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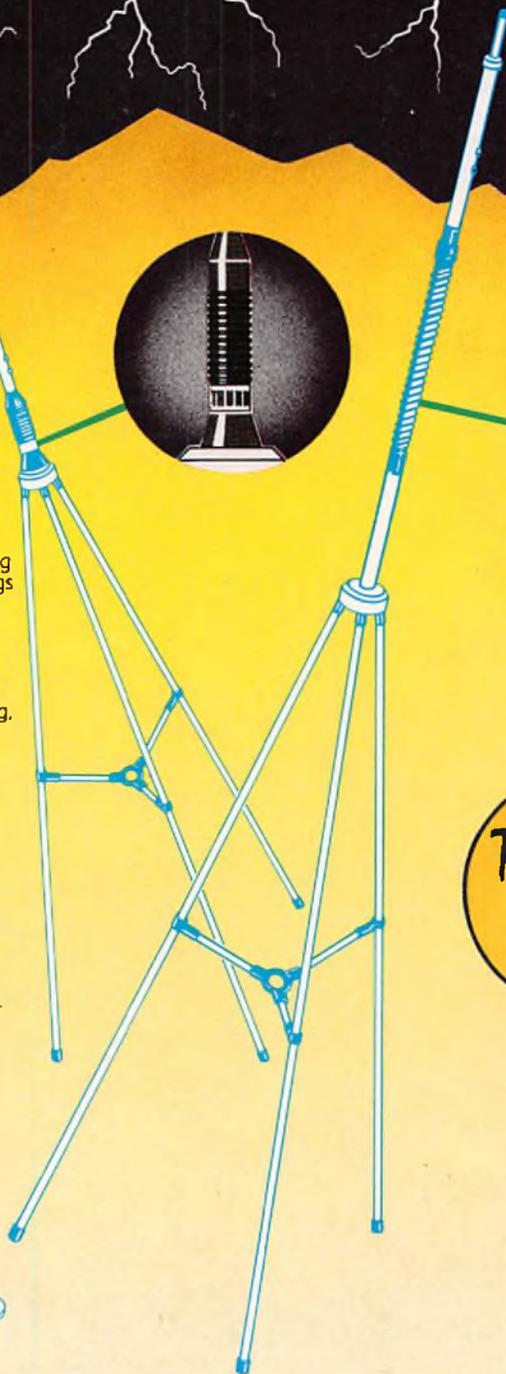
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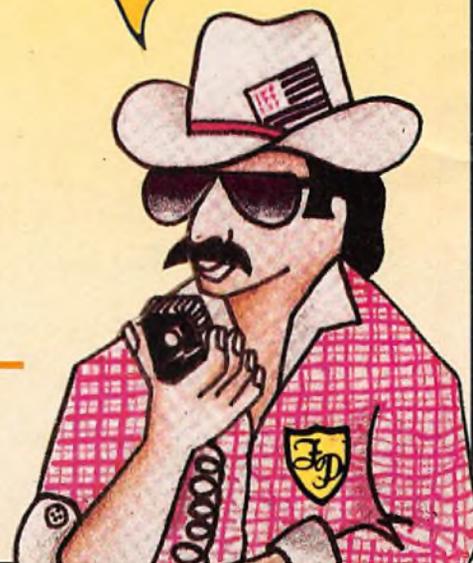
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CB

CITIZENS' BAND

DECEMBER 1987

Volume 6

Number 1

C O N T E N T S

ISSN 0263-0613

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Editor Eamonn Percival
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GROUP**

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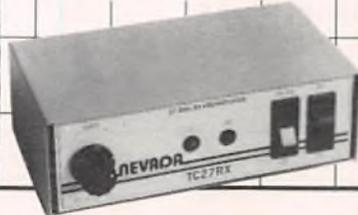
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27Mhz

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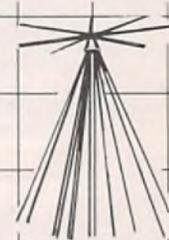
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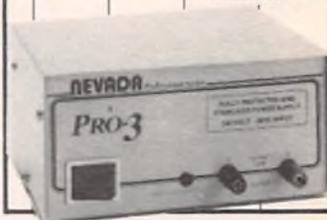
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UPDATE

**The future of 934MHz :: Eyeball success ::
New security system for dealers :: CB EPROM Data Book
:: Thunderflash antenna**



Camon P. P. P.

Editorial

Well, how many of you are there on the new CEPT frequencies? Listening around in the London area and in parts of Hertfordshire, things are pretty quiet at the time of writing. But is it so throughout the rest of the UK?

I have heard many comments like "The DTI sprang it on us so quickly, we need time to save up" or "I'll wait and see how it goes before I buy a new set" or - a little worrying - "I'm not going to bother, I'm getting a board". Let us once again stress the fact that conversion boards are illegal. They don't meet the new spec so any form of dual-band radio is outlawed. Similarly, with owners of the 'old' sets, there is no need to panic. It looks as though we will be able to use the original FM bands for years to come yet. So, with the addition of a new rig, you have eighty channels to play with.

Something else with which we should all be concerned is the number of retailers selling radios for the new frequencies which have not yet been

type-approved by the DTI. When a new radio has been type-approved, it will carry a sticker reading "PR27GB". Unfortunately, a few - and, thankfully, only a few - shops are selling rigs which are not yet type-approved and they are also conveniently omitting to inform the purchaser of this fact. Be warned.

Right, onto this month's issue. You'll notice a fairly hefty chunk of the material refers to the good ol' trucker this month. We make no apologies for this as it is in response to many requests from both truckers and truck fans. In addition, the recent BBC TV *Truckers* series has provoked a big response, albeit mixed, to say the least.

Last but not least is our competition, in which prizes to the value of over £1,000 can be won. Why so generous? Well, we're pretty pleased with ourselves to be able to celebrate our 7th birthday issue this month - and, after all, it is Christmas! Our thanks go to all the suppliers who have offered equipment as prizes. It has not gone unnoticed.

Farewell to Blue Lagoon

Our thanks to Ian Morris of Cheshire who wrote to let us know that, sadly, the famous Lillian - better known amongst her many breaker friends as Blue Lagoon - will no longer be taking part in CB activities, due to ill health. This is a great loss to the CB world, as Lillian spent a lot of time and effort collecting stamps to raise money for cancer research.

Through Ian, she has passed a message of thanks and appreciation for every enjoyable moment of CB over the years, to everyone who sent stamps and to all the friends she made worldwide.

Thunderflash Antenna

We're sure that, by now, all our readers will recognise the name Thunderpole. Well, the latest from the Freeman and Pardoe stable is the Thunderflash mobile antenna, which retails at around £16. This company is perhaps better known for its high-quality base antennas and so we were pleased to get a chance to check over the latest mobile.

Firstly, it's a very slim and neat looking aerial. The whip is 17.7 p.h. Swedish stainless steel and the centre-loaded copper coil is wound on fibreglass for added strength and rigidity. In fact, it would take more than

the recent 110mph gales to bend this little blighter to any significant degree.

The screws themselves are stainless steel and all fittings are chromed brass. A very elegant antenna indeed.

The Thunderflash is claimed to be fully compatible for use on the existing 27 FM as well as the new CEPT frequencies. However, due to production deadlines, we unfortunately didn't manage to try this antenna out on the new frequencies. We see no reason why it shouldn't perform as well as it did on the 'old' 27 FM, though. Reported TX was excellent and reception over a distance of some four miles was crystal-clear. The test, it must be mentioned,

934MHz – the Future?

Mike Devereaux, managing director of Nevada Communications (formerly Telecomms) writes about the confusion about the UHF band.

"As a result of the recent statements by the DTI on the future of the 934Mhz CB band, I have received many enquiries from users, clubs and dealers alike confused as to the future of the band. I thought you and all your readers, may be interested to know the policy of my company regarding these statements.

I have had several meetings with the DTI who have assured me that the department has no intention of taking away the 934Mhz CB band. The department would like to introduce a Short Range Radio service in the early 1990's, proposals for the nature of this service have been put forward. The service will probably use

Digital Signalling techniques and are certainly going to take into account the existing 934Mhz CB radio users.

I understand that a new specification for this Short Range Radio service (SRR) will be introduced within several years. At that time, the current specification will be withdrawn. It is obviously impractical to introduce a new specification whilst leaving an old one intact, hence the reason for the withdrawal of the old specification.

At that time it will then not be possible to import or manufacture any further radios to the old specification. However, we may continue to sell all of our existing stocks of Delta 1 934Mhz transceivers. Purchasers of these radios, at that time, have been assured by the DTI that they will be able to use the radios for the life of the sets – which will be quite considerable.

For our part, we carry large stocks of spare parts, and have heavily invested in sophisticated test equipment which means that we will be able to maintain and service both the Delta 1 and other brands of 934Mhz transceivers for many years to come

Although there is to be a review in 1990 of how much of the radio spectrum is used, I personally expect the existing 934Mhz CB band to continue for many years to come – together with my own company's commitment to that band."



also happened to occur at the day of the recent Big Storm, so it was difficult to correctly gauge its normal performance, as weather conditions were freak, to say the least.

Concluding, the Thunderflash is, in our opinion, up to the usual very high standard of the rest of the range. It's strong and very well constructed and must be excellent value for money at around £16.

The Thunderflash is available from Freeman and Pardoe Ltd, Tything Road, Arden Forest Industrial Estate, Alcester, Warwickshire B49 6ES.

Eyeball Success for Hospice

The Whiskey Sierra Club of Cannock, Staffordshire, write with the good news that their recent eyeball dance (see Update, August) raised £250 for St Giles Hospice at Whittington, near Lichfield. Their secretary, Plodd the Rod, would like to express his thanks and appreciation to all the breakers who attended.

Sierra Bravo Eyeball

The Southampton Breakaway & 79 Club have been kind enough to let us know – well in advance for a change – details of an eyeball they have organised in conjunction with the Marchwood Electricity Club radio section. It is to be held on Saturday 4th June 1987 at the Marchwood Engineering Laboratories, Marchwood, Southampton and admission costs 50p for adults and 25p for children up to 13 years of age.

The event includes a wet T-shirt competition, hot and cold food, licensed bar, club stalls and trade stands, inter-club challenges, children's fun-rides and a car boot sale.

In the evening, there is a disco, admission for which will cost £2 for adults and £1 for children. These prices, however, also cover the eyeball. Overnight accommodation is also available but numbers are limited so advance bookings are now being taken. Booking enquiries should be directed to the PR secretary, Sierra Bravo DX Group, PO Box 151, Southampton,

Hampshire. Cheques or postal orders should be made out to Southampton Breakaway & 79 Club

Calling CB Dealers

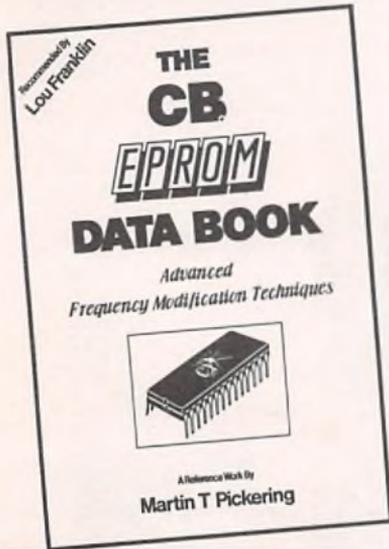
How many times have you heard about your local CB emporium being broken into and robbed? Stolen CB items are all too easy to "get rid of". Similarly, how often do you hear burglar alarms ringing in the middle of the night, usually requiring the keyholder to come out to what is often a false alarm?

Well, a new security system for retail outlets like CB and radio shops, Genesis from Securicor Granley Systems Ltd, virtually eliminates this. It gives any size of retail premises protection against intrusion, fire, flooding and related risks. Its 'intelligent' sensors instantly detect intruders or tampering. Other facilities include variable permutations of 'instant alarm' and 'delayed alarm'. The shop's front window, for example, can be set for 'instant alarm' to bring immediate attention to a smash and grab raid, while the back door can provide

'delayed alarm', giving police the chance of catching the thieves 'in the act'.

All information generated by the system can be routed to Genesis Control centres, which are manned 24 hours a day. As up to 256 different types of alert may be specified by users, the system can be adapted to almost any alarm application in any type of premises - a CB importer's warehouse, for instance.

A free information pack is available from Securicor Granley Systems Ltd, 43 Molesey Avenue, West Molesey, Surrey KT8 0SF. Telephone 01 - 979 1001.



CB EPROM Data Book

Many readers will have read two tomes by Lou Franklin, *The Screwdriver Expert's Guide* and the *CB PLL Data Book*. Soon to be published is the *CB EPROM Data Book*, written by Martin T Pickering and recommended by Lou Franklin.

The book assumes that you have read the *PLL Data Book* and have a basic grasp of the way in which a PLL

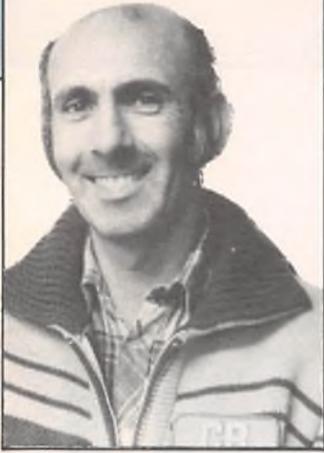
frequency synthesiser works and it will, therefore, be of special interest to those who are looking for a low-cost entry to the American 'Novice' band. It covers conversions, conversion tables, practical examples, diagrams and a handy glossary of terms.

The *CB EPROM Data Book* is published by *CB City International*, PO Box 31500, Phoenix, Arizona 85046, USA.

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Adverts**



MACK CHAT

WHO'S BUYING?

A month or so after the introduction of the new frequencies, Mack wonders who is buying the new rigs

Who's buying all these new CB rigs? I am told the dealers just can't get them in fast enough – as they arrive, they are sold.

So again I ask who is buying them? I listen on the month-old 27MHz frequency as often as I can, which is most evenings, part of the weekend and some mornings before going to work. To my ears, the people who are purchasing and using new rigs seem very few. There are plenty of stations on the frequency but it seems most of them are using multimodes or converted rigs and they are not shy in disclosing the fact.

It would seem that there may be truth in the rumours that the Radio Interference Service have increased their numbers as ten new detector vans were seen in the Southend-on-Sea area. My friend Mike Machin (Selectronics) of Canvey Island told me that recently he had a visit by two RIS officials who requested an inspection of his premises. Mike said that the two RIS men left "educated."

But did you hear about the station that also had a visit from the RIS a few days after the new frequencies came into use? It seems that a DNT rig of the new type was being used at the time and, to the user's horror, he was told that the rig had not been type-approved, yet the rig in question had the legal mark. What had happened, we were led to believe, was that the importer/distributor jumped the gun, receiving their stock of rigs later than expected and had submitted samples to the DTI for type approval and also delivering stock to the shops to be sold. When the people who had bought these rigs heard this as, naturally, news travels fast on CB, the dealers' phones were hot from the constant flow of calls from worried DNT owners. But all turned out well. As expected, the rigs were type-approved a few days later. There are not many Satcom rigs available at the moment;

most have been sold. The next delivery is expected soon. Yet even these have not yet been type-approved. Could this be the reason why I am not copying stations with new rigs? Are they scared to use them or, maybe, perish the thought, they have been bought by parents as Christmas presents for their offspring.

To date, I have been privileged to see and try many of the new rigs and I can't fault any so far. Prices do vary from shop to shop. My favourite so far is the little DNT. It's so small that it really will fit in one's pocket.

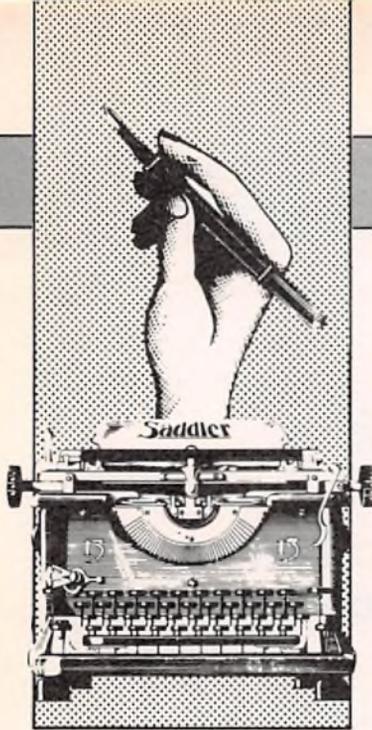
With limited controls and, for the size, it has good audio. The other rig I like is the Satcom; although a normal sized rig, it incorporates push-button controls and features scanning facilities. As I write this, monitoring channel 40 on the new 27 with occasional comments from myself to the stations on the channel, I've just been told of a rig that has been seen that's smaller than the DNT!

On one of my weekend stays in Clacton recently, my mate Martin and I wandered into the CB shop in Clacton. Since my last visit, it has moved up the road a couple of hundred yards. The new site is smaller but packed with CB rigs and accessories. The ownership has also changed; Richard was the rig doctor at the old address and has taken over the business. He was out for lunch when we called but Colin (Scallywag) made both Martin and myself at home and allowed us to try some of the new rigs that they had. As mentioned earlier, like the other CB stores, most of the new frequency rigs had been sold and I was most surprised when Martin opened his chequebook and purchased the last mini DNT that the shop had.

The behaviour of the people on this part of the radio spectrum is, so far, good. I know that it is early days and there have been the occasional wally type but if it stays as it is now then I am sure that we could live with it. I and many of the other users are surprised by the range that we are getting. I can

easily make contact with other stations on the other side of London and surrounding areas with good 'S' readings. As for DX, well, a couple of weeks back, I switched on one morning just before going to work for a quick listen around the band. On channel 31 I heard an 1AT station calling for a English station. As I could not hear anyone returning to him, I did, and the 1AT (Italy) acknowledged my call, but as he did he faded out. This was not as great a DX achievement as many of the other people I have been talking to tell of the DX that they have made on this new band.

