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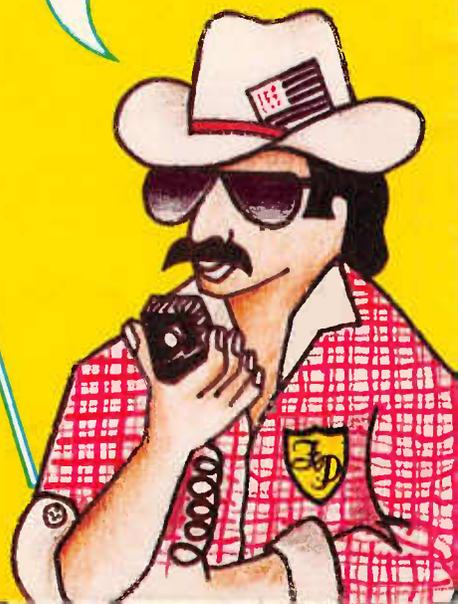
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"HI BREAKERS!
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and make the trip with the centre-
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CB

CITIZENS' BAND

January 1988

Volume 6

Number 2

C O N T E N T S

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Published on the third Friday of the month preceding cover date.



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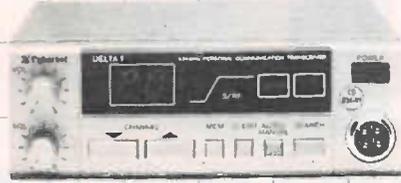
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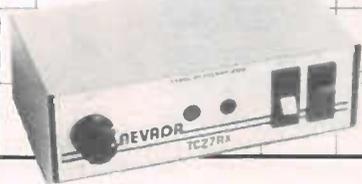
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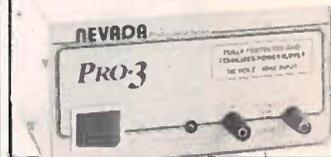
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UPDATE



Editorial

Happy Hogmanay, Hoots Mon, Och Aye the Noo and all that McCobblers to you all. Doubtless, you will have noticed a distinctive Scottish theme to the magazine this month. As many breakers will know, Scotland is a seething hotbed of CB and we thought it about time we catered for our friends north of the Border.

With only a few exceptions, CB organisations and individual breakers in Scotland appear to be one of the most caring and sensible people in the UK. Looking back through my last year's mail, an almost inestimable amount of money has been raised for charity by the 'tartan horde'.

My sincere thanks,

incidentally, to Robbie Reid who kindly deigned to don his full piping outfit for our front cover - and a fine figure of a lad he looks too, I'm sure you'll agree!

Men in skirts apart, I hope you find the rest of this month's issue appealing. Paul Coxwell continues to enthral us with his definitive look at the workings of CB radios, Smart Alec answers a few tricky CB problems, and we welcome back Roundhead and his ramblings.

Also well worth checking out is the second part of our competition (read the rules carefully) in which a total of £1,000 in prizes can be won. And don't - whatever you do - miss out on our special subscriptions offer this month.

That's all for now, byee.



Cameron Beval

Busy Bee CBers

Once more, the Busy Bee CB Teams are on the move. Their annual Eyeball will take place in the Kirkcudbrightshire Hills, in South West Scotland, from noon Friday 27th May until Sunday 29th May.

Members of the team will be Blue Rose, Marco Polo, Big H, Coffee Pot, with backup support from the Solway Pirates CB QSL Club.

More information can be obtained by writing to Bunny, PO Box 337, Neilston, Glasgow G78 3JP.

Sheffield CB Eyeball

The date of the Sheffield CB Eyeball 1988 will be on Sunday June 19th, at the British Steel sportsground, Tinsley, Sheffield. The venue, which is the same as last year's, is approximately one mile from junction 34 on the M1 motorway - should be easy to find!

