conditions this diode (d) has no effect at all, but if the power input should be reversed, the diode conducts and places what is almost a complete short across the input. This causes the fuse to blow, therefore protecting the set. Of course, if there is no protective fuse then some other part of the equipment will blow! It could be argued that an in-line fuse to the rig is not necessary with a properly fused and/or current-limited power supply, but as most sets are supplied with such a fuse-holder it is a cheap extra line of defence.

In the case of an automotive installation, the in-line fuse is absolutely essential. Feeding from the accessory terminal in your car the only protection provided is the car fuses, which are likely to be 10 or 15A or more. Some cars don't have any fusing! Always remember that whilst a car battery is only 12V it can deliver hundreds of amps if shorted — certainly enough to set fire to the car. If you feed your set via separate cables taken right back to the battery terminals, put a fuse as close as possible to the battery, otherwise you have a long run of cable unprotected. (See fig. 3).

Finally, whilst almost all modern cars are negative-ground and CBs are supplied accordingly with the fuse in the positive lead, if you have a positive-ground vehicle, put your fuses in the negative lead. Check that any rigs you propose to install in such a vehicle are suitable for positive-ground operation or you may find you end up with a permanent short-circuit.

Continuing on the line of mobile CB, let's move from electrical safety to mechanical safety for a while. Your set and any accessories should be firmly

attached to the car. Having loose rigs balanced in front of the gear lever is really tempting fate a little. Cables can get tied around where they shouldn't, so make sure the power and antenna cables are neatly held out of the way of the gear stick and pedals, and can't get wrapped around your foot or anything like that. The choice of where to fix a mobile rig requires careful consideration for a number of reasons. From the point of view of safety it must be in a position where in the event of an accident it is not going to injure anyone. Accessibility may also be

**“In the case of an automotive installation, the in-line fuse is absolutely essential”**

desirable in an emergency, so think about that too.

Using microphones while driving is a subject about which much has been said recently. Don't fit the rig where the mike cable has to be stretched to its full length to reach you — as well as being awkward and possibly dangerous it'll put unnecessary strain on the wiring. Make sure that with the set in its intended position the cable doesn't stretch across controls you may need to get to in a hurry, and be sure that you can drop the thing quickly if need be without getting tangled up in the steering-wheel or anything else. Small mikes to clip on your shirt or jacket are available, and keep wires out of the way, and you can get a small switch to fix on the steering column or gear stick to switch from receive to transmit. Probably the safest from that respect is voice-operated

changeover (VOX), but this can be difficult to arrange in a mobile where there is a high ambient noise-level. Look at the ads, there's a wide variety of such equipment available these days.

Another point worth bearing in mind when fitting a mobile set is the glare from the lights when driving at night. It doesn't take much distraction to cause an accident. Some rigs offer a dimmer control, but often it only dims the channel display. It is the meter light that is most distracting and needs dimming really — get your repairman to dim the lights down for you if necessary. If you really want to be fancy you could arrange for the lights on the rig to dim when you switch on your headlights!

Now, on to antennas and masts. Firstly, let's get the obvious out of the way — yet again, but no doubt not for the last time, *keep clear of overhead lines!* Unless you are 100% certain of what an overhead wire is, assume it to be potentially dangerous and avoid it. Antennas in America are required to have a warning notice attached that says “DANGER — WATCH FOR WIRES. You can be killed if this antenna comes near electric power lines. READ INSTRUCTIONS”. It is a pity that only some manufacturers include similar labels on products sold in this country, as they would at least keep pressing this point on people. It is not only CBers that have this problem — two engineers from a local radio station were killed in this way. And if you already have an antenna too close to power lines, don't try to take it down — contact the electric company for advice, they may insulate cables for you to remove your antenna or arrange some other suitable solution.

Remember, too, that while antennas are not very heavy when made of aluminium, once you have 20 feet of rod half way up a ladder it doesn't take much of a breeze to make putting it up difficult. If you can't manage get someone to help rather than struggle on your own and end up falling through your garage roof. If your mast is sizable then it will need guying.

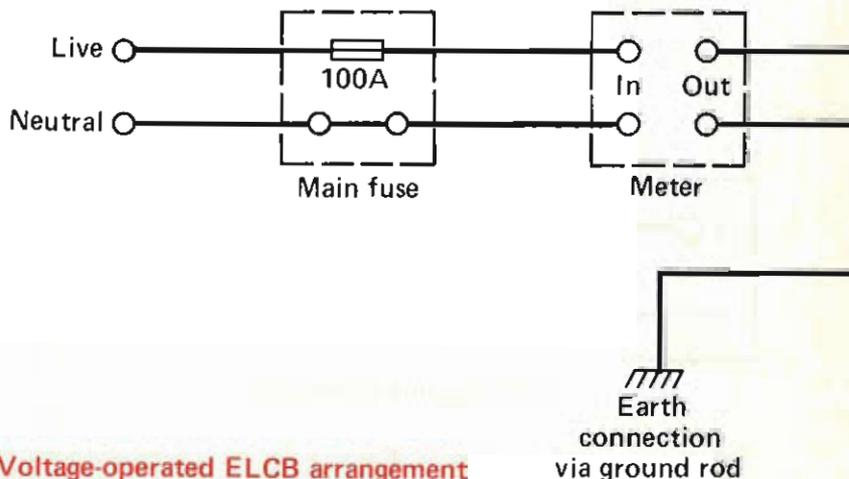


Figure 4. Voltage-operated ELCB arrangement

Long unsupported masts will sway in the wind putting strain on a certain point causing stress to the metal and maybe a fracture over long periods of time, and 40 feet of mast crashing through your bedroom ceiling is not the best of alarm clocks!

Anyone remember Benjamin Franklin? He's the bloke who went flying kites in thunderstorms, touching keys on the wet string and getting sparks. Crazy? Maybe not, because putting an antenna up in the air and connecting it via coaxial cable to your set is not all that much different. If you live on a hill it's even worse. Now let's get one thing straight at the start — if your antenna suffers a direct lightning strike it'll get melted! There's no way you can protect your antenna from a direct strike, but you can minimize the damage to yourself, your home and equipment. At least in this country we don't get the severe electrical storms that are experienced in some other parts of the world.

If your entire antenna support is metal, such as 2" mast or (for the rich) a tower, the best thing is to have the base set several feet into the ground to provide a good earth connection. Clamps can be used round masts to join thick heavy cable which should be run straight down to a solid pipe several feet into the ground — the more the better. Thick heavy earth cable means just that — at least 10 or 16mm<sup>2</sup>, preferably more. The connection clamps must all be clean and secure, the idea is to get the lowest possible resistance to earth. Having done that you can install one of those "lightning arresters" in line with your coax. The ground lug on it should be connected by thick cable to your ground rod, though this cable need not be as hefty as the ground on your mast, 4 or 6mm<sup>2</sup> is suitable and easily obtainable. Once again, these arrester devices will not provide any protection against a direct strike — they are there to prevent static discharges from nearby strikes damaging the input circuitry in your rig. Keep all connections to the ground rod as short as possible and weather-proof where necessary.

Incidentally, a good ground connection on your antenna may well improve its performance as well, so the outlay involved can be appreciated from both angles.