It is now my turn to hit back at the letter writers to this mag. I wonder if some of them can read properly. October issue letters page: Gobstopper of Watford has an appropriate handle. If I was a horse they would shoot me. I have tried a few times to retire from this column but you, the readers, love me too much as do the other members of the CB staff! When did I ever say "No DX on 27/81 frequencies"? I have gone back to the first issue of this mag and searched all 81 subsequent issues and have yet to find when I wrote that. On the contrary, I've known all along that 11 metres is when conditions are right for a worldwide DX frequency. As for getting 2–3 miles on the old MPTs, in my part of this country at the present time that's all I and other stations are getting, if we are lucky. In answer to Gobstopper's next question, "Who's going to pay top money for a radio full of foreign stations?" I say, go and ask Richard or Chris at your local CB emporium. As I asked at the beginning of this page, who's buying these rigs? It seems plenty of people are. Me, I will work any station, be it down the road or across the pond, and finally back to your first point: lots and lots of people abandoned their £100 illegal rigs to purchase legal ones back in 81. Wasn't that the object of those demos and meetings that many took part in seven and eight years ago?



FALSE ECONOMY

Going down for good :: Cure for computers :: Taxi trouble
 :: Legal blackmail :: A false economy



A False Economy

All the way from sunny Bristol comes a letter from Goldwing, who is a bit suspicious about the licence changes...

I have just received and studied the revised conditions of the CB licence. According to your article in the October issue of "Citizens Band", the DTI have only raised the cost of the new licence by a mere £2.00 – or have they?

My annual licence fees have risen by £14.00, and I suspect that, for many, theirs will have increased by much more, if they are to remain legal. The old licence permitted occupants of the licensee's household to operate CB radios. It was, therefore, very comforting to know that, in an emergency, my wife could call me from the home-base to my mobile or vice-versa. All for £10.00 per annum! Under the new regulations I must personally supervise her transmissions – impossible if you are several miles apart! To maintain this existing home-base/mobile link, we need an additional licence!

It is not only me who is being financially stung like this – so are small firms, organisations such as scouts and youth clubs and charities who, in the past, have responsibly used CB as an effective and cheap means of communication.

I am all for trying to stamp out abusers of CB by any legal means – more power to the DTI's elbow in this respect – but I am afraid that the new regulations will put a lot of very keen and responsible breakers off the air on the grounds of sheer economics!

Is this a case of the DTI not thinking through the implications of their new regulations or just a crafty way of getting more cash into their coffers?

Taxi Trouble

From somewhere in South Wales, Ribena wants to air a few complaints about taxis and CB...

David Lazell should be all right for free taxi rides after the whitewash job he did on the cabbies of Loughborough (CB Oct 1987). The quoted "genial attitude to other CB users on the part of drivers" and the willingness of the cabbie to move to another channel must rank (no pun intended) among the best fiction of 1987. Ask any breaker in the valleys north of Cardiff what BT stands for and the reply won't be British Telecom – it'll be Blasted Taxis. Anywhere else in Britain you might get run over by a taxi but north of Cardiff they stamp over you instead, and the only way they will move is with a farepaying passenger.

They are a nuisance to genuine CB

users, they are a security risk when an unsuspecting customer gets his or her home address blasted over the airwaves. And what about those using CB for business purposes? Mr. Lazell conveniently makes no reference to that whatsoever.

And so to the magazine in general. It remains to be seen what effect the 10p price increase has on my many Swiss bank accounts. Having lost count of the numerous misprints in the October issue



I smiled cynically when reading that part of the price increase was attributed to typesetting! What next? Another 10p to pay for a proofreader?

But enough of the "knocking" – it's time for compliments and they go to the magazine as a whole. As a seasoned reader (I've now bought the last four copies!) I find it interesting and informative, and look forward to each month's issue. If I may end on a 'food for thought' note – it seems evident to me that the advertisements prove there is a price cartel operated by the major suppliers of rigs – not one supplier undercut the price of another by so much as a penny. Strange?

Going Down for Good

It's always sad to hear of a good breaker quitting CB for good. White Eagle, from Devon, explains his reasons...

It was with some sadness that I pulled my mobile rig out of the car this weekend, took down the gutter-mount and went emphatically QRT as far as mobile CB is concerned.

The straw which finally broke this camel's back was an incident outside our local off-licence which I will briefly recount to you. I should explain that my car has, until today, sported two gutter-mounts – one for the ol' Charlie Bravo and the other for the amateur two metre band (of which more later). I am

therefore quite visibly someone with an interest in radio. I was about to pull away when I was accosted by several young kids of about 13 – 14 years of age. They were extremely loud and rude and when one of them asked at the top of his voice, "Wot's yer 'andle then mate?", I was really in no mood to tell him. As I drove off they made it quite clear what they thought I did with my spare time and how it would make me go blind. This in itself would not have led me to dismantle my gear, but it was the final act in a catalogue of disappointment I have had with the band in the last three years, resulting in my decision not to be associated with CB in future.

I first became a breaker in 1985 having listened to the 'naughty' Aunty Mary for several years and wishing to meet the 'good buddies' involved. Embarking on CB was a great adventure and I soon made many new friends through the medium of radio. My local CB club organized many social and fund-raising events and when a course was organized for the Radio Amateurs' Examination I started to discover a different group of people united by their common interest in radio. At this point I would like to answer the groans of, "Oh no! Not another snobby Ham" with the observation that I in no way abandoned CB on getting my amateur 'ticket' but continued to operate both amateur and CB frequencies (hence the two aerials I mentioned earlier).

I moved from idyllic North Devon and started to experience CB in built-up areas. Who were these 'wallies', dead-keyers and bucket-mouths? Had they been there all the time? I had certainly read of the problem but assumed it to be a small minority of operators. In town they seemed to dominate the band. I got fed up with hearing the kids on '14' when the shcools turned out: "Big Man c'mon... Yeah?... you there c'mon?... Yeah... wotcher been doin' c'mon... Yeah... (loud music playing) etc..."

I tuned instead to '19' and got the truckers f'ing and b'ing until it came out of your ears (with deference to Brandybird, I'm sure they're not all like that but where the heck are the good ones? And what is this "truckers' channel" I keep getting told to get shifted from in no uncertain terms?)

I don't particularly want this letter to be another 'CB vs Ham' but licensed amateurs *DO* tend to be courteous. They *DO* tend to use good radio procedure. Sure, there are wallies about

but these are really confined to the VHF repeaters. The simplex frequencies and HF bands seem to be free of them. Perhaps this is a reflection of the fact that it takes a good deal of sweat to get an amateur licence – perhaps you value more that which you have worked hard to get? This is in no way a slight on the thousands of good, decent breakers out there. They do exist and I have heard them (as well as read their views in these pages). The problem is, out of 250,000-odd, how many are there? Hams number some 50,000 and I wouldn't mind betting that there aren't many more 'decent' breakers than that. A lot of these seem to be taking the RAE and going 'Ham' in any case, if the recent intake into our local amateur radio society is anything to go by. The rest seem to fall broadly into kids, bucket-mouths and wallies.

Cure for Computers?

From Sandy in Bedfordshire. Mr R Compton kindly offers a few tips on problems caused by computer interference...

Regarding the letter printed in the September edition in Q & A where the reader had a problem with interference from their computer, the only real cure for this type of interference is to stop the computer from emitting RF. Nearly all home computers are lacking any form of RFI shielding which leads to lots of stray RF being sprayed into the atmosphere.

There are a number of ways that this RF can be reduced:

1. Build the computer into a metal box and ensure that every panel is earthed.
2. Strip the computer down and spray the inside faces of all panels with a proprietary anti-RFI paint and then ensure that all panels are electrically connected to earth.
3. As above, but use copper shielding tape to form a grid on all panels and then connect to earth.
4. Re-mortgage the house and buy an IBM PC!

The suggestion of using mains filters is OK where the interference is mains-borne but in this case it is not. The monitor will be emitting some RF around 6MHz and to cut this down the above steps 2 & 3 will be effective.

There is only one other alternative, and that is quite simple, don't use the computer and the CB at the same time!



Legal Blackmail on Two Counts

Lazer writes from Derbyshire and appears to be a bit annoyed. . . .

The title of this letter says it all but I shall elaborate. On the first count, you had the good manners to thank Jim Finch of SSE for the saving on typesetting when you published his frequency list in the October issue. Then you had the cheek to charge us an extra 10p for each issue stating it is due to typesetting, printing and, of course, the old distribution again. Sounds familiar, lads. It should do, it's in just about every other issue. This is poor planning if your planners cannot foresee a price increase early enough to be published in the issue previous to the increase to warn us of the embarrassment of being asked for another 10p when we've put our £1.25 on the counter. If the people concerned cannot forecast this far ahead, then sack them and put the money you save

towards your next price increase. Seriously, it is embarrassing when you go to the newsagents with only £1.25 in your pocket.

The second count concerns the DTI for raising the licence fee to £12, again without prior notice. All they said was that it was under review and then banged on another £2 immediately. OK, now we have an extra 40 channels to play with. That is, we've got a spare £140 to buy a new rig but if, in 1989, the DTI decide to drop the old UK FM channels, will the licence fee come down. Like hell it will!

The DTI say: *Good value for money.* £12 for 80 channels? Radio hams pay £12 for thousands of frequencies. I do not call it good value. They say: *Allocation of 40 new channels.* Radio hams have been allocated 50MHz (100GHz at 10KHz spacings with no licence fee increase). They also say that *it's the first increase since 1981.* The radio hams' licence fee has remained unchanged for years.

Last but not least, they say: *Administration costs have risen*

considerably. Surely the same must apply to radio hams as well.

The DTI are worried about illegal stations. I think they have just created 250,000 more!

Without wishing to appear pedantic, Jim's frequency table which was published in the October issue cost him a lot more to produce than it saved us in typesetting bills - for which, incidentally, we are eternally grateful. Also, we can hardly sack our 'planners' as they, in fact, are our bosses! Truthfully, when the magazine is processed two months in advance of its publication day, it's extremely difficult to be right slap-bang up-to-date. This also refers to another of your points regarding the late announcement of the licence increase. A government body as large and as complex as the DTI suffers similar problems with administration and planning. Remember, it's not just one person who makes all the decisions, and so it all takes time to come to fruition and the timing doesn't always suit everyone - Editor.



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LATEST CEPT SETS

Paul Coxwell checks out the latest sets for the CEPT frequencies – a mobile and a portable from DNT

DNT is a name already familiar to many thousands of CB users throughout both Europe and Britain and requires no introduction. Here we examine two transceivers that have just reached these shores, the DNT Contact 40FM mobile unit and the HT-4000FM portable.

First Impressions

Taking the mobile radio first, the most noticeable feature is its size, or rather lack of it. Measuring just 5¼ x 1¼ x 6 inches you should have no trouble finding somewhere to fit it in even the smallest of cars. The front panel is the usual matt black finish and has a minimum complement of controls. There are two small sliders for volume and squelch, two slide switches for power and channel 9 select, and two buttons for up/down channel change. To the right of these is the display panel comprising the green digital readout of channel, a 4-light S-meter and RF indicator (red), a TX warning light and DNT's usual channel-free LED. Around back are the antenna socket, extension speaker socket and the power cable. The latter is non-detachable, as is usually the case with DNT, and about 4 feet long. The microphone connects via a DIN socket on the left-hand panel and is the same shape and size as on previous sets. The mike plug is 5-pin but the socket has no less than eight connections, more of which later.

On to the portable unit then. For the record it measures 9 x 3¼ x 2¼ approx and looks pretty much the same as any other portable rig. On the top are the on/off-volume and squelch controls (conventional rotary types this time) and 40-position channel switch. Also present is a switch to turn the channel display off to save battery consumption and of course the telescopic antenna (which extends a little over 4 feet). At the front we have a green channel display, TX and RX indicators and a small S-meter. The lower scale is marked RF Power but actually shows the battery condition on transmit! Below these are the regular

speaker and condenser microphone. The PTT bar is in its normal location on the left along with an inset call button.

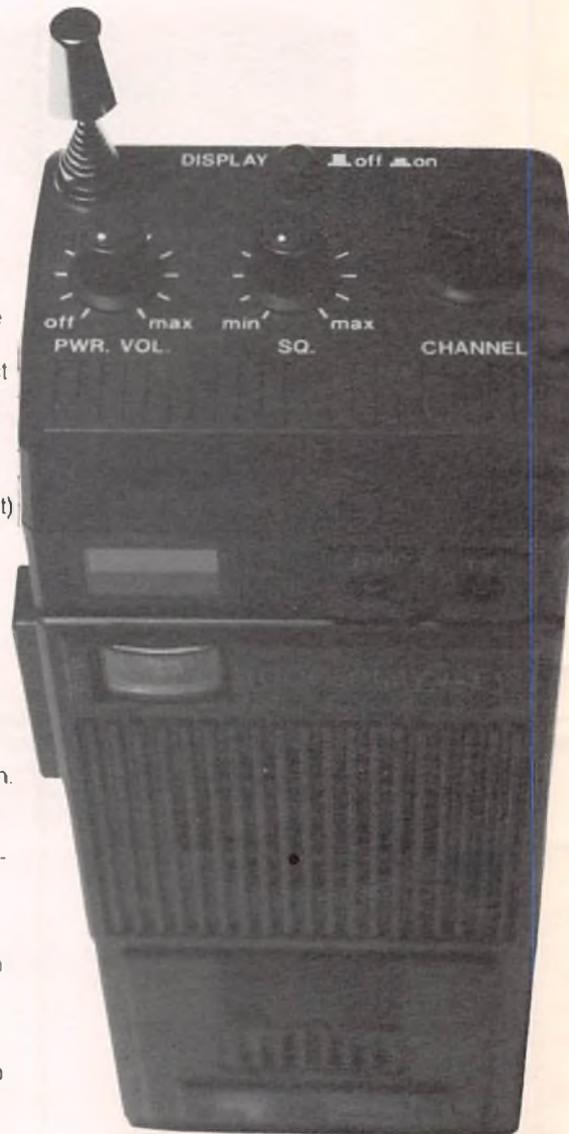
On the right panel: the channel 9 switch which extinguishes the channel display completely when used and a 2.5mm jack for charging and an RF output power switch. Whilst this is not a requirement under MPT 1333, it is a useful facility on portable equipment to conserve battery power. This side location is far better than some portable units which hid the power switch underneath the batteries! On the subject of batteries the unit requires 10 AA-size cells, either disposables or nickel-cadmium rechargables. As with any equipment of this type (particularly with transmitters giving the full 4-watts output) nickel-cadmium batteries will pay for themselves after only a few charges. Either way it is advisable to use low power (0.5W) whenever possible.

Now for a complaint – DNT do not supply a carrying case, probably in an attempt to cut costs. This may not be a problem of course, depending on your planned use of the radio but for a portable it seems like a serious omission. This fact combined with the less-than-rugged plastic case of the set itself suggests that for mountain-climbers pot-holders etc. you would do well to consider something else, such as the Zodiac P-2040, reviewed in October.

The instruction booklets supplied with both sets will look familiar to anyone who has previously bought DNT equipment, although most people probably wouldn't even need to refer to them. For the techies among you both manuals have a block diagram, full schematic and circuit board layouts.

Technicalities

There are no startling innovations here; remember that whilst these sets may be new to England, they have been around in Europe for a considerable time. The circuit boards are double-sided, good quality and, even on the portable unit, reasonably uncluttered. The requirements for better harmonic and spurious emission suppression in MPT 1333 sets shows in the design – there



are extra 27MHz bandpass filters after doubler stages, improved low-pass filters on the final output and extra shielding. This is one reason why CB 27/81 sets converted by an expansion board are not permitted.

On the receiver side, DNT have learned by past mistakes. Some early 27/81 sets had receivers that were absolutely terrible but those days are long gone. Both the mobile and the portable have a dual-gate MOSFET as

the first RF amplifier, followed by a single-gate FET mixer for the portable and two dual-gate MOSFETS forming a balanced mixer for the mobile set. It appears that a little more cost-cutting has been applied to the Contact 40FM in the receiver front-end. According to the block diagram and PC board layout diagram, there is a 27MHz ceramic band-pass filter between the RF amplifier and first mixer. This would provide extra rejection against out-of-band signals, including second channel images. On the full schematic, however, this filter has been replaced by a simple coupling capacitor. In the transceiver itself, the board is clearly marked for a ceramic filter but only a capacitor is fitted. Whether the specifications given are with or without the filter is not known and time did not permit a full specification test.

Moving along the receiver chain, the IF stages are in the usual form of an integrated circuit. Both radios have crystal filtering at the first IF of 10.695MHz and ceramic filters at the 455kHz second IF. The mobile set has a second crystal filter at 10.695MHz shown as an option on the schematic and examination of the circuit board confirmed that this was fitted, as did the layout drawings. The claimed figures for receiver sensitivity and rejection are shown in table 1 for your reference.

The PLL section of the HT-4000FM portable unit is almost identical to many 1981 specification sets but using the LC7132 IC instead of the 7137. This chip is pin-for-pin compatible and the only difference will be the internal N-code programming. The mobile transceiver employs an NPC C5121-00 PLL chip which differs mainly in having no BCD programming pins. Instead, a select pin is connected to a positive voltage to step up through the channels and to ground to step down. Output pins on the device then connect to the channel display. On both chassis separate VCOs are used for receive and transmit with the receive oscillator running 10.695MHz below channel frequency and the transmit oscillator

running at half the channel carrier frequency.

The audio stages are integrated and on the transmit side both sets make use of the UPC4558 operational-amplifier. Interestingly though the mobile set has an amplifier followed by diode limiters whereas the portable uses an AGC arrangement to limit and maximize deviation. On the portable the mike amplifiers are fitted to a separate board below the main one.

Now to return to the 8-pin microphone socket on the mobile radio. Three of the pins are the regular audio, PTT and ground connections. This set does not require a separate audio return for receive and uses a CMOS analog switch IC to route audio internally. Of the five remaining connections two provide DC power at 13.8 and 6 volts, one is an audio output, one allows remote channel change and one allows remote squelch operation. The audio output pin carries audio from the microphone during transmission, after all necessary filtering and limiting has been applied. During reception, audio is routed through the same low-pass filters from the demodulator output. Thus the audio here could be used to record both sides of a conversation if required (the output is taken before the squelch gate so you'll get all the hash as well). The channel change pin can be linked to the 6-volt supply to change up and to ground to change down. It is therefore possible to switch channels from the microphone if one fitted with suitable press-switches is obtained. The squelch input pin can be linked to the 6-volt pin to override the front panel setting and squelch the receiver. In conjunction with the 13.8-volt supply and audio output this means that a selective call unit could be plugged in to the microphone socket, although no specific mention of this is made in the instruction book.