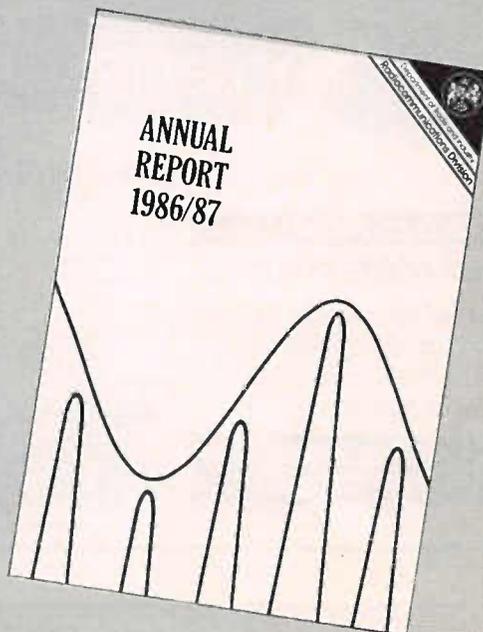
After the success of last year's event, is is the committee's intention to make this one even better. Although a number of displays and entertainments have yet to be confirmed, it is hoped that many of last year's attractions will again be available.

DTI 2nd Annual Report

The Department of Trade and Industry have just produced their second annual report 1986/7. It is available free by simply calling 01-215 2072

(24-hour Ansafone) and leaving your name and address.

The report again is packed with information and colour photographs about the radio scene in the UK.



New CB Information Sheets

The Department of Trade and Industry have just published four new CB Information Sheets. It should be stressed that sheets A-D replace the former sheets 1-9, the latter now being obsolete.

Sheet A covers CB licensing in depth and also includes a free mailing list offer whereby you can be placed on the CB micro-computer mailing list for all current and subsequent Information Sheets. The DTI also stress that the list has been registered under the Data Protection Act and so the records held on it will only be used to send information issued by the Radiocommunications Division and will *not* be used for any other purpose.

Sheet B covers CB equipment and, basically, tells you what you are allowed to use and what you are *not*

allowed to use, plus a frequency list for all three services.

Interference and abuse is the subjects of Sheet C and this covers TV and radio interference, foreign interference and the code of practice.

With the increasing number of monitors, Sheet D should be of real interest. The main topics are emergency monitoring and channel 9.

All in all, it's a timely move on the part of the Department of Trade and Industry, given the current changing face of CB and the sheets are available free of charge to enquiries from the following address: CB Information Sheets, Department of Trade and Industry, Radiocommunications Division, Room 613, Waterloo Bridge House, Waterloo Road, London SE1 8UA.

Alternatively, you can call 01-215 2316 and the DTI will be pleased to help you.

Alarm Warning

KM Services in Stratford-on-Avon are currently marketing a simple deterrent to the ever increasing number of car thieves.

For £1.20, KM Services will supply, through mail order, two high quality alarm warning labels printed with gold ink on a black vinyl background. The labels are only intended as an alternative to real alarms, but

must be considered as being possibly the cheapest and easiest form of vehicle security on the market.

KM Services promise delivery within 14 days and welcome enquiries for larger quantities where generous discounts are offered.

More information can be obtained from KM Services, 22 Masefield Road, Stratford-Upon-Avon, Warwickshire CV37 7JT.



ABCB Public Forum

The solemnity of the Council Chamber of Notts County Council, the sight of CB folk sitting in seats normally occupied by the civic dignitaries, and the presence of the Sheriff of Nottingham, did not inhibit the audience of about 100 breakers at this second open forum, run by ABCB.

The meeting was opened, and the speakers introduced, by "Leftman", the Chairman of ABCB. Visitors to Nottingham were welcomed by the Sheriff, who is also the Patron of the Radio Club of Nottingham.

David Daniel, the Secretary to ABCB gave the audience an insight to the aims and aspirations of The Association for British Citizens Band, and the doubtful future for CB unless more join the fight to protect it.

This was followed by a speech from the Chairman, who spoke of how CB meant different things to different folk. From the bed-bound to the "Wally". He touched upon the "Value for money" aspect

of the new, increased licence fee, and the intended role of the Radio Investigation Service with the new channels and the new licence conditions.

The main speaker for the meeting was Mr John Watts, the district manager for the Radio Investigation Service. He gave an account of the history relating to the legalisation of Citizen's Band Radio, and some of the problems relating to it.

On the matter of complaints to his department, he said that the authenticity of clubs and organisations in the CB world was taken very much into account. He stressed the difficulty of progressing certain complaints, and explained the method of recording details for use in later investigations.