Once we have a good earth on the antenna, there is one other problem with earthing that may crop up. You may have it already without realizing it. In some parts of the country houses are fitted with a device called an "Earth Leakage Circuit Breaker" or ELCB for short. These are wired as

**"... don't touch any adjustment unless you know exactly what you are doing ..."**

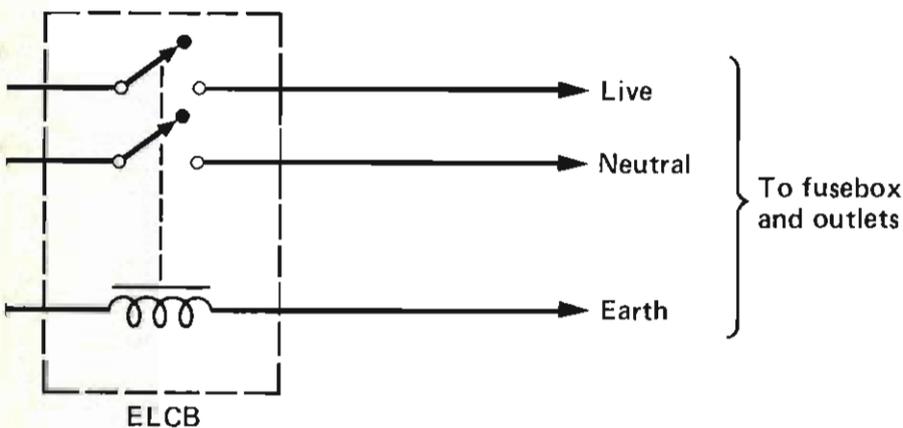
shown in fig. 4. All the earth terminals from sockets and lights etc. around the house are wired back to the coil of the ELCB, and the other side of this coil is connected to earth by a ground rod. The idea is that any voltage leaking to earth causes a voltage to be developed across the coil, and when this reaches a certain value the main switch in the circuit breaker is "tripped" and switches off power to the whole house. The reason for using such devices is where the earth resistance is not low enough to cause enough current to flow to blow a fuse in the event of a fault. With your antenna well earthed the outer braid of the coax is grounded, and so therefore is the chassis of your rig when it's connected. Some rigs have the chassis internally connected to their negative power lead, and many power supplies have their negative terminal connected to the casing, which is in turn connected to the mains earth.

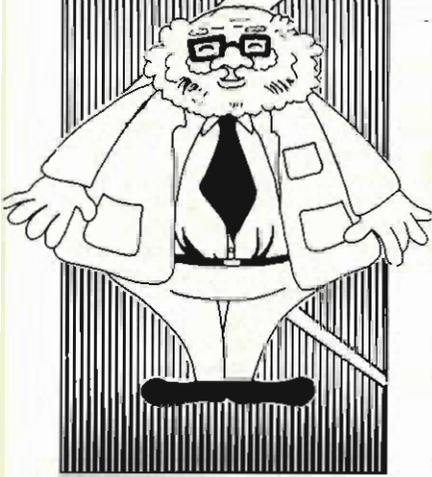
To see if you have this problem or not, with everything switched off use an ohm-meter or battery and bulb to see if the negative lead of your set is connected to chassis. If not there's no problem, but if it is try the same test on your power supply. If this also has it's negative connection joined to chassis then a potentially dangerous situation exists because you have effectively shorted out the coil in that ELCB. This removes or impairs all protection the circuit-breaker offers from the whole building. Somewhere along the line that earth-loop must be broken. It is possible to disconnect the earth from the power supply but in view of what was said earlier not advisable. A better solution is to "float" the negative power outlet of the supply, so it is no longer connected to earth. If you do not have sufficient knowledge for this task yourself then consult your local repairman. A similar problem may exist with base station units and the remedy is the same. Note that houses with circuit-breakers of the current-operated type do not have this problem.

If all this talk of floating lines and ground-loops is beginning to get all too much, then don't worry, we're nearly done. Lastly, a word about fiddling with rigs. For the safety of the set don't go prodding around inside unless you know what you're doing. It is fairly easy to blow delicate components by momentarily bridging a couple of connections. Turning all the adjustments inside may have more effects than you bargained for. If you find afterwards that you can only hear a mile away, or that nobody can hear you shouting "one-four for a copy" it's not really that disastrous, but if you end up transmitting on channel 10 and you're wiping out channel 9 as well it might just stop getting through in time to someone. (Over-deviation specialists please take note!)

Some people try tuning every coil in the transmitter for maximum reading on the meter. While in many cases this is perfectly alright there are some adjustments that attenuate harmonics and tuning for maximum reading on the panel meter you are setting the rig up to radiate maximum interference rather than minimum, so beware! Obliterating an episode of *Coronation Street* may not be all that bad (except for you when the fans find out who it was!) but wiping out emergency communications is, so please, think of this aspect of safety too and don't touch any adjustment unless you know exactly what you are doing and why, and you have the necessary equipment to set it correctly.

Well, I hope it hasn't been too boring for you, and maybe you now have one or two things to go and check out. Always remember that electricity is a wonderful tool, but you must also respect it as it doesn't always give a second chance. Never touch anything you don't fully understand and be careful. There is no reason why CB cannot be safe, whether used for business, hobby or just keeping in touch with friends and relatives.





# ROUND AND ABOUT

**Roundhead, our roving reporter, tells of some interesting contacts over the airwaves**

**I**f we stop to think that, for most of us, switching a rig on and off and chatting with the world at large is an automatic action, spare a thought for those who have disabilities and for whom operating a CB set is, or can be, a supreme effort of mental and physical will-power.

Not only is the actual working an exercise in sheer concentration but the ability to make the brain and speech co-ordinate — so that others can understand — is something we all take very much for granted. As if these problems are not enough, the handicapped breaker can have the added burden of "receiving stick" from idiots who, with sarcastic jibes, "take the mickey." The true hero for me is the breaker who ignores these morons and quickly learns there are many friendly contacts who will be pleased to exchange news and views. One such hero for me is Bed Tester (known as BT) out of the Collier Row 20. He observes all the niceties of operating and works his rig correctly and courteously. I generally pick him up at Brentwood on my way through to London and copy him as far as Gants Hill. He is an avid reader of this magazine and was kind enough to say he enjoys these ramblings. For Bed Tester, a special breaker, here's a little bouquet from all our readers, sent with greetings and good wishes.

A few weeks ago while en-route for the big city, I was having a chat with Bunk Bed (George) and son Steve from Stowmarket. After advising him the road ahead was "clean and green" my car suddenly drifted from side to side. Horror! A puncture! Happily, Bunk Bed was close-by. He stopped and most kindly assisted me to change the tyre. I say helped me but he did the work. I merely supervised! What a super gesture. The change was made so quickly I felt as if I had made

a pitstop in a Formula One Grand Prix. Thank you George, very much indeed.

Some recent interesting copies include Goldfinch from the St. Cross 20 in North East Suffolk, an area where many of the villages bear the name of a saint. This charming lady breaker is aptly named. She sings out a greeting as I cut across the border between Suffolk and Norfolk on my way through Thetford and the A11 and I get sent on my way happily with good wishes for a safe journey. In the same area recently I copied the Galloping Major. Truly a character, he was complaining sadly about problems he was experiencing with his fiery steed. The old girl was fading, he observed, and did I know of a suitable

watering place for the old charger. I told him of a local hostelry but regretted I couldn't join him. Now there's someone I'd like to meet. So listen out for the Galloping Major — he has a voice that can't be missed — the epitome of the last senior major in the Indian Army! A great sound.

While the Major booms out, Superwheels from the Beccles 20 beguiles. She is the mistress of the double-entendre. There is so much subtlety in her voice. I've listened spellbound on more than one occasion. She too is a great character and believe me despite her own personal problems does try to cope.

I've also spoken to Brown Eyes at Hollesly again who seems to specialise in long distance copies. This time its Spain and North Wales! Also Sample Size, Woodchopper and Shiner and a rig check from both Gunner at Aldeby and Gamekeeper, Beccles, the latter proudly telling me about his dog Penny who seems to be a specialist in retrieving lost golf balls. Further down the road into Chelmsford I heard the familiar voice of Cranefly — giving out a fine signal. There was Nimrod, too and Moped Lady, all courteous and helpful breakers.

Nearer home I had Subsoiler taking me to task for not providing fish and chips to sustain him while he was out in the fields in his tractor. Some time ago I did just that for his friend JD, and haven't heard the last of it! Motoring down what is known as the Bungay to Halesworth straight — an old Roman road absolutely straight for mile after mile — I could see Subsoiler in the distance ploughing, accompanied by a flock of seagulls. It was what we might well term a long distance eyeball. And, passing my front door a day or two ago, came Corn King. A friendly wave and he was gone about his business. CB is a great leveller and maker of friends.