In Use

So how do the sets perform in use? Audio on both radios is crisp and clear on both transmission and reception so there are no complaints there. As with

virtually every CB ever tested reception is improved by connecting an external speaker. The squelch circuit operated without any problems and is reasonably sensitive. It is difficult to achieve a good subjective test in a short time due to a distinct lack of activity on mid-band at the moment. During the test period of a couple of days however there was one point at which a good lift to central Europe opened up and good results were obtained using the mobile set on a loaded gutter-mount. Sensitivity is excellent, and on the mobile rig stations were heard clearly that were indistinct on another (Cybernet-boarded) receiver. At no time was there any evidence of blocking or inter-modulation, although it must be admitted that there aren't really enough stations on the band to give rise to interference yet! A test was performed with another transmitter just a few yards away and it was still possible to receive perfectly well two channels away, which can't be bad. The mobile and portable radios were used in conjunction with each other and good signals were obtained over a distance of 3-4 miles.

Now for some minor niggles, which are aimed at ease of use rather than the radio's ability to receive and transmit. Firstly the mobile set. The radio always powers-up on channel 9, which is handy in an emergency but gets to be a pain after a while. It would be fairly easy to arrange for the set to stay on whatever channel was last selected, as do many other types of transceiver that use up/down selection. The other criticism of the channel selection method is that the contrast of the green display leaves a lot to be desired. In sunlight it looks as though channel 88 is selected even with the set turned off, and trying to select a channel while shading the display with one hand and steering with the other is something we could well do without. Obviously this point is greatly affected by the chosen mounting location but even in the most shaded position available there was still trouble reading the display in daylight. An extra optical filter over the display would work wonders here.



The only other point is that the volume and squelch controls are a little fiddly to operate, particularly whilst mobile over less than perfect roads. The short travel makes fine adjustment awkward and although somewhat a matter of personal preference, I feel two conventional rotary controls here would be a lot better

On the portable unit the display is considerably better and the rotary volume/squelch controls are fine. Whilst there are no problems normally, the channel knob could be slightly larger and easier to grip in view of the fact that a portable may well be used outside when the user has freezing cold fingers!

Approvals

At the time of writing (end of September) the DNT mobile has received approval by the DTI but the portable is still waiting. One point is of slight concern here – the new licence conditions specify that you may use signals of less than one second duration intended to call up another station etc, hence the limited beep when the call button on the portable radio is pressed. However the license also states that for MPT 1333 equipment (i.e. these radios) *any such signals shall be inaudible*, which strictly speaking means that the HT-4000FM cannot get approval in its current form. We shall see . . .

Conclusion

At first sight to many it may appear that the "new" CEPT rigs are somewhat expensive, really though it is just that our peculiar CB-27/81 radios were cheap compared to other European sets. The Contact 40FM sells at £89.95 and the HT-4000FM portable will set you back around £95.

For a simple, no frills mobile set the

DNT is recommended, so long as you don't mind the fiddly controls and barely readable display. As far as the ability to transmit and receive messages goes it passes with flying colours. The HT-4000FM works well for a portable unit but you are advised to get some sort of carry-case for extra protection as the plastic case just will not withstand any amount of rough handling.

Table 1. Receiver specifications

| | Mobile | Portable |
|----------------------------|--------|----------|
| Sensitivity (20db S/N) | 0.5uV | 0.8uV |
| Selectivity at 10kHz | -85dB | -80dB |
| Adjacent channel rejection | 85dB | 65dB |
| Image rejection | 80dB | 75dB |

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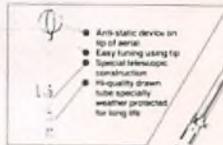
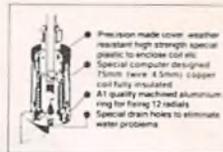
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LADY BREAKERS

GIVE US A CLUE

At last, the climax of the Great Little Puddlewick Treasure Hunt

Deadline time again. There I was slumped over my desk scratching my head and moaning 'what on earth shall I write about?' when someone reminded me that I promised last month to finish the story of the Great Little Puddlewick Treasure Hunt. Not that our village is called Little Puddlewick, of course – even I wouldn't live somewhere with such a silly name as that. No, as usual the name has been changed to protect the innocent. And me, from libel!

Anyway, never let it be said that Filly disappointed her public, so here is the second instalment of that thrilling saga. If you remember, our team had just solved the first clue and we were feeling pretty pleased with ourselves. Harry O (our driver) and Oily Rag (our radioman) were bouncing about like two-year olds in the front of the team Volvo, and even Big Jane had permitted a little smile to invade her granite-like visage.

We drove off to Pew Street Post Office, radioed back our position, were told by our triumphant team mates back at base that we were correct (and ahead of the opposition), and received the next clue.

"Third of six in G4," read out The Shocker, sounding baffled. As well he might.

"Third out of six in G4?" repeated Oily Rag blankly, staring at the mike as though it had just landed from Mars. "What sort of clue is that?"

"Sorry, got to get off the air. Rules," said The Shocker, and promptly did, leaving us to gape at each other.

"G4 – that's obviously a co-ordinate," said Oily.

"Yes – so the answer is in this square here," I said musingly, poring over the map. Third out of six? What on earth – ?" But I was undoubtedly inspired that day. I saw the answer.

"Seymour Lane!" I yelled. "Quick, Harry, Seymour Lane, just outside

Ashley Grove. About two miles away."

"I know it," said Harry, switching on the engine, "but why Seymour Lane?"

"Third out of six," I said, looking round at them excitedly. "Jane Seymour was Henry VIII's third wife!"

"Good grief!" said Oily, and eyed me with respect.

"Pays to have brains on the team," I said, modestly.

And so it went on. It was definitely our day, and we raced through the clues until we had established a lead of half-an-hour on the opposition in their battered Rover. But right at the last moment, with victory in our grasp, we got stuck.

The last clue is a direction to a place where some object is hidden. To win, you must find this object, and race back to base on foot; first team back wins. The problem was, we couldn't work out the clue.

"It's sickening!" groaned Big Jane, thumping the side of the car in frustration. The car rocked. "We've done so well – !"

"Greater than none beneath the Sun, but not Ash and Thorn," Oily repeated for at least the fiftieth time. "Sounds like a quotation. Or a hymn, or something."

"This is what comes of involving the Vicar," groaned Harry. "He should never have been allowed to do the clues – remember that clue from Proverbs? Lucky Filly went to Sunday School in her dim and distant youth."

"Thank you very much," I said politely.

"I wonder – " Oily said, tentatively. "Do you think it's anything to do with The Sun pub, in Brandon Hill?"

"If it is, that's three miles walk to base!" groaned Harry.

"Good exercise!" said Big Jane briskly. "You might be right, Oily. Anyone got any better ideas? No? Right, drive to The Sun, Harry."

Arrived at The Sun, we left the car and sought inspiration – in the form of

pints of real ale, since the pub had just opened.

"It's no good," said Oily after ten minutes. "The other lot'll be here any minute – I'm going to ask the landlord."

"Against the rules," murmured Jane.

"So it is," said Oily cheerfully, and proceeded to repeat the quotation to the landlord, who knew me well. I tried not to meet his eye.

"Well, now," said the landlord, rubbing his chin thoughtfully. "There's one tree that's always associated with the ash and thorn . . ."

"Yes, yes?" we cried.

" . . . as you would all know if you were true country-bred, instead of misbegotten townies playing at being country folk," the landlord continued crushingly. "That's a quote from Kipling, and the tree is the oak – "

His voice was drowned in the clatter of stampeding feet, because of course we had all remembered the ancient oak that had stood in the beer garden of The Sun since the beginning of time. And there, hidden among its gnarled roots, were – two small rubber ducks.

"Quick, quick, grab one, Filly, and let's go!" yelled Oily.

"Why don't we hide the other one?" Harry suggested.

"That's cheating!" protested Jane. "Just push it out of sight – that's right – that should hold them up. Got the duck, and the map, Filly? Let's go!"

We puffed across the fields, me with my nose buried in the map, trying to find the quickest way.

"There's a footpath off to the left here – cuts through a copse – might be quicker – oh, hang on, perhaps not – " I babbled.

"Oh, and something else," I added, feeling in my pockets. "I've dropped the duck. So that's that. Er, now come on, chaps, where's your sense of humour . . . ? It's only a game . . . No, gerroff . . ."

COMMUNICATION THE

QSL WAY

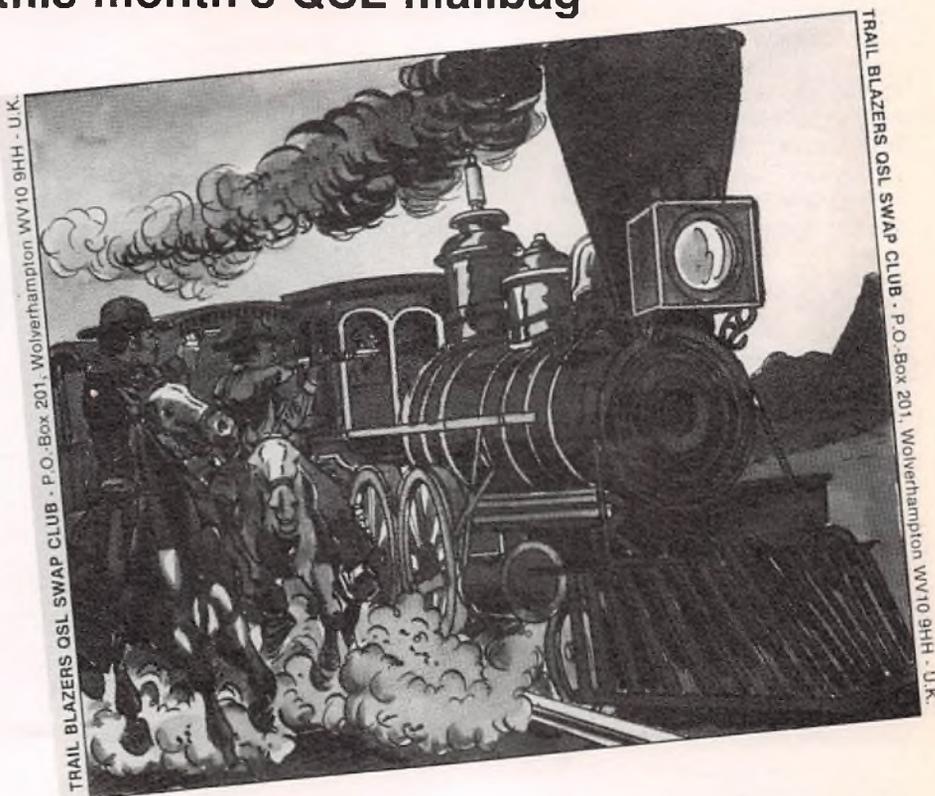


Yet again, David Shepherdson dips into this month's QSL mailbag

This month I have no details on any Forthcoming Events left this year. In fact so far, I have no details yet on any for 1988! So, if you are planning on holding one next year, please do let me know as soon as possible. Even if you have no exact details of venue or costs, please let me know the basic outlines of any such do coming up. As an example, I've included a sort of forecast of events based on the fact that the clubs mentioned have held a meeting this year, and I am assuming will do so next. That should give you the idea of what I would like to hear about.

In the September issue I mentioned that I had received a letter to the effect that PO Box 112, St Leonards on Sea, had been cancelled. Since then I have been contacted by Terry (*Star Rider*) to the effect that this is incorrect and he is still trading from this address. I regret and apologise for any inconvenience caused but have to accept letters and info received as being in good faith.

For the past few months I have been meaning to include a few words on a Solihull organisation but for one reason or another I have kept putting it off. (Yes that's right, I forgot!) So, with my apologies for the delay I will now, at long last, pass on some details of a charitable organisation well worth our support, this is the Medico 9 Organisation run by my friend Horace Arundel. The Medico 9 Organisation was formed at the end of 1979 as the first Medical and First Aid Service using CB Radio. The Medico 9 "Green Owl Service" was formed to help the disabled, blind and OAP's and to train



them in the use of CB. Also to help form clubs for them where they can meet in friendly atmospheres, arrange talks, demos and visits to other clubs. There is also the Mike 9 QSL Service for QSLers.

This service is not a club as such, but is open to anyone interested or using radio to receive or transmit. Membership costs £2 (admin charge) for which you receive a plastic membership card, badge and car sticker. QSL cards are available at £2.50 per 50 when sent by post and use of the PO box is £1 per year. For members wishing to use the PO Box who live outside the immediate

area, please supply suitable SASE's. Applicants for the First Aid/Medical Network should apply to the Director, 1 Hale Way, Frimley, Surrey, GU16 5HX while the QSL side and Monitoring/Rescue sections should apply to the address given in the QSL Club List. Please note that the address given above is *NOT* a QSL address! Horace is also UK Rep for the Kilo Romeo Circle of Friends of Australia. For an application form or details of either Club/Service, please drop Horace a line with SASE.

As it is coming up fast to Christmas

once again, could I ask you to save your Christmas cards up, then when you have finished displaying them, would you like to help out another charity? If so, would you be kind enough to send them to Ann (*Devil Woman*), RDX Charities Organiser, PO Box 5, Stornoway, Isle of Lewis, Scotland. The cards can be used to raise funds for the Guide Dogs for the Blind so your packages of cards can be sent free (or nearly so) providing they are clearly marked "Articles for the Blind". Also, if you have any bundles of used stamps and are looking for a place to send them, Ann welcomes these too. If you would like to further help Ann in these matters, a SASE with your bundle(s) would bring not only her thanks, but a bundle of "S.O.S." cards to pass on.

Moving on for now to several bundles of cards and letters from all over starting off with Tom (*Highlander*) of Saltcoats who sends out such a pack of club and personal cards that a single stamp isn't enough for the envelope! He has Currie cards, (old) Midas cards (ie: before the takeover), POMA and many more, a terrific package! Another Scot is Alan (*Werewolf*) of Aberdeen who sends a pile of cards and even certificates out, while from Cleveland hails Mark (*Buck Fuzby*) who QSLs so well as not to give his handle a bad name. A family QSL in from Malcolm (*Round Robin*), Ian (*Wigan Joker*) and Colin (*Coral Boy*) of St Helens, and from Ken (*Rubberlegs*) of Reigate comes news of a new card or two!

From Wales comes a dragon of a card in the Currie Numbered Series from Gwyneth (*Feathers*), from Holland a pair of stamped cards from Henk and a promise of up to 25 different cards in from Jan (*Superman*) of Stornoway (another one from Scotland)! A new address for Mark R Johnson (*The Hobbit*) has been passed to me, and a few cards in from Violet (*Quick Brew*) of Reading. Having just mentioned the Currie Number series I suppose it's only fair to mention that there are regional agents for this firm and one of these is Geoff (*Sky Blue*) who has sent me a few of those he has organised. They include one for Mick (*Leprechaun*) of Leicester, personalised club cards for the Four Kings DX-QSL Club of Coventry and various of his own.

A local radio club who hold an annual function of which all proceeds are donated to charity is the Port of Larne Radio Club. Michael (*The Condor*) has sent me a few details of the Club which has a new Club card and should anyone wish to QSL to him, they will receive one in Michael's QSL package. For anyone visiting the area, the Club meets every other Tuesday in the Town Hall in Larne and you will be most welcome to pop in! Another club which meets every last Tuesday on the month at 8pm at the Chequers Inn, Leominster, is the Whisky Mike Bravo's and I'm sure anyone

QSLer ADDRESSES

| | |
|----------------------------------|---|
| Mick (<i>Leprechaun</i>) | 85 Radstone Walk, Rowllatts Hill, Leicester, LE5 4UJ |
| Geoff (<i>Sky Blue</i>) | PO Box 17, Leicester, LE2 5HZ |
| Tina (<i>Lady Sky Blue</i>) | PO Box 19, Coventry, CV6 6ND |
| Violet (<i>Quick Brew</i>) | 22 Reading Rd, Cane End, Nr Reading, Berks, RG4 9HD |
| Mark R Johnson (<i>Hobbit</i>) | 1 Beaufort Close, Aylesbury, Bucks, HP21 9BB |
| Jan (<i>Superman</i>) | 21 Nicholson Rd, Stornoway, Isle of Lewis, Scotland |
| Gwyneth (<i>Feathers</i>) | PO Box 3, Colwyn Bay, Clwyd, Wales |
| Henk | Sterrekamp 62, NL-8414 MH NIEUWEHORNE, Holland |
| Ken (<i>Rubberlegs</i>) | 13 Stockton Road, Reigate, Surrey, RH2 8JF |
| Malcolm (<i>Round Robin</i>) | PO Box 72, St Helens, WA9 4PP |
| Mark (<i>Buck Fuzby</i>) | 55 Fernwood, Redcar, Cleveland, TS10 4NF |
| Alan (<i>Werewolf</i>) | 26 Argyll Place, Portlethen, Aberdeen, AB1 4QZ |
| Tom (<i>Highlander</i>) | 36 Links Road, Saltcoats, Ayrshire, Saltcoats, Ayrshire, KA21 6BQ, Scotland |
| Ann (<i>Devil Woman</i>) | PO Box 5, Stornoway, Isle of Lewis, Scotland |



holidaying in the area would be welcome to call in. Ken (*Homebrew*) sends out a very varied QSL package which is well worth sending for! But remember, if you send for a bumper package, please make sure that your own package is a good 'un!

News in from France now that the cost of joining the Club Alpha Romeo (CAR) has gone up to \$9 (US) plus 10 (or more) of your *personal* QSL cards for which you can expect the following items: Your CAR Number, ID card, certificate, 10 club cards, stickers, welcome letter, exchange cards and invites, roster, colour stickers etc. Extras

available include two types of club stamp (\$4 and \$6) and club cards at \$13 per 100. Payment can be in US dollars, French francs or UK sterling (cash).

When sending cash abroad, I always recommend that you make use of the Post Office's Registered Post for your own safety! If the money goes astray, then you do have a good chance of regaining your money.

Staying in Europe now with a pair of German Clubs which are the Berliner Bear & Super Stinky Clubs of Kaiserslautern. The BB Club is a long time and very well established Club run

by Knut and costs £5 with 10 Personal QSL cards. The Super Stinky which had closed down but has now been revived by the Berliner Bear Club costs £5 plus 30 personal QSL cards. The membership packages are extensive to say the least. Payment should be made by cash or credit card. Knut will accept most of the main cards if you are interested, and for full details on these two clubs, please drop him a line with 2 IRC's (from your local Post Office) for his reply. he can also offer personal "BB" cards at very reasonable costs, but I understand from many people that there is quite a wait as he prints in batches of four.