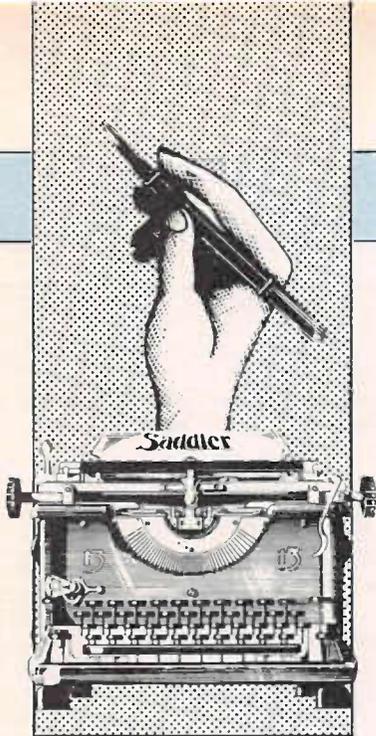
His speech was followed by a very interesting open forum, when questions were asked from all quarters of the floor. The forum was divided into three main sections, first on the new licence conditions, second on the new frequencies, and third on whatever the customers wanted.

Sheet A: Licensing
 26.985 MHz - 27.425 MHz (MPT 1333)
 27.8075 MHz - 27.99125 MHz (MPT 1320)
 93.40125 - 93.49625 MHz (MPT 1221)

Sheet B: Equipment
 The following CB Services operate in the UK:
 1. MPT1333 26.985 MHz - 27.405 MHz
 2. MPT1220 27.60175 MHz - 27.99125 MHz
 3. MPT1321 93.40125 MHz - 93.49625 MHz

Sheet C: Interference and Abuse
 Legal FM Citizens Band equipment when it is covered within the terms of the CB Licence is less likely to cause interference than similar equipment using AM or SSB modulation.

Sheet D: Emergency Channel 9
 It is also important to get in touch with the local police if you wish to help an accident. The emergency services can be contacted either than needed when people turn up on the scene of an accident or when it is important to make sure that the correct services are properly directed.



MONEY AND POWER

Money and Power ■ Thought for Today ■ Lucky Breakers ■ Access to HF bands



Money and Power

Yes, it's Martin Wright time again. Martin writes from High Wycombe...

I offer a sequel to the letter of mine published in November. The no hope future for CB. No to AM, no to SSB, no policing, no more than 40 channels. The real, but never stated, reasons for this are - quite simply - money and power.

Take money. Notice those little clauses in the new licence conditions, - "you must not and cannot affect any interconnection with any telephone system", and, "you will not affect remote control of a station".

Take away these two clauses and the present duopoly of radio phone services goes straight down the pan. A CB radio-phone system would cost you the user about one quarter the price of cellular equipment. Add to that the fact you would only be charged as if you were using the home phone directly, and it is patently obvious that the present radio-phone gravy train would end overnight. The result being a few well-heeled shareholders losing a lot of un-earned dividends.

Not that there is any point in trying to work a phone-patch with FM in the first

place, the capture effect peculiar to FM would result in a very unreliable, very short range capability. Not so at all with AM, and even better still with SSB. No wonder these two modes are refused.

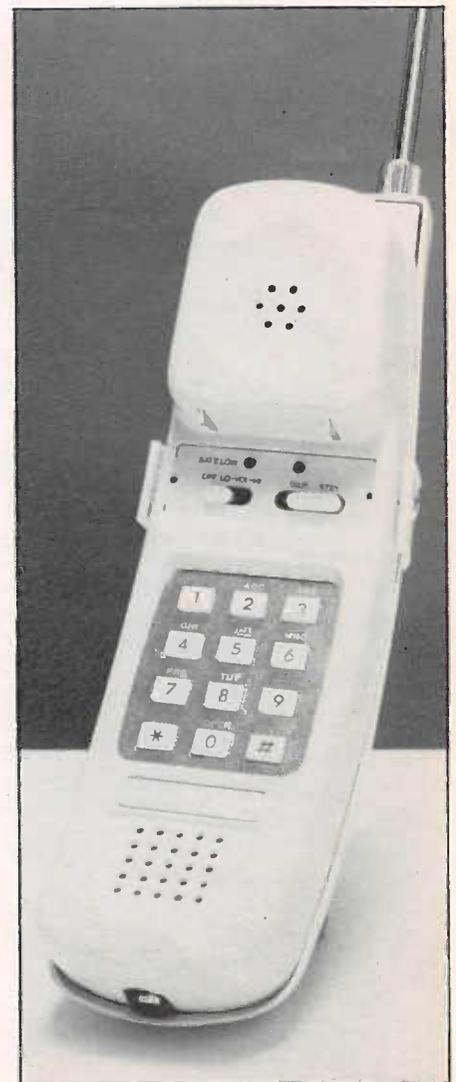
Even ignoring the phone-patch potentials, if the CB service were to encompass AM and SSB, with enough channels to avoid the present congestion, and properly policed to end the anti-social activities, then far more ordinary decent people would use it in place of the telephone, and once again it is the big shareholder who loses out on fat dividends from the multi-million pound profits of BT.