**"The handicapped breaker can have the added burden of receiving stick from idiots who, with sarcastic jibes, take the mickey"**

by

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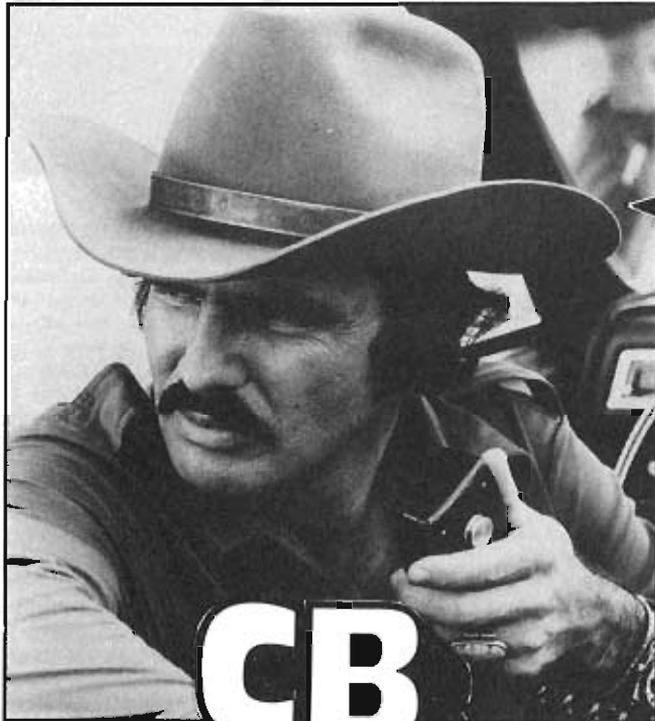
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## CAPTAIN SPARX

# GOLDEN DAYS

Would it be true to say that every CB buff is a sci-fi wonder? Captain

Sparx says forget about Flash Gordon and simply read on

The cause close to Hugo

Gernsback's heart — this 1920s

radio store is one of the many

exhibits at the Electronics

Communications Museum in New

York

**T**he other day, a learned gent said that there was a hole in the sky above Antarctica and that on the whole, it was getting worse. Given the high power of some illegal amplifiers (or 'kickers') used since the advent of CB, it's not surprising that there's no dent in the universe, let alone a bit of ozone fraying above the Poles. Since the advent of radio in the early years of this century, some bright-eyed radio buffs have wondered if Martians might be contacted over the air-waves. Or indeed, characters in distant galaxies. I discussed this with a member of a northern CB club not so long ago, and was about to offer a two quid copy of my idea for a Galactic Communication Antenna, when the genial leader of the fraternity said, "Who'd want to get into more CB than we've got already?" It may have been a bad evening for selling the usual raffle tickets, but I decided it was time to revive the CB aspirations towards sci-fi.

Now, science fiction (or sci-fi) and radio have been closely associated since the early days. After all, robots would probably be controlled by radio, and, as the universe was permeated with something called 'ether', it was only natural that frequency communication would be far easier than actually visiting distant planets in person. In any case, some of the early work on CB radio systems for traffic control read like science fiction, even though they were in essence darned good ideas. Back in the 1960s, one could have thought that by the 1980s, cars would have on-board communication systems giving instant read-out (e.g. on a dashboard LCD



panel) of location, best routes to destination, looming traffic hold-ups and so on. We may be slowly getting that way, thanks to cellular radio and new forms of radio teletext, but CB in general has somehow become disconnected with the mainstream of progressive thought. So, if you never got your GCE in CB Radio and Physics, don't despair. Just concentrate on this copy, and avoid loud cries of wonder until you've finished reading it.

Best example of this link between radio and the science fiction future was undoubtedly one Hugo Gernsback who could well be called 'the father of modern radio discovery'. Quite properly, the great Arthur C Clarke is credited with advancing the prospects of orbiting communication satellites, in a paper published just after the second world war (in 1949). But to Gernsback, must go credit for anticipating much else.

An American, who spent much of his business life in the Big Apple (New York), Hugo Gernsback was born in

1884. At the time the mighty deeds of Thomas Alva Edison were capturing the headlines, certainly as Gernsback grew up. By the time that he was in his early twenties, the perceptive Hugo had written his first book, 'The Wireless Telegrapher' published in 1908, soon followed by a remarkable volume that is greatly sought by collectors today. This 'Romance of the Year 2060' (i.e. one hundred and fifty years forward of the book's publication in 1910) was called 'Ralph 124C, 41 Plus' and among other things, anticipated radar. Dr Myron Shaw of the State University of New York Department of Communications penned a tribute to Hugo Gernsback in the excellent publication of the Antique Wireless Association, New York, some eight or nine years ago. 'The Old Timers Bulletin' piece noted that 'Ralph 124C, 41 Plus' anticipated two-way television, germicidal rays, tape recorders using '1/4" tape, baseball played at night under floodlights, artificial fibres, stainless steel, magnesium's use in structures, and fluorescent lighting. In

passing, it's worth noting that the great inventor, Nikola Tesla (of which more, perhaps, on another occasion) also anticipated an international order in which people communicated by wrist-watch style two-way television, linked to satellites. Tesla was not a native American, but did much of his best work there. No doubt Hugo Gernsback took keen interest in Tesla's ideas.

The special flair that Hugo Gernsback possessed was that of popularising ideas about the future, always essential in any progressive society. He was a dedicated publisher-businessman and in 1908 launched 'Modern Electrics' Magazine, a forerunner of one of America's most popular periodicals, 'Popular Science'. Indeed, all 'popular science' type magazines owe their origins to Gernsback. It was in this first magazine, that the writer serialised his story, 'Ralph 124C 41 Plus' — and it was a rattling good read. Britain had no-one like him, though H G Wells certainly turned out some sci-fi literature, much of it later transformed, with varying success, into films. Wells did not attempt to give a technical basis for his devices, perhaps because he realised what might happen if he did. That anti-gravity stuff called 'Cavourite' which helped get the First Men to the Moon, might well be chocolate yoghurt for all we know about the formula. Like any good story-teller, Wells concentrated on character and plot, though even Wells used a form of Earth-to-Moon communication at the end of his 'First Men on The Moon'. Hugo Gernsback was far better in explaining the basis of the 'future inventions' he included in his narratives. Inventor of the word 'Television', he was specially interested in future developments in radio, and his expertise obviously impressed Dr Lee De Forest, inventor of FM communication and transmission systems. De Forest thought highly of Gernsback's work. And if you were one of those who realised that Britain's motorways have as many holes as the ozone above the South Pole this summer, recall that Gernsback described a new kind of trans-continental highway. It never wore out, and was made of metal. However, use was restricted to electrically-driven cars, known as 'electrobiles', since Gernsback foresaw the ultimate demise of the petrol/gasoline automobile, partly through the problems of pollution, partly through necessities of energy conservation. In any case, components in the 'electrobiles' would last many times the life of those in conventional automobiles.

'Voice prints' — so often discussed in CB papers over the years, sometimes in respect of clobbering abusers of the medium — were anticipated by Hugo Gernsback more than seventy years ago. Electronically produced patterns of speech can have the same kind of individuality as fingerprints, so that future security of cars, buildings, computers, etc can be assisted by use of voice print techniques. That is, a car of the future may have two locking mechanisms,

one conventional though better than that available to most of us right now; the other based on the owner's (and other approved users') speech pattern. So one could go on, listing the possibilities detailed in Gernsback's work, much of them to do with future world-wide, and even inter-planetary communication. Volcanic heat would be utilised for the benefit of mankind, which would also discover that high frequencies applied to plant roots accelerated growth. Background music would be played in public buildings, he wrote, whilst illumination of streets at night would be controlled by environmental-sensitive systems, much as they are today. Heliports were anticipated, and so was wide use of solar energy.



**The great 'popular Science' (see above) and 'Popular Mechanics' magazines from the USA brought a new spirit to do-it-yourself radio in the 1920s and 1930s.**

It makes gripping reading, for those of us here in the late 1980s, to see that so many of his thoughts on an ecology-necessary civilisation, have come to fruition in our generation. Given the problems of diverse space launch vehicles in recent months, it is also worth noting that Hugo Gernsback thought that gravity would be conquered by the year 2000AD in terms of controllable anti-gravity systems for travel by ... flying saucers.