UK clubs on the agenda here include the Four Kings of Coventry and the Trailblazers of Wolverhampton. The Four Kings costs £2.50, 5 personal QSL cards and a 9" x 6" SASE stamped to 38p (UK). The massive package you get back includes things like full-colour club cards, key-ring, pen, log sheets, exchange cards, invites and so on. Over 20 different items go into this club's package. Extras available include the club cards and stamp. Payment can be made by either cash or UK Postal Order (to D. Hackett). The Trailblazer package costs £4 along with 10 of your personal QSL cards. For this sum you soon receive your TB package with your TB number, certificate, plastic ID card, President's, Vice-President's, Treasurer's and Secretary's cards, some club cards, exchange cards and invites, gold stickers, club pen, key fob etc. Club extras available include club cards (POMA or Midas) at £3.50 per 50, club stamp £3, cloth patch £2. Postage on these items is 50p (UK).

I mentioned that these clubs require personal cards when joining and going from some letters I've received of late there are those who are new to QSLing or unsure of just what a personal card is. So, for those people, here's a short description of the three main types of QSL cards. First is the plain and simple

QSL SERVICES ADDRESSES

| | |
|---|---|
| Charlie Cards | 26 Edward St, Hartshorne, Burton-on-Trent, Staffs. DE11 7HG |
| Currie Cards | 89 Derwent St, Blackhill, Consett, Co Durham, DH8 8LT. |
| Ensign Cards | 58b Market St, Ashby-de-la-Zouch, Leics. |
| POMA (Ray -UK Rep) | PO Box 106, Canterbury, Kent. CT1 3YN. |
| Star Rider Designs | PO Box 112, St Leonards on Sea, East Sussex, TN34 6NX |
| Vine Lodge Products (Labels) | 11 Mill Lane, Butterwick, Boston, Lincs, PE22 0JE. |
| Glass Engraving | Bob McWilliam, 150 Yoden Rd, Peterlee, Co Durham, SR8 5DU. |
| Scottish C.B. Newsheet, C/o 'Arnail', Patison, Neilston, Glasgow, G78 3AT (One year's Subscription £2.10) | |

club card. This is issued by a club either when you join or as an extra item. You are expected to use these WITH your own cards by adding your own address somewhere to them. Never use these cards instead of your own cards, always with it, it does help to build up your QSL package too! The second type is the personalised club card. This is still a club card which should be used alongside your own card, again, *not* instead of it. These are club cards which have had your name etc printed on them by the club for you, often in batches of 500 or so. The third, and most collectable, card is the personal card! This is the one that everybody is after! You have had this one designed, printed, photocopied or whatever as your very own card which you want to swop with other people's. Basically it should have your handle, either in words or as a design and your return address *clearly* on it.

If there is no address on them, how can you expect people to reply to you? Likewise if the address is scrawled on as an afterthought, by the time you've done

a few dozen, if your writing is anything like mine, it's totally unreadable! In cases like this last, good investment is a pack of 1,000 stickers made to order by one of the sticker firms for about £3.50 or so. A good one is Vine Lodge of Boston. And one last thing, don't apply to a club using club cards: it is rather insulting to the club concerned. Also it does suggest that you haven't even got any personal cards so what sort of member are you going to be? That's the impression you may be giving by using club cards *instead* of your own! One bit of very late news just received this morning is that the Papa Charlie DX Club of Sheffield is now run by the Tripe City Breakers of Accrington.

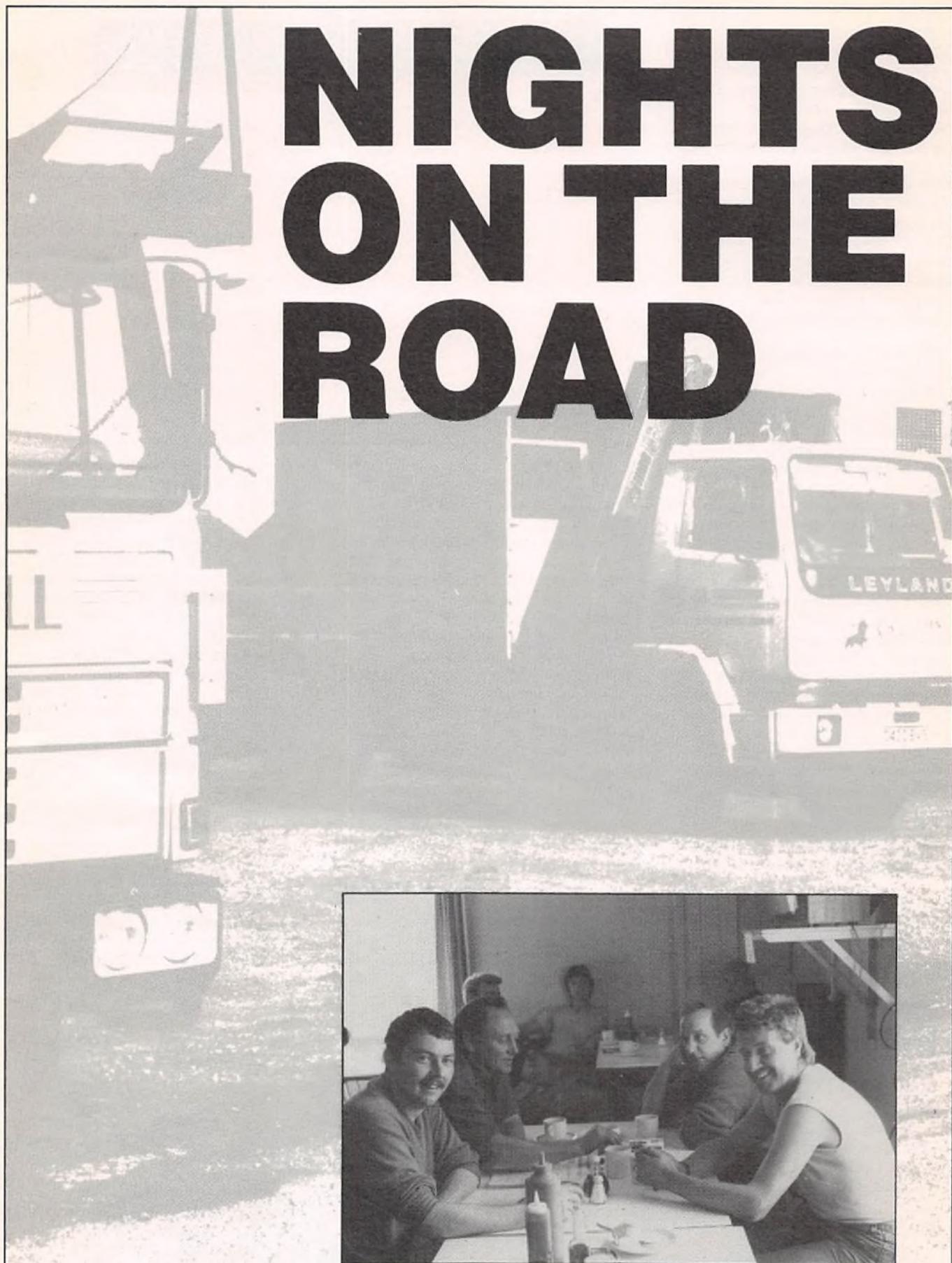
Anyway, that's it again for this month, take care and I'll catch you again next month. For a mention, for yourself or club, drop me a line, either C/o the mag or direct to 3 Tarn Villas, Cowpasture Road, Ilkley, West Yorks, LS29 8RH. If you want a reply, then please do include return postage and if it's about an event, please mark the envelope "EVENT" nice and clear so I can spot it easily, TNX

QSL CLUB ADDRESSES

| | |
|------------------------------|---|
| Berliner Bear & Super Stinky | PO Box 2923, D-6750 Kaiserslautern, West Germany |
| Club Alpha Romeo (CAR) | PO Box 1011, 66010 Perpignan Cédex, France |
| Four Kings DX-QSL Club | PO Box 19, Coventry, CV6 6ND |
| Medico 9 (QSL) | PO Box 83, Knowle, Solihull, West Midlands, B94 6ED |
| Port of Larne Radio Club | PO Box 20, Larne, Co Antrim, Northern Ireland, BT40 1LU |
| Trailblazers QSL Club | PO Box 201, Wolverhampton, WV10 9HH |
| Tripe City/Papa Charlie | PO Box 14, Accrington, Lancs, BB5 6JL |
| Whisky Mike Bravo | PO Box 8, Leominster, HR6 8TS |



NIGHTS ON THE ROAD



Since the recent BBC TV series *Truckers*, a lot of interest has been generated in the Romany lifestyle of our own Knights of the Road...

"I stopped at a roadhouse in Texas, a lil' place called Hamburger Dan's . . ." So goes the opening verse of the popular country and western song *Truck Drivin' Man*. Like many, many country songs from the States, it goes on to give a very romantic view of the American truckers' life across the pond. Beer-swillin', cigar-chewing, all-macho men to a "T". Movies like *Smokey and the Bandit* and *Convoy* perpetuate this image, but what of the truckers of the UK?

The recent six-part BBC TV series *Truckers* met with mixed reaction. Most TV critics thought it was the best thing since *Minder* repeats, but the majority of real-life truckers were outraged at the way in which they were portrayed. Cowboy outfits, wheeling and dealing, breaking picket lines for a fast buck – was this typical of British truckers? No, no, no, they cried. To find out the real story behind these romantic roadsters, *Citizens' Band* loaded up, jumped in the cab and set off up the A5 to check 'em out.

The A5 Cafe near Markyate, Hertfordshire, is not exactly a palace of salubrious delight, but it's where many a long-distance lorry driver chooses to break his journey for a cuppa and fry-up. Just yards from Junction 9 on the M1 motorway, it's a very handy place to spend your official 45-minute break. You can get a substantial meal for less than £2.50 – and even a bed for the night for just £3. Apart from the guy behind the counter who is hard of hearing (you can order what you like, but you take a chance on what you actually get), other amusements include TV. *Space Invaders* and a fruit machine.

One of the truckers we spoke to was Drifter, who lives in Leighton Buzzard, a driver for Unipart. He enjoys stopping at the A5 Cafe and he enjoys life on the road.

"I've been doing this for nine years now", he said. "And, yes, I still enjoy it. Mind you, I'm luckier than a lot of others because it's not too often I spend more than two nights a week away from home."

Drifter drives as far north as Grimsby and as far south as Bournemouth, plus all points inbetween. When the trip entails an overnight stop, he prefers to sleep in his cab rather than rent a room or a bed at a truckstop. And why not? He simply has to push the two front seats forward, unfold the bed behind and lay there either listening to his radio, CB or watching his portable TV!



Talking of CB, Drifter has, in the past, found it invaluable. "At first, I used to use it just as many newcomers do now", he told us, "But now, we tend to use it for communicating with each other if there are one or two trucks on the trip, or for 10 – 13s. In our crew, we usually use channel 13 as a common breaking channel."

Another trucker we met was Harrier, who has been a trucker for over 27 years. He, too, found CB of great help on the roads, again talking to other truckers or asking for traffic information.

"Unfortunately, CB is not what it used to

be", he said, "It depends on the area, but you still get the wallies, after all this time. But we still persevere and it can be quite a help if you're in trouble. We use it more for information than anything else."

"It's like a lot of things, really. Everything changes, just like driving along the motorways. It's just not what it used to be, being a trucker. It's getting more and more like a rat-race since the motorways came. In the old days, if a trucker broke down, there would be another trucker along to help him. Nowadays, everything's too fast. There's just no time for helping others, usually because delivery times are just too much to be able to stop and help. Yes, the old camaraderie has gone."



Harrier also had a few things to say about the general standard and capabilities of truckers: "To get a licence, all you need do is pass your medical and then pass a test. It doesn't cover things like loading and tying a rope around your load. Say, for instance, you've got a bloke who just does short, small deliveries. He's never tied a rope in his life but then he gets a job with a large haulage firm. It could be disastrous."

Blue Robin, from Leicester, also has some forthright views about CB. He is "sick to death" of the wallies who disrupt the general flow of traffic information so needed by truckers.

"It's almost getting to the point of an every man for himself attitude," he said. "Half the time you're on the air asking for 13s, all you hear is the kids chatting about birds they fancy or swearing at anyone and everyone. It's becoming a joke and CB is losing a lot of respect."



The recent media coverage of so-called 'truckstops' who, apparently, are none too keen on welcoming these Knights of the Road, brought forward some strong views.

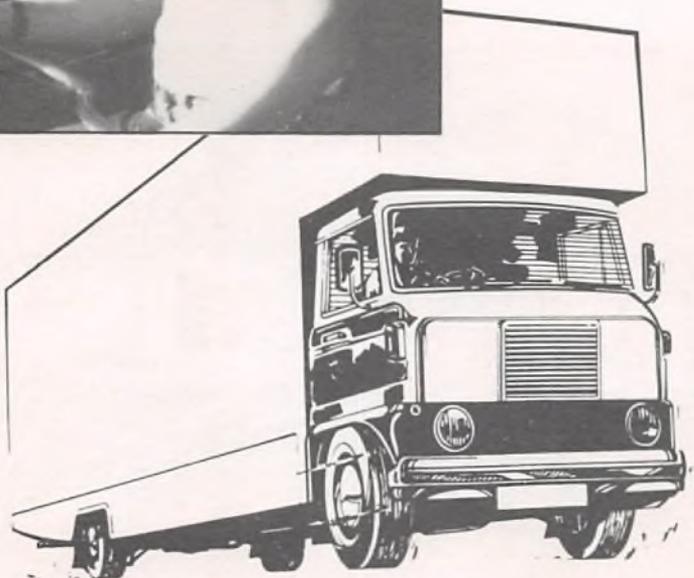
"It's definitely becoming clear that there is a real North/South divide when it comes to places truckers can stay overnight. There are just not enough places in the South of England. It's really obvious, when you travel up and down the country, that there are much, much more places that accept truckers in the North of England than in the South. Places like Little Chef and Happy Eater have taken over many 'old-fashioned' truckstops and make it clear they do not welcome our business. It's just not like the old days.

"They simply don't want you", he continued. "You obviously have to stop for a certain amount of time by law, but it's becoming increasingly difficult to find somewhere where you are welcome. When you do, they tend to charge what we call 'tourist charges' for their services. It's nothing short of exorbitant. I honestly believe that Watford Gap is the furthest South who allow truckers and don't give them a hard time."

A sort of second-class citizen syndrome?

"Without a doubt. Without a doubt. Let's face it. We're all just doing our jobs the best way we can. We're not yobbos or thugs. OK, maybe our work sometimes makes it necessary to wear overalls - but the first thing we do when we pull up at a 'stop' is to go and have a good old scrub-up."

Big Mac, from Kilbride in Scotland, had the



last word, having watched the controversial *Truckers* TV show.

"I thought it was a complete joke," he said. "No trucker I know is anything like the characters in that programme. All this going behind people's backs to nick jobs off them - if you did that in real life, you wouldn't last long in this game. And in nearly every scene with one of the truckers out on the road, there was always a young dolly bird hanging around. Well, you just look around here and tell me how many dolly birds you can see. Fair enough, we all have our moments now and again (at this point, the author promised not to tell Mac's wife!) but nothing like to that extent!"

"I think that the show, on the whole, put the real truckers in a bad light, and everyone I know agrees with me. If you're going to publish this, please let your readers know that we're not like that at all!"

Consider it done, Mac

IN THE PROCESS

Paul Coxwell checks out a new speech processor board designed to enhance your TX

It is generally recognised that a good speech processor, be it a compression or clipping type is a better alternative to a straight amplified microphone and the subject of this review is the speech processor board made by JD Custom Electronics and available through Truck King.

This particular processor has been designed to fit inside any transceiver rather than be connected in an external box as with the majority of other add-on processors. The board itself measures a shade under 2½ x 1½ inches and should fit in all but the most compact of sets. Installation is fairly straightforward and detailed instructions are supplied but it would be most unwise to tackle it yourself unless you can solder well and can identify a few simple connections inside the radio. The audio circuit between the mike input and amplifier on the main board is broken to insert the module and you will also need a SPDT switch, either as an extra or one of the existing switches disabled. This will switch the processor on or bypass it as required.

The trickiest part of installation is probably securing the board in position to stop it shifting around. The rear of the PCB is covered with stick-on foam to provide insulation so you could use adhesive to some suitable point (note that some glues will dissolve the foam though!); another alternative is to use some heavy copper cable (such as stripped-down 5-amp house cable) between the ground point and a chassis lug or transformer can. Two such links usually offer sufficient support for many add-in boards. Ferrite beads are supplied to slip over the audio input and

output connections to prevent RF getting picked-up on the extra circuitry but it would still be a good idea to avoid fixing the processor anywhere near the RF output stage, particularly on higher-powered multimode equipment. In practice no trouble was found in this respect.

Setting-Up

Two adjustments are provided on the processor board, one to set the compression level and the other to set the overall output level. Both have no effect when bypass (i.e. no processing) is selected. As the instructions so rightly say, you should make sure that all other modulation adjustments are correctly set. This means no cranked-up deviation on FM and all those AMC and ALC presets put back to where they should be on AM and SSB rigs respectively. Of course, they shouldn't have been tweaked-up in the first place! The output preset on the board is set to match the processor output to your radio's input and the gain control is then adjusted to give just the right amount of compression. Don't get carried away – too much is no better than none at all! If you have a mike gain control and you wire the processor board *after* it you will have variable compression from the front panel. In this case you can turn the input gain on the board up full and just use the mike gain control. This has the benefit that you can reduce the compression to a slightly lower level if desired. If you don't have a mike gain you'll just have to adjust for the best compromise between too much on clearer signals and not enough on weaker ones. You will generally find that

levels of compression used on a very weak copy will sound far too much on a good clear signal. On local stations it is best to bypass the processor and run with no clipping at all.

Results

The module was tried in several UK FM transceivers including the common Cybernet chassis type (York, Rotel etc.) as well as multimode equipment. It performed well in all cases though as expected the improvement was most dramatic on SSB. This will be the case with just about all compressors and clippers. Both standard and amplified (power) mikes were tried on the input and the board always provided good clear audio at the distant end even when the gain was turned up nearly full and certainly well above levels that would normally be used. A regular mike and the processor produced signals far "cleaner" than many generated with power mikes over-driving the input amps of a rig and definitely added that extra bit of "punch" to the audio.