No way will the government ever concede to their influential 'fat-cat' friends being deprived of their 'earnings'.

Take power. Not RF output power, but the power of the establishment to subjugate the public. Two recent events illustrate this well.

The acceptance by one of the European Commissioners that the CB service was *the only* form of public access communications that stood even a slim chance to surviving in a nuclear war, and that it is an *essential* service in the event of serious natural disaster such as earthquake.

The latter point being totally vindicated in the aftermath of our 'hurricane' storm last month. A storm that took out 90% of both power supplies and telephones in the whole of the south east of England. This near total collapse of communications ('phone) resulted in it taking a whole *week* for the authorities to establish the true magnitude of the situation.



Effective public communications systems, immune to storm or other disruption are, however, a double-sided blessing. Not only does it enable established agencies rapid assessment, it provides the public with the same ability to process such information. This, in the event of a nuclear war is seen by the government as a *highly undesirable* public capability. That is why, under the Emergency Powers Act, the public will be cut off from the telephone network. One has only to look at the government pamphlet 'Protect and Survive' to realise that their real objective is to neither protect the public nor enable them to survive.

The intention and advice is to make you stay put in your home, equipped with little more than a few tins of baked beans, a bucket of water, and a transistor radio on which to receive propaganda broadcasts.

The existence of any form of viable two-way radio communications, a service that, by its very nature, could not be terminated or silenced would totally negate the intentions of the Emergency Powers Act. 'Joe Public' would retain the capability of communications and the factual assessment of the situation. We would know of the safe areas remaining in the country to which to evacuate. We would know where the emergency food silos are. We would know the true extent of the attack. All the very facts that the government wish to keep secret from us, the public.

No way will the present government concede to the public gaining access to an effective communications system that would result in the total frustration of their plans to leave most of us to die a lingering death from either starvation or radiation poisoning.

Such is the paranoid fear of widespread public use of CB that the Home Office has standing orders to *all* police forces that no CB set is to be used in any police vehicle, not even for just listening on as an aid to traffic management/emergency response.

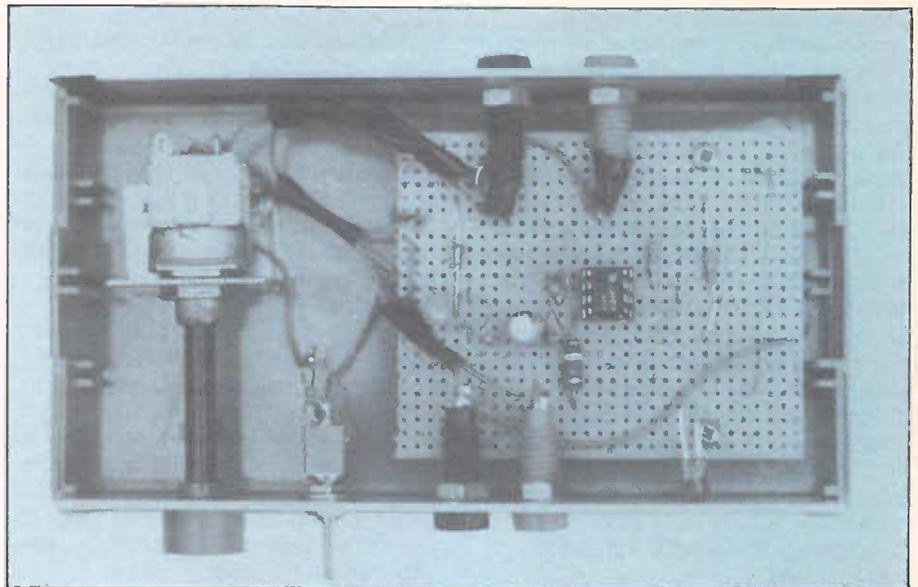
A comprehensive, all mode, properly policed CB service, is *vital* to the public good, even our very survival.