That first magazine, 'Modern Electrics' — published well before the advent of the first world war — triggered a keen interest in radio. Hugo Gernsback was asked to print the catalogues issued by The Electro Importing Company, one of the few organisations then offering radio construction kits and components by mail order. No wonder, Gernsback was soon known as 'The Father of Amateur Wireless'. At any rate, he brought out a new magazine in 1912, 'The Electrical Experimenter', later (1920) known as 'Science and Invention'. In 1919, he launched 'Radio Amateur News', which as a re-named 'Radio News'

nurtured that lively interest in radio communication that has served the USA (and other nations) well over the years. Some fifty magazines were created by this remarkable man, some of them achieving legend status, like 'Short Wave Craft', published from 1930. It's worth noting that, whilst always up-to-date with his information, and perceptive of the future, Hugo Gernsback paid tribute to the great radio pioneers, some of whom he had known as friends, in his publications. He was one of those who wisely see that any nation that forgets its past is likely to lose its future. 'Radio Electronics' was launched in 1939, a fateful year for Europe.

Though no peace campaigner in the sense of that description today, Gernsback clearly saw that man's wonders could be turned to destructive ends. Did he foresee a final great conflict in which all mankind would be engaged? To answer that, one may turn to the pages of his epochal book, 'Ralph 124C, 41 Plus'. The background of this remarkable book is that of a mankind able to control, and exploit his mechanical, electrical and chemical inventions. But the book also has as its climax a 'running fight in space ... with almost unbelievable and incredible weapons'.

Included in his magazine empire was a spread of sci-fi magazines, including 'Wonder Stories', a favourite of the 1930s. These yarns were more 'prophetic fiction' than 'fantasy', in the sense that Hugo Gernsback wanted to portray possible, even likely futures. Though published in New York, his periodicals had a wide following in Britain, and in other English speaking nations. We're glad to add that Hugo Gernsback lived to a good old age, 83 in fact, and died as recently as 1967. That is, he lived to see some of his ideas come true, and could anticipate some yet to be created before the close of our troubled century.

Throughout his work, the sense of *communication* is uppermost. Long before the great majority of men — including most politicians — Hugo Gernsback foresaw a time when, thanks to radio and television, mankind would be, as McLuhan has it, a global village. Radio, on a two-way and group participation basis, would be 'democratised', not just the province of the professional. Not just nation speaking peace unto nation, but person speaking peace unto person, assuming that mankind's better nature could be enhanced. CB enthusiasts in the USA have included very many who were brought up on Hugo Gernsback's writings. American CB magazines have carried articles, over the years, on the future of personal radio, and linked features, since today's science fiction is tomorrow's science fact.

This, of course, puts the concerned, and creative CB user on something of a pedestal. CB is not merely about personal pleasure, but somehow considering the future — and making sure it doesn't just disappear though that hole in the sky.

It's easy to get confused by the number of different mikes and rigs around. Here, Paul Coxwell tries to simplify mike wiring

# MUDDLED

**M**any of you at some time or other have probably needed to try a different microphone on your set. Maybe you have sufficient knowledge to enable you to wire microphones and trouble-shoot them and so get everyone in your neighbourhood bringing their faulty mikes to you. Or maybe you just want to use one mike on several different sets. In any of these cases unless you're very lucky you'll have discovered that not all rigs use the same type of connectors, and with those that do there is no guarantee that the connection scheme is the

same. Resoldering mike plugs to try something then resoldering them back the way they started is a fiddly, time-consuming process you could well do without. Now what if we could have a set of adapter leads that would allow any mike to be connected to any rig?

Fig. 1 shows the three commonly found pin-outs on UK sets. At (a) are the Cybernet connections, used on Amstrad, Rotel, York, Harrier, Communicators, Binalone, Harvard, Mustang, Major, Midland, Tristar, Ham International and others. Any mike from one of these sets should plug straight in to any of the other sets with no problems. At (b) are the standard Uniden connections, found on

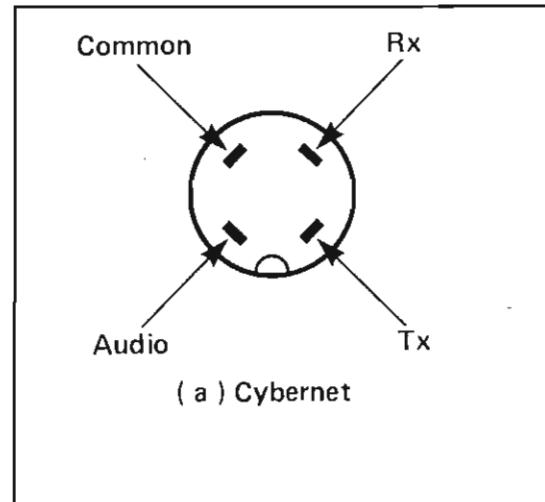
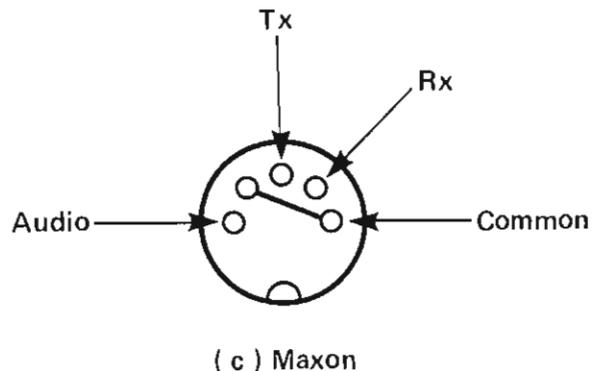
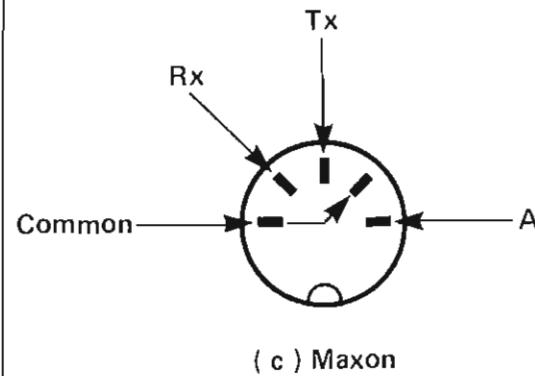
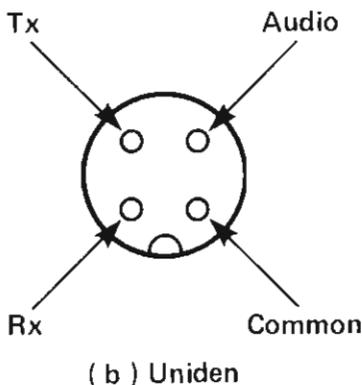
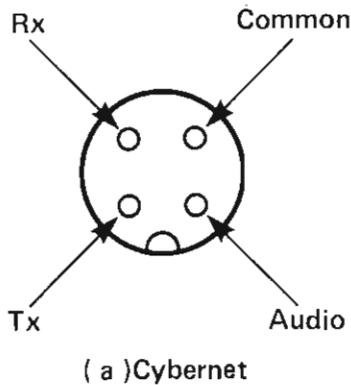


Figure 1. Three common mike connections (Rig connector as viewed from outside)



