AN ARGUS SPECIALIST PUBLICATION

CB CITIZENS' BAND

DECEMBER 1986 £1·25

FOR BRITAIN'S 250,000 CB USERS

TWO INTO ONE?
Why UKFM and FCC won't mix.

6th BIRTHDAY ISSUE!
We look back

RF WATTMETER
Special DIY Project

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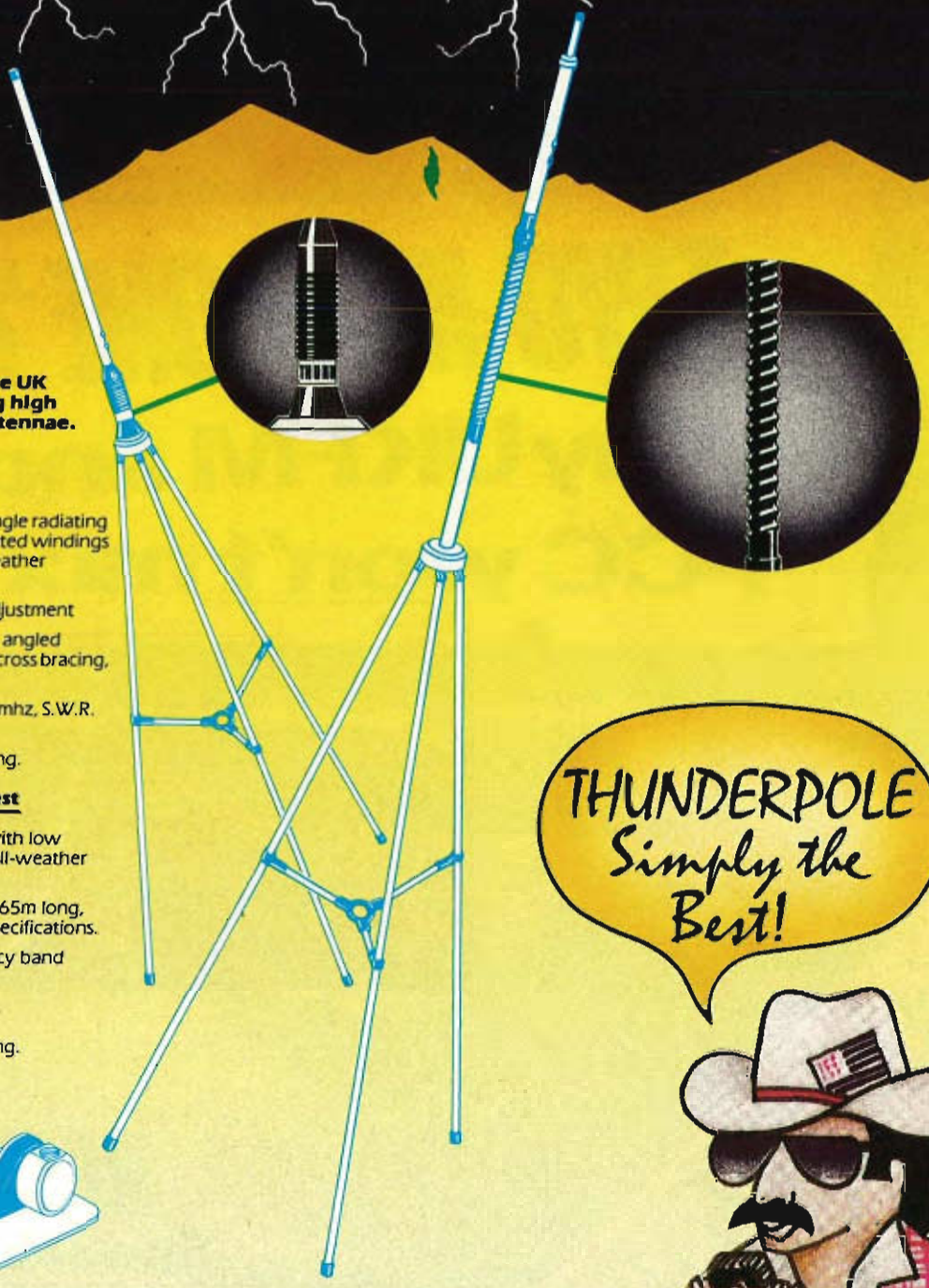

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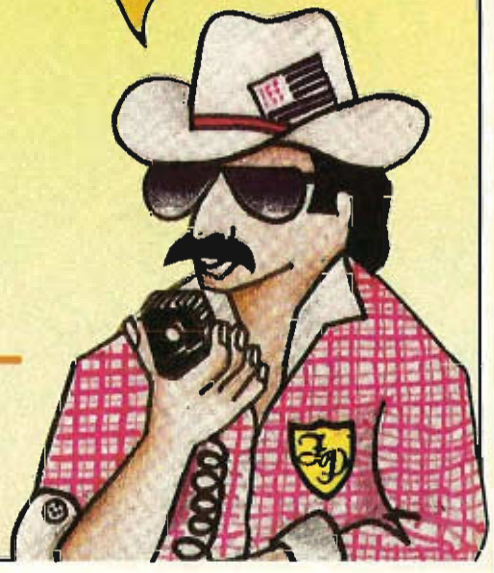

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CB Citizens' Band

December 1986 | Volume 6 | Number 1

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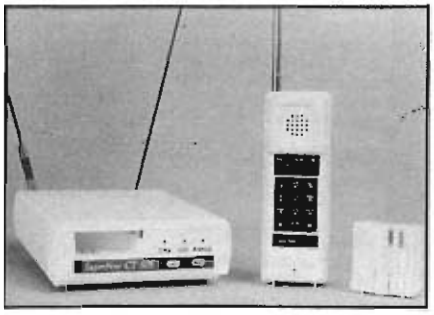

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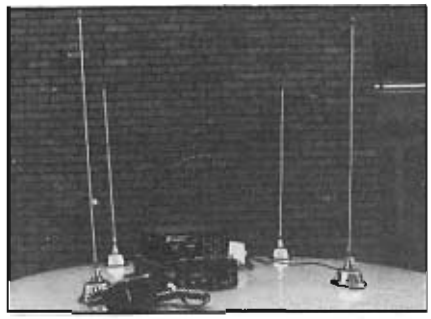

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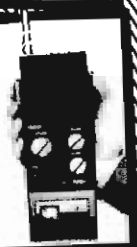

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TRANSMIT	50-500MHz
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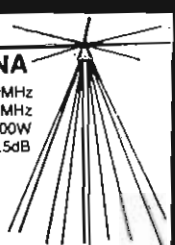

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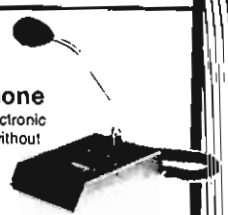

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UPDATE

Happy birthday to us, happy birthday to us, happy birthday Citizens' Ba-and, happy birthday to us. Yes, the issue you are now holding in your hands is our sixth birthday number. Who would have thought it? Cor blimey! What a turn-up for the books eh? (Sorry! I've just been listening to Derek Jameson on Radio 2). Seriously though, when I took over the Editor's chair exactly two years ago my first contacts with the trade (distributors and dealers) brought forth many comments such as "CB? Oh, yeah, it's dead on its feet innit? I'll give the magazine about two months." Well, I'm happy to say, we've proved them wrong. CB is still alive and thriving. True, many people have given up what they came to see as just a novelty, and many dealers fled the market after the initial 'boom period'. However, the 'trade survivors' — you'll know who I mean by looking at advertisements in recent issues — really *have* survived. Business is booming, they tell us, and why should it be otherwise now that the CB market has 'levelled out'?

CB operators too have kept with us and it's nice to hear that the mass of wallies in most areas have thinned out a bit recently. Yes, they're still out there and there will always be a few whose purpose in life seems to be to disrupt the pleasure of thousands of decent, law-abiding breakers but, judging by some of your letters, the number is decreasing.

Many CBers of six years ago, having started with the hobby by merely buying a setup and chattering inanely to their friends down the road, have taken an interest in radio generally. They want to know how things work and why. We like to think we've kept our part of the bargain by providing technical and constructional features on a regular basis — and we shall continue to do so.

The future? Well, we can only wait and see. The Department of Trade and Industry's decision to adopt the FCC frequencies next year remains a worry to some and a hope for others. As usual, we shall keep you informed of progress towards this as and when we find out about it.

CB has progressed a lot in the last six years. Let's all try and ensure this happy state of affairs continues.

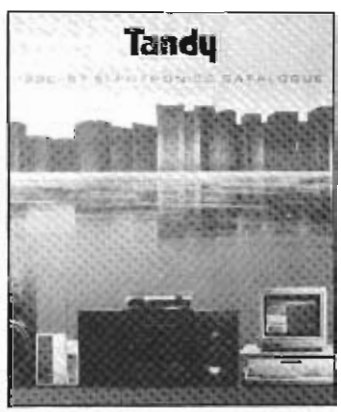
Last, but not least, a merry Christmas and a Happy New Year to all our readers.

Eamonn Percival

New Tandy Catalogue

In good time for Christmas, the new Tandy Electronics catalogue is now available. Free, from 360 Tandy stores and authorised UK dealers, the full-colour 136-page catalogue contains over 2,600 items including CB radios, hi-fi systems, mini-portable TVs, business computers, disco and PA systems, scanners, digital electronic test equipment, telephones — and even toy robots.

Anyone wishing to obtain a catalogue should simply visit their local store or dealer or write to Tandy UK, Tandy Centre, Leamore Lane, Bloxwich, Walsall. West Midlands WS2 7PS.



Christmas ideas are plentiful in Tandy's 86-87 catalogue

Change of place

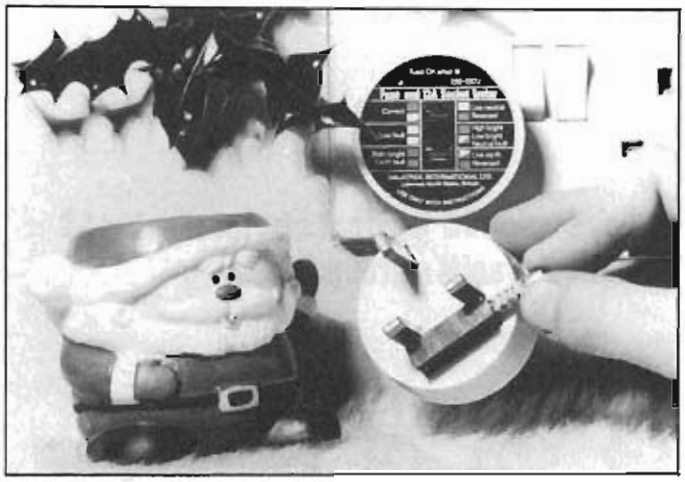
Do you want the good news or the bad news? Well, the bad news is that production of the Uniace 400 934MHz transceiver has ceased. The good news, however, is that in order to ensure that purchasers of this unit are able to receive continued after-sales service for some years to come, Telecomms of Portsmouth has purchased the entire production line and spares of this unit. They now stock everything from the complete case to spare knobs and will be happy to answer any queries to assist Uniace owners to keep their sets in good working order.

Any worried Uniace 400 owners can put their minds at rest by contacting Telecomms, 139 London Road, North End, Portsmouth, Hants. Telephone (0705) 662145.

Christmas News

Stuck for an idea for a Christmas present? Well, a company called Galatrek may be able to provide the answer. Their F.A.S.T. (Fuse and Socket Tester) is a 13 amp socket-testing device, shaped like an ordinary 13 amp plug. It will test six fault conditions on 13 amp

On our sixth birthday, we look back over the years :: New Tandy catalogue :: Latest on Uniace :: New fuse and socket tester :: Breaking from an early age ::



More Christmas ideas, this time from Galatrek

wall mains sockets by simply plugging it into the socket. The F.A.S.T. also has a simple-to-use safe receptacle for testing any plug fuse.

It really is a Christmas present of appeal to all ages and walks of life, from housewives to electricians and academics to businessmen. It costs £14.95 and this includes postage, packing, transit insurance and VAT. Delivery is quoted at between seven to 21 days from Galatrek, Scotland Street, Llanrwst, Gwynedd, North Wales. Telephone (0492) 640331.

Youngest Breaker yet?

Pictured here is Gemma (handle — Molly Cap) and her father Moonraker. Could she be the youngest breaker featured in the magazine so far? Gemma is just six months old and lives in Swansea. According to her mum Strongbow, Gemma gives her parents "a right old time" until they turn their rig on. So, if you're in the Swansea 20, why not give her a shout — don't just leave Molly alone (weak joke — Ed).

(Above) Moonraker gives Molly Cap a grounding in the rudiments of CB

New Maxview Appointment

Maxview Aerials of Kings Lynn recently announced the appointment of Edward Shelser as their national sales manager. He comes to Maxview from the Prestige Group where he was national accounts manager. Left to right in the photo are: Reg Clark (managing director), his son Alan (commercial director) and Ed Shelser.

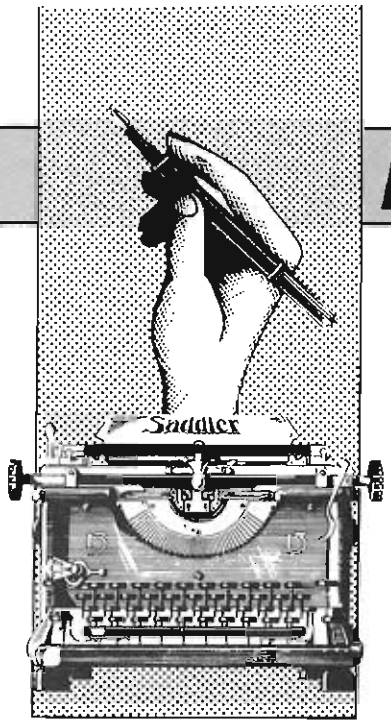
Book Review: Modern Electronic Test Equipment

This book, by well-known technical writer Keith Brindley, and which has just been published by Heinemann Newnes, will be a godsend to anyone involved or interested in electronic test equipment. The book shows how the main categories of test equipment work, allowing the reader to compare instruments, make an informed choice and then use the equipment to the best advantage.

There are explanations about how many types of equipment work and their applications. These include sections on analog and digital meters, oscilloscopes, frequency, time and event counters, spectrum and logic analysers and automatic test equipment.

To aid the uninitiated, there are many good, clear diagrams and photographs and the book is laid out in an easy-to-read format. A must for the technically minded.

MODERN ELECTRONIC TEST EQUIPMENT
by Keith Brindley
Heinemann Newnes
ISBN 0 434 90567 4
134 pages
£6.95



BACK CHAT

FIGHT FOR AM

Fighting tooth and nail for AM ∷ A plea for more co-operation ∷ Copicat circuit needed ∷ Mack's integrity under suspicion ∷ New Southampton monitor group ∷

From East Sussex, 'Jackson' writes to take Keith Townsend to task . . .

I have just read Keith Townsend's articles in the current and recent editions of Citizen's Band. I agree with a lot of what he says and his observations but I do *not* agree with "any real discussion of AM or SSB legislation ended a long time ago". It will never end and he should be fighting for it tooth and nail!

First of all, may I say I am an ex-ham and qualified electronics engineer with 50 years' experience in electronics. SSB is the only rational system of speech transmission. FM is for high-quality stereo transmission using wide band division. Any radio signal between SSB, AM or FM *can* cause interference to other users in the radio spectrum if the transmitter is badly made or maladjusted.

Secondly, I am — as we all are now — EEC citizens and nearly the whole of Europe including the Iron Curtain countries are using SSB. Ten million of our fellow European citizens. The UK government signed the Treaty of Rome. For the UK government to start using FM on its own frequencies which, incidentally, is causing our European CB friends much havoc, is in defiance of the Treaty of Rome and is surely illegal. The only legal users in the UK are the sidebanders and FM stations on FCC frequencies. Also, for the DTI to prosecute UK (EEC) citizens for using FCC frequencies and SSB is, again, surely illegal under the Treaty of Rome.

Really, Keith, you should be fighting tooth and nail against our law-breaking government and fighting to take the UK government before the European Court for the persecution of *legal* SSB EEC citizens who happen to live in the UK!

Well, what do other readers think? Unfortunately, at the time of going to press, Keith wasn't available to answer Jackson's points. We'll try to nab him for a reply in the next issue.

Don't Hog

The Listener, who hails from Hertfordshire, asks for co-operation between breakers . . .

I am both a radio amateur and a legal CB user. Most dead-keyers and music players have gone now but there are still a few who spoil the CB for others. Many readers will know how useful a two-channel handset can be. Unfortunately, we have a breaker who has deliberately chosen the 30 as a local breaking channel. This makes use in this area almost impossible.

The Listener asks for more co-operation — especially for handheld users

Radio amateurs avoid certain frequencies known to be used by low-power transmitters. Could not the same apply to the CB? Where I live, in Hertfordshire, there are alternative channels available throughout most of the day and night.

A good point, Listener, and one which a lot of others should take heed of. If the more uncaring element of CB users could be a bit more considerate, CB would be a lot more fun than it is at the moment in some areas. No-one has the right to hog one particular channnel. Please bear that in mind.

Soap Opera?

Now, from Sheffield, Dutch Dyke would like to comment about the misuse of CB in his/her area . . .

How does a newcomer to CB stations here in the

British Isles make his presence known— Try as I have, along comes a person saying 'Breaker, breakers, I'm going on to channel 14' and then, when on channel 14, proceeds to monopolise the channel for what seems like hours upon hours reciting utter nonsense about Soap Sud D being better than soap sud B. If one wants to study soap suds he or she should refer to the many TV advertisements, and not the CB.

Also in this vicinity, one is greeted with obscene language — all, I strongly suspect, from the younger element.

In Europe, one never hears such language on the CB but over here in the British Isles anything goes — without anything being done to stop it. Here, again in the Sheffield region, one often hears of the CB user telling all and sundry of his exploits into the local refuse tip to scrummage around for any article he can lay his hands on. This is hardly a worthwhile subject to talk about; all it does is use up valuable CB time.

Sheffielders greatly want educating on the proper use of CB and not the garbled nonsense they put on the air day after day.

Calling Copicat

A breaker by the handle of Singer 2 lives up in the West Midlands and is stuck for an address of a manufacturer . . .

I have a Watkins WEM Copicat, which has been converted for CB. It only has four tape heads. However, I think the Swell on the unit has been pulled down and I am trying to get a circuit diagram to enable me to get this put right.

I get your magazine every month and I thought you were the best people to come to. Could any of your readers tell me where I could get one from?

Well, Singer 2, you're lucky that our Editor is also (or claims to be) a musician, as the WEM Copicat echo units were originally designed for singers or guitarists in the early 1960s. They were a great success and continue to be in the 1980s and, yes, it's possible to convert them for use with a CB station. We suggest you write to Watkins Electronic Music, Unit 119, 62 Tritton Road, London SE21 8DE (telephone 01-761 6568). It might be an idea to quote every reference number or model you can find on your echo unit, as various different models have been produced since they began manufacture.

The famous Watkins Copicat echo chamber, converted by Singer 2 for CB

Suspicious Mind

A follow-up letter from Eric (Kilowatt) who resides in Eltham . . .

Firstly, thank you for publishing my letter in Back Chat (October 1986). I enjoyed the comments made by Billy Boy from Weston-super-Mare about Mack the Hack charging about in the mountainous regions of Essex with his MT370 which he couldn't afford! Anyway, back to the mountainous regions of Essex (not far from Chingford, actually). I do not know whether Billy Boy knows Essex at all but, apart from a few lumps and bumps, it's as flat as a pancake (apologies to Essex inhabitants).

Scanning through and trying to avoid the Mack Chat page, I happened to come across Mack giving a plug to the new 934 Club in Southampton. Ho, ho, I thought. Southampton? Secretary's name, Jim? Could it be Jim from SSE? Yes, it could. So, out came my 934 QSL cards and what do you think I found? The new PRCGB club address is the same as SSE Ltd. Well I never, I said — or something similar. The crafty devil — and me going on about businesses fronting clubs and all that. Well, the cat is really among the pigeons isn't it? What say you, Billy Boy? And another 15p on the cover price. It's usually 5p or 10p but must 15p be the printing and distribution costs again? Back in 1984 the magazine had 56 pages, tut tut!

I should like to hear Billy Boy's comments on this latest gem and also mention it was noticed that 'Ed' got a plug in at the end of that letter for a certain concern in Canvey Island. What about a plug for my old emporium, good old Two Way Radio, 475 Woolwich Road, Charlton, London SE7 (telephone 01-858 8715). Ask for Dave. There, I've done it.

Anyway, good luck to Jim. I hope he gets the backing he requires to make 934 a better system.

Ta for your letter, Eric. However, you will find Mack's own admission about the handheld on his Mack Chat page this month — there, you'll *have* to read it now. Regarding the new 934 club, nobody has ever tried to disguise the fact that Jim Finch is the man behind SSE. However, Jim started the club because he is a fervent user of this band and strongly maintains it has nothing to do with his own business. He sees it purely as a mission to 'spread the word' and educate would-be users of 934. To this end, he has been travelling the country demonstrating versions of continental PRS sets — at his own expense. Don't be so suspicious Eric!

Farewell, Reader

Woe is me! We've just lost a reader. Mr Tyler writes from Buckinghamshire bemoaning the fact that the cover price of the magazine has been increased . . .

I have been buying Citizens' Band magazine for quite some time now but I was really set back this month when I found that the price had jumped up to £1.25 from £1.10, an increase of 15p. I got on the phone to my newsagent and asked him to cancel forthwith.

When you come to think about it, there are quite a lot of people like me who are OAPs and £1.25 is a bit too much. Of the 250,000 CB users, I am one that will not be buying another copy. After all, I do enjoy my time on CB and I am also a monitor on channel 9 for MSGB Ltd. So thanks for the past copies.

We're very sorry about the price increase, Mr Tyler. Obviously, we don't want to lose readers, we want to build the numbers up. But it's a sad fact of life that printing, distribution costs and other hidden factors do mount up over the years.

Hello There

Electric Fairy, from Southampton, would like to welcome breakers in the area to her monitor group, of which she is secretary . . .

We are Southampton Control Traffic Monitors. We have ten home bases and ten mobile monitors and we are on channel 23 5½ days a week. We monitor from 8am to 6pm Monday to Friday, and 8am to midday Saturday.

Give us a call on 23 for directions and 10-13s if you come into the Southampton area.

MOBILE ANTENNA CHOICES

More questions for Smart Alec — and this month's Star Query wins a year's free subscription

STAR QUERY

Mobile antenna choices

Mr D. Chambers writes from somewhere in Gloucestershire to ask how to get on the air with the greatest of ease ...