Conclusion

The final verdict then – you should have no trouble fixing the processor into most radios with the exception of handhelds or really sub-compact models. Wiring and adjustment is fairly simple and within the capabilities of anyone who can trace mike wires and solder properly. There are no complaints about the quality of signal produced by this processor and with a price tag of £18.50 comes recommended as a good buy.

Thanks go to Truck King at Watford for supplying the review sample.

SHARMAN'S

SOME OF THE EXCLUSIVE RANGE OF SHARMAN
CITIZEN BAND PRODUCTS NOW AVAILABLE

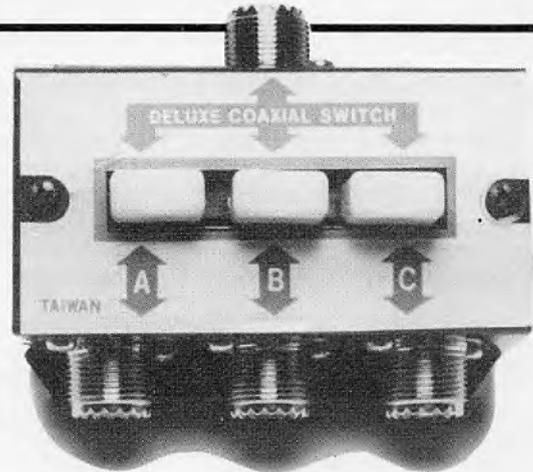


MAXCOM MX7E

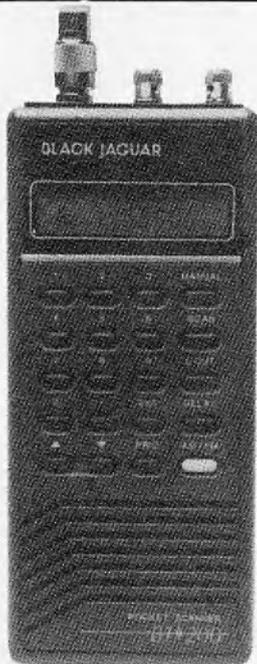
Instant, Fully Portable and Mobile 4
Watt, 40 Channel Transceiver
Complete with antenna, magnetic
mount, power connector, battery pack,
carry case and belt clip.
Squelch and Volume control, TX
indicator and attenuator switch.



KA 50 PROFESSIONAL QUALITY
GUTTER MOUNT



3 POSITION COAXIAL SWITCH



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5 Band
programmable
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including
26.0 / 29.995 MHz.



SW7-11
COMMUNICATION SPEAKER
ALSO AVAILABLE SW7-12

WHOLESALE

FM 2-Way Radio from Maxon: Hands Free & Helmet Ready!



**Maxon Model 49-HI
Voice Activated 2-Way
Radio with Operator-to-
Passenger Intercom**

Here's a 49 MHz FM transceiver AND intercom combined in one compact, versatile communications package. It's ideal for cycling, boating, snowmobiling—any recreational or industrial activity that involves the use of helmets. The primary headset permits AUTOMATIC VOICE ACTIVATED 2-way radio communication with other transceivers on the same frequencies—UP TO ½ MILE AWAY! The second headset lets the passenger monitor the vehicle operator's 2-way conversation, and talk with the operator via intercom. BOTH HELMET CONVERTIBLE HEADSETS install easily, without cutting or drilling, in most open and closed face helmets. Rugged control unit weighs less than nine ounces and has a handy belt/pocket clip.

Also Available:

Model 49 H5 . . . Helmet
available 49MHz FM
2 way radio operating
on 5 channels

maxon

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

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RING NOW FOR OUR SECURICOR DELIVERY DETAILS!

7TH BIRTHDAY

To celebrate seven glorious years of the existence of *Citizens' Band* magazine, here is your chance to win some fabulous goodies from some of the top suppliers in the world of CB.

The total value of the prizes to be won is over £1,000, thanks to the help of Nevada Communications, Truck King, Sharman's Wholesale, Pama & Co and Freeman and Pardoe.

All you have to do is to fill in three answers correctly on the form below and – this is the important part – cut out and save it! The next two issues will have similar forms (but naturally with different questions). So, on completing the third form in the February issue, send all three in TOGETHER to: BIRTHDAY BONANZA, *Citizens' Band*, 1 Golden Square, London W1R 3AB.

These are some of the great prizes to be won:

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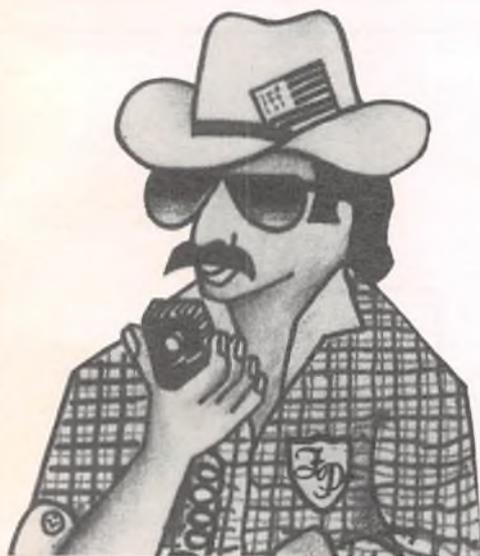
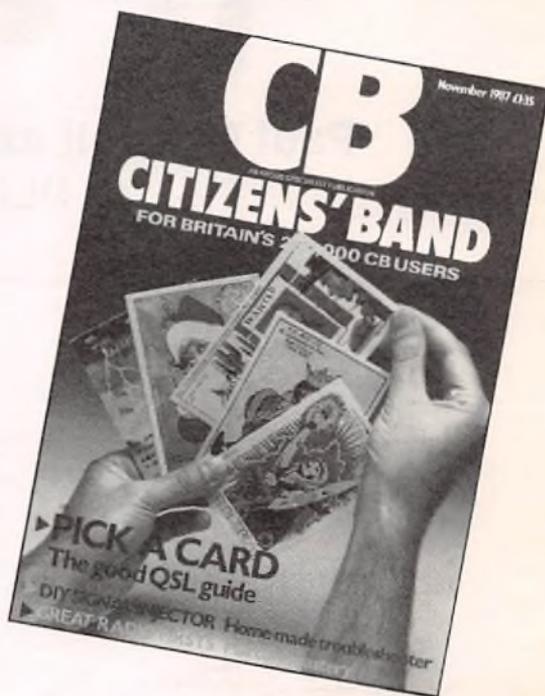


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QUESTION 1: When were the CEPT frequencies made 'legal'?

QUESTION 2: When was 27MHz FM made 'legal'?

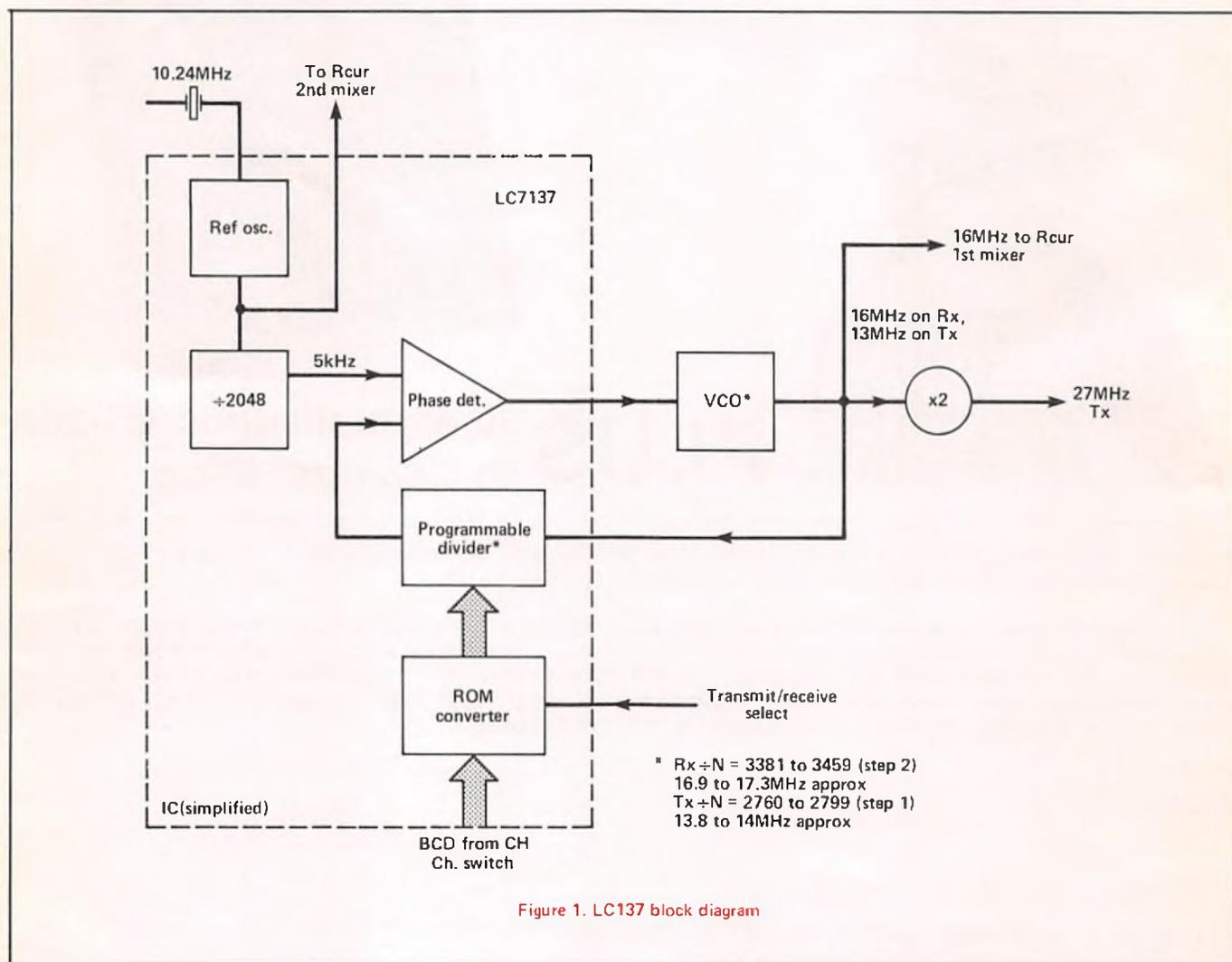
QUESTION 3: When did *Citizens' Band* first appear on the bookstands?

ANSWERS

1.
2.
3.

CB IN DEPTH (Part 9)

Paul Coxwell examines the complexities of PLL arrangements



No relaxation this month I'm afraid, we're keeping straight on with the Phase-Locked Loop circuitry! We've seen how the basic loop operates and had a quick look at two typical arrangements in

block form. Before examining the wiring in detail we will see what other PLL arrangements there are.

Programming the Divider

Remember the programmable divider that is set to divide by a certain number to obtain the 10kHz for the phase

detector? The channel switch provides the code to select this of course, but we have not seen how this is achieved. Let's start with the PLL02A we saw last month, using the chassis that has N-codes from 330 (channel 1) down to 286 (channel 40). This particular PLL chip has nine pins that select the code and

these are designed for binary inputs (these computers get in everywhere don't they?). The pins are labeled from P0 to P8, the latter being the most significant bit and the former the least significant. We must digress somewhat here to explain the binary system. If you are already familiar with it then skip to the next paragraph.

In our conventional decimal counting system we use ten different digits, 0 through 9. In any given number, the right-most digit represents units of zero to nine. Moving one place to the left we then multiply by ten (because we have ten digits) giving ten, twenty, thirty etc. Each time we move one place to the left a particular digit represents ten times the value it did before. The units digits would be termed the *least significant digit* and the left-most digit the *most significant*. In binary we have only two digits available, 0 and 1. For each movement to the left we therefore multiply the significance, or *weight* of a digit by two instead of ten. The progression from right to left is therefore 1, 2, 4, 8, 16, 32, 64, 128 and so on. As an example we will convert a binary number to our own more familiar decimal format. The number we'll use is 11001011. Writing the digits with their respective weights thus:

| | | | | | | | |
|-----|----|----|----|---|---|---|---|
| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |

it is a simple matter to convert. Where a one appears we add the appropriate value to the total, where a zero is present we don't. So from the above table we get $128 + 64 + 8 + 2 + 1 = 203$.

To return to divider programming the PLL02A has nine bits of binary the pins arranged with their respective binary *weights* as below.

| | | | | | | | | |
|-----|-----|----|----|----|----|----|----|----|
| P8 | P7 | P6 | P5 | P4 | P3 | P2 | P1 | P0 |
| 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |

To get the code for channel 1 which is 330, inputs P8, P6, P3 and P1 are set to 1 and all others to 0. This gives a binary code of 101001010 which converts to $256 + 64 + 8 + 2 = 330$. For channel 2 the switch provides a code of 101001001 or 329 and so on. A binary one is set by applying a voltage to the appropriate pin, a zero by connecting it to ground.

BCD Programming

Some PLL integrated-circuits use a slightly different method of selecting the channel which is a sort of half-way house between binary and decimal. It is known as *Binary Coded Decimal*, or BCD for short. It works by taking the digits of the required decimal number and assigning four binary program lines for each one. Four bit binary allows numbers from zero to fifteen to be set, but with BCD programming only zero to

Fig. 2. N-Codes & Frequencies for the 7137

| LC7137 PLL CHART | | | Ref, osc, | 10,24046 | | |
|------------------|--------|----------|-----------|----------|-----------|--|
| Transmit | | | Receive | | | |
| Channel | N-Code | VCO | N-Code | VCO | Ch. Freq. | |
| 1 | 2760 | 13.80062 | 3381 | 16.90576 | 27.60124 | |
| 2 | 2761 | 13.80562 | 3383 | 16.91576 | 27.61124 | |
| 3 | 2762 | 13.81062 | 3385 | 16.92576 | 27.62124 | |
| 4 | 2763 | 13.81562 | 3387 | 16.93576 | 27.63124 | |
| 5 | 2764 | 13.82062 | 3389 | 16.94576 | 27.64124 | |
| 6 | 2765 | 13.82562 | 3391 | 16.95576 | 27.65124 | |
| 7 | 2766 | 13.83062 | 3393 | 16.96576 | 27.66124 | |
| 8 | 2767 | 13.83562 | 3395 | 16.97586 | 27.67124 | |
| 9 | 2768 | 13.84062 | 3397 | 16.98576 | 27.68124 | |
| 10 | 2769 | 13.84562 | 3399 | 16.99576 | 27.69124 | |
| 11 | 2770 | 13.85062 | 3401 | 17.00576 | 27.70124 | |
| 12 | 2771 | 13.85562 | 3403 | 17.01576 | 27.71124 | |
| 13 | 2772 | 13.86062 | 3405 | 17.02576 | 27.72125 | |
| 14 | 2773 | 13.86562 | 3407 | 17.03577 | 27.73125 | |
| 15 | 2774 | 13.87062 | 3409 | 17.04577 | 27.74125 | |
| 16 | 2775 | 13.87562 | 3411 | 17.05577 | 27.75125 | |
| 17 | 2776 | 13.88062 | 3413 | 17.06577 | 27.76125 | |
| 18 | 2777 | 13.88562 | 3415 | 17.07577 | 27.77125 | |
| 19 | 2778 | 13.89062 | 3417 | 17.08577 | 27.78125 | |
| 20 | 2779 | 13.89562 | 3419 | 17.09577 | 27.79125 | |
| 21 | 2780 | 13.90062 | 3421 | 17.10577 | 27.80125 | |
| 22 | 2781 | 13.90562 | 3423 | 17.11577 | 27.81125 | |
| 23 | 2782 | 13.91062 | 3425 | 17.12577 | 27.82125 | |
| 24 | 2783 | 13.91563 | 3427 | 17.13577 | 27.83125 | |
| 25 | 2784 | 13.92063 | 3429 | 17.14577 | 27.84125 | |
| 26 | 2785 | 13.92563 | 3431 | 17.15577 | 27.85125 | |
| 27 | 2786 | 13.93063 | 3433 | 17.16577 | 27.86125 | |
| 28 | 2787 | 13.93563 | 3435 | 17.17577 | 27.87125 | |
| 29 | 2788 | 13.94063 | 3437 | 17.18577 | 27.88125 | |
| 30 | 2789 | 13.94563 | 3439 | 17.19577 | 27.89125 | |
| 31 | 2790 | 13.95063 | 3441 | 17.20577 | 27.90125 | |
| 32 | 2791 | 13.95563 | 3443 | 17.21577 | 27.91125 | |
| 33 | 2792 | 13.96063 | 3445 | 17.22577 | 27.92125 | |
| 34 | 2793 | 13.96563 | 3447 | 17.23577 | 27.93125 | |
| 35 | 2794 | 13.97063 | 3449 | 17.24577 | 27.94126 | |
| 36 | 2795 | 13.97563 | 3451 | 17.25578 | 27.95126 | |
| 37 | 2796 | 13.98063 | 3453 | 17.26578 | 27.96126 | |
| 38 | 2797 | 13.98563 | 3455 | 17.27578 | 27.97126 | |
| 39 | 2798 | 13.99063 | 3457 | 17.28578 | 27.98126 | |
| 40 | 2799 | 13.99563 | 3459 | 17.29578 | 27.99126 | |

nine are used. If a chip allows three digit decimal numbers for instance the code on the pins might be 000100110101. Splitting this into groups of four we get the codes for three individual decimal digits thus:-

| | | |
|------|------|------|
| 0001 | 0011 | 0101 |
| 1 | 3 | 5 |

You can see that each group of ones and zeros has been converted separately to give the decimal number 135. Quite often the hundreds digit will have less than four inputs: with two for example you can set any number up to 399.

ROM Program Code Converters

The newest PLLs (including the majority of all UK rigs) use another computer

derived device called a ROM, or Read-Only Memory. The chips have BCD programming inputs but instead of the number representing the actual +N-code it is the channel number. So on channel 1 the code is 0000 0001 on channel 23 it is 0010 0011 etc. The ROM then converts this code into the actual N-code that the divider uses. Don't fret too much over how this works because the ROM is tucked safely away inside a chip where you can't ever reach it. Visualize two columns of figures drawn as a table with 1 to 40 down the left hand side and various other numbers down the right. If you want channel 20 you just look at the numbers opposite 20 and there it is; this is basically what the ROM does in electronic form.