# MIKES?

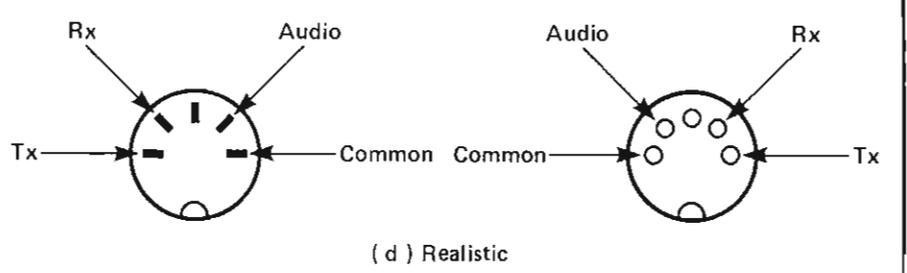
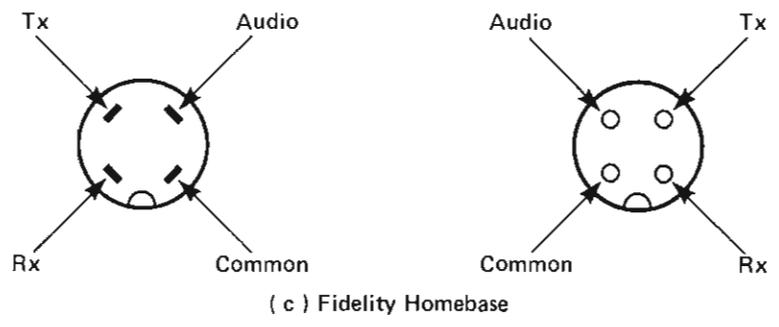
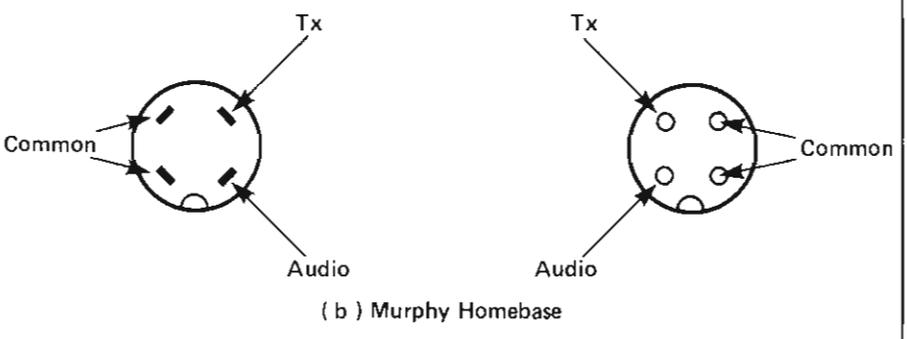
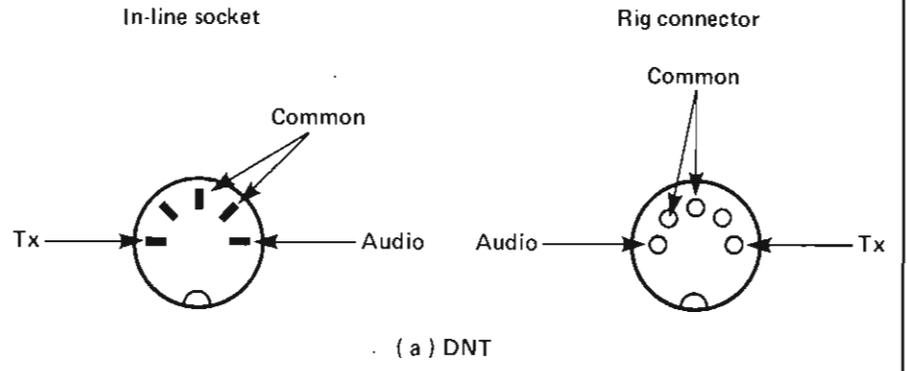
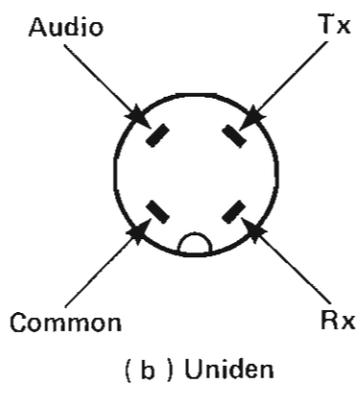


Figure 3. Other UK connections

Figure 2. Wiring to in-line connectors (as seen from solder lugs)

Audioline and Uniace rigs. Sets such as the Fidelity 1000 and all these Gecol, Eurosonic lookalikes use these too.

These connections will also be found on the popular Cobra 148/Superstar 360 and President "Export" sets as well as the Stalker 9. (c) is the standard Maxon connection that uses a 5-pin DIN plug and is found on many of the Korean made sets such as Commtron CB40F, Colt 295 and Maxcom. Note that the diagrams are looking from the outside of the rig, toward the pins of the chassis connector with the locating lug at the bottom. This will also be the view from the solder tag side of the plug on the end of the mike.

A set of six adapter leads will allow connecting any mike from one of these three groups to any rig in one of these three groups. Obviously you need not build all six leads if not

required, and two leads could be connected together. Say you had a Uniden-Cybernet adapter and a Cybernet-Maxon adapter then these could be linked together to give a Uniden-Maxon conversion. For the complete set of six adapters however, you will need four standard 4-pin mike connectors (some people call them plugs, others call them sockets just to make things more interesting), four 4-pin in-line plugs (or sockets if you prefer — the ones that take the end of the mike anyway), two 5-pin DIN plugs and two 5-pin in-line DIN sockets. You'll also need a few feet of suitable cable. This needs to have at least one shielded core plus two other cores. Use the same colour codes for all your adapter leads — it'll make things much less confusing for you!

The shield should be connected to the common pin, the core inside it to the audio pin and the two remaining wires to the Rx and Tx pins. Make sure you know which is which or you'll end up having to hold the mike keyed to hear anything! Remember when wiring the sockets for the mike to plug into that looking at the solder connections of the socket will give a mirror image of the connections.

## Connections

Fig. 2 shows the connections as seen looking along the cable to the socket. It is advisable to label the 4-pin plugs and sockets or you won't know which is Uniden and which is Cybernet connections — an ideal solution is to put a small sticker on the connector with a "U" or "C" on it. Unless you build adapter leads for other sets that use 5-pin sockets the Maxon ends don't need labeling.

These six leads will enable most mike rig connections. If you just want them for trying out mikes on your set then obviously only the two leads for the other two groups will be needed. If you have a Uniace 200 for example

**"If you work extensively with rigs and mikes, then some of these adaptors may come in handy"**

you'll only need a Maxon-Uniden and Cybernet-Uniden adapter. One or two other rigs deserve a brief mention because they use strange connections all to themselves. Fig. 3 shows the pinouts for the DNT, Murphy and Fidelity homebases and Realistic rigs. Note that the DNT and Murphy do not require an Rx line to be connected. If you work extensively with rigs and mikes then some of these adapters may come in handy. It's not really worthwhile building a complete set of these, but two for each unit should suffice. If your main test rig is Cybernet based then build a DNT-Cybernet and a Cybernet-DNT adapter. If you need