Q I have just taken delivery of a new car and would prefer not to drill holes in it for my CB aerial. The alternatives appear to be either a mag-mount or some form of gutter mounting but both offer problems.

The car is so shaped that using a gutter mount would result in the aerial sticking out at a potentially dangerous angle and it also has a vinyl roof, which might affect the adhesion of a mag-mount. Please can you offer any other suggestions?

A Unfortunately Mr. Chambers has not told us what make of car he has bought, so it is difficult to be specific but there are still a number of options open to him. If, for example, it is a saloon with a boot lid he might try using a trunk lip mount, which would offer reasonable performance, both because it offers a sound earth contact and allows the whip to stick straight up in the air. On the other hand, there are a number of gutter mounts on the market which incorporate a form of swivel base so that the aerial may be mounted vertically even if the angle of the base is a bit awkward.

Mag-mounts do offer yet another alternative but they have been known to come adrift at higher speeds, especially when fitted to a vinyl roof. The intervention of the vinyl also tends to add capacitance to the antenna, which reduces its efficiency. If all else fails, Mr. Chambers, you might like to try removing the broadcast antenna with which I presume your car is fitted and replacing it with a good quality CB one. You can still run the broadcast receiver successfully by means of a good quality diplexer, or "splitter box" but make sure you buy a good one.

Where to mount a mobile?

Nice idea . . . but!

From Sidesaddle, of North London, comes a question on the art of the impossible ...

Q I live on a large estate where external aerials are apparently regarded with distaste. Although normal TV aerials are permitted, the intrepid few who have erected CB aerials have all received written invitations to remove them. I have tried a loft aerial but without much success and I am now wondering whether it would be possible either to modify a TV aerial to work at 27 (perhaps by means of an antenna matcher), or to disguise a CB aerial to look as though it were fitted to a TV set. Please can you help?

A It is a nice idea, Sidesaddle, but it just will not work. TV aerials are designed to operate at frequencies very much higher than CB and consequently their elements are cut much shorter, so as to resonate at UHF. It is most unlikely that you could buy or build a tuning unit capable of overcoming the vast gap in frequencies and any attempt is likely to result in such a mismatch as to either prevent you from transmitting at all, or to ensure that you cause widespread interference to television reception in the area.

The idea of disguising a CB antenna is novel but equally impractical. I suppose it could be done by mounting the aerial horizontally and fitting dummy elements across it but these would have to be made of some non-conductive material in order not to alter the characteristics of the CB aerial. The main problem then would be the loss of signal strength (probably in the region of 3dB) which you would experience both in trying to copy signals from other stations and in transmitting to them if they were using the more common vertical polarisation.

Jumping the gun

Globetrotter, from Macclesfield, is living up to his handle ...

Q My work frequently takes me overseas and I currently have trips planned to Germany, Holland, France, Italy and Denmark. In view of the fact that we are shortly to be allowed to use the old FCC frequencies, I would like to be among the first to own a rig built to the new CEPT standard about which we have heard so much of late. Please can you tell me in which of the countries I have listed I can buy a rig which conforms to the new standard?

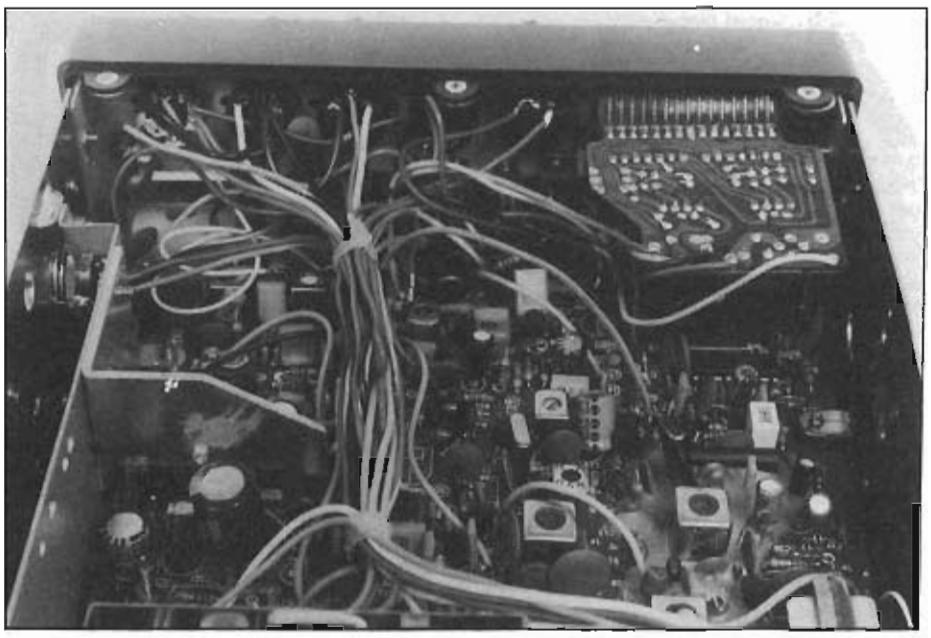
A So far as we can ascertain, Globetrotter, Holland would appear to be your best bet, as they seem to be the first to have adopted the new proposals. Failing this, Denmark might prove fruitful.

However, before you spend your money it is worth considering the fact that, at the time of writing, the importation of such rigs remains an offence under British law and, until such time as regulations are amended, which cannot be too far into the future, you might have difficulty getting your new toy into the country. Another point worth considering is that, to the best of our knowledge, the various European authorities are still discussing the finer details of their agreement, including such niceties as common type approval standards. You might well buy a rig now and find out at a later date that some minor subclause prevents its meeting the required standard. If, as appears likely, you are a seasoned traveller, you might do well to wait a while.

A bit on the side

Mike writes from Taunton with a very unusual problem ...

Q A number of breakers have suggested over the last few days that my signal, although reasonably strong, appeared distorted. As one put it, it sounded as though I was talking through a handkerchief. In disbelief I swapped rigs with a friend so that I could hear the problem for myself. The signal is certainly very messy and, since my rig was still affected whilst my friend was using it does seem to be an antenna fault. Please can you help?



Has anyone been scratching around inside your rig? (See fourth letter)

A I would really like to hear your signal for myself, Mike, as this always makes diagnosis much easier but, assuming that the result is the same on all channels, I am inclined to think that your rig may no longer be exactly on frequency. Has anyone recently been scratching around inside it?

You might have a problem with the phase-locked loop, in which case there is little you can do, other than return it to a qualified engineer for a replacement to be fitted. Alternatively the fault might lie with either the frequency crystal, which might have become damaged, or, if one is fitted, the trimmer by means of which the crystal frequency can, to some extent, be adjusted. In either case, the first step is to find someone with an accurate frequency counter which, if I am correct, will confirm the source of the trouble. The next is to have the rig looked at by an experienced engineer.

Reciprocal licencing?

Another itinerant, Bagman, known around Dumfries as Ian, reckons he might get lonely without his rig ...

Q I am shortly to begin a three month exchange visit with a French student and will be staying with his family during my studies. I have a UK standard rig which has been fitted with a conversion board so that it will work on the lower half of the 27 MHz band, which I understand is correct for France. Please can you tell me how to obtain whatever permission might be necessary to operate it whilst I am in France?

A Sorry to sound negative, Ian, but although your rig includes the right set of channels it cannot legally be used in France, simply because it also contains our original channels, which are not permitted over there. You might get away with it simply by restricting your operation to the approved frequencies whilst you are on French soil but I question whether any French licence would be valid in such circumstances. There is, of course, also the potential problem of getting a rig which no longer conforms to its original specification back into this country at the end of your stay.

As regards licensing, we contacted the French embassy, who confirmed our belief that there are currently no reciprocal licensing arrangements. They did, however, tell us that you would be able to buy an ordinary French licence, which would, like our own, be valid for twelve months.

Problems should be sent to CB Q&A, Citizens' Band, 1 Golden Square, London W1R 3AB

CB TO THE RESCUE

While wallies abound in many areas there is a sane side to CB, as Red Leader reports

Almost every time we open the pages of this magazine, we find people lamenting the wallies, mike-keyers and bucket-mouths; and it is a sad fact that decent breakers, especially if they live near a large town or city, do get more than their fair share of these microbes. It is always pleasing, therefore, to hear of the good things about CB — like the tremendous amount of charity work that breakers do, and the large sums of money they raise through 'sponsored rachets' and the like. I should like to recount, then, two rather spectacular incidents in which CB — and some good breakers — proved to be positively life-saving. I heard of these events recently from a friend of mine who wishes to remain anonymous, so we'll say his handle is 'Rough Rider' (which it isn't), and we'll describe his Home 20 as 'Largetown' in the North of England (which it is).

Rough Rider's homebase had gone on the blink and was in the loving hands of the local rig doctor, but he did possess a Harvard 410T handheld so, on this particular Saturday evening about 11-30, when the rest of the household had gone to bed, he switched it on and went into his lounge from where he often got good copies. He was just casually flicking through the channels when, on channel 25, he thought he heard a feeble call of 'Mayday'. He listened for a short time but, hearing nothing else, he came to the conclusion that either his ears had flapped or there was yet another wally exercising his warped skills; he flicked on through the remainder of the channels.

However, when he got back to channel one, having heard no-one he knew, some sixth sense told Rough Rider to go back to 25. He did, and was just in time to hear a modulation ending: it was the same feeble voice, and again he thought he heard 'Mayday'. This puzzled him because he would, like the rest of us, expect to hear that on channel 9. Nevertheless, he decided to stay on 25, just in case. After about half a minute, the feeble call came again. The modulation was a good 5 over 5: it was the voice that was feeble, somewhat distorted — as though drunk — and the message was not too coherent. But what did make him sit up was that he thought he

It's not only teams like REACT who act the Good Samaritan

heard the words 'overdose' and 'ambulance'; and this time there was no doubting the word 'Mayday'.

As soon as the modulation finished, Rough Rider pressed his mike-key and said, "The breaker calling 'Mayday' come back to Rough Rider!" He repeated this a couple of times and then unkeyed. As he did so, he could hear at least two other breakers on the channel, each stamping the other out. Rough Rider realised that there had been others listening and, by sheer fluke, they had all decided at that moment to go in to the 'Mayday' call.

Rough Rider hesitated a few moments, wondering what to do. Suddenly, the voice of a lady breaker came in.

"There's at least three of us trying to get in, " she said with authority, "and we're going to get nowhere if we keep at it. Is anyone copying me?"

Rough Rider was in quickly to say that he was, so the lady breaker came back: "OK, my friend, you've got Cake-Baker here. Hang 6 and let me try again."

She called again and, sure enough, the breaker came back to her, his voice slurred and indistinct. Rough Rider listened while Cake-Baker questioned him. The breaker was clearly very ill: he had, quite accidentally, taken an overdose of a drug prescribed by his doctor and was in urgent need of medical help. He had realised he was losing consciousness but had no telephone, so he had switched on his rig and started to call. Unfortunately, he was now rapidly losing contact with reality, and neither Cake-Baker nor Rough Rider could get his actual address from him.

Despair

Just when they were beginning to despair, a 'teenage voice cut in: "This is United Fan here. I know who he is; I recognise his voice: That's Cigar Box. He's not far from me. I've eyeballed him often." This youngster proved to be the other breaker who had been stamping out Cake-Baker when Rough Rider had unkeyed after his first modulation.

"Can you get to his 20?" Cake-maker asked him.

United Fan replied that he could and was on his way — without giving the address!

It seemed ages before the 'teenager reached Cigar Box's flat and during the ensuing time, both Cake-Baker and Rough Rider tried hard to keep a conversation going with the sick man; but it became more and more difficult as he was obviously slipping into unconsciousness, However, United Fan eventually came to the rig and reported that he had had to force the door.

"He's lying on the floor and just about unconscious," the lad yelled. "Oh God, what am I to do? Please help me: I don't what to do!"

It was clear that the youngster was about to go to pieces, so Cake-Baker (obviously a mother!), speaking calmly and deliberately, said, "Tell us the address of the flat so we can call an ambulance; and then make him as comfortable as you can with blankets from the bed."

It took her some time to get these simple instructions into the frantic 'teenager's head, but at last he gave her the address. While she went off to call 999, Rough Rider kept up a conversation with United Fan. And quite a conversation it was, too, because everytime Cigar Box — now unconscious — moved or groaned, United Fan began to panic.

After what seemed an eternity, the ambulance and police arrived, and Cigar Box was whisked off to hospital. United Fan returned home — and then Rough Rider and Cake-Baker had the difficult job of calming *him* down!

The second incident involving Rough Rider began in much the same way, but this time, he heard a call for help on channel 9. He almost ignored it, he told me, because only a few nights before, he had been duped into searching the local riverbank at midnight by some wally who came on channel 9 and claimed to be in difficulties in a boat which he said was sinking. However, as it turns out, Rough Rider happens to be made of sterner stuff and so he continued to listen.

The call came again, and Rough Rider realised that the caller was not used to CB, because he did not understand the jargon, and that he was either in pain or very great difficulties because his speech was very laboured — in fact, it transpired that he was both.

Bit by bit, Rough Rider pieced the story together as Kevin — as we'll call him — told it. He had been riding in a car, sitting in the passenger seat, with his uncle, who was driving, and with his aunt and cousin in the back seat. It was a wet night and, as they had driven down a steep country lane, the car had skidded on a muddy patch outside a gate. It turned out that the vehicle had slid off the road to the right, crashed through a hedge and rolled over into the field which was below road level. As far as Kevin could tell in the almost total darkness, the car was lying on its right side some way inside the field. He thought they had been there some time and thought that he had been unconscious. The others appeared to be still unconscious. He was, he said, half suspended by his seatbelt.

Though not a breaker himself, he had often seen his uncle operate the rig in the car and knew that channel 9 was for emergency calls. In great pain — in fact, both his legs were broken — he had managed to twist himself far enough to reach the rig which was situated under the dashboard on the passenger side, and had had enough presence of mind to put out the call which Rough Rider had eventually heard. (Miraculously, the boot-mounted aerial was virtually undamaged!)

The problem now was that Kevin and his relatives were strangers to the district — merely driving through on an overnight journey to a holiday camp – and so Kevin did not know where he was. Though Rough Rider realised from the signal strength that the crashed car could not be far away, he had only lived in that neck of the woods a few weeks and did not himself know the district too well.

Rough Rider kept talking to the injured Kevin, trying to glean any scrap of information which would help locate the crashed car, but the young man frequently became well-nigh incoherent, and Rough Rider had great difficulty in maintaining contact. Nevertheless, convinced in his own mind that it was not some gigantic hoax, Rough Rider called his wife and told her to alert the police that there was a crashed vehicle somewhere in the vicinity.

At last, Kevin said that he thought they had passed a drive with large square white gateposts just before the crash occured, but as he thought he had been unconscious, he was not sure how soon after seeing these gateposts the accident had happened.

Anxiety

Almost frantic now with anxiety, Rough Rider suddenly had a brainwave: living across the road was Fred Smithson, a sprightly old boy of eighty who had recently told Rough Rider that he had spent all his married life in that area. Rough Rider yelled to his wife to fetch the old man.

When Fred Smithson arrived, he was quickly given the details of the accident and asked if he had any idea where these white gatepost could be.

Without hesitation, the old fellow, "Oh yes; they must be the ones at the entrance to Manor Hall. The old place has been uninhabited since the end of the war when the army left it. It's been derelict for years now. If they've passed that, there's only one way they can have gone. They'll be in that big pasture field almost at the bottom of Fallow Lane."

Calling to his wife to take over the rig, Rough Rider grabbed the telephone and told the still waiting police where he thought the accident was. Then, yelling to the old man to follow him, Rough Rider ran outside, jumped into his car and started out for the field near the bottom of Fallow Lane, a distance of just over a mile.

The old man had been exactly right: Rough Rider's headlights showed a wide gap torn in the hawthorn hedge and, through that, the badly damaged car could be seen lying on its right side.

At that moment, a police car, siren screaming, shot up the lane and skidded to a halt beside Rough Rider's. Together, Rough Rider and the policemen got the injured Kevin, a lad of about eighteen, out of the car and did what they could for the other passengers until the fire brigade and the ambulance came.

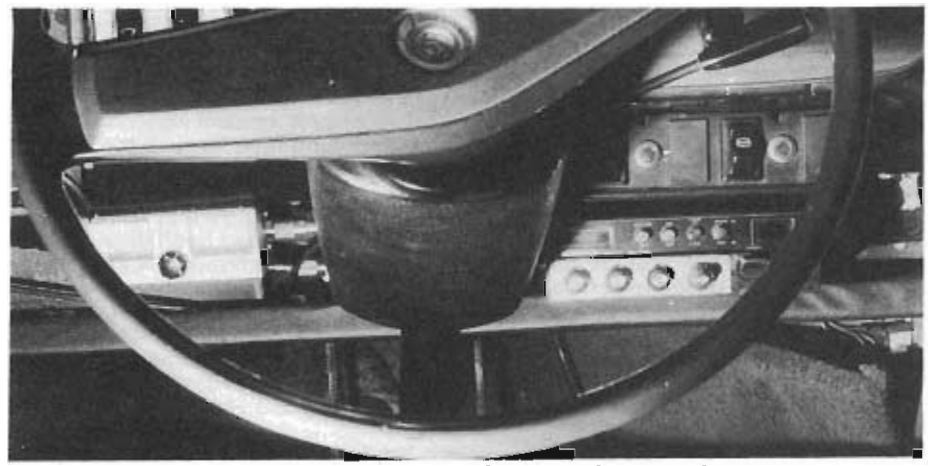
Happily, though they were all badly injured, the passengers recovered. But would they, had it not been for CB? What would have become of them if they had remained, unattended, in that field at the bottom of deserted Fallow Lane until daybreak. One shudders to think!

TWO INTO ONE

Bearing in mind the forthcoming frequency changes, we look at the problems of mixing the two

With excitement mounting over the forthcoming introduction of a true European CB System, attention is beginning to focus on the practicalities, not to mention the difficulties, of Britain becoming the first country in the world to adopt a full 80 channel system. True, rigs containing eighty and even 120 channels have been readily available throughout the western world for more than ten years but nowhere has it been possible, until now, to obtain a licence to use more than 40. Despite the fact that we are, for once, leading the world, the first problem seems to be the fact that to take full advantage of this increase in useable frequencies we are to be obliged to carry two separate rigs, as the idea of combination seems to have sent waves of horror through those who order such things. If this is really to be the case, then it doesn't take much imagination to foresee the practical difficulties which are likely to result, particularly in mobile operation, or for such users as the sightless and disabled.

Take the case of the motorist, for instance. Once upon a time car manufacturers built to a basic specification, leaving you to decide for yourself what extra goodies you might like, or even be able to afford. This left plenty of odd little spaces into which to fit such non-essentials as heater, broadcast receiver and, had such things been available at the time, CB rig. As time has progressed motorists have become more discerning, until the present trend is for manufactuers to fit all manner of what were once described as accessories before your pride and joy leaves the factory, with the result that in many modern cars there is barely enough space to fit a single rig, let alone two. Even should you be fortunate enough to find the required space and assuming that it does not put one or both of your rigs out of reach, there is still the problem of having two microphones to choose from and, leaving aside the obvious dangers, I can imagine all sorts of problems as drivers, intent on staying alive, try to decide which rig is calling them. There are, of course, effective means of connecting a single mike to more than one rig but the complications do not end there and the whole issue is likely to be more than just a mite untidy. Two mounting locations, two sets of controls and, to avoid the losses attendant upon most splitter boxes, two antennas, which, remember, must be sited so that they do not impede each other's radiation pattern. The mind boggles!



In modern cars there is barely enough space for one rig

The simple solution would seem to be to build both sets of channels into a single rig. Of course this is well within the capability of the industry but whether manufacturers would be prepared to cater for such a market, restricted, as it would be, to Britain alone, is another question. But do they really need to? There is no shortage of dealers offering circuit boards designed to increase the frequency range of your existing rig, so surely a few soldered joints are all you need to get you on your way? But hold on a minute! Frequency availability is not the only requirement if you wish to remain legal. It should be remembered that the original specification (MPT 1320) was designed to meet the needs of a purely British service, whilst present CEPT proposals, soon to form the basis of specification MPT 1333, must take account of the requirements of each and every country intending to take part in the standardisation programme and there are some very significant differences. Differences which it would be impractical to overcome within your old set.

From the comparative table it can be seen that the old and new specs are superficially similar. Power output, frequency deviation, channel spacing and a number of other factors are common to both but there are still some pretty significant differences hidden deep in there which would cause no end of problems for the casual conversion. Lightening up the suppression of spurious emissions from the transmitter to the extent demanded by the new spec involves some very sophisticated filtering which, although easy enough at the point of manufacture, would prove very costly on a one-off basis, whilst the need to reduce the maximum frequency error to plus or minus 0.6kHz, regarded as very stringent by many of the engineers I consulted, would necessitate changing the crystal for one of a much higher quality. So that what might have appeared to some to be a justifiable commercal risk in producing conversion boards well in advance of the introduction of the extended service seems unlikely to reap the rewards which they might have envisaged.

To cite just a few examples of the difficulties facing the would-be converter, adjacent channel selectivity must, henceforth, not be less than 60dB relative to an e.m.f. of 1 microvolt, whilst the original requirement that spurious tranmitter radiation be limited to no more than 50 nanowatts at frequencies between 80 and 85MHz, 87.5 and 118MHz, 135 and 136MHz, 174 and 230MHz and between 470 and 862MHz might have been adequate for Britain in 1981 but it seems that Europe, although not caring overmuch what happens between 80 and 85MHz or 135 and 136MHz, requires more than a twelvefold reduction, to 4 nanowatts within the remaining bands, at the same time insisting that this figure should not be exceeded within a new range of frequencies including 41 to 68MHz and 162 to 174MHz. Working that little lot out might prove to be a mathematician's nightmare and getting your old rig to conform would require some really fancy juggling and a not inconsiderable investment.

Perhaps there are those among us who remain undaunted by the sheer scope of the problem so far? It seems that the mandarins of Brussels might

think so, for, not content with specifying what amounts to a far cleaner transmitter, they have turned their attention to the receiver. Our original specification paid scant attention to this side of the rig, content merely to ensure that receiver spurii should not exceed 20 nanowatts and the lack of an adequate receiver specification is arguably its greatest failure. That the new demands will improve receiver quality cannot be argued and every breaker should be happy at the prospect of less noise from signals on nearby channels but there is a price to be paid and I seriously doubt whether any of the present generation rigs would meet the new requirements on intermodulation response, never mind suppression of spurii.