Thought For Today

Reg Moores, from sunny Brighton, has a valid point...

Since the recent ferry disaster, with the loss of almost 200 lives, the Government has brought in new laws to punish those who repeat the act of sailing with the bow doors open:- a maximum up to "£2,000 fine & 2 years in prison" - the same penalties as for anyone illegally transmitting?

On another track, the "DIY Signal Injector" (Page 38); the outputs are not isolated, so that the Op/amp will be destroyed by testing on a voltage part of the rig under test. Likewise, the earthy output, if connected to the rig earth point,



which may have a return, via either using the same power source to supply both units, or by general earth inter-connection, will pull down the balanced resistor centre voltage!

The solution will be to isolate the output from the Op/amp, via a "Blocking Capacitor", with the earthy output likewise, or instead is taken down to the -Ve rail.

Trust this will save "Egg on Face" and answering enquiries, if put in the next issue.

be said that the vast majority of this is only available to those with exceptional skill and a high degree of technical ability.

All frequencies above 1296MHz (23cm), and to a certain extent, this band also, are basically the subject of radar technology. While this does not of course mean that any Amateur cannot use them, they are by their very nature non-existent to most Amateurs.

Another point worth noting is that, within 100km of Charing Cross, the sub-band 430-432MHz is no longer



Lucky Breakers

From Shetland, J D Carp puts pen to paper on the old ham vs CB debate...

I read with interest the letter from Martin Wright (November 1987), and I must sympathise with his feelings.

However, I feel I must clarify one or two points. Firstly, he states that Radio Amateurs have an existing allocation of 1145.565MHz. While this is true, it must

be said that the vast majority of this is only available to those with exceptional skill and a high degree of technical ability. Also, the remainder of this band (432-440MHz) is only used on a secondary basis, with no compulsion on the primary users not to interfere with Amateur activities. Many active users of 70cm, particularly in the south of England, will report the interference caused by the Mould and Syledis systems.

Additionally, 50-52MHz is available only on the basis of non-interference with

other services, mainly in continental Europe. As such, power levels are much lower than those used elsewhere. There are very few Amateur bands which are exclusively allocated to Radio Amateurs. The vast majority have Amateurs as secondary users and subject to much interference from other agencies.

The International Telecommunications Union's Article 32 states that a morse test is required for operation on bands below 30MHz. Whilst the allocations and modes for CB in the UK may not be ideal, and this is open to question, they should feel somewhat fortunate to have any HF allocation at all. Indeed, with conditions likely to improve dramatically over the next few years with the peaking of the current solar cycle, many B class licence holders are likely to be at some disadvantage to CB'ers in respect to international DX.

It is worth noting that CB is not designed with DX in mind. I feel that most CB'ers would use any form of communications if they were as relatively cheap and convenient as the present system, this being only designed for short range point-to-point communication between unqualified operators, and control over the facilities available is protected from interference by the user in just the same way as the public telephone or television services.

To conclude, if Mr. Wright and others like him feel jealous of the Amateur allocations, perhaps it is because they have outgrown the limits of a restricted user service, and perhaps it is now time that they took out a licence permitting them more scope for experimentation. I am sure that if their interest is so strong, this could only be to the mutual advantage to both of our hobbies.

Careless Talk Costs

Nimrod writes from Wigan with a word or two of warning . . .

Re the letter 'Careless Whispers' (November 1987), I personally think this letter should have been called 'Careless Talk Costs'.

Freelance gave a warning regarding careless talk on the air. In the case he quotes, it was a young disabled couple in his area. In my own area, we have had similar problems, but in our case it's very often the older breaker as opposed to the younger ones. For some reason or another, they will insist in telling all, via the airwaves, that they are going to such-and-such a place for a certain period of time.