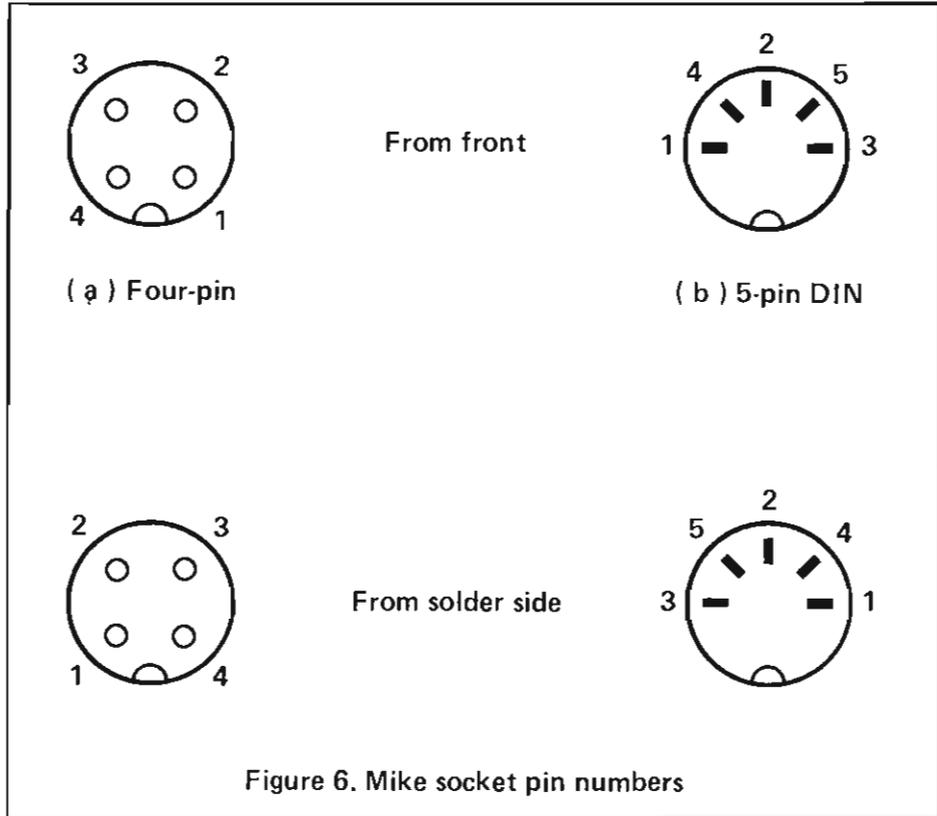


Figure 6. Mike socket pin numbers

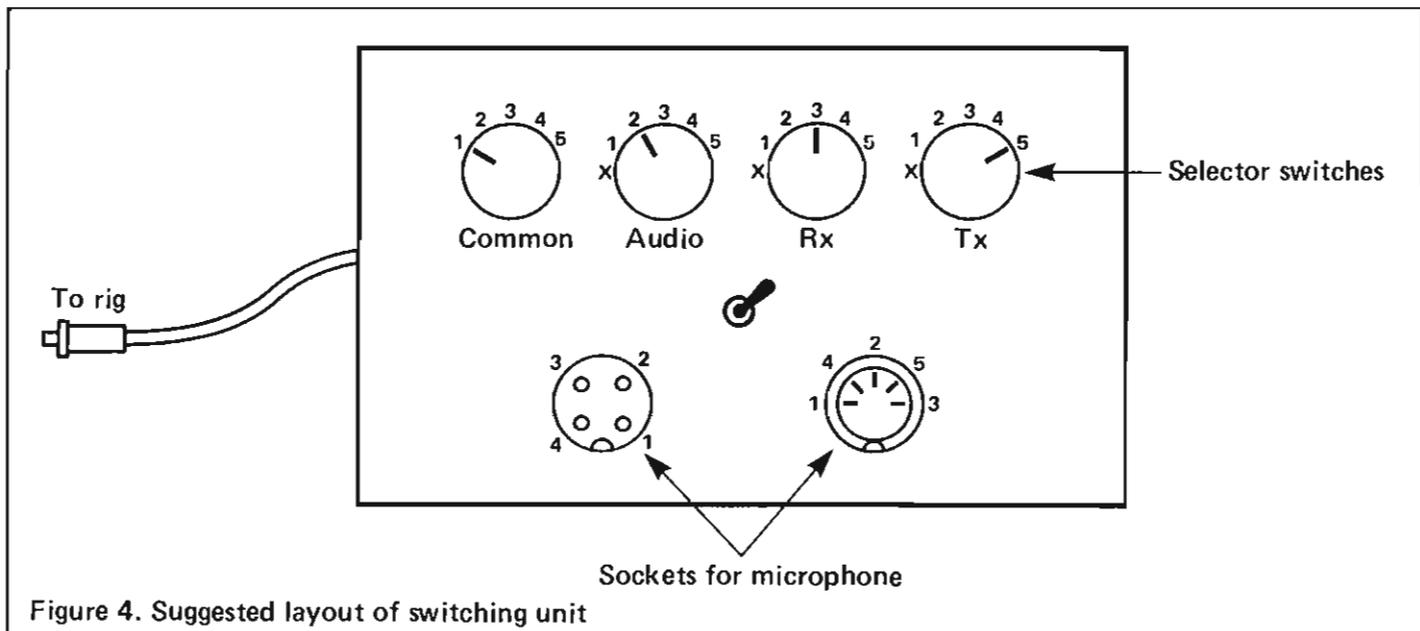


Figure 4. Suggested layout of switching unit

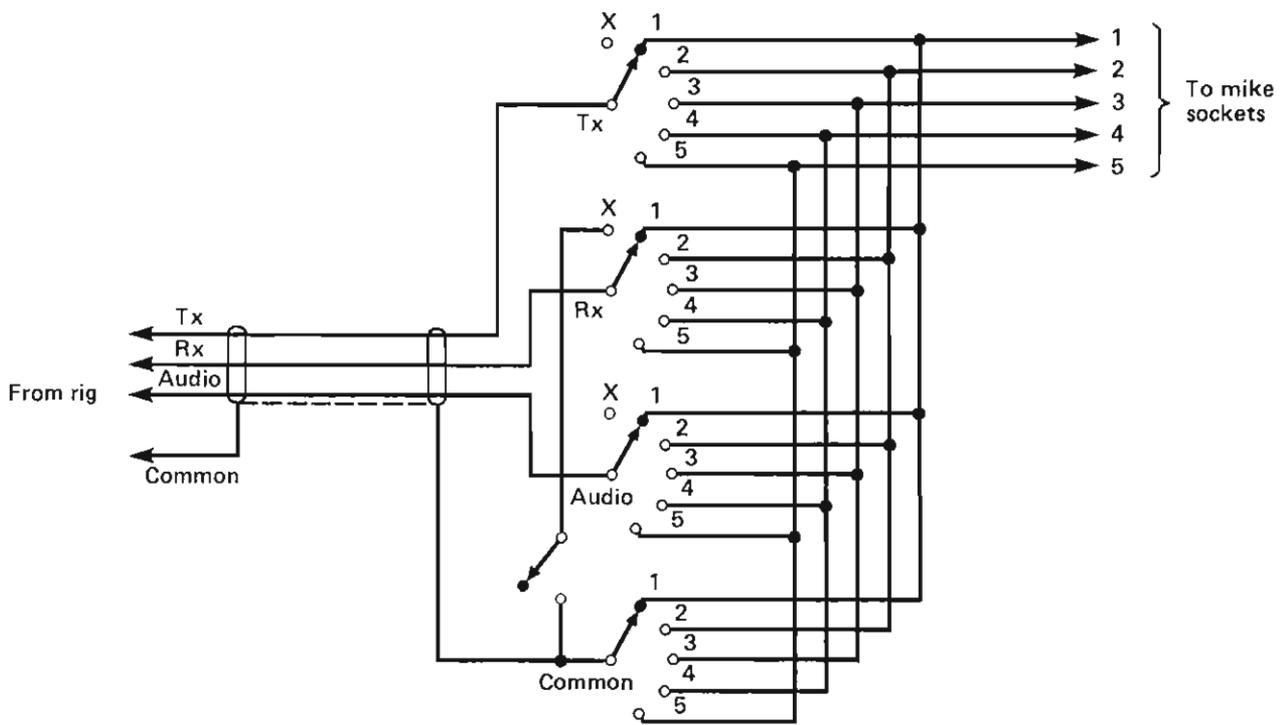


Figure 5. Wiring of switching unit

to connect to another style you can use two plugged together. Make sure you label the leads so they don't get mixed up.

Fig. 4 shows a handy little device that can be easily built and allows any mike with a 4 or 5-pin plug to be linked to your rig. Four rotary switches allow each of the required lines — Common, Audio, Receive and Transmit — to be connected to any of the mike socket pins. The schematic diagram is in fig. 5. The lead to the rig should be terminated in a plug to suit your set. The five wires from the switches (right of diagram) go to the two mike sockets on the front panel. Fig. 6 shows the pin numbering from both the front and rear of the connectors. It's not a bad idea to number the pins on the front panel so that you can easily see which pin is which by reference to the switch settings.

Pins 1 thru 4 of the two sockets should be linked together so that either one may be used. Obviously only one mike at a time should be plugged in. So you can get the idea of the use of this switch box, fig 7. lists the switch settings for all the mikes discussed so far. Note that for the two mikes that do not have a receive line the Rx switch is shown set to its "X" position. Referring to fig. 5 you'll notice that this connects the receive line of your transceiver to an extra switch. This enables your receiver to be heard by closing this switch when testing a mike that does not have a receive line. If you plan to use the box with a rig such as the Murphy or DNT then you needn't worry about this extra switch.