Described as the ability of a receiver to inhibit the generation of in-band signals caused by the presence of two or more signals at unwanted frequencies, the power of this phenomenon must, henceforth, be rejected by not less then 60dB, relative to an electromotive force of 1 microvolt. (Where have I heard that before?) This might not mean much to most of us but it certainly raised a few eyebrows among boffins looking at the spec for the first time, with some even suggesting that the requirement would add considerably to the retail price of a new rig. All were agreed upon the impracticability of attempting to meet the requirement by converting existing receivers.

Our European brethren are also demanding far tighter control of receiver spurii. No matter what you do to minimise it, each and every receiver manages to "leak" a small amount of RF energy over a wide range of frequencies. You know the sort of thing. The horrible whistling noise which results from putting the trannie too close to the goggle-box. Whilst MPT 1320 was content to ensure that its level did not exceed 20 nanowatts at any point thrughout the spectrum, MPT 1333 will bring about a reduction to an almost incredible 2 nanowatts at all frequencies below 1000MHz, though we may still joyfully radiate the full 20 nanowatts anywhere else in the spectrum that we choose. In the light of these far more stringent qualifications I was just a little surprised to discover that the presently permitted level of adjacent channel power will, under the new terms, be doubled, from 10 to 20 microwatts.

I can already hear most of you protesting that you only want to use the thing, so what have all these figures got to do with you? Surely they are for manufacturers to worry about? In the old days I would have agreed with you but the times they are a-changing and, although it has never happened before, your new rig will be subject to type approval. So what? Well, broadly speaking, this new requirement will oblige manufacturers to prove conclusively that their products meet the demands of the spec in every respect, whereas they were previously permitted to offer the authorities their own assurances.

Presumably the same stringent requirement will also apply to any components designed to materially affect the rig's performance. Obtaining type approval is not only a costly business, requiring that samples of the rig pass a series of stringent tests, carried out under strictly controlled circumstance, before they can be covered by the terms of a licence. It is also a protracted process, with certification commonly taking months rather than weeks to obtain. Since no rig which has not received type approval can be operated on the "new frequencies without breaking the conditions of the licence it follows that using any conversion, however precise, without the proper approval will constitute an offence against the Wireless Telegraphy Act! No-one has yet told us whether the DTI is prepared to consider granting type approval to anyone other than transceiver manufacturers but, even if they are persuaded to do so, the question then becomes one of whether they would be prepared to accept batch samples from the manufacturers of conversion kits or whether every single modified rig would need to pass through their hands. Clearly the latter option is totally impractical, both because the cost to the user would be prohibitive and because the resultant log jam would just about ensure that you never got your rig back.

So what are the alternatives? The need for a universally adopted standard for CB throughout Europe cannot be denied and it is to the DTI's credit that they have acted to bring Britsh breakers into line with their overseas counterparts. It is equally undeniably true that anyone attempting to leave these shores in the company of any rig which exceeded the parameters of the long-awaited common specification would find themselves faced with the same difficulties which have beset British CB enthusiasts ever since your unique frequency allocation was first decided but what of the majority? The thousands who wish to make full use of their licences, without ever travelling further south than Lands End? Is blind adherence to the letter of international agreement to leave them with the choice of either doing without half of the channels to which they will be legally entitled, or buying and operating two separate rigs. Presumably the present terms of the CB licence will soon be amended so as to include the new channels and, if we are to be discouraged from making full use of them, may we expect a reduction in the fee charged for half a licence?

Despite the fact that there is merit in much of the argument put forward by the DTI, particularly in respect of old rigs, they have repeatedly stated that they have no intention of removing our entitlement to the use of the higher channels, so long as they remain in common use, but, given the fact that rigs built to the new forty channel standard are likely to cost quite a bit more than we have become accustomed to paying over the last couple of years, I am less than optimistic about the projected growth in the legal use of the FCC style allocation.

As in any other walk of life, there are bound to be difficulties in getting a large number of countries, each with its own preferences, to reach complete agreement on what constitutes the ideal CB service. That so much has already been accomplished is a measure of the honest intent of those administrations, including our own Radio Regulatory Division, which have taken part in literally months of discussion but to lose sight, at this late stage, of the fact that British CB enthusiasts already have a frequency allocation which, although initially foisted onto them by a reluctant Home Office, now has countless thousands of devotees, is, to say the least, shortsighted. At least this is the view of MP Sir Patrick Wall, who told me that he considers it unreasonable to expect breakers to run two rigs in parallel.

"It may not be possible" he said, "to bring our present radios up to the full requirements of the new standard but we have all waited a long time for the chance to participate in a truly international CB facility. Now that we have achieved it we must do all that we can to make sure that we do not lose the use of our existing frequencies and carrying two radios everywhere you go is not the way to do it!"

Table 1

	MPT1320 (CB27/81)	MPT1333 (TR20/02)
Number of channels	40	40
Frequency band	27.60125 — 99125	26.965 — 27.405
Mode of transmission	FM	FM
Deviation	2.5KHz	2.5KHz
Freq error tolerance	+/— 1.5Kc	+/— 0.6Kc
TX spurii	50nW	4nW
RX spurii	20nW	2nW (below 1000MHz) 20nW (above 1000Mhz)
Intermod	no spec	— 60dB/1uV
Power output	4w	4w
Adjacent channel power	20uW	10uW

934 MHz PERSONAL RADIO

The Nevada Range

Join the growing number of people discovering this exciting radio band.

934 MHz offers 2 way high quality communications from 10 - 250 miles (according to location/weather conditions).

7. **NEW LOW PRICE**

THE CYBERNET DELTA 1 934 MHz TRANSCEIVER
Has been engineered specifically for the UK market using latest "state of the art" technology.

- Sensitive RX (0.25 μV for 12 db SINAD).
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- Auto/Manual scan and search facility.
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£355 + £5 DELIVERY
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POWER SPLITTER
Enables the co-phasing of any two similar 934 MHz antennas to give an additional 3 DB gain.
£24.50

HRA 934 L IN-LINE GaAs FET PRE-AMP

A super new ultra-low noise pre-amp which fits in line on any base or mobile installation. Guaranteed to give a staggering increase in received range. Extremely low noise 0.7 DB NF, 20 DB gain.
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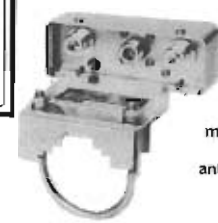
SWR/POWER METER
This precise and extremely accurate meter features an illuminated scale, low loss 'N' type connectors and twin meters for both power and SWR measurement. Power 0-50 watts in two ranges.

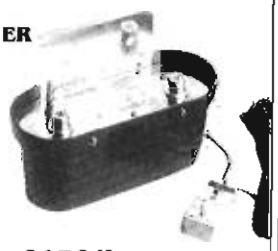
£89.95

REMOTE ANTENNA SWITCH



High quality weatherproof masthead mounting switch. For switching 2 antennas with one cable feed.
£59.95

HRA 900 MASTHEAD PRE-AMPLIFIER

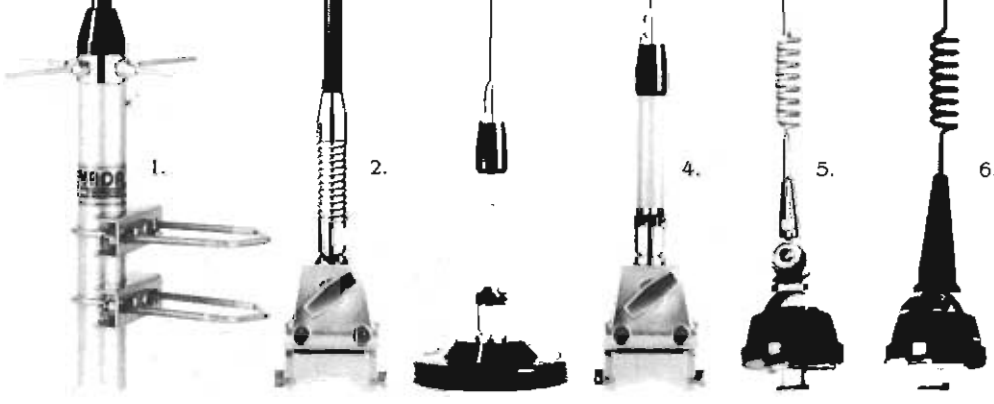


Super low noise GaAs FET pre-amplifier that mounts at the masthead. Low insertion loss and noise (typically 0.8 dB) coupled with 15dB gain enable this unit to double the received range of many sets.
£139.95

NEW

PSDL
Professional dummy load
DC-3000 Mhz
PWR 1 - 15 watts
£36.00

WR 900 SWR/POWER METER
A low cost unit measuring power to 100 watts in two ranges.
£49.50



ANTENNAS
Manufactured to the highest possible specification.

1. **PA7-E BASE COLINEAR** — Gain 7.14 dBI stacked ⅝ array. **£66**
2. **P714-RE** — High gain gutter mount, mobile antenna. **£44**
3. **P7-ME** — High gain mobile magnetic mount antenna. **£44**
4. **P7-E** — High gain gutter mount mobile antenna. **£44**
5. **G900A** — Low profile, bolt thru mobile antenna. **£25**
6. **G900R** — Low profile bolt thru mobile antenna in black. **£25**
7. **Tc 12L MKII 12 ELEMENT BEAM** — A new aluminium version of our succesful 12 element loop quad. Gain: 18dBi. **£39**

ASK YOUR DEALER FOR MORE INFORMATION OR CONTACT US DIRECT.

NEVADA 934

Professional Series

Telecomms, 189 London Road, Portsmouth PO2 9AE. Tel: 0705 662145 Telex: 869107 TELCOM G

Nevada 934 MHz Catalogue with full details and specifications of the complete range is available from Telecomms £1.00.

CONTACT

FOR SALE: Harvard rig £15, also thousands of spare electronic components, cheap or swap W.H.Y. Phone (0793) 812291 extension 252 working hours or 812566 after 5pm.

CALLING all CB clubs/groups. If you want to be entered in the 100% International CB QSL Directory, please send a SAE to YAD 22, PO Box 1029, Yate, Avon BS17 4LE.

WANTED: A good working handheld CB, 4 watts output power, maybe Realistic 1001, in exchange for Harvard 404 base station CB. Please telephone Mr A G Jones on 01-267 5493.

MOBILE FM 40-channel rig for sale. 15 Green Shield stamps or swap for any CB equipment. Contact (054281) 348.

WANTED: K40 mobile antenna with mounting. Telephone (0926) 36034 and leave details.

FOR SALE: 934 Reltec Mk 2, base mike Protel 103, Pre-amp Masthead Nevada 00, colinear base antenna. All items in excellent condition. £320 o.n.o.

FOR SALE: Epson PX8 portable computer 128K RAM, 80-col LCD screen, RS232 interface, software, Wordstar etc. Mint condition. Offers: Telephone (04023) 45969.

TALL handsome 'Worzel Base', age 45, requires nice young lady interested in CB and to become his future Aunt Sally. Ankle-snapper not objected to. Preferably Robin Hood country. Will travel to suitable applicant. Photo and details to 33 Crossman Street, Sherwood, Nottingham. Ball and chain status will be considered later.

LIZZY, took the dogs for a walk lately? Just to say I'm still madly in love with you and I can't wait until you've finished your exams. Still waiting for that record "Saving All My Love For You". Hope to see you soon, lots of love and kisses — Karl.

WANTED: Any CB radio magazines from the late 70s or early 80s, preferably from the good old AM days. Must be in good condition. Best prices paid. Details to Adrian (25DX), PO Box 22, Carlisle, Cumbria.

HELP: Wanted — channel selector switch in good condition for Hygain 2795 Mk 1. Reasonable price offered. Or possibly Hygain address or any info where possible. Contact Snowman (Adrian), 19 West Tyning, Marksbury, near Bath, Avon.

EXCHANGE: 10m Cobra 148 GTL DX, also RAE course never used, for Ham Jumbo or Yaesu FC707 A.T.U. or W.H.Y. Please write to Ian (The Dormouse), 5 Sunset Walk, Bush Estate, Eccles on Sea, Norfolk NR12 0SX.

WANTED: Oscar CBM 272 radio. Must be in working order. Phone Dave, between 5pm and 7pm on (0295) 55488.

FOR SALE: Lafayette 1200 FM 480 channel transceiver, AM, FM, SSB. One owner from new. Internally untouched. Great condition, owner going for something bigger. Offers around £100. Phone Belfast (0232) 224381 after 7pm or 657913 between 1-6pm. Ask for Harry Ashe.

FOR SALE: ZX81, Timex 2040 printer, 4 rolls of paper and 16K rampack. All in good condition and in original packing. £30 o.n.o. or will swap for good quality, working CB equipment. Phone Justin on High Wycombe (0494) 713031.

URGENTLY REQUIRED: Any old unwanted antenna parts (loading coils, top section whips, stingers etc) for homebrew antenna hobbyist. Please send to Nigel Booth, 34 Ingram Road, Boston, Lincs.

WANTED: BRL 500 linear, broken Jumbo, Jaws 2 or W.H.Y. Tel: (days) 01-831 0648.

DISABLED breaker wishes to purchase a multimode homebase transceiver, similar to Ham International Jumbo etc. Must be in good condition, with AM/FM/USB/LSB frequencies. Will pay up to £120 plus postage for suitable model. Credit/HP facilities essential, due to unemployment. Dealer enquiries welcomed. All letters will be answered. Please contact The Secretary on (0875) 813/382.

HARVARD CB homebase, good working order, still in box. £49.95. Harvard 40-channel handheld, good working order £42.50. Realistic amplified dynamic base microphone, £12. Telephone Bicester 246389.

COBRA 148-GTLDX 200-channel, legal front facia, professionally modified, a beautiful radio, £135 o.n.o. Yaesu speech processor, £40. Katsumi speech processor, £60. Zetagi C50 frequency counter, £40. Pre-amp, £10. Power reducer, £10. All offers seriously considered. Telephone Steve on 01-941 0993.

WANTED: Magpie Autoscan 5000. Any condition. Contact Clive Mockett, 23 Appenine Way, Leighton Buzzard, Beds LU7 8XZ.

WANTED: Ham International Concord 3. Must be in mint condition. £250 offered for best example. Please phone Steve on (0446) 710149.

Uniace 200, Teardrop power mike, both boxed and six weeks old plus power supply and SWR meter. Buyer collects. £80. Meday 404096.

WANTED: New or VGC leather type case for a Harvard 410T handheld CB. Also a six-sided nut 13/32 across flats to join aerial to magmount. Phone Hertford (0992) 54435 after 6.30pm.

FOR SALE: Z27 coax gutter mount quick release. Sirtel 5/8 Gap Homebase. Unused. Rotator. 934MHz — 10 x 10 beam unused. £100 but will split. Andy, 01-304-3361.

FOR SALE: Hard-to-find multimode President Madison, modified to new CEPT FM CB frequencies 1987. 200+ channels. Offers, giving telephone number to Edward, PO Box 8, Mirfield, West Yorkshire. WF14 0XA.

A new service for readers wanting to buy, sell or exchange equipment, and for obtaining information (i.e. circuit diagrams, handbooks etc.) that other readers may be able to provide.

CONDITIONS

1. These adverts. are offered as a free service to readers who are not involved in the trade of CB equipment or operate such services on a commercial basis. If this service is ebused by trade advertisers, it will be withdrawn. The advertising dept. is always willing to hear from potential trade advertisers!
2. Adverts. will be inserted as and when space becomes available and will used on a 'first come, first served' basis. We will not be able to guarantee the insertion of a particular advert. into a particular issue of the magazine.
3. Although we cannot accept responsiblity for printer's errors, we will do our best to ensure that legibly written advertisements are reproduced correctly. In the event of a gross error, a corrected version may be printed in the earliest available issue at the Editor's discretion.
4. The magazine or its publishers cannot accept responsibility for the contents of the adverts., and by acceptance of these conditions the advertiser undertakes to indemnify the publisher against legel action arising out of the contents of the advert.
5. The magazine reserves the right to refuse edverts. or to delete sections where this is judged necessary. Adverts. are accepted in good faith and the publisher cannot be held responsible for any misrepresentation or for the activities of advertisers or respondents.
6. Advertisers must supply their nemes, addresses and (if available) telephone numbers and sign the form to indicate acceptance of these conditions. Unsigned forms will not be used.
7. All that is to be reproduced in the advertisement should be entered into the space provided on the form printed in the magazine. All advertisements must give either a telephone number and/or address for repliers to contact and this must be included in the wording of the advertisement. Advertisements must be 40 words or less. Telephone numbers normally count as two; exchenge or exchage code as one, the number as the second.
8. Readers should write their advert. in block capitals or type it, underlining any words that are to apper in bold.

Name .....

Address .....

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.....

Telephone: .....

I accept the conditions listed above.

Signature .....

Send this form to:

Contact
Citizens' Band,
1, Golden Squere,
London WIR 3AB

ENTER YOUR ADVERTISEMENT HERE:

COMMUNICATION THE QSL WAY

Addresses from Staffordshire to the States — it's all in a day's work for David Shepherdson.

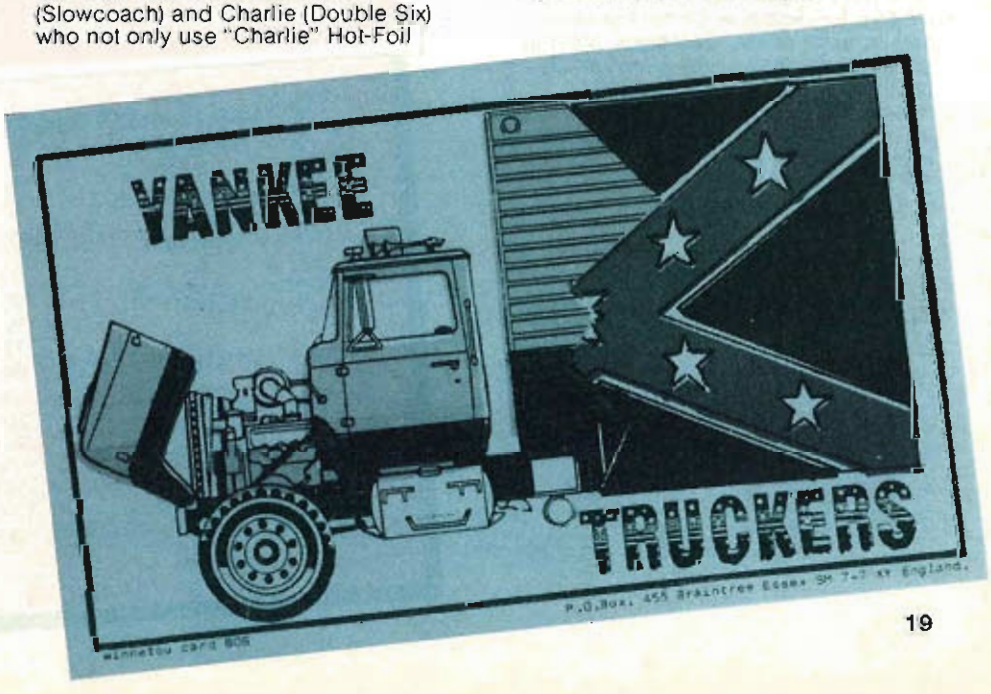
It hardly seems possible but once again, it's this time of year already; I'm sure the years are getting shorter! Many people who write for magazines do a roundup of the year's "moments" and I'm sure that someone will already have done so in this one, so I'll leave that to them and get on with some of the promises I made last month!

I said then that I would include some information on a couple of clubs who want to compile a directory of QSL and DX clubs. The first of these is Martin of the Ham International Owners Group of Mirfield. His idea is to compile a directory of QSL Swap, DX and Owners Groups with entry into the directory being free for the club, and the details sent should be either one of the club's application forms, or a letter stating club name, postal address, date the club started, and now much it costs to join. Martin hopes that this will be, given the necessary support, a bi-annual issue and the first copy will cost £5.

The other one is Bob of the Dartmoor Breakers QSL & DX Club who want to gather the info required (as above) to publish a National Directory of all CB clubs within the UK so that anyone who wishes to do so can have an easy reference for a club, its address and who to contact. The headings for the entries will be: (1) DX, (2) Local, (3) QSL, (4) Hobbies/ Exchange. When Bob has sufficient info together, he intends to contact a few publishers and see if he can get one of these to publish it with the hopes of keeping costs down. Anyone who is interested in either of these please get in touch with the relevant club president. Just a personal point here, when writing to any club, firm or individual QSLer, please do ensure that your return address is nice and clear, and in the case of a letter, that it is easily readable! I mention this now as I recently received one, maybe two letters from the same person. I say "maybe two" as I cannot decipher any part of them, and both letters were postmarked Co. Durham. The second enclosed a loose stamp but I am totally unable to work out a return address as there was no personal card enclosed, just a club card and a veiw card along with a somewhat scrawled letter. So if Boxcab(?) is reading this, that's why I haven't replied; I haven't been able to understand a word of it, sorry!

Okay, some cards and addresses I *can* read now come from Janet (Slowcoach) and Charlie (Double Six) who not only use "Charlie" Hot-Foil cards, but also are connected with the firm and, of course, do QSL! Excellent cards as always which cost about £18.50 per 100.

Other names include those of Alan (TK 795 — Werewolf) who sends details of a change of address along with a new card, as indeed does Dennis (Applejack), new card that is, president of the Currie Card Collectors Club. Applejack has so many different cards now I've lost count! Those I can recall include a series of bird cards, full colour Currie cards, and now I've found a four-part full colour set. Dennis has even managed to get some Currie cards in a textured style of card! As indeed has Freda (Tinkerbell), same address as Dennis. Membership of the Currie Collectors Club costs £1 plus a large SASE (with 34p in stamps) and 10 of your



FORTHCOMING EVENTS:

Forthcoming Events:

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.

personal Currie Cards. Please do note that this club does cater *only* for holders of Currie Collector Series cards; these are numbers and highly collectable! Whilst with Curries', last month I did say that I had been told that the Roman City Club had closed due to work pressures for Guy, the President. Well, I'm happier this month to be able to say that Des has let me know that the Club has been taken over by Barry and Joan (Airwolf and Silver Squirrel) which I'm sure will please members of the RC Club. Club extras are now available from them but please do drop them a line, with SASE, for the current prices.