There are usually six program pins, four for the BCD representation of the

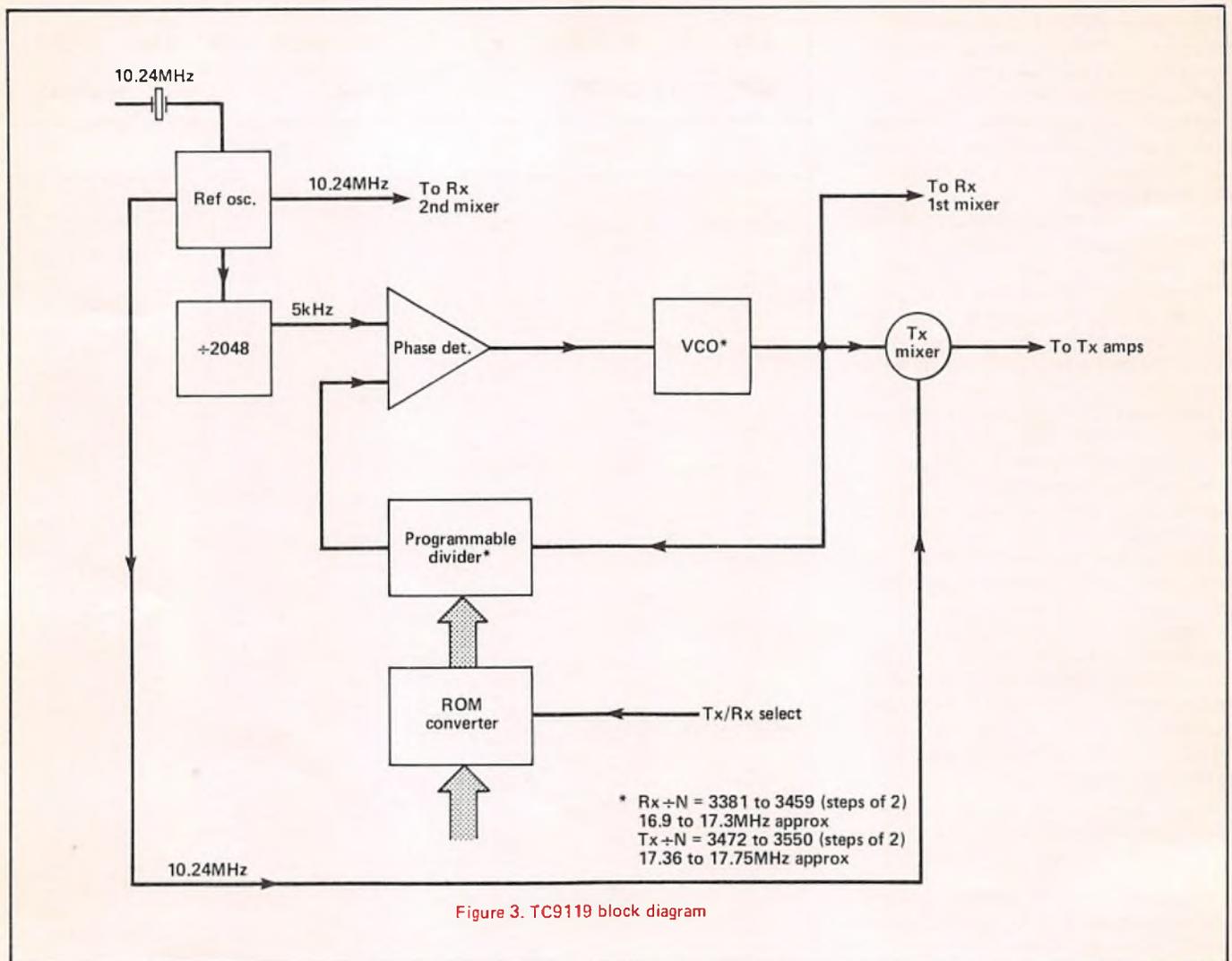


Figure 3. TC9119 block diagram

units channel digit and two for the tens. At first sight it may seem that three would be needed to obtain the code for 40 (0100 0000) but these devices actually use 0000 0000 to represent 40. ROM PLLs usually incorporate another line which selects between transmit and receive. In our previous examples the VCO and PLL circuits have run at the same frequency during both transmission and reception, and the mixing further on generates the correct frequencies for each mode. Here however it is normal to have the VCO shift its frequency between transmit and receive and fig. 1 shows a typical scheme employed in many UK radios. The VCO runs at around 16MHz on receive to give the usual 10.695 MHz offset for the I.F. On transmit however the VCO frequency is lowered to half the required frequency, around 13½ to 14 MHz. cast your mind back to our first look at transmitter circuitry and you'll remember mention of a frequency doubler used in some chassis. This is indeed the case here and this method removes the need for separate (expensive crystal oscillators running at 10.695MHz.

How might the VCO shift frequency between modes? Expand that mental image of a table of numbers to include

three columns – the 1 to 40 channel number, one set of N-codes for transmit and another set for receive. Now arrange for a signal to the PLL chip to tell it which set of codes to use and voila!

Such a table is shown in fig. 2 for the 7137 we have just been looking at. Also included are the VCO frequencies and so on as before. You will notice that the N-codes go up in ones for transmit and twos for receive. The reason is simply this – when the VCO signal is passed through the doubler on transmit the channel spacings will also be doubled. It's no good starting with 10kHz steps because you'll wind up only being able to use every other channel. To overcome this the reference oscillator is divided down to 5kHz rather than 10kHz thus giving 5kHz increments. On transmit these get doubled to give the required 10kHz channel spacing but on receive where there is no doubler in the signal path the N-codes are incremented by two to keep the 10kHz steps.

You will have probably noticed that the reference oscillator runs a little above the usual 10.240 MHz, 10.24046 to be exact. This is because the UK channel allocations are rather weird and not an exact multiple of 5kHz. Because the PLL is dividing by such large numbers only a small change at the

reference frequency is needed to cause the 1 25kHz upshift in final channel frequencies. (With precisely 10.240 we'd have 27.600, 27.610 etc.). A side effect of this is that the channel spacings are no longer exactly 10kHz; $10.24046 \text{ MHz} \div 2048$ actually gives 5.0002kHz, which doubled results in a spacing of 10.0004kHz! This is so small to be of no importance, but on the frequency chart where figures have been rounded to five decimal places you can see the effect on the final frequencies. American and European sets where the reference is exactly 10.240MHz and channels an exact multiple of 5kHz don't get this "problem."

The use of ROM PLL chips and BCD programming has been an advantage to some people and a disadvantage to others. To the average user it has meant the cost of rigs has fallen due to the loss of crystal oscillators, loop mixers and suchlike; integrated circuits are very cheap to produce once in widespread use. It has also meant convenience for manufacturers, for instance the channel switch in a UK set can be identical to the one in a European set. With direct binary programming they would be different because of different N-codes for the different band and the fact that European channels have 20kHz gaps

Fig. 4. N-Codes & Frequencies for the 9119

| TC9119 PLL CHART | | | Ref, osc, | 10,24046 | |
|------------------|--------|----------|-----------|----------|-----------|
| Transmit | | | Receive | | |
| Channel | N-Code | VCO | N-Code | VCO | Ch. Freq. |
| 1 | 3472 | 17,36078 | 3381 | 16,90576 | 27,60124 |
| 2 | 3474 | 17,37078 | 3383 | 16,91576 | 27,61124 |
| 3 | 3476 | 17,38078 | 3385 | 16,92576 | 27,62124 |
| 4 | 3478 | 17,39078 | 3387 | 16,93576 | 27,63124 |
| 5 | 3480 | 17,40078 | 3389 | 16,94576 | 27,64124 |
| 6 | 3482 | 17,41078 | 3391 | 16,95576 | 27,65124 |
| 7 | 3484 | 17,42078 | 3393 | 16,96576 | 27,66124 |
| 8 | 3486 | 17,43078 | 3395 | 16,97586 | 27,67124 |
| 9 | 3488 | 17,44078 | 3397 | 16,98576 | 27,68124 |
| 10 | 3490 | 17,45078 | 3399 | 16,99576 | 27,69124 |
| 11 | 3492 | 17,46078 | 3401 | 17,00576 | 27,70124 |
| 12 | 3494 | 17,47078 | 3403 | 17,01576 | 27,71124 |
| 13 | 3496 | 17,48079 | 3405 | 17,02576 | 27,72125 |
| 14 | 3498 | 17,49079 | 3407 | 17,03577 | 27,73125 |
| 15 | 3500 | 17,50079 | 3409 | 17,04577 | 27,74125 |
| 16 | 3502 | 17,51079 | 3411 | 17,05577 | 27,75125 |
| 17 | 3504 | 17,52079 | 3413 | 17,06577 | 27,76125 |
| 18 | 3506 | 17,53079 | 3415 | 17,07577 | 27,77125 |
| 19 | 3508 | 17,54079 | 3417 | 17,08577 | 27,78125 |
| 20 | 3510 | 17,55079 | 3419 | 17,09577 | 27,79125 |
| 21 | 3512 | 17,56079 | 3421 | 17,10577 | 27,80125 |
| 22 | 3514 | 17,57079 | 3423 | 17,11577 | 27,81125 |
| 23 | 3516 | 17,58079 | 3425 | 17,12577 | 27,82125 |
| 24 | 3518 | 17,59079 | 3427 | 17,13577 | 27,83125 |
| 25 | 3520 | 17,60079 | 3429 | 17,14577 | 27,84125 |
| 26 | 3522 | 17,61079 | 3431 | 17,15577 | 27,85125 |
| 27 | 3524 | 17,62079 | 3433 | 17,16577 | 27,86125 |
| 28 | 3526 | 17,63079 | 3435 | 17,17577 | 27,87125 |
| 29 | 3528 | 17,64079 | 3437 | 17,18577 | 27,88125 |
| 30 | 3530 | 17,65079 | 3439 | 17,19577 | 27,89125 |
| 31 | 3532 | 17,66079 | 3441 | 17,20577 | 27,90125 |
| 32 | 3534 | 17,67079 | 3443 | 17,21577 | 27,91125 |
| 33 | 3536 | 17,68079 | 3445 | 17,22577 | 27,92125 |
| 34 | 3538 | 17,69079 | 3447 | 17,23577 | 27,93125 |
| 35 | 3540 | 17,70080 | 3449 | 17,24577 | 27,94126 |
| 36 | 3542 | 17,71080 | 3451 | 17,25578 | 27,95126 |
| 37 | 3544 | 17,72080 | 3453 | 17,26578 | 27,96126 |
| 38 | 3546 | 17,73080 | 3455 | 17,27578 | 27,97126 |
| 39 | 3548 | 17,74080 | 3457 | 17,28578 | 27,98126 |
| 40 | 3550 | 17,75080 | 3459 | 17,29578 | 27,99126 |

and channels out of sequence which the British channels don't. For people who like to modify sets to get lots of extra channels however the ROM PLL is a pain in the diodes!

The program codes sent to the input pins can't be changed because the ROM is programmed to reject invalid codes and just switch to channel 9 or 19. There is no loop mixer stage where the crystal oscillator frequency can be changed to shift the frequency and to obtain extra channels generally involves the fitting of considerable amounts of circuitry, whereas with the earlier types such as the PLL02A just adding a crystal could double the frequency range. Indeed some rigs require no more than a spare switch, a resistor and a couple of short pieces of wire! Various governments throughout the world decided that this was not on and in many countries it is now a requirement

that CB transceivers must use the secure ROM chips with no loop mixers or other easy means of expanding the range. By the time British CB was legalized, these circuits were well established and the chips were just produced with the necessary N-code changes for the UK channels. Curiously there are one or two British sets that don't use this method and are therefore easier to modify but to avoid our esteemed editor censoring me in mid-sentence they shall remain nameless!

Other Variations

You will no doubt come across many other variations of PLL design, such as seeing Tx/Rx PLL switching combined with loop mixers and even with binary programming. Whether the set is AM or FM is academic at this point, it is the frequencies we are concerned with. For

reference, we will briefly mention another common UK-only chip which will be found residing in Audioline and Uniace sets mostly. This is the TC9119 and the block diagram is shown in fig. 3. This is very similar to the LC7137 and uses the same ROM code converter and T/R code switching pin. During reception the N-codes and VCO frequencies are the same as the 7137 chip but on transmit we find a difference.

This chassis doesn't use a frequency doubler but the good old transmit mixer. This gets its fixed signal from the 10.24MHz reference oscillator. Yep, that reference signal gets put to a lot of uses! Because the signal is only 10.24 instead of 10.695MHz the ROM is programmed to shift the VCO up by 455kHz during transmission. The results are shown in fig. 4. The VCO output increments in 10kHz steps all the time because there is no doubler as with our previous example. The chip still uses 5kHz as its basic reference point so all the N-codes go up in twos. This chassis is just as unmodifiable as the 7137 chassis, because whilst it incorporates a mixer it is only used on transmit.

The other main difference on this chip is the method of selecting the channels. It doesn't use binary, direct BCD or the channel BCD of the 7137. It has eight program inputs which at first sight have a rather weird coding. The channel switch in a radio must not only feed the PLL with channel data but it must also correctly light the segments of the channel display for the user. This naturally involves a very complex switch arrangement for all these functions and this chip was intended to simplify the arrangements slightly. Instead of having separate poles on the channel selector for the PLL it takes its code from the same pins as the display. The result is a peculiar combination of zeros and ones that represent whether a particular segment is alight or not, but the ROM inside converts the codes just as before.

If all this is getting too complicated, don't panic, in time it makes perfect sense! We could spend months looking at different PLL schemes because this is one area of CB radios that have seen many advances in technology and many different designs. However at this point we must stop although there are lots of interesting variations to discuss. Next month we make it to the actual PLL wiring.

If you want to investigate the fascinating subject of PLLs further there is an excellent book by Lou Franklin called "The CB PLL Data Book." It is obtainable from Truck King at Watford (0923) 661673, Telecomms at Portsmouth (0705) 662145 or direct from CB City International in Phoenix, Arizona (602) 996-8700.



CAPTAIN SPARX

CARIN – SON OF CB

Since the advent of CB, in-car navigation and information aids have taken a big leap forward. The Captain investigates

Just as I was rattling my piggy-bank to see if I could afford an 'E' reg Jaguar (or even a 2CV6, which is nearer my style). I heard the latest from Philips' about CARIN, the remarkable car information and navigation system developed at Philips' Project Centre at Eindhoven. Although unlikely to be in widespread use before the early to mid 1990s, an initial prototype was in use last year (1986). Full page advertising in the UK press this summer has given advance notice of CARIN, though there is no indication yet of likely cost. You'll just have to get a bigger piggy-bank and cut down on non-essentials like groceries!

The full potential of CARIN is hard to imagine, given the possibilities of computer based safety, control and efficiency systems in soon-to-come cars. Like Philips' remarkable invention of the early 1960s, the Compact Cassette, CARIN may eventually do even more than initially envisaged. Basically, CARIN, otherwise called 'The Talking Map', is a sort of electronic co-pilot, using on board computer resources and a Compact Disc stored data base. CARIN enables the driver to plan his route, thereafter guiding him to the destination using the speech module. CARIN can take account of 'new information', e.g. broadcast warnings on motorway hold ups, in route planning – especially important when the Radio Data System (RDS) comes into use on a Europe wide basis. RDS is well advanced, by the way, with test broadcasts already in hand in Britain, France and Sweden.

Digital RDS signals, accessible to the in-car computer, do not interrupt normal radio broadcasts. Even if CARIN did no more than 'navigate' to optimum efficiency, the savings to the car owner would be impressive enough. It's estimated that UK drivers could be some 20% better off in their route planning, fuel consumption, time etc, if they explored variations to most popular

PHILIPS

CARIN
The Talking Map

CARIN the car information and navigation system was developed by Philips at their own research laboratories at the Geldrop Project Centre in Eindhoven, Holland.

The system is an electronic co-pilot which can plan the route, guide the driver to his destination, know the position of the car at any moment and also provide a number of details about the environment or the destination of the journey.

In later phases of the project CARIN will be integrated with dashboard functions. Spoken warnings can then be given if the car needs to be filled with petrol or oil, if the temperature goes too high or if there are battery problems. The system could also be linked to traffic warnings over the car radio. This might be done by means of the Radio Data System (RDS) which is now the subject of standardisation discussions on the European level, which RDS test broadcasts are already taking place, for example in France, Sweden and England.

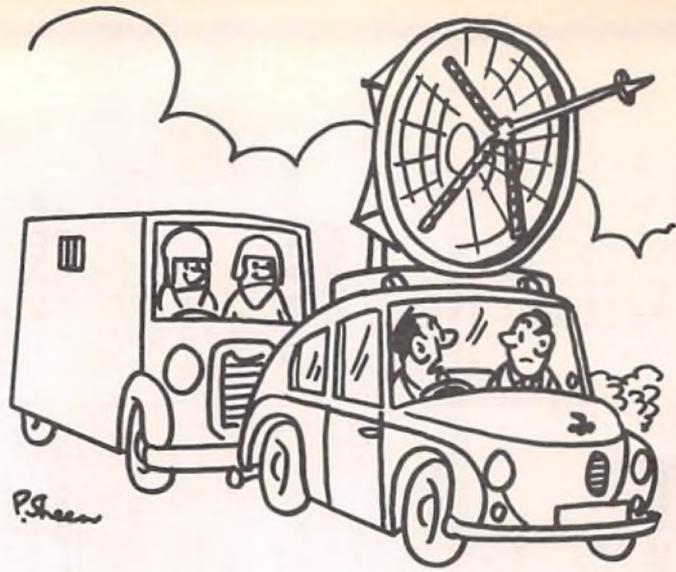
The coupling of CARIN to RDS, for example, would make it possible to plan alternative routes to avoid traffic queues, road works or icy patches, and to modify the guidance provided accordingly. The digital RDS signals are accessible to the on-board computer and do not interrupt or interfere with the normal radio programme.

British traffic research has shown that drivers could plan their routes approximately 20% more efficiently on average if they did not merely guide themselves by familiar landmarks. Fuel costs and driving time are included in the calculation. With CARIN one could always reach one's destination in the most efficient manner possible.

routes. Information to the driver may be 'packaged' in audio and video formats, e.g. accompanied by an electronic road atlas – available only when the car is stationary. The Compact Disc Read Out Memory (CD – ROM) has amazing possibilities. Philips estimate that each CD – ROM disc could store the equivalent of 150,000 pages of A4 paper, a stack about 15 meters high. Sounds like the amount of road maps we carry in the car when taking Ma for a quick trip to the supermarket.