### Switch positions

Type of microphone	Common	Audio	Rx	Tx
Cybernet	2	1	3	4
Uniden	1	2	4	3
Maxon	3 or 4	1	5	2
DNT	2 or 4	1	X	3
Murphy Base	1 or 2	4	X	3
Fidelity Base	4	3	1	2
Realistic	1	4	5	3

Figure 7.

**“Use the same colour codes for all your adapter leads — it'll make things much less confusing for you”**

The unit should be assembled in a metal box for screening and construction is not at all critical. If you prefer, the switches can be replaced with small wander sockets and you can then use short lengths of wire with plugs to link the appropriate sockets. A similar type of arrangement can be used to link your standard test mike up to any set, and the various permutations are left up to you as the end-user. A pound or two spent on adapter leads or a switch box will eventually save hours of fiddly mike plug soldering if you have to do a lot of mike repairs or testing. Many other labour-saving devices such as these can be devised — the sky and your imagination is the limit. Happy switching!

With the recent announcement about the possible introduction of a personal radio service, Keith Townsend looks at another option

# PRS ~ AN ALTERN

**H**ot on the heels of our recent revelation that communication authorities throughout Europe are considering some fairly big changes in the way that the band around 934MHz is to be used came a call from Jim Finch, whose company Solid State Electronics, has been turning out some pretty impressive CB goodies since the year dot. Although he has no commercial interest in 934, Jim is a dedicated user and one of very few in this country who already have first-hand experience of a PRS type service. He is also very concerned to ensure that any future changes to the band are introduced in such a manner that they do not affect the rights of the existing users.

"There are presently around three thousand users of the UHF band," he told us, "each of whom has made a quite considerable investment, both in terms of money and effort, in order to take advantage of a band which, at the moment, is devoid of the sort of abuse to which much of 27MHz is prone. We must ensure that any future changes do not leave them out in the cold."

Not that Jim is opposed, in principle, to the idea of a PRS service. On the contrary, he has first-hand experience of both the Japanese and Swiss systems and believes that the envisaged expansion of the band will be to the advantage of both present and future users. So long as the band does not become a cheap substitute for presently available business frequencies.

"With PRS rigs costing around half the price of much of the present generation PMR gear," he explained, "there is a vociferous lobby demanding that our frequencies be handed over for the exclusive use of the business community and some pretty hysterical articles have appeared, claiming that such a service should not be 'wasted' on the general public."

Against this, Jim assured us that there was little evidence of widespread business use in either Japan or Switzerland: "In both cases use is almost entirely restricted to the genuine hobby user, with little to show that even the average Swiss or Japanese family use it whilst out shopping or mending the car and the business community appears to have ignored it altogether, preferring to stick

to their more traditional frequencies."

With the massive possibilities which the envisaged changes portend, we were very eager to accept Jim's offer to demonstrate two Swiss sets which he just happened to have lying around and soon found ourselves facing two of the most impressive radio transceivers any of us had ever seen. Encased in neat, brushed aluminium cases, the twin Clarion mobiles would not have looked out of place in even the most luxurious Rolls Royce but they were festooned with such a bewildering display of knobs,

**"... some degree of manual control was necessary, especially in mobile operation"**

LEDs and buttons that it took Jim only a few minutes to convince us of his first point. Namely, that some degree of manual control was necessary, especially in mobile operation. With ten programmable memories and most operation dependent upon telephone number type calling, even Jim admitted that he was likely to press the wrong button occasionally, unless he referred to the instructions, which, as he pointed out, you cannot do whilst hurtling down the M1 at seventy.

An additional complication was the fact that many of the switches performed more than one function. For example, the figures 2 and 7 could be selected by pressing either the top or bottom of the same button, which required only the lightest touch. If you

are anything like as hamfisted as me, you might find it virtually impossible to select the correct number combination whilst controlling a car in traffic and we gained the definite impression that even in the quiet of your own home more than a little care would be needed to avoid making the most unholy mess of things.

To demonstrate his point, Jim programmed the two rigs, firstly so that contact could be made between them. Using the digital controls, he inserted a series of five digits into the memory of one of the rigs, duplicating it on the other. Even this was not as easy as it sounds, as inserting the combination into memory required that a number of buttons beside those required to determine the numerical sequence be pressed in the right order.

Once both rigs had been programmed it was a simple matter to make contact. Just press the button to ensure that you were using the right memory, then key up and the rig does the rest. In an instant the second rig responds with an audible tone designed to tell the listener that he had been called, as it responded to the digitised information being transmitted. Within less than a second it had found an available channel, relayed the information back to the rig which had originated the call and then returned to the clear operating channel, where speech contact could take place. All of this was achieved without any indication of the precise operating frequency or even a channel number being displayed.

The big drawback, as Jim saw it, was the fact that no other station could join in the conversation without first knowing the digital code used to begin the transmission and, with the variety of combinations available, it would be about as easy as winning the pools to hit upon the exact combination by accident. To demonstrate this fact, he reprogrammed one of the rigs so that its memory contained a different code. It promptly ignored all attempts to make contact.

Whilst I appreciate Jim's point about CB being for everyone's use and his concern for the community spirit, I do not altogether share his view that this facility represents a handicap. I can think of numerous occasions on which I would have been grateful for the non-intervention of an uninvited guest and I feel certain that those who currently

# ACTIVE VIEW

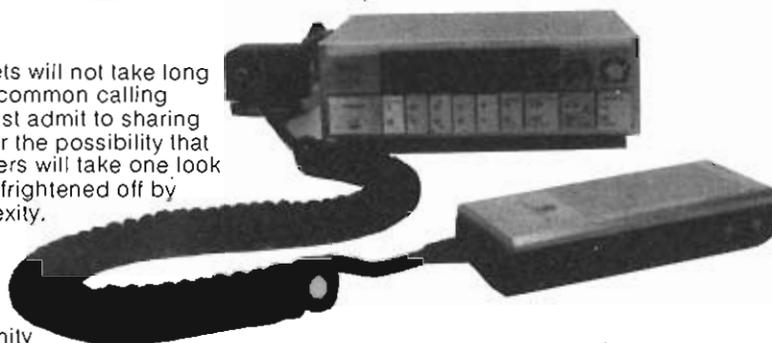
operate regular nets will not take long to decide upon a common calling code, though I must admit to sharing Jim's concern over the possibility that many potential users will take one look at the rigs and be frightened off by their sheer complexity.

So concerned is Jim to ensure that 934MHz users get the best possible opportunity to both understand and discuss the future of their hobby that he has joined forces with a number of fellow users to form the Personal Radio Club of Great Britain, of which membership is available to anyone with an interest in the UHF band. In its introductory letter the club points out that "We feel very strongly that it should be the majority of 934MHz users who should be in a position to comment and debate the future of the 934MHz band ... It is, therefore, our aim to present information to those 934MHz users who wish to join an organisation with first-hand information in a non-commercial form, so that they may better understand the issues at stake ..."

The club's present officers are determined that it should reflect the views of users from all corners of the British Isles and one of their first acts was to invite groups from various localities to nominate their own representatives, who would then act as committee members of PRCGB.

"In this way we will not only be able to accurately reflect the views of the widest possible cross section of users," said Jim, "We will also be sure that we are acting in the best possible interests of all." He went on to explain that, in his opinion, the present trend throughout Europe was toward the introduction of PRS style services and that only by combining together to make their views and preferences known would those currently using UHF CB gain any advantage from the inevitable changes.

The Personal Radio Club, which is currently attracting members in significant numbers, has already approached the DTI with a number of questions concerning the future of UHF CB and has received an assurance that any future changes will be made after discussion with existing users of the band and that channel allocation will be carried out in such a manner that existing radios will not



**"... the specification was just about the highest we had encountered in any radio designed for public use"**

become outmoded but the DTI continues to stress the fact that, although interested in the possibilities of PRS, it is by no means committed to its introduction. RRD officials point out that although draft proposals for such a service do exist they should not be regarded as the blueprint for any extension of the use of UHF, which will only occur, if at all, after lengthy discussion with various interested groups and a considerable degree of international co-operation.