Details in now from Sussex on the Hastings International DX-QSL Club run by Terry (Star Rider). For a membership fee of £5 (cash) and 10 personal QSLs (or view cards showing your address), signed and dated, you receive you HI pack of Unit No, ID card, certificate, 10 club QSLs, varied exchange QSLs, local info, viewcards, club roster, keyring, pen and stickers, plus log sheets etc. A Club stamp is available at extra cost. Use of the Club PO Box is available free to members providing you spend a supply of SASEs. Terry's another with a vast amount of personal cards, not sure just how many he has currently, but there's some real good ones in there!

Staying in Brighton a moment longer, the Brighton Breakaways DX Group have started up a Swap section. At the time of writing the Club's invites were not available from the printers, so a SASE for details to Chris (The Ninja) should fetch details and costs. Moving up to Scotland now with a few details of the Edinburgh Radio Group International (ERG) which costs £5 (cash or UK PO made out to the Club) and five signed and dated QSL cards. For this amount you get a package consisting of some 20 items including ERG No, ID card, certificate, QSL cards, stickers, rubber stamp, Scottish flag, viewcards, pen, badge, roster, Q-codes etc. Also details of various DX contests and awards.

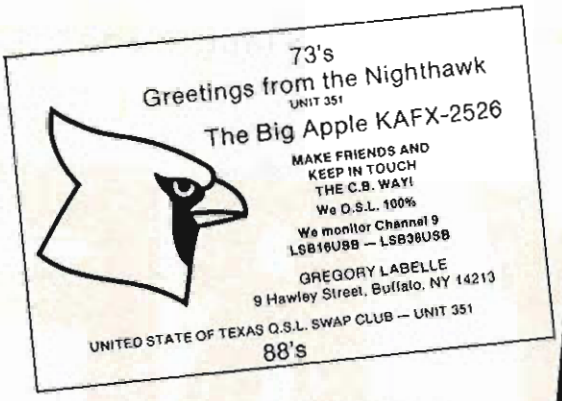
Some time ago I did ask if any club was doing anything for Christmas to let me know in good time, well, sorry to say, only the Sea Dragon Club got in touch in time for inclusion here with the news that they are once again offering Sea Dragon diarys for members, a SASE to the Club address for prices, size and colours etc please. Many clubs also do various designs of Christmas cards or Xmas QSLs so if you fancy some of these from your favourite club, drop them a line, including a SASE with a first class stamp and ask if that club does them.

Right, at long last the promised Browse Through a Club's Package. I'd just like to stress that this is *not* a "Club of the Month" spot, but merely a more detailed look through a club's pack and obviously the decision whether or not to join is up to you. The club going under the 'scope this time

QSLer ADDRESSES:-

QSLer Addresses:

Janet (*Slowcoach*)	80 Audens Way, Midway, Burton-on-Trent, Staffs, DE11 0HQ.
Charlie (*Double Six/ Charlie Cards*)	26 Edward St, Hartshorne, Burton-on-Trent, Staffs, DE11 7HG.
Alan (*Werewolf*)	26 Argyll Place, Portlethen, Aberdeen, Scotland AB1 4QZ.
Dennis (*Applejack*)	29 Morland Ave, Columbia, Washington, Tyne & Wear, NE38 7EA.
Ray McKelvey (*AM 001*)	Box 536, Ellettsville, IN 47429, United States of America.
Olle Paulsson	Sunnanvag 6 G, 222 26 LUND, Sweden.
Sigfried Pucknat	Sheffelstrasse 1,D-6901 MAUER, West Germany.
Harry (*Rusty Bell*)	134 Lakenham Road, Norwich, Norfolk, NR4 6BB.



is the Yankee Truckers QSL Club run by Ian (Freightliner/Conman) of Braintree in Essex. It is possible to join this Club in one of two ways, the first pack costs £4 (cash) plus 10 of your own signed and dated cards for which you get your YT Unit No, ID card and certificate, an unmounted Club stamp, 10 assorted Club QSLs, local info, exchange cards and £1 discount voucher should you wish to join the sister club, the Freightliners.

The second pack costs £8 (cash) and 15 of your own cards and is the one I'll deal with here. This pack is called the "YT Collectors Pack" and I feel it's well worth the extra four pounds. This one consists of a large and very colourful card certificate depicting a big American truck and the stars and stripes, and again, a large and colourful ID card in a similar design. The club stamp comes fully mounted in this package and is some 50mm by 60mm showing the big Yankee Trucking logo and truck with space for your Unit number on the trailer. Then there is a 6-colour cloth club patch, and a second patch of Essex's coat of arms. QSL cards take up quite some room in the package which comes in a good strong envelope which arrived in good condition. These include a good selection of Ian's own cards, a bundle of mixed exchange QSLs ranging from (if you'll excuse the phrase) "basic" mono cards to full colour cards in various Collector Series (FCCs) from the UK to the USA, and all over Europe. Then ther's some "basic" club cards and 10 POMA (FCC) and 10 Winnetou (FCC) club cards for your own use. Then there's a good bundle of local viewcards and tourist info leaflets and a substantial amount of club invitations to both the YT and YT recommended QSL clubs. Also within the package I've found a welcome letter or two, (can recommend a dicte . . . erm, dictionary Ian) a list of recommended clubs, a QSLer's list and QSL tips. Also the Club can arrange for members to have their own name, handle and address printed on the Club QSL cards at a cost of about £18 per 500 Poma Cards. The sister club, the Freightliners, has a similar pair of packages this time at £5 and £8 (for the Collector Pack) and now the YT Club has been made UK PR for the Dutch Trucking QSL Club of Holland. Should anyone wish to join that club, Ian holds several packages which cost £8 plus 20 personal QSL cards. Ian did ask me to mention some time back that Steve (Hot Shot) is also a PR for the DT Club and that he, Ian, uses two handles, Conman and Freightliner as several people have been sending QSLs to both handles thinking that they are two different QSLers.

Anyway, that's it once again, if you would like a mention, please do drop me a line, but please ensure that I can read it as if I can't, I won't be able to use it! If you or your club are organising a "do" next year, get in touch as soon as possible, and not within a couple of weeks of the actual event *please!* One club wrote asking for a mention for their event in the "next" issue for an event that was three weeks off, and the "next" issue was on sale later that same week! So, until next month, do take care and I'll see you again in January's issue!

QSL CLUB ADDRESSES:-

Brighton Breakaways DX Group	PO Box 458, Brighton, Sussex, BN2 3JN.
CurrieCard Collectors Club	29 Morland Avenue, Columbia, Washington, Tyne & Wear, NE38 7EA.
Dartmoor Breakers QSL & DX	22 Blackabrook Avenue, Princetown, Devon, PL20 6RH.
echo Romeo Golf Int' Ham Int' Radio Club	PO Box 205, Edinburgh, Scotland.
Hastings Int DX-QSL	PO Box 8, Mirfield, West Riding of Yorkshire, WF14 0XA.
Roman City DX QSL Club	PO Box 112, St Leonards-on-Sea, East Sussex, TN34 6NX.
Sea Dragon QSL Club	10 Swaledale Crescent, Barnwell est, New Penshaw, Houghton-le-Spring, DH4 7NT.
Yankee Truckers QSL Club	PO Box 2, Sheringham, Norfolk, NR26 8TY
Dragonrider One, *either* Via the Mag, or direct to 3 Tarn Villas, Cowpasture Road, West Riding of Yorkshire, LS29 8RH.	PO Box 455, Braintree, Essex, CM7 7XY.

When writing to ANY QSL Club or QSL Service, always include return postage to assist with their reply, it really does help!

QSL SERVICE's ADDRESSES:-

QSL Service Addresses:

Charlie Cards	26 Edward Street, Hartshoren, Burton-on-Trent, Staffs, DE11 7HG.
Currie Cards	89 Derwent Street, Blackhill, Consett, Co. Durham, DH8 8LT.

John Clark describes how to make a meter which will measure the output of a CB rig

DIY RF WATTMETER

Introduction

The measurement of true rms AC power, with differing waveforms and varying load impedances, is a complex electronic function involving the multiplication of current and voltage at the load terminals.

However, fortunately for CB users, the waveform is always a nearly pure sinewave and the antenna circuit load impedance is always designed to be close to 50 ohms. This means that the output power may be calculated from a knowledge of voltage alone, which greatly simplifies the design of a simple wattmeter.

The unit designed has a fullscale sensitivity of 20 Volts rms, corresponding to 8 Watts into 50 ohms, the 4-Watt point occurring at 70% of full scale. So that power measurements may be made without actually transmitting on the antenna, a 50-ohm dummy load is included which may be switched in when required. As the power consumption of the meter is very low, less than 40 milliwatts at the 4-Watt reading, the meter may be left in circuit permanently without loss of transmitted power.

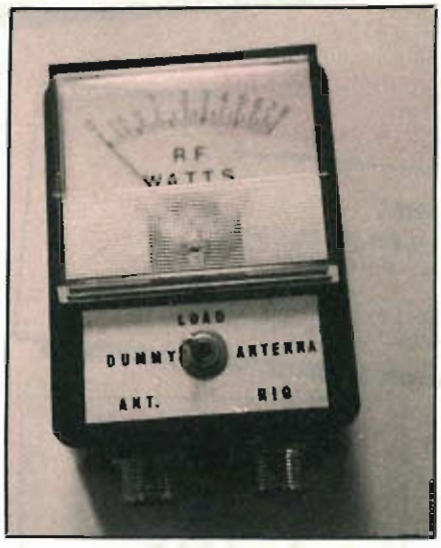
The circuit

The output of the rig is applied to the diodes D1 and D2. D1 conducts on the positive half-cycle and charges C1 to the positive peak value, while D2 conducts on the negative half-cycle and charges C2. The sum of these positive and negative voltages, known as the peak-to-peak value, feeds a current through the meter scaling resistors R13 and R14 to the meter M1.

The switch S1 allows the dummy load network to be brought into circuit as an alternative to the operational antenna. The dummy load comprises of twelve resistors, each of 150 ohms ½-watt rating, arranged in a series-parallel network to provide a total load of 50 ohms with a nominal power handling capacity of 6 Watts. Of course, for short periods, these resistors would absorb the full power range of 8 Watts without serious heating.

The components

The diodes D1 and D2 need to be fast in operation and keep up with having to turn on and off over 27 million times a second, and need to have a peak inverse voltage rating which exceeds the voltage of 56 volts which appears across them when they are turned off. The best diodes for this duty are of the Schottky type, having a particularly low forward voltage drop in the 'on' condition, but the much cheaper silicon diodes will also function very well in this circuit. The component list gives two suitable examples of each type, if the silicon diodes are used then the combined value of resistors



R13 and R14 should be very slightly lower to allow for the greater diode voltage drop.

The author used a meter M1 of 1 milliamp full scale deflection, any other 1mA meter would be suitable and may have any available coil resistance up to 500 ohms. However, meters of less than 1mA are also suitable, and would have the added advantage that they will consume even less power and, because of the lower current, would lessen any very small peak waveform distortion caused by the capacitor charging current peaks. If these more sensitive meters are used, then the values of R13 and R14 should be increased proportionately. For example, if a meter of 100 microamps is used, then resistors R13 and R14 are increased tenfold.

The dummy load resistors must be of the non-inductive type, therefore wirewound resistors are not suitable. Metal oxide resistors may be used as an alternative to the metal film types listed. The toggle switch may be more or less any available type, but do check the switching action because while almost all the larger types make contact in the direction of the toggle action, many of the miniature types operate in the opposite sense and this will have to be clearly understood before connecting up.

Construction

While there is nothing very difficult to be encountered in building the unit, providing that you are practised in soldering small electrical joints and have the necessary basic tools, some of the operations must be tackled with patience and care. Full details are given of all stages of contruction which may, of course, be varied if you decide to use a different box or meter, when the drilling dimensions and the size of the circuit board will be altered to suit. The chosen box has slots into which the board is simply fitted, in the absence of board guides the board may instead be supported directly on the terminal screws of the meter.

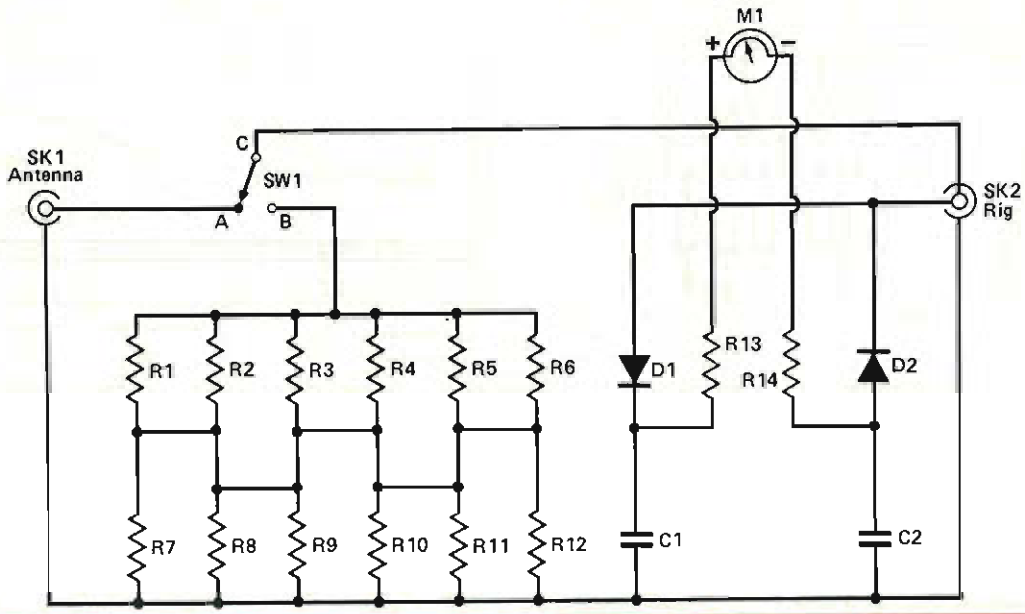
Box Preparation

Before marking or drilling any holes, cover the whole box with masking tape, which will not only make the marking simpler but will also prevent scratches.

First use a small pilot hole for all holes, say 3mm or ⅛ inch. For the large meter hole, use either a 2-inch hole saw or an adjustable fly cutter (tank cutter). For the socket holes, it is best to first open out to ½ inch (a carpenter's centrebit, if really sharp, will do this). Then, if needed by the type of socket used, file the flat and then open out the remainder of the hole with a round file until the socket is a tight fit. After drilling is complete, get rid of all burrs on the hole edges with a file or paring knife.

Next, the guide ridges must be cut

Fig 1



away inside the box on the face which holds the sockets, again using a sharp paring knife, until this inside face is smooth.

Legending the switch on the front of the box can be done in several ways, depending on the facilities you have available. I masked off the whole box again, leaving an area of 60mm x 30mm symmetrically round the switch hole, and painted this area white using several light coats of aerosol spray paint. The lettering was then added using 'Letraset' transfers (12-point size) and varnished over. Of course, if you can get some white Letraset, then the lettering can be applied directly to the black box. A much simpler method, although possibly less smart, would be to write or type onto self-adhesive labels, either individual price-stickers or one larger overall label. After removing the masking tape, any residues of sticky stuff will come off easily using white spirit.

The circuit board

The circuit board is cut from stripboard ('Veroboard' or similar). As this stuff usually comes in rather large sheets, it is better to beg an offcut from an acquaintance as you only need a piece 1.4 x 2.8 inches. Make cuts through lines of holes using a junior hacksaw, keeping the sawblade almost flat on the material to ensure a straight edge, checking that the copper strips run along the long dimension. You should finish up with a piece having 13 holes one way and 27 holes the other way.

Mount all the components as shown, bend their wires slightly to keep them in position, then solder them in place. Then solder on the leadwires, using 7/0.2 or 16/0.2 insulated wire, noting that the earth wire, the wire from the load resistors to the switch and the wire to the rig socket all have to be soldered onto the track side. Crop the excess component wires close to their soldered joints.

Double-check each for correct position, making sure that the diodes are the right way round. Now take a small drill and use it to cut the tracks at the positions marked 'x' in Fig 3. Finally examine the tracks and soldered joints very carefully to make sure that no solder has bridged between the tracks and that all cuts have been made.

Wiring up

Fit the SO239 sockets to the box, with the washer inside the box followed by the solder tag and the nut. The sockets must be tightened very firmly, this can be awkward in the confined space, but I have found that the short box spanner used for spark plugs of small motorcycles fits this nut and will go inside the box quite easily. Line up the two solder tags so that they can be soldered together.

Mount the meter. Again a little difficulty in getting to the four nuts, a good tip is to press the nut into the end of a piece of rubber tube and hold the nut in the tube while starting it on the thread. A small box spanner will be needed to finally tighten the nuts.

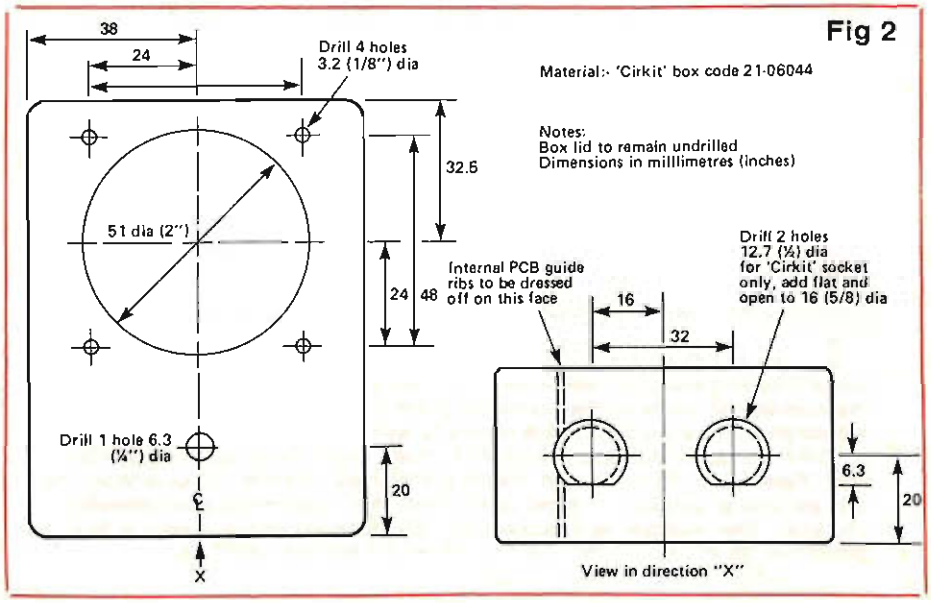
Mount the switch. Drop the circuit board into the slot between the switch and the meter, and connect the two wires to the meter. Connect the remaining wires, including those from the sockets to the switch. The wires from the board to the switch and sockets should be kept as short and direct as possible.

Now, if you have an ohm-meter to hand check that, with the switch in the Antenna position, you have a short circuit between the two socket contacts, and with the switch in the Dummy position there is a reading of 50 ohms between the Rig socket contact and the earth shell.

Scaling the meter

This is the trickiest bit. Unfortunately, because the power into a constant load impedance is proportional to the square of the voltage, the Watts scale is non-linear and has to be marked out

Fig 2



Material:- 'Cirkit' box code 21-06044

Notes:
Box lid to remain undrilled
Dimensions in millimetres (inches)

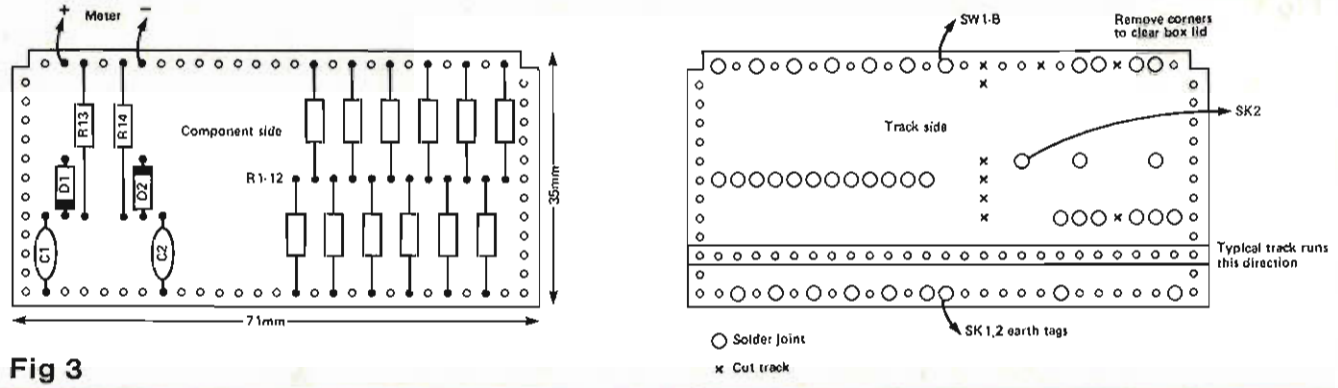


Fig 3

specially. If you are unlucky enough to be a bit hamfisted by nature, it is best to trust the job to a friend who is good at fiddly little jobs like watches and clocks.

First remove the transparent cover of the meter. On the meter which I used, the cover simply snaps off when prised gently in the centre of a long edge, and this may be done while the meter is fitted in the box.

Next, measure the distance between the pivot (a small grubscrew head) and the top of the cutout in the scaleplate. On the suggested meter, this is 9 millimetres. Remove the two screws holding the scaleplate, and very carefully withdraw the plate without bending the pointer. Note that the screws are usually plated steel and will be drawn into the movement magnet unless you are very careful. If you are unlucky enough to have this happen, then remove the screw with small tweezers very carefully.

The nexy step is to remove all unwanted markings from the plate, leaving only the minor graduations. Stick a strip of plastic insulating tape onto a metal plate and, using the point of a sharp blade against a straightedge, cut a strip of tape 2mm wide. Carefully lay the tape over the graduations, following the curve exactly, then press into position. Cut the ends of the tape to just cover the first and last graduations.

Now paint the whole scaleplate white; the easiest method is to use spray undercoat or gloss in several light coats, until the original markings are obscured. When dry, the tape is peeled off to leave only the minor scale markings (usually at every 0.02mA). Clean off any sticky residues left by the tape using white spirit and cotton buds.