The CARIN system – paralleling computer monitoring fuel consumption and exhaust emission systems in US cars – will be applied to major aspects of car functions. Water temperature, oil/fuel levels, battery condition, for example, will be monitored to give early warning of any possible problems. Doubtless, comfort factors affecting passengers will be monitored, too. Those who sometimes get baffled by fast-passing road signs will be pleased to learn that CARIN is designed to provide precise location of the car at any time. In the short term, an electronic compass will be used, e.g. to establish the direction of the car relative to the earth's magnetic field, this data being used with speedometer information. Long term, in car navigation will be related to satellite communication. The proposed civilian application of the US NAVSTAR Global Positioning System (GPS) will define positions (i.e. of signal/enquiry source) with a plus/minus accuracy of 10 meters. Likely to be completed with 18 orbiting satellites by the end of 1988, NAVSTAR will have 12 satellites in use by the beginning of 1988. That's how close the CARIN Prospect is coming!

Philips are to be congratulated on initiating CARIN. From a CB radio point of view, one could perhaps say 'we saw it coming'. In the US 'CB Magazine' for August 1978, Harold Staras of RCA Laboratories wrote an interesting piece 'Whither Communications?' for a 'CB Radio – What's Ahead?' Supplement. Mr. Staras noted the desirability of automatic monitoring of location of vehicles in a commercially managed fleet, e.g. delivery trucks, buses, taxis and, for that matter, non commercial vehicles like police cars. During the 1970s, various ideas to achieve this had been projected, some of these related to Citizens Band Radio. For buses, travelling defined routes, the answer seemed to lie in electronic signposts and check stations, using shortwave. Buses respond to 'interrogation' signals, by relaying to the Control Centre signpost identification reference code, the bus' own identification code, plus distance



“YOU MEAN THE IN-CAR COMPUTER IMAGE, SATELLITE CONTROLLED INTELLIGENCE SYSTEM JUST SAID MA’S GONE OUT TO BINGO?”

recorded since passing the last electronic signpost. However, long before British Buses could take up this idea, drivers were calling for two way shortwave communication as a deterrent to vandalism and violent behaviour.

The US Department of Transportation was, and no doubt is, interested in more flexible systems, including computers, to check on location of vehicles moving randomly. A mid-1970s system used digital radio signals, transmitted from the vehicle and including data on routes taken, distance elapsed, etc since last contact. The data relates to maps stored in a computer memory: the system though useful was exact to within about 30 – 50 feet. Another idea was that of 'electronic vehicle identification', in which an electronic 'tag' was fixed on the vehicle, this relating to roadside 'interrogators'. The tag was designed to transmit an identifying message. One of the systems used optical scan technology of the kind now familiar to shoppers at electronic check outs. Electronics seemed to offer tremendous possibilities to car owners and fleet operators, including automatic location, locking, toll collections, check in for rented vehicles, etc.. One might well ask: why are so many of us waiting to enjoy these benefits?

Many American CB users of the 1970s – and even before Citizens Band became legal in Britain – thought that wider use of this relatively simple to use medium (though with additional frequencies) was the way to proceed. The philosophy was simple: "why spend money on a computer when you can train a human being?" In those halcyon days, it was believed that the FCC would encourage a co-ordinated approach by various government agencies 'before partial solutions lead to fragmentation and frustration'. Those were the days all right!

It's sometimes forgotten that the Americans were looking into the

possibilities of Citizens Band for driver mobile-to-information-base systems from the late 1950s. Some of the remarkable innovations arising will – we hope – be drawn from that sack of papyrus that Captain Sparx calls his filing system.

Radio telephones may have immense possibilities in helping a significant minority of road users. However, more people are likely to be helped by CARIN, as the facilities are incorporated in 1990s car models. Presumably, truckers and other wise characters will no longer need their CB radio for traffic condition and location checks, though my guess is that person to person communication will remain top favourite in accessories. However, the 1990s CB may have voice operated microphone and channel choice in the computerised dashboard, or even in the safety glass windscreen. As veteran CB users often remark, as Captain Sparx buys his round of light ginger ale, "More efficient cars are great. But what this country needs also is road users who use that soft grey computer the Lord stuck between their ears."

Philips' CARIN system will be a great asset to the thinking driver. One day – quite soon – car/truck drivers will use a 'touch screen' to indicate destination on the computerised map display, or request street or location by name then leave the on board computer to do the rest. The popular TV series, 'Knight Rider' shows other possibilities for the heroic future, but for the time being, Captain Sparx is sticking to his shortwave and waiting for CARIN. By the way, does anyone out there know a sure cure for a leaking piggy-bank?

(Footnote)

An interesting illustrated leaflet on CARIN is available from: Philips Electronics, P.O. Box 298, City House, 420 – 430, London Road, Croydon CR9 3QR



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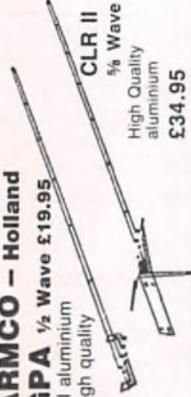
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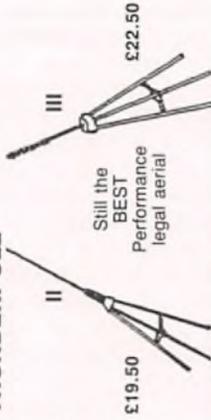
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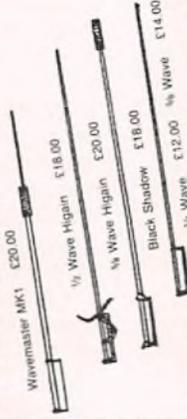


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KEEP THEFT OFF THE ROAD

Smart Alec investigates a West Midlands experiment to try to combat truck theft

What do 30 tons of tinned beans, a couple of dozen video recorders and £38,222 worth of motor tyres have in common? They all offer a quick profit for well-organised gangs of thieves on the lookout for an unattended truck. Like most other forms of crime, truck hijacking has become big business in recent years. In one part of the country, the West Midlands, where, on average, one truck a week goes missing, police and lorry owners are getting together in an attempt to reduce the problem and they claim that CB radio has a big part to play in their plans.

West Midland Road Haulage Association Vice Chairman, Derek Cope, told us: "We in the transport industry are our own worst enemies. We tend to take security for granted. It is not at all uncommon for owners and operators to lock expensive vehicles up on Friday night and not give them a further thought until Monday, by which time they might be many miles away. The average truck is only too easy to break into and the annual cost to industry runs into millions of pounds.

Something has to be done to make hijacking a more hazardous occupation, so Mr Cope's organisation has approached West Midlands Police with some revolutionary proposals. We asked a West Midlands Crime Prevention Officer, Detective Inspector Brian Hewitt, to explain. He told us that one of the biggest problems lay in tracing stolen trucks before they could be unloaded.

"The thieves are well organised," he said. "Before stealing a truck, they will often have arranged to unload its contents onto other vehicles within a short distance from where it was taken. Our best chance lies in finding these trucks either before or during unloading and this is where we need the help of local truck drivers, particularly those equipped with CB radio."

The plan put forward by the RHA is simplicity itself. As soon as a driver or owner realises that his truck has been stolen, he reports the theft to the nearest police station, from where the information can quickly be fed to the

policy communications centre in Birmingham. They, in turn, will notify the Road Haulage Association nerve centre, from where the message will be flashed to drivers via CB. Those already on the road can then keep a lookout for the missing lorry. Even breakers who are not working at the time will have a vital role to play in combating the thieves. As well as contacting drivers who are already mobile, the RHA will make phone calls to five or six truckers' homes, from where each driver will alert a few more before taking to the streets. In this way, the police hope that they can use drivers' knowledge of their own locality to comb the back streets, vacant plots and other quiet places where lorries might be hidden. Detective Inspector Hewitt explained: "Police resources are very tightly stretched these days. However we try, we cannot search every likely spot, whereas CB owners with local knowledge can cover an area quickly, reporting to their own control point as they cruise the streets and each likely hiding place has been checked."

Inspector Hewitt stressed the fact that breakers would only be expected to *help locate* missing trucks. He said: "We see this as an extension of the already successful neighbourhood watch schemes in which suspicious or doubtful events are quickly reported to us. We do not expect, nor would we want, CB users to tackle anyone they might find unloading a stolen truck. All we would ask them to do is report its position and to keep it in sight until police arrive on the scene."

Asked what he expected of breakers on the move, he replied: "If you are driving along the road and spot a truck you know or believe to be stolen, then you should report its location in the same way. If you can keep it in sight whilst staying far enough back to keep out of trouble, so much the better. Always leave the thieves (there are invariably more than one) to the police and do not try to apprehend them yourselves. We see this scheme as a serious attempt to combat a very real problem. The last thing we want is for anyone to regard themselves as vigilantes."

Would the police be able to make direct contact with breakers in the event

of an emergency? DI Hewitt told us that no police cars in the West Midlands were equipped with CB rigs and that there were no plans to fit them at present.

"Whether some form of monitoring scheme might be possible in the future is subject to discussion but it is something we have not really considered at this stage and it would require very careful thought," he said.

Although the entire plan is, as yet, only in the early stages of development, both the police and truck operators' representatives are enthusiastic about its potential. A similar scheme was in operation in the London area for a short time in the 'sixties. Although successful, it fell into disuse after a couple of years, largely because such thefts were not occurring on today's scale. Its proposers believe that today's plan has a far greater chance of being taken up in other areas, both because more trucks are being stolen and because the widespread use of CB radio will provide a degree of rapid communication which was simply unavailable to those involved in the earlier scheme."



in the earlier scheme."

Asked about the possible involvement of other police forces, DI Hewitt told us: "If any driver finds himself having to follow a stolen truck across the boundary of any neighbouring county, he can be sure that officers from the force concerned will be there to support him but, for the moment, we prefer to treat this as a local experiment. As it evolves, we shall keep other police forces advised so that what we are setting up might ultimately serve as the model for a nationwide facility."

His views were echoed by Mr Cope, for the Road Haulage Association: "We are keen to see this scheme in operation throughout the British Isles, he said." "There is a terrific team spirit among truckers everywhere and I am sure they will all want to join in a scheme which is designed to protect all of their livelihoods."

He was also keen to point out that although many trucks were stripped of their loads without having travelled more than a couple of miles, others covered very long distances. He quoted the case of two truckloads of beans which, having disappeared from Walsall in the West Midlands, had been recovered somewhere in London where their new 'owners' had managed to arrange full clearance for them to be exported within the next few days. He pointed out that breakers who used the motorways regularly would have a unique opportunity to watch for stolen vehicles. Though he too urged drivers to simply use their rigs to report the facts and to wait for the police to take care of the rest.

Asked what drivers should look out for, he told us: "It is not only high value loads that attract the light-fingered brigade. Sometimes they are after a specific type

of truck, rather than its load. At various times, they have taken a liking to tipper trucks or to those fitted with their own loading cranes. All kinds of truck are vulnerable and we would ask not only truckers but all mobile CB users to bear in mind the fact that every time a truck is stolen, a driver is prevented from earning his living until such time as it is recovered. Please be alert to the fact that truck theft is a growing industry. Use your CB sets to keep each other informed of anything which appears suspicious and do not be afraid to alert the police."

Impressed by what we had heard, we asked our trucking correspondent, Brandybird, to find out what the guys on the ground thought of all this. She headed for the service area at Corley, on the M5, where she got an equally enthusiastic reception.

Without exception, the drivers she spoke to welcomed the possible introduction of any scheme designed to safeguard their vehicles, though they were all quick to point out that it would only work if the police were given the full co-operation of all sectors of the transport industry. In pointing out that such co-operation must work both ways, one driver from the Liverpool area explained that he had once tried to alert his local police to what he thought was a stolen truck and had met with thinly-disguised indifference. Most truckers agreed that they would happily use their CBs to report sightings of anything suspicious, though some seemed less willing to report directly to the police, preferring to leave that part to others. Some had stories to tell of similar ideas from different parts of the country, notably the North West, and one told of a

scheme whereby all drivers leaving Felixstowe docks were furnished with a comprehensive list of stolen container loads.

Brandybird also discovered just how responsible the average trucker is, as every one questioned expressed the opinion that catching crooks was the job of the police and not something to be tackled by amateurs. As one driver put it: "I would be happy to help with the proposed scheme but I don't expect coppers to drive 38-tonners and they don't expect me to play Batman!" Also noticeable among drivers of all ages was the view that they were "too old for those sort of capers".

Most drivers seemed to share just one reservation about the proposed scheme and that lay in their belief that if a lorry were stolen in the wee small hours it might either have been unloaded or driven halfway across Britain before its loss was discovered. Many seemed to doubt the value of asking volunteers to scour the area from which a truck had been stolen in such circumstances. Although we accept their point, we cannot but applaud the initiative behind the RHA's proposals. Nobody said it would be easy. Nobody said that it would work in every case but the widespread operation of schemes like this should not only be seen as a means of catching criminals but also as a means of deterring them. Far from being a case where too many cooks might spoil the broth, this is a great opportunity for every long-distance lorry driver to make good use of the team spirit which exists among them. With the best will in the world, the police cannot be everywhere at once and, who knows, the load you save might just be your own!



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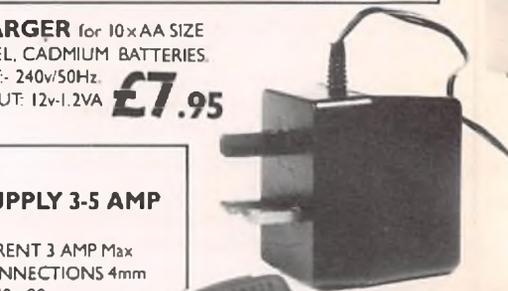
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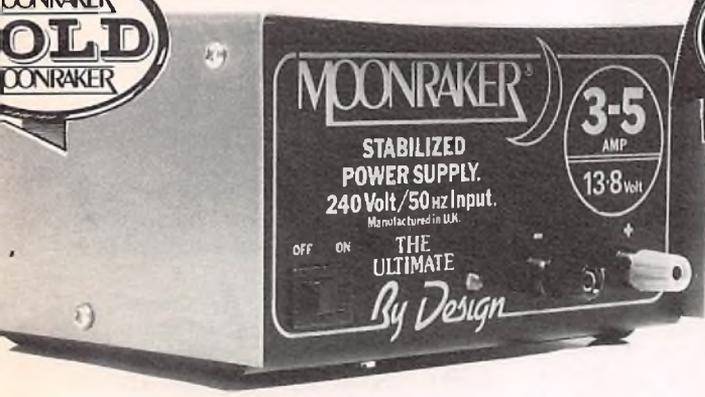
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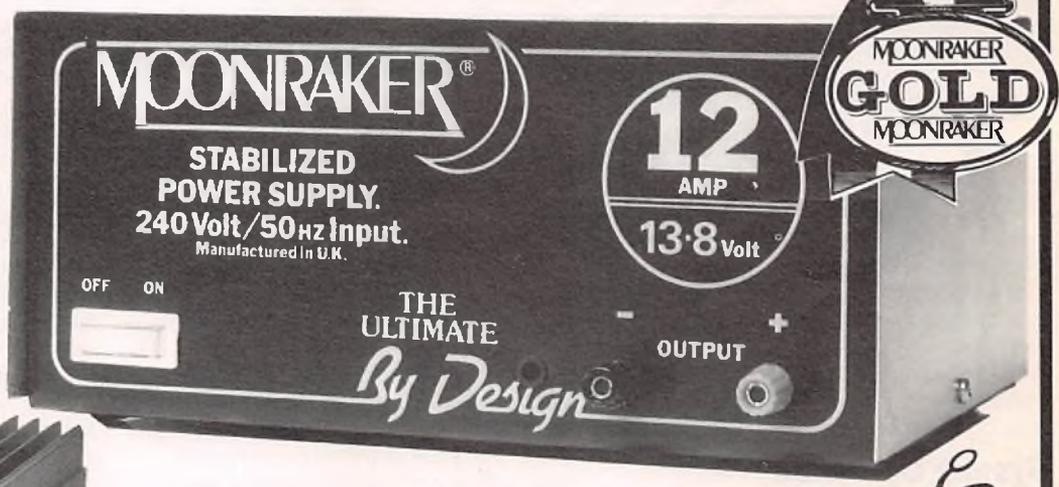
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DIY SIGNAL TRACER

Following last month's Signal Injector project, David Cox offers another troubleshooting project



This month's D.I.Y. project is that of a Signal Tracer; the natural counterpart of last month's project entitled Signal Injector. The tracer makes very light work of troubleshooting audio circuits (such as that no-good microphone!) as bad joints and faulty components are easily identified. The system is, very simply, a small audio amplifier which is battery-operated and it can report signals which may be but a few millivolts in amplitude.

System Operation

As mentioned, the unit is little more than a small amplifier in a box. There are currently a vast range of chips on the market that will, with the addition of a few external components, provide the desired amplification. Such a chip is the TBAB20M which is capable of producing a 1 watt output with only a small number of extra components. Apart from the amplifier stage, all that is required is a volume control and a loudspeaker.

The Circuit

The signal to be analysed is presented at the input of the Signal Tracer and, as can be seen from the circuit diagram in fig 1, the input signal leads directly to VR1-the volume control. This single component offers the simplest way to effect a change in output volume. When the control is rotated, the wiper (marked B on the diagram) moves closer to one of the resistive track ends (A or C). If we

assume that the control is fully rotated in such a manner that "B" is next to "A" then we can see that there is a very low resistance between "A" and "B" but a relatively high resistance between "B" and "C". In this circuit, the track end marked "A" is connected immediately to the input and the track end marked "C" is connected to 0 volts. Therefore in the above example, the full input signal travels unhindered to the amplifier stage and full volume is achieved. At the opposite end of things, when B is next to C, there is a low resistance between B and C but a high resistance between B and A. At this point, there would be virtually no sound from the loudspeaker.

Once the input signal has been tailored, it is passed into the actual amplifier. This arrangement is similar in all respects to the manufacturers' suggested circuit for the TBA820M. In this circuit, C1 and C3 are decoupling capacitors, C4 is included to correct and maintain the frequency/gain characteristics and C6 prevents any direct current from reaching the loudspeaker. Capacitor C2 and resistor R1 set the gain of the amplifier at about 34dB (x50). The resistor and capacitor, R2 and C5, form what is known as a Zobel network which is often found across the outputs of amplifiers in order to aid stability and prevent the oscillation of the amplifier in question.