One aspect of the possible changes currently interesting potential users and manufacturers alike, at this early stage, is the probable size of the British market for such a service. Although Jim Finch has expressed the view that a combination of equipment complexity and comparatively high

retail price will keep the number of users down to something below the three thousand currently estimated to be using 934MHz, the fact that a number of other countries will be licensing the same sets seems likely to have a dramatic effect on the user price, whilst manufacturers, whom experience has taught us will almost inevitably be Japanese, will undoubtedly market their goods with at least the same vigour which they apply to their cars and motor cycles. Is it too much to hope that British manufacturers will finally wake up and demand a slice of their own market?

The present Japanese PRS system, started in 1981 and covering the 903/904MHz band, currently has more than 1.25 million licensees, of whom a large percentage are truck and other long distance drivers. Most radio traffic is inevitably short distance because of the sheer number of contacts taking place at the same time and Japanese pundits admit to some degree of co-channel interference, though the same problems are far less likely to occur in Britain, where we do not share Japan's problems of overcrowding.

Swiss sources, on the other hand, appear to have nothing but praise for their particular version of PRS. Population densities are, of course, very much lower than those of Japan and this is the probable reason why very few cases of in-band interference have been reported. Range has proven to be equal to anything we have achieved in this country and although there is, as yet, a comparatively low user population, user groups and dealers alike are reporting growing interest. As for the rest of Europe, many countries are carefully watching the Swiss service and some appear eager to emulate it. So far as we are aware, only Germany has so far declared its unwillingness to participate in such a service, preferring instead to opt for Jim Finch's nightmare: a full blown business service at 934MHz.

So far as equipment is concerned, we were all very impressed with Jim's Clarion rigs, the specification of which was just about the highest we had encountered in any radio designed for public use. We must, however, echo his concern at the sheer complexity of their operation and hope that if and when such a service comes to Britain, much thought will have been given, both to making the rigs a little more user friendly and to the needs and aspirations of the present generation of UHF users. Meanwhile, for those who want to know more about the Personal Radio Club of Great Britain, a stamped, addressed envelope to: PRCGB, 41, Twyford Avenue, Shirley, Southampton, SO1 5NZ, will soon have a reply winging its way to you.

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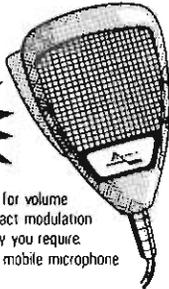


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## LADY BREAKERS

# THE FOG

This month, a tale of mystery and suspense, as Filly discovers the channels are empty

I woke up this morning and found myself in a ghost village.

The first thing I noticed, as I struggled to emerge, yawning, from the blankets was the strange absence of noise. Now, townies probably imagine that villages are always deathly quiet — no steady roar of traffic, no clink of milkmen's bottles, no clattering dustbins and so on. But country villages are full of noise — you can hear the birds, and the trees whispering in the breeze, and the local postman whistling and ringing the bell of his bike when he sees someone he knows, and dogs barking, and things like that.

But this morning, nothing.

I fumbled around blearily for my dressing gown, put on a raincoat by mistake, and went to peer out the window. It was misty outside, and the garden looked cold, dank and unpleasant. Not to say eerie, but it often looked like that on damp autumnal mornings. Still no sound, but maybe that was due to the blanketing effect of the heavy mist.

I padded downstairs, went automatically to the front door, bent to pick up the letters — no letters. Odd. There should at least have been some bills. I went through to the kitchen, opened the back door to pick up the milk — no milk. Very odd indeed. HARRY the milkman must have overslept.

I made some tea and toast, took it through to the living room and switched on the base station, hoping to catch some commuter conversation among the people driving off to town. I was working from home today and I felt like some human contact before I buried myself in papers. But how peculiar — nothing at all on any of the channels. Nothing on the travelling channel from the slab. Nothing on any of the popular channels used locally. No friendly, gossiping farmers' wives. Not even a wally. Was there something wrong with the rig?

I went outside to see if the antenna was still in place. There it was on the roof, looming out of the mist. The mist seemed to be getting thicker, it was like moving about in a cloud. I could

hardly see ten feet in front of me. And still no noise. Had I got up too early? I went in and checked all the clocks — no, it was eight o'clock. The village should have shaken itself awake by now.

Beginning to feel like the last survivor of some catastrophe I had somehow managed to sleep through, I switched on the television. No bright-faced breakfast TV presenters appeared but then the television was sometimes erratic when first switched on. I tried the radio — better, there was a voice, what a relief, but still something not

quite right. The voice was American, an American girl's voice. What happened to BBC?

I picked up the car keys and went out to the car, meaning to drive into the village and reassure myself that it was, in fact, still there. The mist was really thick, now — cold, penetrating, all-embracing, pressing in on the car windows. I switched on the mobile rig and tried every channel in turn. Nothing, just an empty crackling. I spoke into the mike. "Anyone there?" I squeaked from a dry throat, but there was no response.

Was it the mist? Had it somehow interfered with all the radio signals? It wasn't so much mist, now, as fog, thick, swirling fog, billowing around the car and the house... I started the engine, and drove up the lane towards the village. Houses loomed, unfamiliar houses that did not belong in the village. A strange church. I drove on, and stopped at the top of a cliff, high above a surging, foaming sea.

Sea? The village — my village — was sixty miles inland! I switched on the rig again, and this time there was something... the steady tread of bare feet slapping on the road, the swish of ragged, sodden clothing... I jumped out of the car and stared back down the road. There were dark, hunched figures approaching, obscured still by the fog, but I could see the glow of their eyes, and the pale blur of their hands with a glint of metal...

With a screech, I fell out of the armchair. The television was still on, the screen grey and wavy. The video recorder had rewound itself. Outside, I could hear the start of the dawn chorus. I sat on the floor and blinked at the CB mike clutched in my fist, then reached out and picked up the cover of the video film I had been watching. *The Fog*.

I stood up and rushed to the window. Early morning light was stealing across the sky — and there was no trace of mist.

But that is the last time, positively the last time, I will ever sit up alone, late at night, to watch a horror film...



"But how peculiar — nothing at all on any of the channels"

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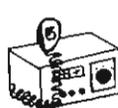
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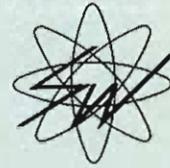
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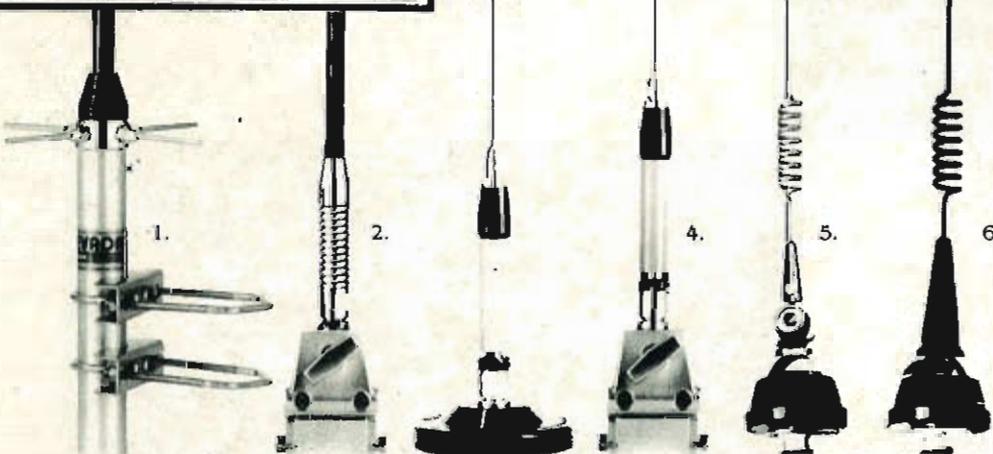


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