List of Components

REF.	DESCRIPTION	QTY.	TYPE	SUPPLIER	ORDER CODE
D1, D2	Schottky Diode	2	IN5711 or IN6263	RS Comp'ts Cirkit	271-713 (5) 12-62637
D1, D2	Silicon Diode (see note	2	IN914 or IN4148	RS Comp'ts Cirkit	271-606 (25) 12-41486
R1-R12	Metal Film Resistor	12	150R ½W 1% or 2%	RS Comp'ts (or other)	149-997 (10)
R13	Metal Film Resistor	1	22L ¼W 2% -do. — 1%	RS Comp'ts Cirkit	148-815 (10) 47-22372 (10)
R14	Metal Film Resistor	1	33K ¼W 2% -do. — 1%	RS Comp'ts Cirkit	148-859 (10) 47-33372 (10)
R13, R14	Metal Film Resistor (see note)	2	27K ¼W 2%	RS Comp'ts (or other)	148-837 (10)
C1, C2	Ceramic Disc Capacitor	2	0.1μF 50V (100nF 50V)	RS Comp'ts Cirkit	124-178 (10) 04-10403 (5)
SK1, SK2	UHF Socket	2	SO239 (round)	RS Comp'ts Cirkit	455-905 10-01011
SW1	Min. Toggle Switch	1	SPDT or SPCO	RS Comp'ts Cirkit	316-973 53-00200
M1	Moving Coil Meter	1	ML52 1mA 200R	Cirkit	37-00521
	ABS Plastic Box	1		Cirkit	21-06044

Note

When the alternative Silicon diodes are used, then R13 and R14 both 27K.

RS components are normally available from CB shops, component stocklists and radio/tv repair depots. The number in brackets denotes the number of parts in the standard pack of the given order code, although most shops split the packs to sell single items.

Cirkit components are available by mail order from Cirkit Holdings PLC, Park Lane, Broxbourne, Herts EN10 7NQ. It must be said that, for this particular project, components from this source are considerably cheaper. The number in brackets for the low-cost components is the minimum quantity of that order code which will be supplied.

Meter Scaling Details

Line	Meter	Scale
Volts rms	Current mA	Power Watts
0	0	0
2.24	0.09	0.1
3.16	0.14	0.2
5.0	0.23	0.5
7.07	0.33	1.0
8.66	0.42	1.5
10.0	0.49	2.0
11.18	0.55	2.5
12.24	0.60	3.0
14.14	0.70	4.0
15.81	0.79	5.0
17.32	0.87	6.0
18.71	0.94	7.0
20.0	1.00	8.0

CB CITIZENS' BAND

READERS SURVEY

It seems like a long time since we last did a Readers' Survey in this magazine. In fact it's been just over two years and so we feel the time is now right to ask you, the readers, what you want to see in Citizens' Band. There are lots of spaces for you to fill in, questions about what you do or don't like about the magazine.

Naturally, we have our own ideas but we are sure you have just as many, if not more. We'd like to hear them, to make the magazine the type of magazine you would like to see.

If you look at the back of this section, you will see a Business Reply Service "envelope". Simply fill the form in, fold it in the way described, stick it down and post it to us. You *don't* need a stamp — we pay for that. So, it's quite simple but it will tell us a lot.

The space (right) is for any extra comments you would like to make that either are not covered by the questions or about which you would like to expand your comments.

CB READERS SURVEY 1986

Please put a tick next to the answer or box that comes closest to your thoughts.

1 How many issues of Citizens' Band have you read in the last six months?

One ☐ Three ☐ Five ☐
Two ☐ Four ☐ Six ☐

2 How many people read your copy of Citizens' Band?

One ☐ Three ☐
Two ☐ More than three ☐

3 How did you obtain this issue of Citizens' Band?

Local newsagent ☐ High St newsagent ☐
At a travel point ☐ (W.H. Smiths, Menzies etc)
Postal Subscription ☐ Delivered or held for collection by newsagent ☐

4 If you buy it off the shelf, do you ever have difficulty in obtaining a copy?

Never ☐
Sometimes ☐
Always ☐

5 How did you become a reader of Citizens' Band?

By chance ☐ Impulse buy ☐
Friend's copy ☐ Recommended ☐

6 How long do you keep your copies of the magazine?

1 month ☐ 6 months ☐
3 months ☐ Longer (please specify)

7 When did you buy this issue of Citizens' Band?

21 November or earlier ☐ 5-12 December ☐
28 November-5 December ☐ 12 December or later ☐

8 Do you know that the publication date of Citizens' Band is the third Friday of each month?

Yes ☐ No ☐

9 If you are a regular reader, how does the magazine compare now with earlier issues?

Much better ☐ Better ☐
No different ☐ Slightly worse ☐
Much worse ☐

10 Please rate the following features from 1 to 10, using 5 as an average. Give 0 if you don't (or haven't) read it.

Update ☐ Antenna Reviews ☐
Q & A ☐ Rig Reviews ☐
Back Chat ☐ Truckstop ☐
Lady Breaker ☐ Club News ☐
Mack Chat ☐ Free Readers Ads ☐
Technical Articles ☐ Accessory Review ☐
DIY Projects ☐ Historical radio articles ☐

11 Please name any subjects covered in the magazine which you feel should be included.

_____

12 Are there any subjects we cover that you feel should be left out?

_____

13 If you have a CB rig, please give the make and model.

_____

_____

13a If not, do you intend to get one in the next six months?

Yes ☐ No ☐

Please specify make and model if you have already made your choice _____

14 During the next year, do you plan to buy:

A 27MHz rig to replace or supplement existing equipment
A 934MHz rig ☐ A new or replacement antenna ☐

Accessories. If so what? _____

15 What do you estimate your equipment to be worth?

£50 or under	☐	£201-£350	☐
£51-£100	☐	£351-£500	☐
£101-£200	☐	Over £500	☐

16 What do you estimate you have spent on CB equipment in the last year?

£25 or under	☐	£51-£100	☐
£26-£50	☐	Over £100 (please specify if possible)	☐

17 Are you a member of

a local CB club	☐	a national CB organisation	☐
A British QSL club	☐	an international QSL club	☐

18 If you are a member of one of the above organisations, how many other members buy the magazine?

75% or over	☐	Between 50% and 75%	☐
Between 25% and 50%	☐	Less than 25%	☐

19 How long have you been a CB user?

One year or less	☐	Between 1-2 years	☐
Between 2-3 years	☐	Between 3-4 years	☐
Between 4-5 years	☐	Over 5 years	☐

20 Do you find advertisements in Citizens' Band useful?

Yes ☐ No ☐

21 Do you look at the advertisements?

regularly ☐ occasionally ☐ never ☐

22 How many times have you written directly to an advertiser as a result of an advertisement in Citizens' Band?

_____

23 If you reply to an advertisement do you prefer to

cut out a coupon	☐	phone	☐
write a letter	☐	visit directly	☐

24 How do you decide what equipment to buy?

On advice of a dealer	☐	On impulse	☐
Through ads in CB	☐	Through test reports in CB	☐
On recommendation	☐		

25 Do you like the design and presentation of Citizens' Band?

Yes ☐ No ☐

26 If no to 25, what do you dislike?

Reader Profile

The questions in this section are of a personal nature and any replies are treated in the strictest confidence. If you would prefer not to answer these, we still value the help you have given us in filling in the rest of the form.

27 Age

Under 20	☐	Male	☐	51-60	☐
21-30	☐	Female	☐	Over 60	☐
31-40	☐	41-50	☐	Single	☐
				Married	☐

28 Income

Under £5,999.00 p.a.	☐	£10,000-£12,999 p.a.	☐
£6,000-£6,999 p.a.	☐	£13,000-£14,999 p.a.	☐
£7,000-£9,999 p.a.	☐	£15,000 and over p.a.	☐

29 Which of the following newspapers do you read regularly?

The Times	☐	Sunday Observer	☐
Financial Times	☐	Sunday Times	☐
Daily Telegraph	☐	Sunday Telegraph	☐
Daily Express	☐	Sunday Express	☐
Daily Mail	☐	Sunday Mirror	☐
Daily Record	☐	Mail on Sunday	☐
Daily Mirror	☐	News of the World	☐
The Sun	☐	Sunday People	☐
Daily Star	☐	The Guardian	☐
The Independent	☐	Today	☐

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2

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W1R 3AB

SECOND FOLD

LADY BREAKERS

A NARROWBOAT ESCAPE

Filly tries to get away from it all — but couldn't quite manage to elude CB

Have you noticed how incredibly difficult it is to get away from it all these days? I mean, dammit, you scour the travel brochures to find the most remote Mediterranean island. After an eight-hour boat trip, clutching your suitcases (have you noticed how suitcases get heavier the longer you carry them? Have I discovered some law of physics that old Einstein missed?), you disembark on to what seems like untouched, unspoilt paradise.

You find what you think is a deserted beach, you spread out your towel, you stretch out blissfully under the sun with nothing but the gentle slap of waves to disturb the silence — then some moron at the other end of the beach turns on his tranny full blast and you're assailed by the Greek equivalent of Radio 1.

I bet if you trekked into the middle of the Sahara you'd fall over some Bedouins watching *EastEnders* on their imported Japanese television sets.

So after an abortive summer spent trying to find a holiday spot really away from it all, we suddenly had the idea of taking off for some remote canal somewhere and sitting snugly on a narrowboat for a week. It was well into autumn, we reasoned, so the canals were bound to be free of holidaymakers. Canals tend to be quiet, peaceful places where the maximum speed limit tends to be around 4mph.

How nice, we thought, to spend a week at walking pace. No newspapers, no telephones, no television, no radio, nothing to remind us we were a part of so-called civilisation, just us and the birds. Maybe not even the birds, maybe they'd all had the sense to leave for Egypt.

So off we headed for the Llangollen Canal in North Wales, which seemed about as remote as we could get, and I waved goodbye to my CB rig with only a twinge of regret. All those breakers out there, they could do without me for a week, I told myself.

We had even removed the mobile rig in the car before leaving, just to remove all possible temptation. As my husband pointed out, you tend not to get traffic jams, pile-ups and tailbacks on canals, so it wasn't as if we needed CB. And since canals tend to go in just two directions — there and back — you tend not to need to ask the way.

So we picked up our boat, and off we sailed, shivering a little in our mufflers and mittens it's true, but oh! the sense of being away from it all! We had checked carefully, and there was no television on the boat, so we couldn't watch *EastEnders* even if we wanted to, which of course we didn't. Someone would fill us in on the story when we got back ... er, I mean ...

"We had even removed the mobile rig in the car before leaving . . ."

We were a mile down the canal when we discovered the CB radio. The boat had actually been fitted with Citizens Band radio! We gaped at it. It sat stolidly in its cubby-hole and looked back at us, as if to say, 'Here I am, use me!'

After a few well-chosen words on the subject of treacherous boatyards, which impressed a group of fishermen we happened to be passing at the time, my husband was all for turning round and steaming — well, sort of chugging gently — back to demand that they remove the rig forthwith. Trouble is, you can't just turn round on a canal, not just like that. You're likely to end up wedged embarrassingly across the width of the waterway. Since we wouldn't reach the next turning point until about lunchtime the following day, it looked like we were stuck with it.

After issuing various dark threats outlining what would happen to me if I so much as glanced at the rig, my husband appeared to accept the situation and on we went. About an hour later, he said to the sky, 'Wonder if it works?'

'If what works?' I asked, mystified.

'That — that thing. That radio. After all, we've paid for it. Wonder if it works?'

'Shall I find out?' I asked. He shrugged. 'Might as well,' he said, carelessly. So I set up the antenna and twiddled a few knobs, and it worked. We picked up a conversation straight away.

After pretending not to listen for a few minutes, my husband said, 'Why don't you ask them if there's a decent pub around here? Might as well stop near somewhere we can get something to eat.'

So I asked, and was duly given the name of a suitable canal-side pub.

'At least it's good for something,' muttered the voice from the tiller. About half an hour later, he asked what the time was.

'Quarter to five', I told him, adding with a malicious glance, 'Football result time. Going to miss the results, aren't you? Nice to be away from all that nonsense for a bit, isn't it?'

He scowled at me and eyed the now silent rig. 'Do you suppose — er — you could ask someone ...?' he asked grudgingly.

And that, of course, was the end of our splendid isolation. Not that I really minded, it was nice to steer to the accompaniment of soft border voices discussing border matters, and not a wally to be heard. As for *him*, he discovered he really quite liked to know what was going on in the world outside, even at second-hand. And once he discovered many of the local breakers to be seasoned fishermen, it was all I could do to prise him away from the mike.

Wonder if there's Citizens' Band in Zakynthos ... ?

TALKING TELEPHONES

Paul Coxwell looks at the similarities between CB and telephones

Did Alexander Graham Bell envisage this?

Telephones!" I hear you shout, "What have they got to do with CB?" Well, believe it or not, there are many similarities between these two forms of communication; after all CB can replace local phone calls! So let's have look at how your phone calls travel across the country and round the world and how CB radio is similar.

The main aim of both telephones and CB is to get acceptable voice quality to enable a message to be passed between two points. One important consideration is bandwidth, or the amount of radio spectrum that is used for each conversation. Fig. 1 shows this graphically. At (A) is the typical range of audio frequencies reproduced by a modern hi-fi set-up, extending from 20Hz right up to 20kHz (20,000Hz). This is all well and good for giving a full, deep sound for the latest LPs or whatever but for just getting a message through is rather wasteful of frequency space. True that full range would mean good quality speech but it is simply not necessary. The generally accepted 'telephone bandwidth" is 300Hz to 3400Hz; these points are also shown in (A).

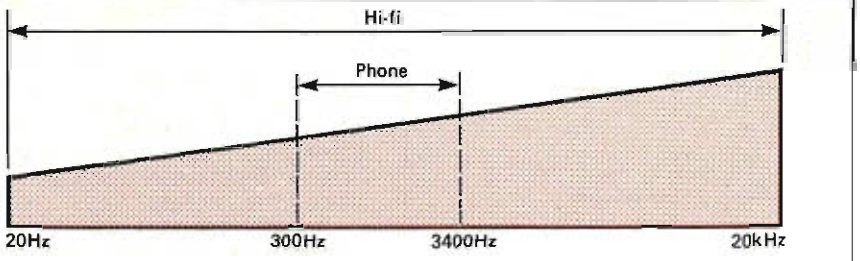
Now take a look at (B), which shows the same overall spread of 20Hz to 20kHz. In this same space we can fit five channels if the frequency range of each is limited to that already discussed. So how would these bandwidths affect a radio signal being transmitted? Assuming a straight amplitude-modulated signal, the total bandwidth is twice the maximum audio frequency present. In fig. 2(A) a carrier is modulated with a full hi-fi range signal, giving a total bandwidth of 40kHz (20kHz below the carrier forms the lower sideband and 20kHz above the carrier forms the upper sideband). Now let's reduce the maximum audio frequency we want to send to 5kHz. This reduces the bandwidth of our signal to 10kHz, which means we can pack four times as many signals into the same space as in fig. 2(B). To put it another way, if CB used full-range audio, we would only have 10 channels in the space that holds 40. Clearly, then, limiting the range of audio transmitted result in a worthwhile saving in space — and if you're making money out of handling other people's conversations fitting four times as many signals in to the space that could be filled by just one means much bigger profits.

Hands up everyone who can see how to double the number of channels we have in fig. 2(B) without using any extra frequency space. If you've been into radio long enough to know about SSB transmissions you've probably got it. Sending signals such as those shown in fig. 2(B) is wasteful, because one sideband of each signal is just a mirror-image of the other. By eliminating one sideband we can then fit in twice as many channels as shown in fig. 2(C). So we have now reduced each channel to a bandwidth of 3100Hz (3400-300).

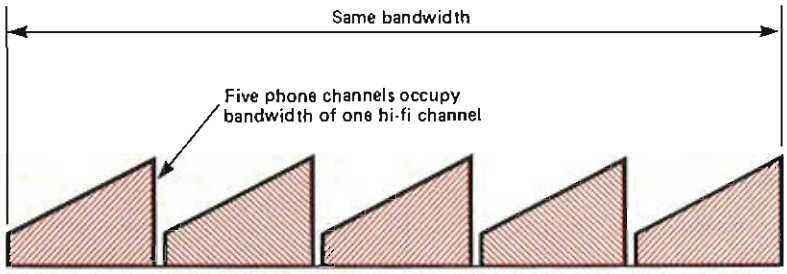
In practice, we need to leave a small space between adjacent channels to prevent what, in CB terms, would be called bleedover and for inserting various control signals, so the channels are each allocated 4kHz. So from our basic full-range double-sideband signal occupying 40kHz we can now pack in ten separate channels. Right, we now need some way of getting these signals from point A to point B.

Say we want a 5-channel link between two points. For CB, the signals are radiated as electromagnetic (radio) waves, for telephones the signals may be transmitted over the air or direct via cables. Either way the outline is the same. Fig. 3 shows one way in which our objective could be achieved — we have five separate transmitters and receivers, each carrying one channel. Using a pair of wires for each channel as in (B) is just the way the circuits between two small telephone exchanges work, but if we want to send hundreds of channels over a distance of miles there has got to be a better way! Obviously there is, and it is called multiplexing.

Let's go back to our single transmitter that can send audio up to 20kHz. Now, referring to fig. 4 let's assume we want to send four separate channels, each with a maximum frequency of 5kHz. We'll leave channel 1 as it is occupying zero to 5kHz.



(a) Typical hi-fi bandwidth (phone bandwidth shown dotted)



(b) Increased channel capacity using limited bandwidth

Figure 1. Bandwidth of audio signals

Channel 2 goes through a converter that shifts everything up by 5kHz, so that this channel now occupies 5kHz to 10kHz. Similarly channel 3 is shifted up by 10kHz to occupy 10 to 15kHz and channel 4 is shifted by 15kHz to occupy 15 to 20kHz.

Now, if we mix all four signals together, what we end up with is one audio signal up to a maximum of 20kHz that is actually carrying four channels. This could then modulate the transmitter so that one radio signal carries four channels. At the receiving end (fig. 5) we reduce the radio signal to audio (maximum 20kHz remember) then feed it into four bandpass filters. These just allow a particular range of frequencies through and eliminate those above and below the required range. The filter for channel 1 then need only remove everything above 5kHz and so on. For the channels that were shifted up in frequency (2,3 and 4) we must shift them back down again to give the original audio signal that we started with.

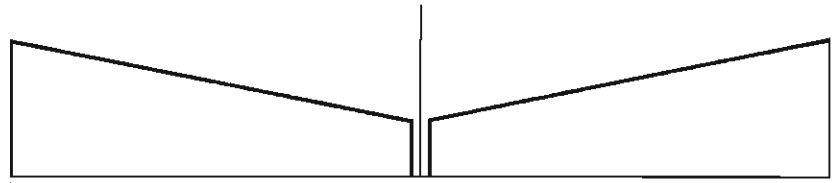
This may seem an awful lot of trouble to go to but when moving up to hundreds of channels it is well worthwhile. What actually happens is that a dozen or so channels (SSB remember) are multiplexed in this way to form a *group* that has a bandwidth of about 60kHz. Several groups can then be multiplexed together to give what is termed a *supergroup*. These can then be multiplexed together yet again to form a *hypergroup*. The end result is one wideband (several megahertz) complex signal that can carry hundreds of conversations (one hypergroup often has a capacity of 960 channels). This wideband signal can then be sent down a coaxial cable or fed to a radio transmitter.

Two such systems are usually employed, one for each direction, so that one cable might carry 960 channels from A to B and an adjacent cable carries the corresponding return speech from B to A. In some cases, two or three hypergroups are combined to give thousands of channels down just one cable. The reason for multiplexing into groups, then supergroups, hypergroups and so on instead of just multiplexing 960 channels together? A link leaving from point A going to point B may have some channels destined for points C and D etc. These signals have to go via point B (fig. 7).

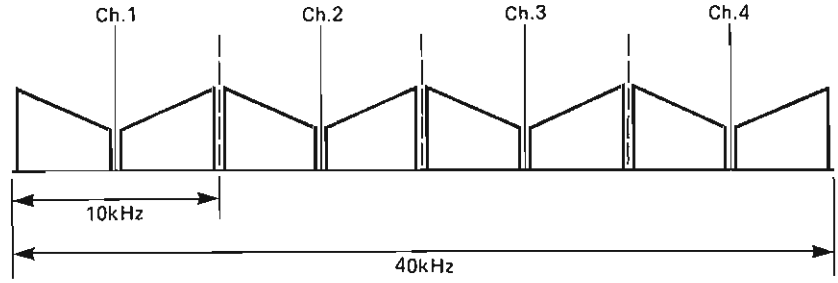
In the example shown we have an initial 960 channels of which 600 terminate at B, 120 continue to C and 240 continue to D. If we just fed 960 channels into one big multiplexor we'd have to demultiplex at B into the original 960 channels. Then we'd have to take 120 channels and feed them into another multiplexer to send them to C, and 240 channels into a second multiplexer to feed to point D. If, however, we arrange for all the channels leaving point A destined for C to be in two supergroups (a supergroup holds 60 channels), and all the channels for D to be in another four supergroups, things are made much easier at B. All that is then needed then is to break the circuit down to supergroup level and feed the two appropriate supergroups to C, four to D and the rest can be broken down into individual channels for B.

Obviously this diagram is very much simplified and in practice there are hundreds and thousands. A long-distance call from one end of the country to the other will pass through doazens of intermediate stages.