If Freelance takes the trouble to enquire, he will find it is not often that CB is the problem. For instance, two years ago, an old gentleman who was a regular at the local drinking establishment, decided to take his first holiday abroad. So, this particular evening, he gathered several of his friends at the bar and told them all about it. The next morning, he left early for the airport. Some caring

neighbours checked his house to make sure he had left it secure but, alas, found the place had been ransacked. The job had been carried out so quickly, in fact, that the gentleman had not even left the airport when he was told the news.

The moral is that, apart from CB, never talk about those sort of things when you can be overheard. Again, talking of CB, it should always be remembered that they originally intended calling the system 'Open Channel' – the operative word being 'open'. What I cannot understand about the older folk is that, although they lived through the war, when there was a large number of posters warning about careless talk, they still seem to talk before thinking. We have several people around here who let others know over the air that they are going down to the Post Office to collect their pensions – then they wonder why they get mugged!

Access to HF Bands

'Sandy', from Dundee, has a few ideas on the popular theme of examinations . . .

We read that the number of CB licences issued has halved over the last two years; that the number of "B" ham licensees is dropping, from licences being allowed to lapse, and that the Radio Society of Great Britain protests alarm at the lack of interest in radio, particularly among young people (admittedly its definition of the interested is largely confined to amateurs and "A" licence holders at that).

I suggest a simple explanation for this; dx radio communication is interesting and even exciting (remember 1979!), short range, by and large, is not.

What people want, of course, is access to the hf spectrum and thereby dx; what stops most is the morse test needed for any "A" amateur licence (many a CBER has easily passed the RAE, leading to moans from ham backwoodsmen that it is now far too easy!). Many are simply incapable of learning to receive morse; many more, including those youngsters, can very well see that imposition of the morse requirement today is absurd, antiquated, trivial, vexatious and

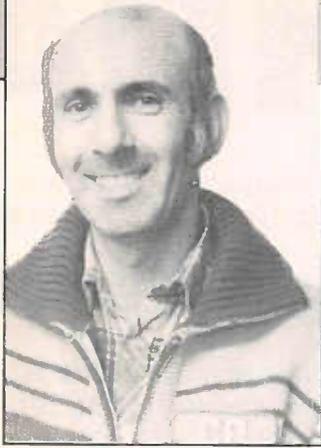
superfluous, a highly negative motivation is aroused and they just go and do something else. I propose that access might be given by allowing "B" licensees on to some or all of the phone sections of the amateur bands (as has been done for their equivalents in some other countries) and/or by issuing an enhanced CB licence with more power and sideband provision if a suitable test of competence is passed.

Such proposals of course arouse cholera among that section of RSGB membership which runs it, which opposed CB and which forbids mention of such notions even for discussion in the columns of *Radio Communication*: it likes the test to keep the hf bands (usually the phone sections!) clear of riff-raff and it now has a vested interest in having acquired the franchise for amateur morse testing, which it conducts on the cheap by exploiting the services of unpaid volunteers. So frantic opposition can be expected.

Accordingly, Sir, I beg through your columns to ask all your readers who agree in principle, or who may very well have better ideas along these lines, to put their thoughts on paper now and send them to: Department of Trade and Industry, Radiocommunications Division, Waterloo Bridge House, London SE1 8UA.

It need not be a long piece, but numbers count: the good skip is coming round again, and some of us will not live for ever (here I declare interest!): **so please write.**





MACK CHAT

SSB OR NOT?

Mack the Hack is still pondering on the possibilities of single sideband operation

I don't care what the so called 'experts' say, but I still like them. They say that there are 40 channels of noise and interference. What rubbish these experts talk. Maybe they have, for just a few minutes, tuned into the MPT 1333s and scanned the 40 channels, then express their 'experts' opinion. Who are these 'experts'? Well, I have found them on MPT 1320 (27/81), 934, and some of the amateur bands. It's the people that use the MPT 1333 who are the experts. They know how to use the frequency to best advantage.