The output is then presented to the miniature, 8 ohm loudspeaker which was mounted on the bottom panel of the

box. Care must be taken when selecting the loudspeaker as it must be one of an 8 ohm impedance and of a suitable size to fit in the box.

The power for the circuit is derived from a 9 volt battery via a simple on/off switch. Alternatively, an external source could be connected – say from a mains transformer. Eitherway, the LED (D1) shows when the unit is on.

Construction

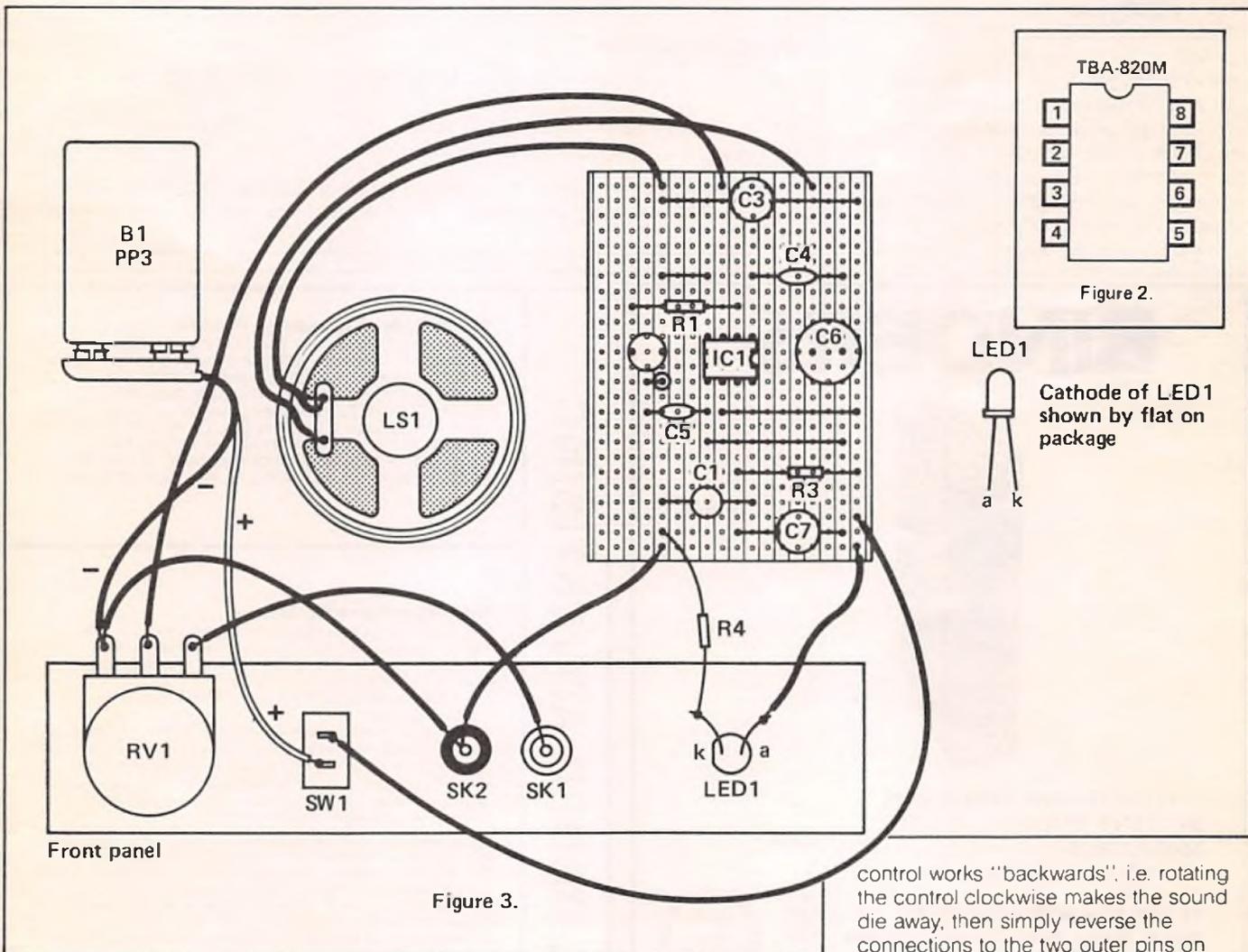
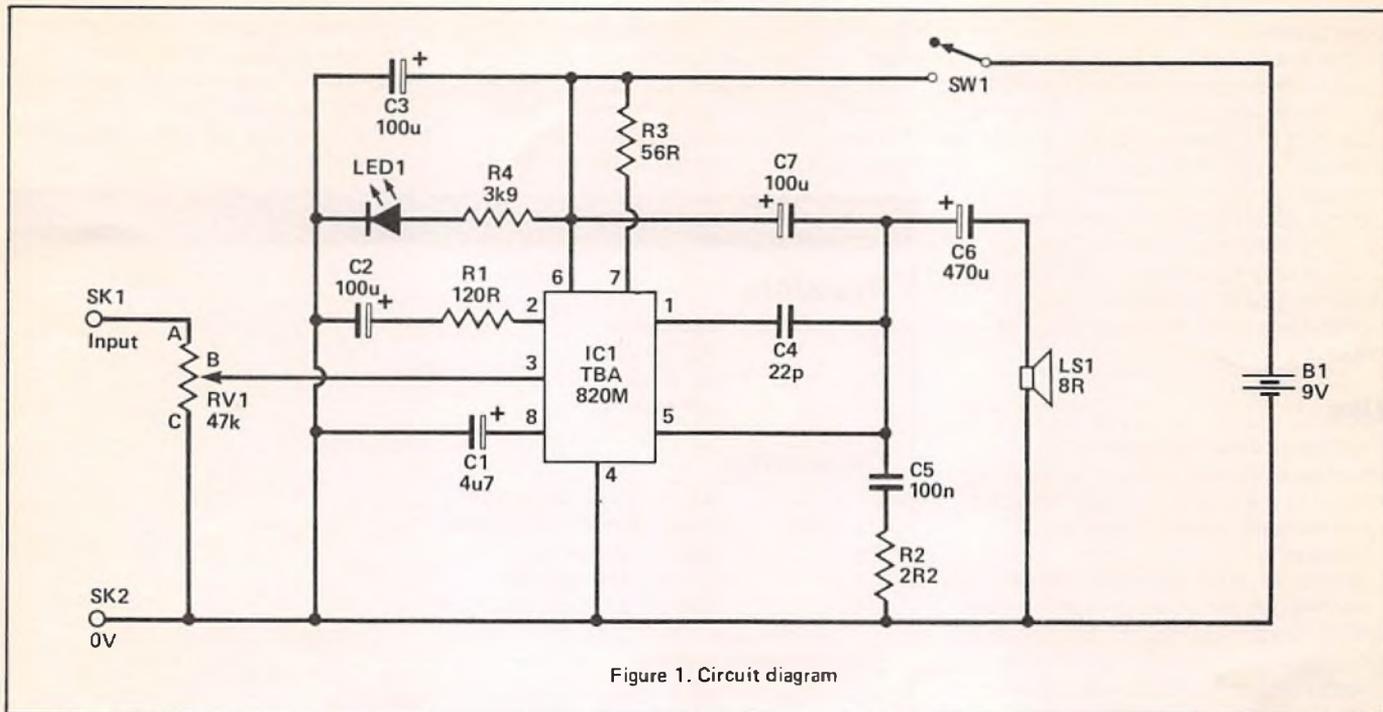
Construction is straightforward with only a few components to assemble and only a few holes to drill. Most of the electronics fit onto a small piece of copper stripboard containing 16 copper strips each with 25 holes in them. First to be inserted should be the three wire links followed by all of the other on-board components inserted in order of size. As with almost all intergrated circuits, IC1 should not be soldered directly but inserted into an 8 pin d.i.l. socket when all else is soldered. The copper strips on the board need to be severed between the two rows of pins beneath the IC socket.

Capacitors C1, C2, C3, C6 and C7 all have to be soldered into place the right way around. Look on the side of the capacitor packages for little plus or minus signs to identify the correct lead to correspond to the board layout in fig 3.

Mechanical construction is also easy as it entails drilling just five holes on the front panel and a cluster of holes on the base panel to allow free air movement from the loudspeaker. Once drilling is complete, the front panel can be lettered with dry, rub-down transfers and coated with a clear and protective lacquer.

On the prototype, Vr1 had to be mounted towards the rear of the box on an aluminium bracket as the control knob employed was not of sufficient size to cover the necessary mounting hardware for the potentiometer.

When the two sockets and the switch have been added to the front panel and the loudspeaker glued to the base, all can be wired up. When the stripboard is screwed to the base, make sure that the screw does not connect any two used copper strips.



Testing

With a 9 volt supply connected, the LED should be lit when S1 is switched to "on". With VR1 set to minimum volume,

no sound should be heard although placing the loudspeaker next to the ear should reveal a faint hiss which increases in volume when the volume control is rotated clockwise. If the volume

control works "backwards", i.e. rotating the control clockwise makes the sound die away, then simply reverse the connections to the two outer pins on VR1. If no sound is heard or, conversely, strange sounds are heard such as buzzing or squeaking sounds then switch off and investigate. Check the connections to the loudspeaker and VR1, and the positioning of the on-board

components.

If all is well, connect a signal to the input (such as a microphone) and listen to the amplified sound which should be clear and undistorted. If a high volume is selected, a little distortion is to be expected. Once all is working, the box can be closed and the four feet stuck onto the bottom corners of the base. This not only prevents the unit from scratching other surfaces but lifts the loudspeaker from the ground to give improved sound.

Use.

The Signal Tracer makes troubleshooting extremely easy. As an example of how to use this unit we will consider, for a moment, a broken power microphone.

First of all, a set of probes can be connected to the tracer and across the actual microphone insert, checking that this part works correctly. Tapping the microphone should produce a noise from the tracer. If the insert is alright, then the probes can be moved further into the circuit. Note that the black connection on the tracer should be connected to the "zero volts" line and can stay connected to this point even while the red probe is moved through the circuit. In this example, a suitable point for this connection could be the screen around the output cable. The red probe is placed at points along the signal path until the tapping on the insert

is no longer heard. The fault then obviously lies at this point.

Should you happen to have the Signal Injector as described last month, things become a little easier. Connect the (black) injector output to the 0 volt point

and the red output to the microphone input to the circuit under test. Set the injector output to a low level (a few millivolts) and follow the injector's tone through the circuit with the tracer until the fault is found.

PARTS LIST

Resistors

| | | |
|----|------------|---------------|
| R1 | 120 ohms | |
| R2 | 2.2 ohms | |
| R3 | 56 ohms | All 1/4 Watt. |
| R4 | 3.9 K ohms | |

Capacitors

| | |
|----------|-------------------------------|
| C1 | 47uF 16 volt electrolytic. |
| C2, 3&7. | 100uF 16 volts, electrolytic. |
| C4 | 220 pF Ceramic. |
| C5 | 0.1 uF disc ceramic. |
| C6 | 470 uF 16 volts electrolytic. |

Semiconductors

| | |
|-----|---------------------------------------|
| Ic1 | TBA 820M, 1 1/2 Watt audio amplifier. |
| D1 | 5mm red LED. |

Miscellaneous

| | |
|-----|------------------------------|
| LS1 | 8 ohm miniature loudspeaker. |
| B1 | PP3 9 volt battery. |
| s1 | SpSt sub-miniature switch. |
| Vr1 | 47K potentiometer. (Log) |

Also required:- PP3 battery clip, copper stripboard, suitable plastic case, solder, wire, LED mounting clip, nuts/bolts, knob, dry rub-down transfers.

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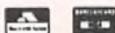
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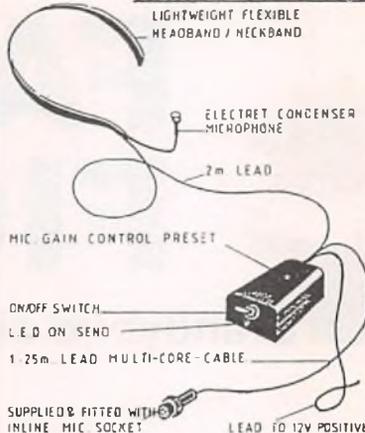
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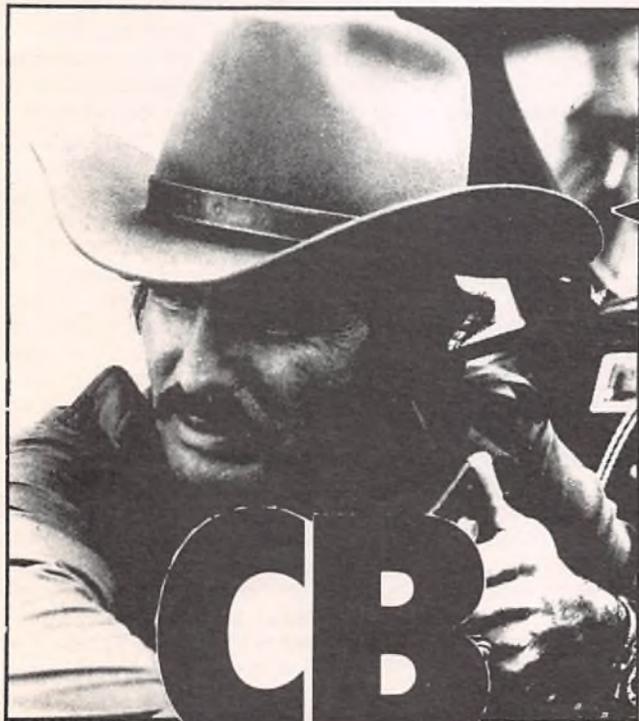
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TRUCK STOP

FACT OR FICTION?

Brandybird airs her views about telly truckers

By now, a larger majority of the British public will 'think' that they know *all* about truckers, thanks to the BBC's *Truckers* programme. I'd be interested to know just what you all think of it. Personally, knowing as many truckers as I do and having spent virtually two years in the cab, I thought that the structure of the series was great, obviously well researched, and it even looks as if truckers have been researched and not just guessed at. The lads themselves were very true to life, every last one of them reminded me of someone I know (I won't say who, or I'll get told off!) but as far as the series has gone so far (end of September), I felt that they are showing far too much of the strike action, threats and violence for it to be *really* true to life. Oh yes, I know that all of that does happen, but not as often as has been shown. It's also a shame that the action sequences have been filmed along the lines of *Dukes of Hazzard*, *The A-Team* and *Starsky and Hutch*. I mean, I certainly won't buy that make of car, which after one slight brush with the side of the trailer, suddenly flips over in mid-air and explodes. A bit far-fetched that. The series certainly makes for compulsive watching, even if it doesn't do the trucker's image a lot of good. Let's see another series of this one.

Talking about images, I recently picked up an old paperback at a local car boot sale. Entitled "Truckers" by Guy Smith, this was part one "The Black Knights", published by Mews books in 1977. This is very similar to the TV series, although containing a lot more violence than that. It contains a very good storyline, about our hero who buys up his bosses' failing business, and struggles to keep on the straight and narrow, despite threats and violence carried out by a big-time contractor who

wants to buy the business. Our hero's driver and mechanic are both killed off rather nastily, all in gory detail. The book is a very good horror-thriller and I would love to get hold of part 2, entitled "The Truckers' Hi-Jack". If anyone's got a copy lying around, please pass it on.

Back to reality: talking to Peter, Honky Tonk, he was telling me of a new truckstop that has opened recently in the West Midlands. West Bromwich Lorry Park, is situated on Great Green Lane and is well sign-posted about a mile off junction 1 of the M5. Peter reports that they serve good, inexpensive, home-cooked food, around £1.50 for a complete meal, and are open from 6am to 7pm, 7 days a week. They have showers, phones and satellite TV and enough spaces for 50 trucks sensibly parked overnight. The owners are planning to build 150-bed accommodation in the near future. Honky Tonk tells me that this place is well worth a call if you're passing, so do give it a try and pass on your comments.

Well, as per usual, I'm going to do a bit more reminiscing. If you should know any of the people that I mention, then please give them a nudge and my regards. It's so strange, as I remember one name, so more come to mind, and yet, before these pages come to press, several of the people I've named get in touch. Most of my names are from the 'good old days' of AM. They probably won't know me as Brandybird, but as my old wind-up AM handle of Paper Knickers. An old friend use to call me that, and the truckers loved it. Yes I know, I'm a bit of a rip-off, or a flipping tearaway I've heard it all before. Still, here goes with this month's forgotten truckers: Romping Donkey (who called me soggy drawers), Trucking Man (congratulations Mick, I hear the wife's expecting triplets), Pacemaker and Gipsy, two big-mouths of the airwaves,

Plastic Plonker, who used to drive tippers, now I believe on Continental, Spareman and Lay-By Larry, who drives fridges from Birmingham to Grimsby, Little Legs, Larry the Lamb and Titivator, Concrete Cowboy from Boston the list is endless. One of these days I shall sort out my big black book, listing all the truckers I spoke to, and we'll see who did change over to FM.

I also want to take this opportunity to blow a kiss to Stan, Bunny Rabbit, who recently took early retirement from the Leyland Squadron. Love to you and Lillian, Stan, enjoy your leisure hours.

I'm still waiting to hear from *you*. Please write and send me your news, views, comments, ideas etc, and I promise to try and get you into print. Since starting this page at the beginning of the year, I've only received three letters and only one of those was from a trucker, so I've definitely got four readers (my mum reads it!) Good, bad or whatever, I'd love to hear from you, so please drop me a line, but do enclose a self-stamped addressed envelope, if you'd like a reply. Send your notes to Brandybird, c/o P.O. Box 158, Coventry, CV6 6DB. Do remember, if you want me to mention an event, please give *at least* two months notice.

Before I go, and because I'm fed up of being told that he hasn't seen his name in print yet, will you all look out for a wagon-and-drag that travels the M6 at night, from Manchester down to Watford Gap and back. It's got a silly big parrot painted on the back doors. If you see him, give him a call and tell him that he's in this month. Nigel, Throttle Foot, I've mentioned you now, so will you shut up!

This is my last one for this year, so can I wish everyone a very happy Xmas and a successful New Year. Truck 'em easy lads and lasses, and most of all stay lucky.

Brandybird.

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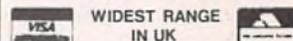
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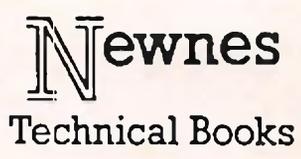
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