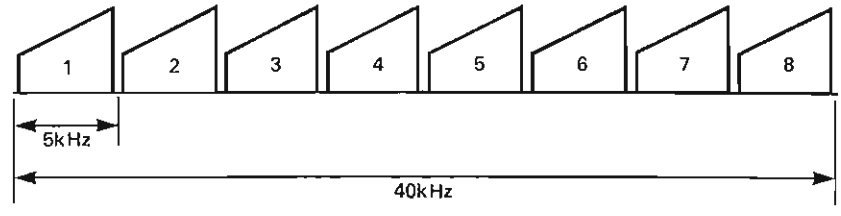
Rather than keep the signals as their normal form but just shifted up and down in frequency, modern data transmission is making increasing use of digital techniques. Pulse Code Modulation (PCM for short) is now in worldwide use, where each audio signal is converted into a digital stream of ones and zeros. These can then be combined (it is much too complicated to go into here) and sent over the appropriate link. Computers had to come into it somewhere didn't they? Of course, such digital binary signals are ideal for the computer's well organised world of zeros and



(a) Double sideband signal (max audio is 20kHz)



(b) Four signals in the same space



(c) Doubling capacity by using SSB

Figure 2. The basis of multiplexing

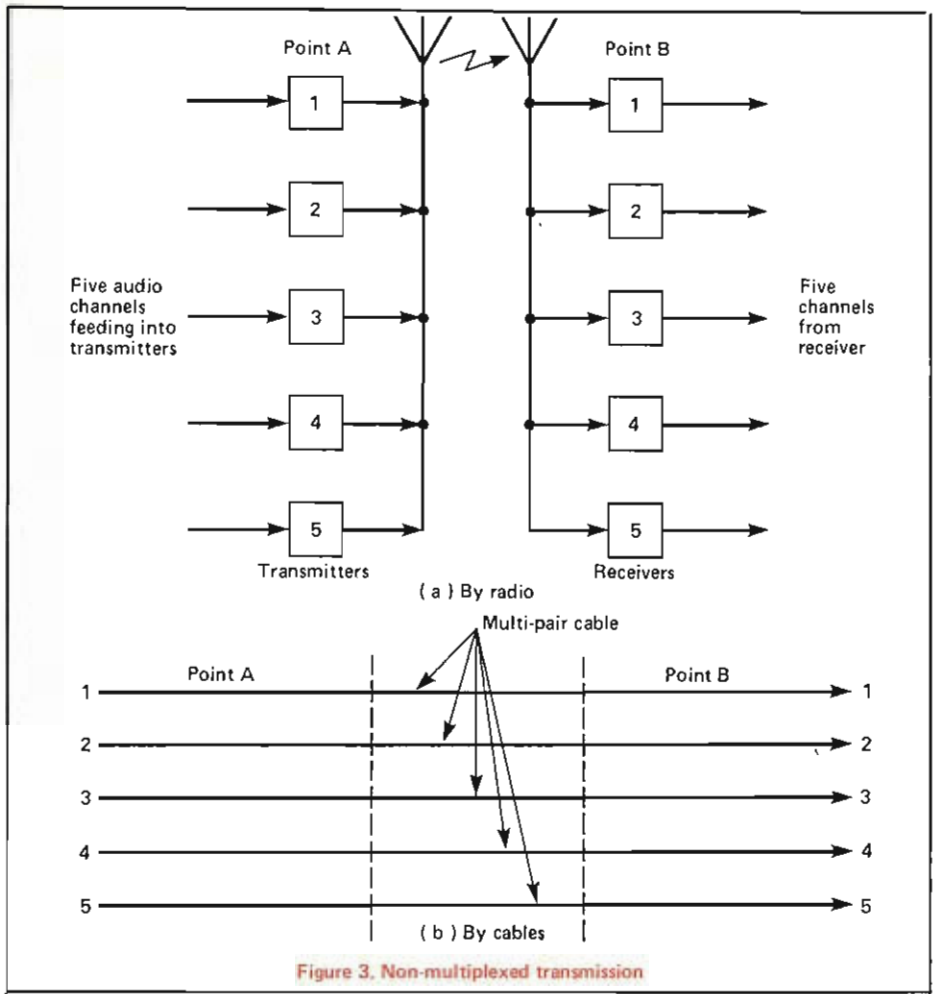


Figure 3. Non-multiplexed transmission

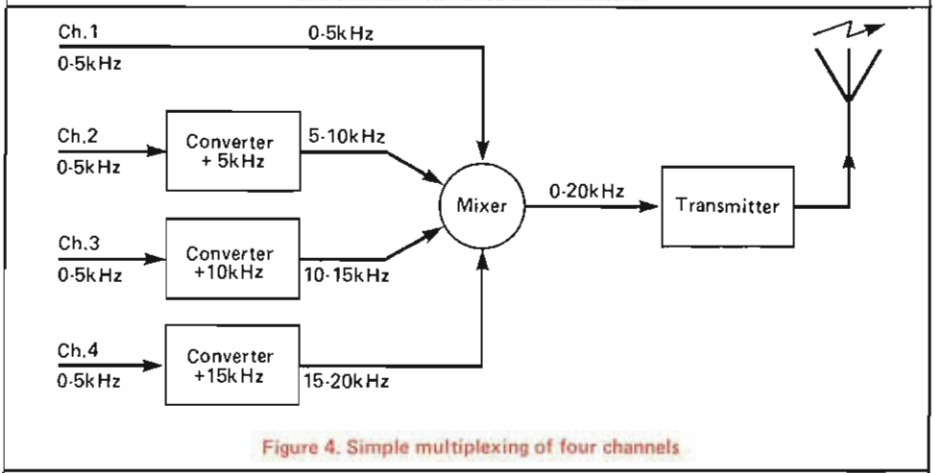


Figure 4. Simple multiplexing of four channels

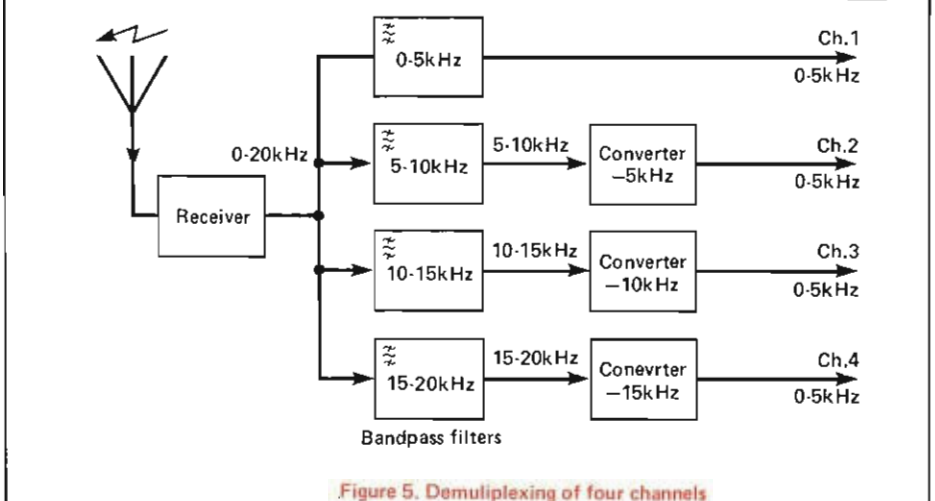


Figure 5. Demuliplexing of four channels

ones. Also gaining popularity is the use of optical fibres. Remember those ornamental lamps that were all the rage awhile back, with lots of coloured dots waving around the end of hundreds of fine strands of fibre? Well it's very much the same stuff that's now being put under roads all over the place. Why use light?

If you care to work out the difference between the lowest light frequency (red) and the highest (blue) you'll find that the bandwidth available is sufficient for millions of channels on one fibre! To get the equivalent capacity using cables would be very expensive and use up many times the space that just one fibre occupies. And an optical cable can obviously contain more than one fibre. These cables will also bring much increased use of video signals as to transmit one TV picture uses the same space as hundreds of telephone channels; if there's plenty of space for both then there's no problem.

Much the same combining and splitting of signals goes on for satellite circuits, the main difference being that the end signal is then fed to a dish antenna to feed to the satellite. These have developed enormously over the years to reach the situation we have today. One early example is a satellite called Intelsat I or "Early Bird" which was put into service in 1965. This could relay up to 240 channels between North America and Europe — remarkable for a small unit measuring only 30 by 24 inches! By comparison, Intelsat V, put into service in 1980, measures 52 by 21 feet and can cope with 12,000 telephone circuits plus two TV channels, all at the same time! Do you believe that it would be possible to launch a satellite for relaying CB messages? It would, although the cost would obviously be high. Radio amateurs have access to satellites for their transmissions, and have had for years, and a similar arrangement for CB could be done, assuming the authorities agreed (not a hope!).

But let's return to Earth to continue our look at the Buzby network (before Buzby got transformed into an ostrich that is — or is it a penguin?!). Having seen how conversations are combined to be sent over vast distances and how this affects frequency space and so on we must go back to basics and have a look at a typical telephone. Fig. 8 shows the circuit of a phone in very over-simplified terms. When the phone is off the hook, switch S is closed allowing current from the exchange to flow through S, transformer T, microphone M and dial contacts D. Audio from the exchange is extracted by the transformer and fed to the earpiece E in the handset. When you talk into the microphone it causes the current in the circuit to vary, so sending audio to the exchange.

The microphone is quite different to the mike on your CB set. Whereas CB miles generate a voltage which is then amplified, a telephone mike relies on an external voltage. The microphone consists of carbon granules which are compacted by the diaphragm when

you talk. This alters the resistance of the mike which causes the current flowing through it to vary with the speech. Modern mikes in phones actually do not use carbon granules but they are arranged so that electrically they are equivalent and interchangeable. When you dial a number the dial contacts D open and close as the dial return to its normal position. If you dialed 4 for example, the contacts briefly open 4 times. Dialing zero gives ten brief interruptions to the circuit. The pulses are only very short in duration (less than a tenth of a second) so the exchange does not "think" that you have hung up. If you want to try an experiment then try dialling a number by pressing the cradle switch— with practice you can manage it but getting a regular pulse for dialing eights, nines and zeros takes a bit of patience. You now also know how to get round those keylocks that fit in the dial!

Only two more components are shown in our simple diagram, the bell B and its associated capacitor, C. The current used for speech and dialling is DC and capacitors do not allow a DC current to flow, so for all intents and purposes the bell and capacitor are not present during normal speaking. When the exchange wants to ring your bell however, it sends AC current down the line. The capacitor passes AC thus causing the bell to ring. As soon as you pick up the phone, closing switch S, there is a DC circuit as previously described and the exchange switches your call through.

The phone unit also contains circuitry to prevent you hearing your own voice in the earpiece, extra contact to stop clicks as you dial and so on. This basic telephone circuit has been in use for many years and the modern phones with all their fancy gadgets still work around this outline. Push-button dialing, at least at this stage, just substitutes an electronic circuit that opens and closes the line to pulse out the required number. North America has had tone-dialing for a long time and it looks as if the idea is just about getting to our side of the Atlantic. In these phones, pushing a button causes two tones to be simultaneously sent down the line. The exchange decodes these and interprets them as digits. The advantage of speed should be immediately obvious — it takes just as short a length of time to dial zero as it does to dial 1. A standard seven digit number can be dialed in 3 seconds flat. Push-button phones over here have the advantage of speedy punching-in of the number, but it still takes as long to pulse the number out as a rotary dial would. Other innovations such as number memories are included in an individual phone and have nothing to do with the switching system itself — the memorised numbers are pulsed out in exactly the same way as normal.

So what of the actual equipment that selects where your call is going? In the old days all calls were placed through an operator who would

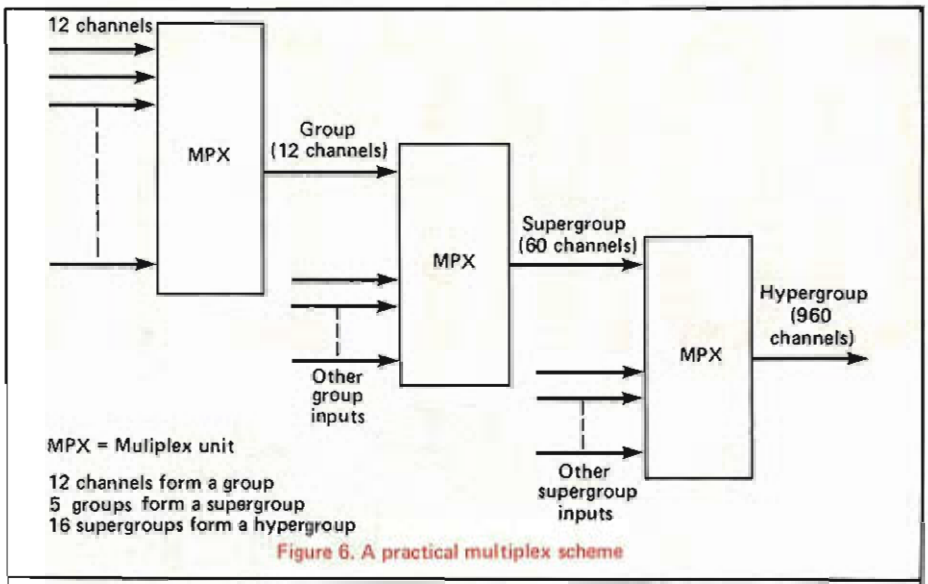


Figure 6. A practical multiplex scheme

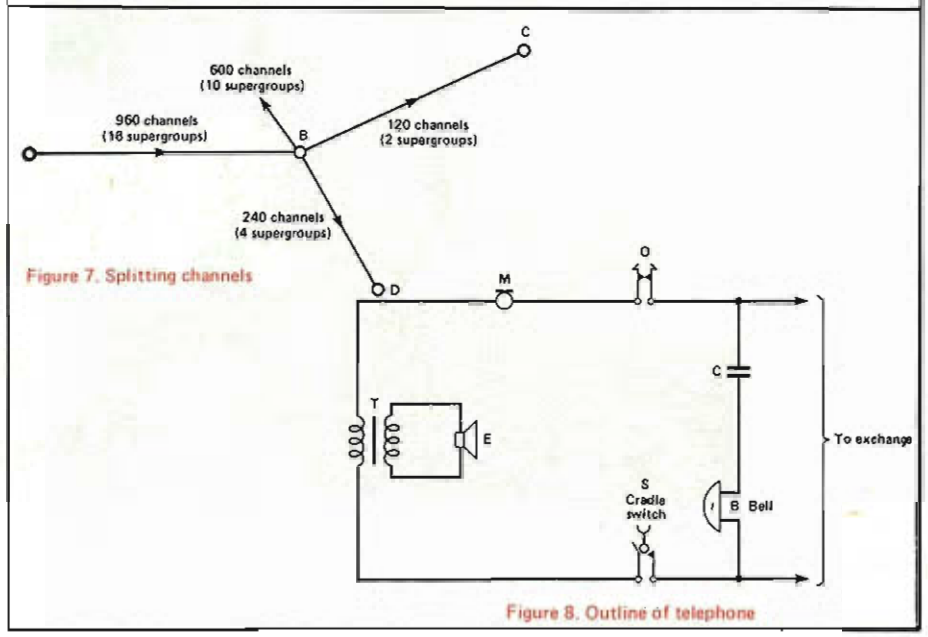


Figure 7. Splitting channels

Figure 8. Outline of telephone

physically connect two circuits together with plugs and sockets to connect your call. Then came mechanical systems such as the popular Strowger system. This uses big heavy switch mechanisms that are actuated with electromagnets. Those pulses from your dial cause the switch to move up one level for each pulse then switch through to another selector switch for the next digit and so on.

Those big switches have several disadvantages — they need quite a lot of power for the magnets, they are heavy, have lots of moving parts and are therefore subject to fairly frequent failure and they are noisy! Standing in a moderate size exchange with hundreds of selectors you can not only hear them working but feel them as well! So modern exchanges use slightly different techniques — crossbar systems where a mesh of vertical and horizontal rods combine to provide links through the office, miniature reed relay banks and now completely transistorised switches with no moving parts all controlled by a central computer. These can monitor the entire exchange and provide a record of every call if necessary. Tracing calls will become much easier when everywhere is using apparatus such as this, so you'd better be increasingly careful if you're the sort of person who makes anonymous calls.

Also interlinked with the telephone network we have data systems for computers and all manner of various control and paging systems. Digital data is the communication system of the future, although there is already a vast digital network worldwide. You can dial direct into the Dow Jones index or whatever, or book seats at a theatre 6000 miles away by going through a digital network. Digital systems will mean much better quality signals — so long as the equipment can detect between a high level (1) and a low level (0) the signal will come through loud and clear — no listening through a sea of noise and crackles.

To develop the entire country to use digital telephone systems will obviously take a very long time, but will in the end be worthwhile. And who knows, maybe sometime in the future even CB will work with digitally-encoded voices!

COMPETITION

Fancy a new twig? Well, here's your chance. Eight lucky people can have the chance to win one of the superb Les Wallen range of aerials.

These fabulous antennas include the Modulator Long Coil, the Super Modulator 11, the Big Twin Modulator, the T-Bolt, Super T-Bolt and Twin-coil T-Bolt, the Saturn Base Antenna and the Super Saturn Base Antenna.

All we ask you to do is put words into Mack's mouth! Simply fill in the balloon with what you think Mack the Hack might be saying — or even what you would like to hear him say! The eight most amusing or original captions win.

Then all you have to do is to send your entry, along with your name and address to: Mack the Mouth Competition, Citizens' Band, 1 Golden Square, London W1 R 3AB. Please also state choice of mobile or base antenna. If you don't want to tear this page out of the magazine, then simply jot down the details on a slip of paper.

Rules: Entries must arrive no later than January 28th 1987. Winners will be notified by post. The Editor's decision is final. No correspondence can be entered into.

NAME.....

ADDRESS.....

.....

.....

(If I am a winner, I would prefer a mobile/homebase antenna)

MACK CHAT

ODE TO BILLY BOY

One advantage of writing this page each month is that I have to suffer the abuse and criticism over the air and in the mail about my comments in this magazine. The advantages of the said criticism is that it, at times, gives me ideas for this column. Many people ask me how do I manage to write this page each month. That's what I ask myself many times as I sit in front of my typewriter a few days before my copy is due, with a blank page and empty head. Yet, after 72 issues, at around 1,000 words a time I have managed. Considering that at the present time not a lot is happening on the 27MHz scene. I know that there has been the recent occasion that some foreign skip has reached these shores, but normally in my area the 27 lacks many of the people of the old days that one could have a decent chat to.

I'll admit that I do occasionally, to my surprise, recognise a station's voice and then maybe we will reminisce of the days gone by and the demise of the many stations that we would pass many an enjoyable evening with. Although I notice that nowadays there are many clear channels of the 40, but by that I mean signals of less than S3. Yet still others seem to want to try and come and use the channels that I might be using at the time. Still I am sure you all know this and I am fortunate that I have the option of switching on the 934 box.

In the October issue of the mag I read two letters of criticism. My reply to 'Billy Boy' is in this rhyme that appropriately could be sung to that old tune that we all learnt at school.

Where have you been all the day Billy Boy Billy Boy
Don't you know the game I play my Billy Boy
You got it in your head, I would not buy is what I said
To swop instead of buy is not the same my Billy Boy.
I went and changed my mind Billy Boy Billy Boy
I had not seen it at the time my Billy Boy
But when at last I did, that's the rig for me I said
So how, without much dough, is it done my Billy Boy?
But if the truth should be told Billy Boy Billy Boy
Ham radio, you know how I feel my Billy Boy
So at Canvey I done a deal, they got my ham gear at a steal
For the MT 370 handset good Billy Boy.

My answer to Eric of south London, ex-(failed?) 934 user. His letter same issue same page. Of course the price is high for this high technology 934 gear, and many on the band say good, it keeps the undesirables off. But I recently helped set up a new station on 934 and it cost less than £150. (Old but good Reftec and loan of surplus antenna.)

The loneliness of the frequency, well yes, I agree to a certain point, but weren't the old AM days lonely? CBers in those days were nocturnal animals, even early FM days for a very short period were lonely. Nowadays I can make contact almost anytime during the working week, although not so busy, there are stations that monitor most of the time.

As for the 934 clubs, were you knocking the 934 Club UK? Because some people who cared for the future of the frequency — yes and of course their livelihood — formed the club. They did not force anyone to join, neither did they force people to purchase their goods to become eligible for membership of the club. I know that the people who are in business and on the committee of the 934 Club UK would resign their position if they could find others to take their place but no-one else does as the last AGM proved.

Thanks to the club I have met many of the voices, recieved regular club mags that inform me of the latest happenings, so I have no complaints. As for me plugging the so-called retail outlets, you follow that, Eric, by saying 'find something new'. The *equipment* that I plugged *was* new. The first many people heard of the new handset was through these pages and I can be proud of the fact that it is due to my mutterings that many stations joined the 934 band. Finally, Eric, my PRCGB membership No is 00620, and I am sure you are aware that James Finch, the founder and president of the PRCGB, is also the guvnor of Solid State Electronics who produce accessories for the 934 and 27MHz CB. However, Jim stresses that his company and the club are not connected in any way. He formed the Club because of his love for the band — and he is also one of the most knowledgeable people about UHF CB with contacts worldwide.

For the 934 vertical antenna users who suffer the cellular phone interference, Telecomms, at the time of writing, are testing a filter that they claim will eliminate the phone problem. Telecomm's tests so far have shown that it does work with little signal or power loss. Hopefully I should have one very soon to try and report my findings. A lot of criticism has been made towards the 934MHz 20 and 40-watt amplifiers. The majority of users value and protect their interest in the hobby. As the advert states 'Amplifiers are sold for customers with high feeder loss'. Fair enough, what a lot of people do not realise is that to obtain the 20 watts from that model, one requires 10 watts to drive it. Now, as far as I know, there is no 934 standard rig that produces 10 watts unless, of course, it has been tweaked up. So, if a rig feeds its legal 8 watts then maybe 16 watts is produced, but take into account your feeder cable, plugs and sockets and you will then see that the final power out will be greatly reduced. Yet another fact that is overlooked is if station A on any frequency uses, say, 20 watts to get out and heard, a distant station B may hear A, but station B using only 5 watts won't be heard by station A. Mike told me that a few people have purchased these amps but discretely mention that they want it kept a secret. I wonder who these power-mad people are.

The question of where to locate a mobile antenna is a perennial one. Smart Alec looks at the possibilities of the boot

PUTTING THE BOOT IN

Just about the most noticeable thing on our roads these days is the number of cars sporting more than one radio antenna. The explosion over the past few years in mobile radio communication has meant that you cannot go very far without spotting them and the range of services which they cover is now so wide that to many it has become something of a pastime to try and decide the working frequency of each mobile they pass. Of course a large percentage are using 27MHz but, apart from obvious commercial users such as the gas and electricity boards, AA and RAC, and the emergency services there is also amateur radio, PMR, cellphone and a host of other services, with the result that it is not at all uncommon to see a single vehicle sprouting three or even four antennae.

Since becoming a CB user I have followed the trend and the last five years or so have seen numerous antennae located in just about every location on my successive cars from which it was possible to develop a signal. Mag-mounts, gutter mounts, trunk lip mounts, bumper mounts, even capacitively coupled windscreen mounts: I have tried them all and very satisfied I have been. That is until recently. What brought about my change of heart was my investment in a new set of wheels. Not just any old set of wheels but a top of the range job with everything except a tea's-made included as standard. Suddenly I felt nothing I could add to the exterior of this vehicle would improve upon the art of its designer and so I began to look around for ways of sending out a signal without making the thing look like a mechanical porcupine.

My first problem was to find somewhere on the flight deck where the rig might remain accessible, at the same harmonising with the existing array of switches, gauges, dials and a bank of warning lights, half of which I hope I never need to understand the function of. "S'easy!" said the dealer's service manager. "Just cut out this 'ere panel and your radio will fit neatly into place." It's all right for him. He hasn't just invested his hard-earned cash in an expensive new toy and he has a little difficulty in understanding why I fail to share his enthusiasm for tearing a dirty great hole in its brand new, and somewhat imposing, dashboard. "No, thanks," says I, wandering off to contemplate the problem anew.

The glove-box? Too far away from my hand and anyway, it wasn't deep enough! Under the seat? No chance! What with fore and aft adjustment, reclining back, height and tilt adjustment and even lumbar support control I doubt if you could even fit a pack of cigarettes under there! The transmission tunnel? You must be joking! Not content with filling the dashboard, the designer had arranged things so that a myriad switches rested neatly on the tunnel, completely surrounding the auto transmission selector lever. Nor could I fit the rig between the seats, as this space was neatly taken up by an arm-rest, which, upon closer inspection, proved to have a hinged lid concealing yet another glove-box. "Looks like we're in, here," thought I, tentatively trying out the rig for size. Surprise, surprise, it fitted but my elation was to be short-lived as I realised that it would require the removal of almost everything but the back axle in order to mount the rig and feed both power and coaxial cable to fit. Even then I would be unable to read the channel numbers without turning my head away from the direction in which I was travelling. Curses. Foiled again. Eventually and with considerable help from the Sales Manager at my local dealer's, I settled

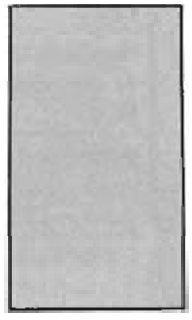
on a less than ideal location, tucked way underneath the dash. Although it had the distinct disadvantage of deepening the colour of the bruise on my knee each time I climbed into the car, it was convenient in that I could reach for the mike quite easily and, at a pinch, read the display without getting myself killed in the process. It was also handy for such minor inconveniences as feeder cable and power source.

Once the rig was on board, my attention turned to the next stage of the game. For that is what it had now become, with my wife, numerous friends and even the kids offering helpful, if impractical suggestions. Successfully mounting the antenna was to prove every bit as challenging as installing the rig had been. From the outset I was loathe to increase the number of visible aerials beyond the one which, from time to time, already protruded from the rear wing. For one thing, the local gentry have a helpful habit of trying to tie knots in anything left sticking up and for another, as I have already said, I was anxious not to spoil the pristine lines of my pride and joy. Anyway, there were numerous problems associated with the idea of external mounting. A large sun-roof effectively prevented the use of all but the very back of the roof, and gutter mounting was definitely out, as I was determined not to have odd bits of coax sticking out between the doors. I had already decided against a trunk-lip mount on purely aesthetic grounds and soon began to toy with the idea of removing the retractable broadcast antenna.

There is nothing I like better than a simple life and so, against my better judgement, I toddled off to the local rig shop to buy a splitter box. What a disaster that turned out to be! Not, I hasten to add, as the result of any defect in the manufacture of the box but, I suspect, more to do with the configuration of the car and the relative position of the antenna. Having removed the manufacturer's choice of broadcast whip, I then spent countless hours in a finally successful attempt to modify the original wing fitting to accept the transmitting antenna.

So far, so good, but I was by no means out of the wood. The next stage of what had, by now, become something like a lifetime's work, entailed the careful but heart-rending gutting of the car's interior, as rear seats, mats, carpet and various bits of trim were removed to create a path for the feeder. Fortunately, the manufacturers had appreciated my lack of enthusiasm for most things energetic and had provided a means of opening the boot whilst remaining firmly fixed in the driving seat, which meant that I was able to pass the coaxial cable through the resultant hole in the rear bulkhead, thus avoiding having to lay both cable runs alongside each other. Cable installed and interior refurbished, thankfully without anything left over, I began to make the necessary connections. Have you ever tried to wield a soldering iron whilst lying flat on your back in the boot of a car? It ain't easy! Not even when its makers have thoughtfully provided a powerful internal lamp, which goes out every time the boot lid descends because you have redistributed your weight to relieve the cramp in some minor part of your anatomy!

All connections having been made, I climbed stiffly from my cramped quarters, ready to make a test transmission. The VSWR bridge showed a healthy 1.4 to 1, which only goes to prove what liars they are, as power output was decidely below par and a quick check with a grid-dip oscillator showed that the whole issue was actually resonant about 5 megs higher than the required frequency. Minor modifications to the innards of the splitter box soon proved ineffective and, in sheer desperation, I quickly connected the feeder direct to the base of the antenna. Result, perfect resonance! So, reasoning that since the antenna was operating perfectly on its own but still concerned to retain the services of Jamieson, Young and Co, I reinserted the splitter, this time with a shorting link across the series circuit which fed the transmitter. The result was absolute chaos. Although the rig behaved perfectly, all signals to the broadcast receiver were so heavily attenuated as to render all but Radio One completely inaudible. Not that all was lost, however, as a few minutes thought and a rummage through what my wife irreverently refers to as the "junk" in my garage left me holding just the capacitor I needed to prevent the broadcast signals from being fed to the rig.



"I have seen numerous antenna located in just about every location . . ."

A solution of a sort having been achieved, I patted myself on the back, content that I achieved my objective of running a rig without increasing the number of aerials on the car. A few days use, however, soon showed up the flaws in my thinking. Although the rig behaved impeccably throughout, reception of broadcast stations such as Radio Luxembourg and a few which the Wireless Telegraphy Act dictates shall remain nameless remained decidely patchy, though I could discern no deterioration in the reception of stronger stations. Undaunted, I began to look for another solution.

"What the Dickens do you want those for ?" demanded an incredulous Service Manager, as I stood before him demanding to know whether he had any nylon bolts similar in pattern to those which currently ensured that my boot lid did not come adrift at speed. He was even more staggered when I explained that I needed them in order that I might electrically isolate the boot lid from the rest of the car. Not the least mollified by my assertion that I intended to use the boot lid as a broadcast reception antenna, but always willing to help, he soon rounded up enough non-conductive bolts, but not before we had spent an interesting half hour discussing the possibility of taking the signal from the rear screen heater. For anyone interested, we decided that it would work, provided that suitable capacitors were inserted in series with the coaxial cable to ensure that the DC current which heated the elements did not pass to the rig and that an RF choke was used to increase the impedance of the element. Our one area of uncertainty was that the choke might not be strong enough to withstand the heat generated in the element but my confederate, for that is what he had now become, was so keen to try out my idea of using the boot lid that we decided to shelve all discussion of the heating element for the time being.

The next morning found my car back in the workshops where one mechanic was removing the boot lid whilst another was busy performing the first service. The bulk of the lid being effectively isolated by its surround strip, we were left with three possible problem areas and so we set to isolating them in turn. The first step was to insert a non-conductive material between the hinge arms and the main body of the panel. This was easily solved by means of small strips of rubber cut from the floor matting of a car which they were about to write off. Operating very carefully so as not to move these strips, we refitted the lid to its hinges, solving our second problem by means of the nylon bolts which had caused such incredulity the previous day. This left only the boot latch to be isolated, so, using the latch itself as a template, the mechanic cut and drilled a small plastic plate which we then inserted behind the latch, making sure to use nylon bolts yet again.

I think it came as something of a surprise to all of us when, once the conductor of the coaxial feeder had been soldered to the underside of the now isolated lid and the braid fixed to a convenient earth point, we achieved perfect reception on every station to which we tuned. Our only real concern was that with the boot closed the signals might be diminished by its apparent horizontal polarisation but, at the time of writing I have been using my boot lid antenna for over a month and am perfectly happy with the results, even on Radio Luxembourg and the dealer's Service Manager cannot resist showing the results to all and sundry every time I go near the garage. I even heard a rumour that he had demonstrated its capabilities to a man from the factory. So who knows what next year's model might contain?

C.B. COMPONENT STOCK LIST

TRUCK KING — THE TRUCKERS SHOP

We list below some of the more popular CB Components usually available ex stock. In addition we have a back up stock from various sources of over 2,500 other types of component. If you can't see what you require phone or write (with S.A.E. please) for a quote. Please note all quoted prices are **inclusive** of V.A.T. so remember to deduct this if comparing with other suppliers lists since most firms quote net prices then add V.A.T.

It is also worth noting that a number of CB Components available currently are of poor quality and grade, we always try and ensure that the items we stock and also use ourselves in our own conversions and repairs are of high grade, NEC, Motorola, Sanyo, Mitsubishi, etc.

Prices listed below are separated into one off columns and also quantity prices for 5 or more of **one item**. For larger quantities please phone for quote.

Please add 30p per each complete order to cover packing and first class post.

Components paid for by Access, Visa, AMEX or P.O. are normally despatched same day. If paying by cheque please allow several working days for cheque to clear.

Please do not use discount vouchers when ordering components or add the value of component orders to other items if using discount vouchers. This will only delay your order and cause inconvenience.

COMPONENT	1 OFF	5+
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2SC 536	.46p	.37p
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2SC 900	.40p	.37p
2SC 930	.25p	.21p
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2SC 1909	£1.38p	£1.21p
2SC 1945	£4.19p	£3.85p
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2SC 2078	£2.12p	£1.58p
2SC 2086	.65p	.58p
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2SC 2290	£21.40p	£20.80p
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2SD 325	.85p	.68p
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MB 8719	£5.52p	£4.95p
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PLL 02A	£7.82p	£7.20p
BA 402	£1.15p	£1.05p
BA 656	£2.30p	£2.15p
LM 386	£1.60p	£1.42p
LM 567	£2.90p	£2.58p
10.695 XTAL FILTER 7.8 10K OR 15K	£3.68p	£3.22p

2SC 1306 and 1307 are not listed above since we have found quality of these very variable. For 2SC1306 we recommend 2SC1969 and for 2SC1307 the 2SC2078 is a better quality substitute.

PLEASE DON'T FORGET ■ ADD 30p PER ORDER TO COVER PACKING & FIRST CLASS POSTAGE ■ DO NOT USE DISCOUNT VOUCHERS WHEN ORDERING COMPONENTS

CB BOOKS FROM CB CITY, U.S.A.

from Lou Franklins CB City Company in the USA four invaluable handbooks for Technicians and Rig Doctors.

PLL DATA BOOK

A COMPLETE, *SIMPLIFIED* GUIDE TO PLL CIRCUIT OPERATION!

Author Lou Franklin (THE "SCREWDRIVER EXPERT'S" GUIDE) unravels more mysteries of CB Radio electronics — this time focusing on the Phase-Locked-Loop or PLL Frequency Synthesizer. This is the heart of every modern CB circuit, and one area which until now has given headaches to beginner and expert alike.

In simple, non-technical language, you'll quickly learn to understand the workings of PLL synthesizer circuits. Whether you're a professional CB repairman or a casual hobbyist, there's something in these pages just for you.

FEATURES

- How they work, in detailed, easy-to-understand terms.
- How to modify them for many more channels.
- How the PLL circuit is used to generate FM transmission and the SSB "slider" shift.
- How they provide the required signals for CB transceiver operation. Most common circuits illustrated in very simple block diagram form.
- Pin-by-pin function description of nearly every PLL device ever used. Over 50 specific ICs including manufacturers' cross-references.
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This big new International Edition covers all the most popular, classic PLL circuits. Plus all the latest state-of-the-art devices used for CB synthesizers throughout the world. Required reading for every serious CB operator!

SCREWDRIVERS GUIDE

FINALLY, A "BIG DUMMY'S" MANUAL OF CB RADID REPAIR!

Written in layman's terms, this unusual book teaches the average person how to recognize and repair many of the most common CB radio problems, and how to get the best performance from his rig.
No special electronic knowledge or expensive test equipment is usually required. Using only common sense, logic, and some everyday tools and accessories, the reader is quickly guided to the problem area by simple illustrated instructions. Emphasized throughout is the fact that a person doesn't have to know how complicated electronic equipment works to be able to fix it. Many of the greatest CB mysteries, such as antennas, are simply explained using everyday terms and analogies that anybody can understand.
This latest edition also contains new sections to help the more advanced CB hobbyist modify his equipment for greater performance capabilities.

HIGHLIGHTS:

- How to diagnose and repair the most common antenna/SWR problems.
- How to wire any mike to any radio. Includes many common mike problems.
- How to "peak out" transmitters and receivers for greatest range.
- How to recognize the most common faulty parts, find an inexpensive substitute part, and replace it yourself.
- Unusual tricks and methods for curing TVI and ignition noise problems.
- How to add extra channels to both crystal and PLL rigs.
- How to make SSB Clarifiers slide on TRANSMIT too.
- Simple AM-to-FM conversions.
- Specific power/modulation adjustments for most popular models.
- Unique Troubleshooting Chart to quickly isolate a problem.

UNIDEN SERVICE MANUAL

26-page book includes PB010 chassis (COBRA 148GTL-OX, SUPERSTAR 360), PC999 (GRANT), and PB042 (JACKSON) in one complete book. Also applicable to Stalker 9FDX export, and American AR-144 type chassis. Written by Lou Franklin, this is the only service manual in existence. Complete specs, voltage measurements, stage gain measurements, theory including detailed PLL description, complete alignment instructions and layouts, block diagram. Special addition describes modifications and improvements for each chassis. Large 11" x 17" schematics for each chassis.

CYBERNET SERVICE MANUAL

24-page book includes PCMAC01S, PTBM125A4X/PTBM131A4X, PTBM133A4X, PTBM121D4X, Models: Cobra GTL150, 148GTL-DX (fake), Coll 320FM, 320OX, 1200DX, 1600DX, 2000DX, 2400, Excalibur, Falcon 2000, Ham International Concorde II, Concorde III, Jumbo III, Multimode III, HyGain 2795, 2795DX, 8795 (V), Intek 1200FM, Lafayette 1800, 2400, HB870AFS, Midland 7001 export, Mongoose 2000, Nato 2000, Pacific 160, Palomar 2400, 5000, Starlire DX, Superstar 2000, 2200, Thunder 2000, Tristar 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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NOW BACK IN STOCK

Just in from this famous manfacturer in USA and its a real mini gem. Measures just 4" across, 1" high with a front fitting mike, the smallest radio ever made for the UK market. It's audio quality and rejection capability is excellent, far superior to its well known predecessors. Ideal for those small spaces in your mobile.

£59.95

FORD 505 Cybernet Beta 3000

£95.00

The well-known Cybernet top of the range unit with a host of features. Volume, squelch, tone control, RF gain, speech booster, PA facility, LEO dimmer and Channel 9. A well proven, top quality unit.

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A high quality Cybernet boarded radio which gives excellent performance designed for gimmick free mobile use. It features volume, squelch, ch. 9 switch, deltatune and attenuator. Its performance is on a par to similar boarded Yorks, Rotels, Harriers etc. Highly recommended.

ONE HANDER AUDIOLINE 342

£79.95

The greatest security CB ever — you just unplug it and take it with you! Slim calculator-style hand unit has all the control features — LED Display, Up/Down Scan, Volume, Squelch, Hi-Low Power, Channel Lock-on Switch, Tone Control and Internal Speaker plus of course the usual excellent Uniden Circuitry which gives crisp, clear copies. The compact power box which feeds the hand unit stows away out of sight under your seat or in the glove or dash. Beat the car thieves and still enjoy excellent CB performance.

£79.95 MAXCOM 30E

This top of the range radio features crystal filtering, RF & mike gain, PA facility, DX switch, tone switch and high SWR indicator. (this radio is featured in 'Citizens Band' reference section). Excellent value and performance.

SOME OTHER RADIOS FROM STOCK.

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Interceptor 300	£45
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Maxcom 7E	£79
Delta 934	£345

DOZENS MORE BASE STATION AERIALS IN STOCK — PHONE WITH REQUIREMENTS

SECONDHAND RADIOS

We have an extensive range of part exchanged second hand units of all types. In recent weeks we've had good examples of hard to find units such as RVC240, CBX, 5 STAR, SHOGUN, WAGNER BASE, TRISTAR, HYGAIN, JUMBO, COBRA, NATO, BELCOM, TS-788 and many more. **WE DO NOT PUBLISH OR ISSUE LISTS** of these radios as turnover is rapid and lists are out of date before they are printed. If you have a requirement for a specific type of radio please write in with, preferably, a daytime phone number where we may contact you. All radios are offered with a warranty, fully serviced and tested and very often with a far superior spec. to the original. Multi mode units for instance, usually have a 6-position Super Low to Super High plus UK 40 capability and are not to be confused with the screwdrivered rubbish usually offered on the air by "rig doctors". Bear in mind also that we always require good, clean radios for part exchange or immediate cash buy-in.

SOME SPECIAL BASE ANTENNA PRICES!

MINI BOOM £14.95

Economy priced high performance just 1.5 metres whip length, suitable for balcony, railing, window ledge mounting, any location where a small home base is required without sacrificing good RX and TX capability. Supplied with standoff, tunable radiator and ground plane, ensures best SWR and still has 200W power handling capacity. LEGAL

THUNDERPOLE 3 LEGAL

Incorporating 3 angled ¼ wave radials and a helically wound centre load whip. This well known home base twig is a popular choice.

SPECIAL PRICE £19.95

£19.95

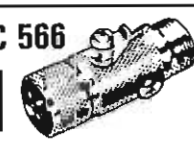
LEMM MINI GP DX

Standing just over 2m high the new GP DX comes with a stand off bracket for outside mounting or can freestand in a room or loft. Top loaded for high performance but compact enough for use where a discreet antenna is required. Performance equal to many bigger base station antennas and highly recommended.

LEGAL

UK MANUFACTURE GP ½ WAVE	£11.95
UK MANUFACTURE GP ⅝ WAVE	£14.95
UK MANUFACTURE BLUE ROD ½ WAVE (ANODISED COATING)	£14.95
UK MANUFACTURE SILVER ROD ½ WAVE (3 SHORT RADIALS)	£17.95
UK MANUFACTURE SILVER ROD ⅝ WAVE (3 SHORT RADIALS)	£21.00

NC 566



£1.65

Lightning arrestor — A must for any home base!

ADD £1.25 WITH CIGAR LIGHTER PLUG FITTED.

£3.50

12 volt Xmas Trees

WITH SPARE BULBS

End of Year 3 DAY SALE

Just to remind you our famous End of Year Sale is not so far away! Monday 29th December, Tuesday 30th December and Wednesday 31st December — Don't miss it! Hundreds of breakers from all over the UK were amazed by our low prices last year.

We'll be offering a range of antennas and accessories some at ¼ and ⅓ of normal cost.

Remember these prices are for three days only, available to personal callers only and will not be repeated. More details next month in this magazine.

TRUCK KING

THE TRUCKERS SHOP

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CROSS OVER ADAPTOR

converts Uniden to Cybernet wiring and vice versa. No trailing crossover leads, no more mike rewiring.

£5.95

Other 4 pin combinations available — please phone.

USA TEE SHIRTS & SWEATS with the original factory logos.

Available in USA made top quality white tee shirts, sizes S-M-L-XL-XXL—£4.95 and USA made grey sweatshirts S-M-L-XL—£9.95

'Firestik' ANTENNAS PHOENIX ARIZONA

A12 Firestik

Cobra CB RADIOS

A2 Cobra

MIDLAND

10 Midland

SIDE SCREWS

Replacement side screws to fit most radios.

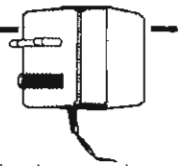
State CB make and model £1.25 per pair

WALKIE-TALKIE ACCESSORIES

RUBBER DUCK £7.50

SCREW ON TYPE FITS ALBA, DNT, HARVARD, MAXCOM, REALISTIC ETC.

CHARGER £7.50



Nicad charger plugs direct between mains and hand held, suitable for Alba, Harvard, Maxcom etc. State make and model when ordering.

RECHARGABLE NICADS SUNRISE

1.25 volts AA size £1.25 each

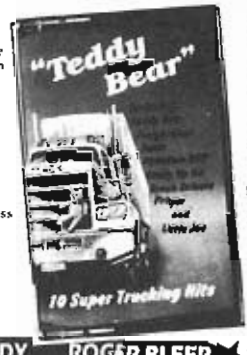
CB AND TRUCKING MUSIC ON CASSETTE £2·50 each.

Side 1
1. Convoy
2. The Silverton
3. Classified
4. Mean Bear
5. Truck Driving Queen

Side 2
6. There won't be no Country Music
7. Crispy Critters
8. Truckin' Man Type Motel
9. Old Home Filler Up and Keep On Truckin' Cafe
10. Rubber Duck

Side 1
1. Me and Old C.B.
2. Looking at the World through a Windshield
3. C.B. Savage
4. That's Truck Driving
5. Roll on 18 Wheeler

Side 2
6. Wolf Creek Pass
7. Girl on the Billboard
8. Gimme 40 Acres
9. Eighteen Wheels
10. Ode to 10-33



Side 1
1. Teddy Bear
2. Freightliner Fever
3. Truck Drivin' Son of a Gun
4. Phantom 309
5. Truck Driving Man

Side 2
6. Giddy Up Go
7. Truck Driver's Prayer
8. Six Days on the Road
9. Moving On
10. Little Joe

New ECHO COMPRESSOR SCRAMBLER MELODY ROGER BLEEP

The voice controller is here! — made *exclusively* for us in Japan this is the last word in voice boxes. It incorporates ECHO with adjustment and monitor, SPEECH COMPRESSION, suitable FM and SSB, for voice levelling, VOICE SCRAMBLER for private conversation if used in conjunction with similar unit, MELODY SIGNAL, 2 different selections to identify your station and 2 different ROGER BLEEP end of transmission signals. All the functions are switchable, 12 volts powered, 1 amp current consumption.

MODEL VC-100 As described and illustrated £129.00

MODEL VC-200 (not illustrated) Without Scrambler function but with EIGHT different melodies and EIGHT different selectable ROGER BLEEPS £125.00

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Enquiries/VISA/ACCESS orders phone 0923-661673.

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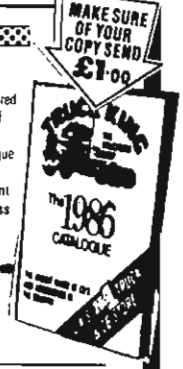
TRUCKING CATALOGUE

When you buy the Truck King 1986 Catalogue you don't just get a comprehensive listing featuring and illustrating over 300 CB items plus our full range of trucking stuff. You also get an easy to use order form, a prepaid addressed envelope and £10 of discount vouchers so you actually save money. It's all designed to make shopping from the most extensive CB catalogue in the UK as simple as walking to the nearest post box! What's more, you are then on our mailing list and in the course of the next few months you'll receive product updates and additions plus some special offers available ONLY TO OUR CATALOGUE CUSTOMERS. Our new catalogue being prepared now will also be sent to you absolutely free of charge when available. This will be a much extended bumper edition of the present catalogue carrying a host of new lines plus some special surprises. Send £1.00 cheque/P.O. for the current catalogue now and make sure you don't miss out in the future.

MAKE SURE OF YOUR COPY SEND £1·00



Antenna gain figures appear to vary widely — we take an in-depth look at how they should be measured.

ANTENNA EVALUATION

Once upon a time I thought an antenna was just a fancy name for a bit of wire used to go fishing for radio signals; just sling it up in the air, hope it stays there, and pray to Maxwell, Hertz and Marconi for results. Sometimes it would work well, sometimes not so well, but more often than not, distinctly unwell, and I was none the wiser! Then came enlightenment with the understanding that resonance and impedance play a large part in the proceedings.

I started to indulge in the black arts with more confidence, and still ended up with some really weird results. Just because a signal from half way round the world was being received I thought "this is a magic twig", but the spell was broken a few days later when I could barely hear someone in the next village on the same antenna. Much library searching later I discovered that propagation conditions had been having more effect on the results than my own efforts. What was missing was a standard for comparison, so that I could test different antennas, and not be misled by conditions outside my control.

There are two ways in which an antenna test can be carried out. One is to very precisely define all variable conditions, and to measure the results accurately. The other method is to use a reference standard, or control.

To give an example of the problem, we wish to hire either Mr Smith or Mr Jones, both building workers, and we have to decide which of them is best suited for the job. Neither of them can get to the same building site on the same day, so a direct comparison is not possible.

To test them both we could see how much sand each is able to move under carefully defined conditions where we know:

1. The type of ground over which each will travel.
2. The distance to be covered.
3. The weather conditions.
4. The size of shovel and wheelbarrow.
5. The time taken.
6. The condition of the beer in the local pub.

7... 8.... ad infinitum.

Unless we could define each of the foregoing variables we would be unable to conduct a fair test.

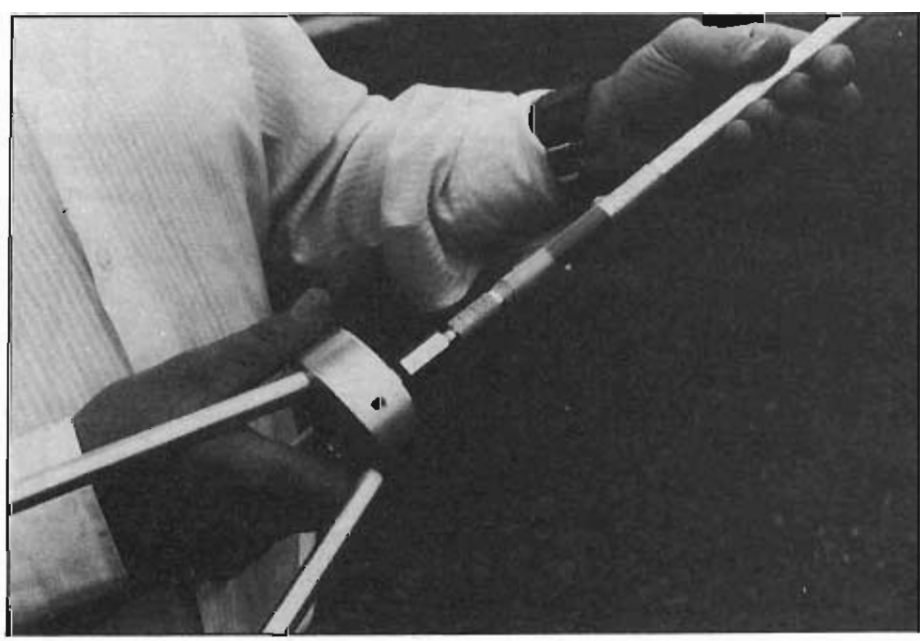
There is a simple solution however, enter Mr Standard, who can work at a steady rate each day, but can still be influenced by all the changes in conditions to the same extent as will either Smith or Jones.

Mr Standard fills up a barrow and moves a quantity of sand across a clear flat side and is timed doing so, he stops work. Mr Jones, using the same barrow and shovel picks up the same sand and moves it back again, he is also timed. They repeat the process in the opposite order and from the times taken we can see that a reasonable degree of accuracy Mr Standard takes only three quarters of the time to do the same job, so the efficiency of Jones = 75% of efficiency of Standard.

The next day we go to a different site, which is a sea of mud, and covered in obstacles, use different sized barrows and shoveis, and a different pile of sand. This time Mr Standard moves the sand, Mr Smith takes it back, and so on, as before, but it seems much less sand is moved, even though it takes longer, and the distance is less. By comparing the times we can see that Smith seems to be 80% of the efficiency of Standard.

We can confidently state that Smith is marginally more efficient than Jones. As can be seen all the variables, such as size of shovel, barrow, pile of sand and site, as well as ground conditions etc. are now irrelevant, as all we have measured was the ratio of the times taken.

There are other factors to be taken into account. For instance we are going to pay out a lump sum for either of these two men to come and do the



"Look at the quality of construction, the type and finish of the materials — and the mechanical strength . . ."

work, so we must compare the price each is asking, look at the things such as their life expectancy, (will one go on working while the other collapses with a heart attack), the outward appearance (will one of them deter our customers) and the reliability (will they turn up every day, or only when it's sunny). Are we going to get value for money.

To evaluate an antenna it does not give a fair picture if we simply put it on a car, drive about gawping at the signal meter, while trying to avoid more alert road users, and getting sketchy signal reports from other stations. There are far too many undefined variables to be considered. Even if they could be accurately estimated, errors may well accumulate sufficiently to invalidate any results obtained. Such an exercise will only waste time, effort and petrol, possibly serving to perpetuate a myth, circulated by the vendor of the item in question.

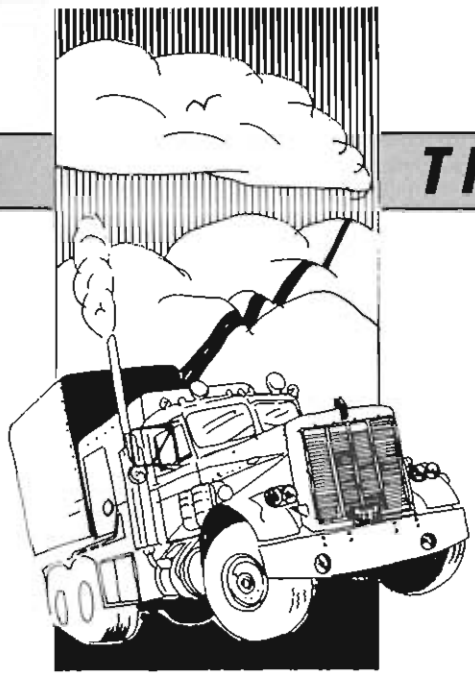
1. Non linear gain characteristics in receiver.
2. Variations in transmitter output.
3. Variation in effective radiated power caused by mis-tuning of antenna, feeder losses etc.
4. Proximity of antenna to other objects distorting radiation pattern.
5. Multi-path reception (signals arriving at the receiver by several different routes sometimes adding, sometimes subtracting causing changes in observed signal strength as with Radio Luxembourg!)
6. Gain compression of the receiver in presence of strong local signals on adjacent channels (Desensitization).
7. Directional effects produced by the imperfect ground plane of the vehicle.
8. Propogation path loss variations caused by differing ground conductivity and obstructions.
9. Misinterpretation of readings.

A fair and *repeatable* test could be conducted as follows:

1. Use a test area away from other transmitters.
2. Set up two reference antennas consisting of quarter wave vertically polarised whips (which have a known radiation pattern) on artificial ground mats, and due to proximity effects at a separation distance of at least five and if possible ten wavelengths on flat, level ground. (N.B. 27MHz. is in the 11 metre band.)
3. Radiate a fixed level signal and set up a reference level say S5 on the receiver by means of a step attenuator in the antenna feed line.
4. Replace the transmitting antenna with the "test sample", tune the test sample to resonance, reset attenuator to the same reference level, and the difference between the two readings is a close approximation to the gain or loss of the test sample compared with the reference antenna at right angles to the axis of the antenna.
5. Replace transmitting antenna with a quarter wave and transfer the test sample to the receiver site. The reading on the attenuator should be the same, thus confirming that the antenna behaves similarly whether transmitting or receiving (Rayleigh/Carson recipricocity theorem).
6. Repeat 3, 4, and 5 at a different height from the ground, which will alter any ground reflection patterns. Hopefully the readings will be very similar, if they are not repeat the tests at a greater height still.
7. Alter the separation distance, and repeat 3 to 6.

The above sequence will yield results which are relatively free from errors caused by ground losses and reflections. The ratios of the attenuator settings are all that is required, and these ratios will be found to be the same if the experiment is repeated at a different location, even though the ground losses etc. may be very different.

The only remaining evaluations concern "value for money", and suitability for a particular application. Look at the quality of construction, the type and finish of the materials, the mechanical strength, and lastly at the aesthetic appeal. Some things can be reported objectively, availability of spare parts and ease of servicing for instance. For the rest a reviewer can only offer an individual view, and the results of any tests carried out. You should study any information available, examine the item, and form your own opinion. When it comes to purchasing an item do not be misled by unsubstaniated or exaggerated claims.



TRUCK STOP

LOOSE WHEELER

Big T travels over 1,000 miles — and loosens a wheel in the process

Where have all the transport cafes gone? Every week on my travels around the country one seems to be closing and in their place Little Chef and Happy Eaters are appearing — I don't have anything against them as such, but most don't allow HGVs especially in the summertime and when you have fifty feet or more of lorry to park, more often than not you have to drive straight past. Both Little Chef and Happy Eaters are always very clean and the food is quite good but you never seem to have enough on your plate.

This month saw the long-awaited Birmingham eyeball run by the Phoenix DX club. Their chairman, Ian, Big Daddy, one of the UK's best known DX stations had acquired the use of the Birmingham Rugby Club premises for the evening do and the pitch for the following day's eyeball. Eileen and myself along with our good friends Poppa Joe, Dave and his good lady Momma G, Beryl, arrived at about 7.30 pm to find most of the top DX stations already there and the first people we saw on arrival was my old mate Joe, Silverfish and the Devon gang, Keith, Shutterbug from Somerset, lots of the Derby and Sheffield breakers along with many more from all over the country.

The evening was superb and for the first time in many years I did have a little more to drink than usual (well I didn't have to drive) — at the end of the evening perhaps I did fall over on my way across the field to our caravanette and perhaps it was me who started singing and waking every one up.

The following day saw many of our friends turning up for the eyeball and unfortunately after dinner it started raining but like true enthusiasts, most of us stuck it out until about 4pm. The damp certainly never spoiled the day for myself so to Ian and his club, many thanks and we certainly look forward to your 1987 eyeball.

This month, Eileen and myself took a much needed holiday — all our sons were either at work or away so for the first time in years we were by ourselves. We had planned to go to the big eyeball held at Gloucester then carry on wherever the fancy took us. Mid-day saw our arrival at Gloucester where we spent an enjoyable few hours meeting all our friends — at about 4pm, we decided to run down to Devon. We had a fantastic holiday touring Devon and down into Cornwall even though we did have a force eight gale whilst we were at Lands End.

Whilst we were down in Cornwall we had an invitation from Gamekeeper 2, Mike and his wife Cakemaker, Alison, down to the Charlie Poppa (Cornish Pirates) club get-together held at the Dolphin pub. The welcome was very warm and we were told that any time either ourselves or our friends were down in that part of the world to call on Monday nights to see them. We would like to say a special thank you to Mike and Alison for their hospitality and also thanks to Brown Split and Dicky Doubt.

After nearly 1,000 miles touring, we had to call out the AA due to strange noises coming from the rear end of our Transit. We limped our way to Clevedon and Ken, Jazzman's where we phoned the AA, who duly came out and inspected the vehicle only to tell us that the diff had broken so, much to Ken's amusement, we had to have a 'piggy back' home to Telford. What a relief that we had paid for the relay. The following morning I took the vehicle to a local garage who found my trouble — a loose wheel! I cannot end this story without thanking Ken, Jazzman, Tango Tango 119, for getting up at 5 am to let everyone know about my predicament, thanks Ken you wicked person. As you may well appreciate, I do have several new 'handles' now, 'Wobbly Wheels' for example.

Last week I had problems with a switch on my Magpie so, on my travels back from Southampton I called at the factory in Andover where Ray, the designer and owner, soon had my Autoscan working again and although the rigs are no longer made, he does still carry a small selection of spares. Ray also told me that he still has the occasional letter asking about the Magpie Autoscan 5000 but at the present moment there are no plans to go back into production. Whilst I was there I did ask Ray about the forty new channels which are due soon and he assured me that, for anyone wanting the new channels fitted to their Magpies when they become legal he will do the conversion for approximately £25, and he would need to keep the rigs for approximately seven days.

This month I would like to give a mention to Margaret, Windmill, from Derby. Margaret wrote to me telling me about raising funds for Richard Ratcliffe who has sadly since died. Anyone wishing to send donations to this fund can do so by sending direct to PO Box 19, National Westminster Bank, Irongate, Derby. I am sure any donation would be appreciated. Should anyone wish to contact Margaret concerning this, channel 9 is monitored every day 4.15 — 12.15 by the Derwent Monitors or, alternatively, call Margaret on 19.

Whilst travelling back to Telford from Cambridge I was pleasantly surprised to find the new St Neots by-pass had been opened and what a difference it makes, instead of queuing for fifteen minutes then slowly negotiating dozens of parked (sometimes I think abandoned) cars and vans through the town centre, five minutes saw me clear and down onto the A1. One complaint, why didn't they make it a dual carriageway?

On my way through Bedford I scanned around the channels and caught my old friend Paul, Shotgun, MC11, TT175, doing some DXing from a high spot around Desborough. We had a nice natter before I lost Paul in all the noise but admittedly I was in Coventry. Anyone who has QSLd Paul will know that his envelopes are really something special — thanks Paul.

Hopefully I will catch you all next time, until then stay lucky.

Big T

ROUNDHEAD'S RAMBLINGS

A TRAVELLER'S TALE

This month, Roundhead picks up a few farming hints and tips

One of the pleasures of living in the country and earwigging on the CB channels is to listen to modulations dealing with different aspects of the land and its cultivation. Whether it be those working with muddy wheelers or retired farm-workers keeping up with local news and gossip one can always be assured of hearing about the state of crops, weather conditions, farm machinery, livestock and an abundance of interesting information.

I eavesdropped into a conversation involving Sonny Jim, Rolo and Greenfly, all out of the Metfield 20, with Osprey from Pakefield. We were treated to an exposition on the latter's quite remarkable results with his well-tried method of propagating tomatoes. After listening to an earlier mod on fertilisers this was a pleasant change. I learned more about tomatoes in five minutes than ever I knew before. On channel were also Punch — personal Judy — a delightful apt handle, and son Biscuit Tin (David). It appears Osprey uses what is known as ring culture, a system where the tomato plants are grown in a twelve-inch diameter, twelve-inch deep pot-like container and placed in a trench lined with stones. You water from the bottom and feed from the top, thereby creating two roots. Keeping the base watered regularly and the pot fed twice weekly will encourage a fine crop of tomatoes, so I am reliably informed.

See what you can glean over the air; all good stuff if you are keen on gardening. While if it's fishing that takes your fancy, there's a lot to be leaned from Bronze Bream and Camping Boy, though I understand Camping Boy's friends are contemplating buying him a compass for Christmas. By all accounts he is a great one for getting himself lost on the way home from angling expeditions.

In the September issue I inadvertently called Bronze Bream "Bronze Beam." I apologise to the noble breaker for the error. One lady breaker bringing my earlier compliments to his attention enquired: "How does it feel to be famous now you've been in the CB magazine?" To which our intrepid Kessingland character replied: "What do you mean, now? I've always been famous!" There's modesty for you!

Colour Code and wife Currie Comb are doing a grand job as co-ordinators for the Waveney CB Emergency Monitors. They tell me they have a new chairman, Saturn Five, whose valuable work for local charities, with his superfine mobile discotheque, helps raise much-needed funds. There is, I understand, another such network in the Lowestoft area called ABC and it is good to note the co-operation between two sets of monitors. Although the two groups overlap in terms of territory covered, they work well together and breakers in the Waveney area receive a first-class service.

Fertiliser

CB was a great boon during harvest time and later as the soil was prepared for fertiliser, ploughing, drilling and sowing. However, fertiliser quickly dispelled the romance of the countryside, for around my home 20 was a strong, pungent bouquet of turkey and chicken manure. Believe me, it was highly potent.

A CB rig in the cab of a tractor is a blessing for the agricultural worker who spends long hours alone, completely isolated, the only relief from the utter boredom is the ability to be able to get out on the one nine.

As I remarked in the July issue, handles often reflect the work or interest of the breaker. I have now spoken with King Carp from Redlingfield near Eye, a dedicated angler and more recently with Barleycorn from Halesworth. His wife is Scorpio (Jenny) with both daughters CB enthusiasts, Spicey (Tracey) and Nutmeg (Gemma). Barleycorn told me he took his handle when Gemma, as a three year old, four years ago, asked her father: "What type of barleycorn are you carrying on your lorry today?" and the name was a natural after that.

A further unusual handle is that of Shogi Bear from Harrow, Middlesex 20. The origin is interesting and worth relating. Shogi Bear (John) is a devotee of the Japanese chess-like game, Shogi. He described the game and I found it is so intriguing I followed up with a call to The Shogi Association who sent me literature. It seems a great game, intricate and challenging. It is played on a board of 9 x 9 squares with the object, as in chess, of capturing the opponent's king. Each player has 20 pieces including pawns, bishop, rook, knights, lances, gold and silver generals and king. I have heard chess being played on CB and if I can find somebody nearby to take up the game we might well be the first to play it over the air. If you want to know more write to Shogi Association, PO Box 77, Bromley, Kent, mentioning CB magazine. But, don't say you haven't been warned. I'm fast becoming taken up with the game and, together with my CB mag, the Shogi Journal is bedtime reading.

Postscript: In the September issue I wrote of poor Sea Hawk and his shyness. We're all trying to coax him but not having much success. It looks as if daughter Anna (Mermaid) has taken over the rig for she spends as much time as possible in his car getting out on the one-nine. She is so enthusiastic that when Sea Hawk (Peter) went to take his car out it had a flat battery. There are now serious limitations on the length of time Mermaid can use the rig. I'm not surprised.

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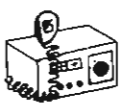

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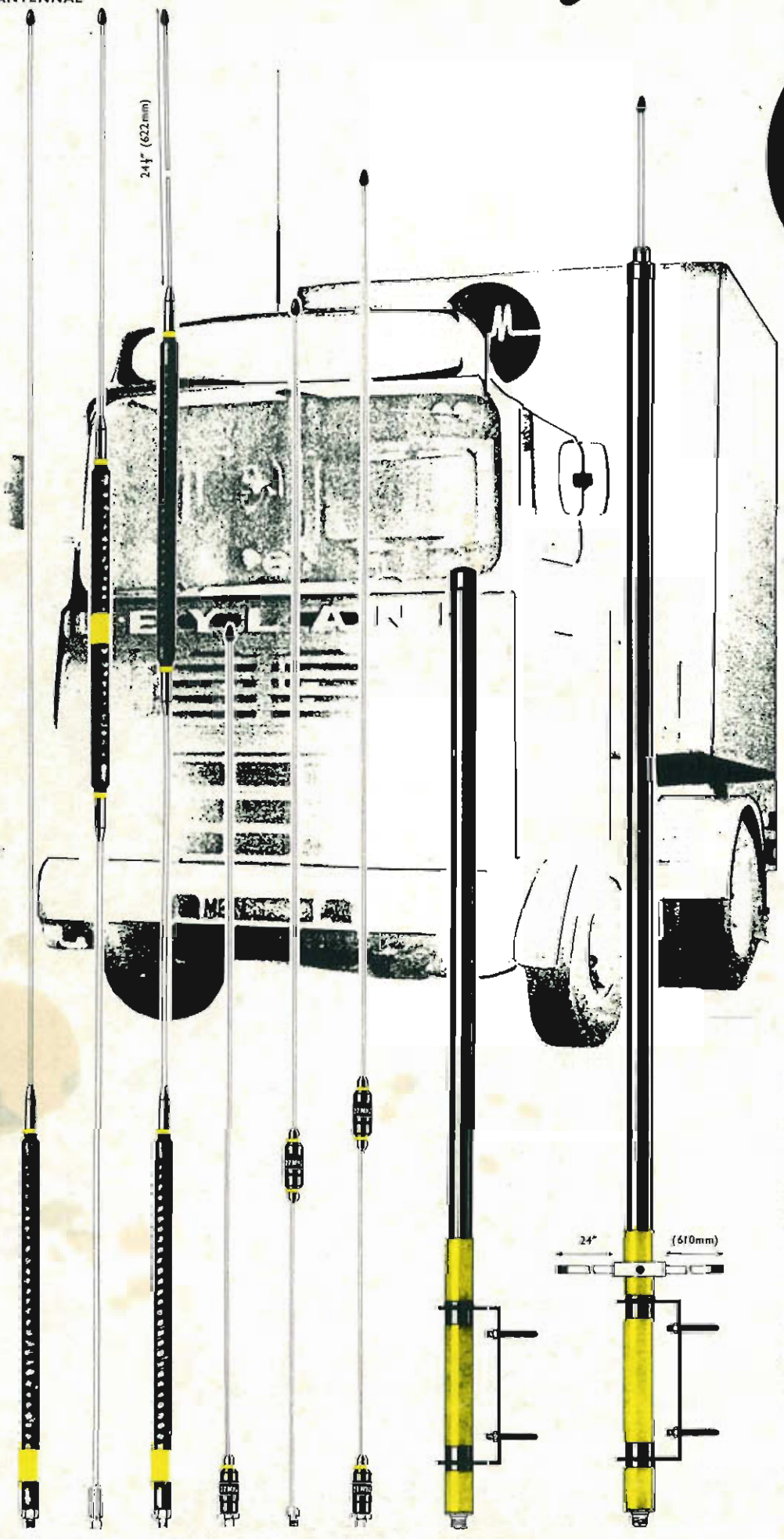

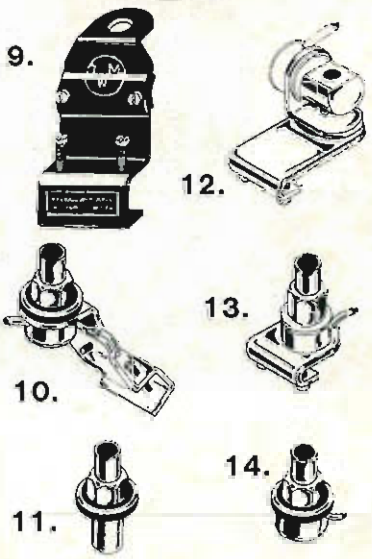

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