As I write this (November) we are into the third month of legal use. There is still a surprisingly small number of users on the frequency, dare I say even less than when it first became legal. Why? Could it be that the people who own and use illegal multi-channel and function rigs have moved elsewhere. During the first days these people were around, I and others would talk to them when we could as it's now been realised how off-frequency these illegal rigs were, and even many of the 'converted' legal rigs were also well off-band. It has been thought for ages that the noise one hears on these frequencies are foreign transmissions, but are they? Being able to listen on these frequencies, be it FM, AM or SSB, I find that many of these SSB signals are in fact being produced from this country and are in QSO with other stations from this island and overseas.

If you recall, a couple of issues back, I quoted figures from the DTI's report which stated that 438 AMers were captured by the RIS. But now I wonder, if they were illegal SSBers, the DTI might class them as AMers, so this would account for these figures. As I have already stated, I have heard SSB but very little AM.

Since MPT 1333 has been in use I have worked stations from France, Northern Italy, Switzerland and Germany. All on a legal FM rig and legal power. I am not alone, as others that I have spoken to have done the same and some even better. But this only happens when conditions allow.

If SSB was offered legally to us 11 metre operators I would be one of the first in the queue to use it, but would it ever be offered to us?

It seems that a lot of stirring movements are being produced in certain organisations in this country. There are, as I am sure you are aware, many SSB or DX clubs in existence and, from time to time, there have been published in this mag letters from individuals and organisations supporting such a movement. As an Amateur I could, like many others, say if you want to play real radio legally, take the ham exam. But I won't because I know that ham and 11 metre are as different as chalk and chesse.

But why should the powers-that-be allow us on SSB? I know that some other countries allow their occupants on SSB, well thats one reason I suppose. Interference to other users of the spectrum would be the big headache for the DTI. 'Let us take an exam', goes out the cry, 'so take the RAE', comes back the reply. Strict rules and conditions could be the answer; rigs built with identification codes incorporated has been suggested so that abusers or non-conformists of the regulations would be easily identifiable. Many might say never will the authorities allow us SSB, but I'm not so sure now; they once said never would the citizens of this country be allowed to use 27MHz. I, and I am sure others, would be interested to hear the views of the SSB users on this subject so now this is an opportunity for the SSB clubs to air their views - write to me care of the mag.

With the latest issue of 'The Monitor', the quarterly bulletin published by MSGB, came a copy of the new DTI CB information sheet; I quote from this:

'The DTI publishes CB information sheets on various topics free of charge. Also available is a mailing list, held on a micro-computer, that automatically sends out information when available. If you would like to join the mailing list or simply receive copies of the other information sheets, please complete the slip below and sent it to the CB Licensing section. Please mark your

Of course you have not got the slip as mentioned but I am sure if you just send your name and address they will send you a copy of these sheets and others when published. Write to: DTI Radiocommunications Division, CB Mailing list, Room 613, Waterloo Bridge House, Waterloo Road, London SE1 8UA.

Yet another idea that people have had is the publication of the names of miscreants that the DTI have captured. The DTI have mentioned numbers of people apprehended and if such lists were published it might deter other CB abusers of the same area.

I mentioned earlier 'Licensed 11 metre operators'. This term is the idea of Chris Lee, originally 'Flash Gordon' (QTH Romford), who says in a letter that the term 'Breaker' is silly and **Citizen's Band** magazine should be called **11 Metre Monthly**. I like it but Eamonn doesn't think much of the idea.

Nothing new is happening on the 934 scene, but during the early part of November we did have terrific lift conditions that lasted for quite a few days. Although contacts in many cases were not held for long periods, the distances were record-breaking. My own personal best was 220 miles, from my home QTH to Durham. Driving off the M11 a few months back into the concrete for the North Circular, I noticed the scaffolding on the top of the middle of the three tower blocks less than a half mile from my home. Shock and horror! There was no mistaking the cellular antennas that were being erected. Sure enough, a few days later, the cellular interference on 934MHz had doubled. That's it I thought, time to pack it in and sell up. I even made suggestions over the band that I could be putting my gear on the market. But how can I when I have such super fun with the 'local' net on the evenings when the net is in progress? The entertainment value is far better than TV can ever give, and I've only to switch flatside to eliminate the phone problem and still able to copy most of the net stations.

7TH BIRTHDAY

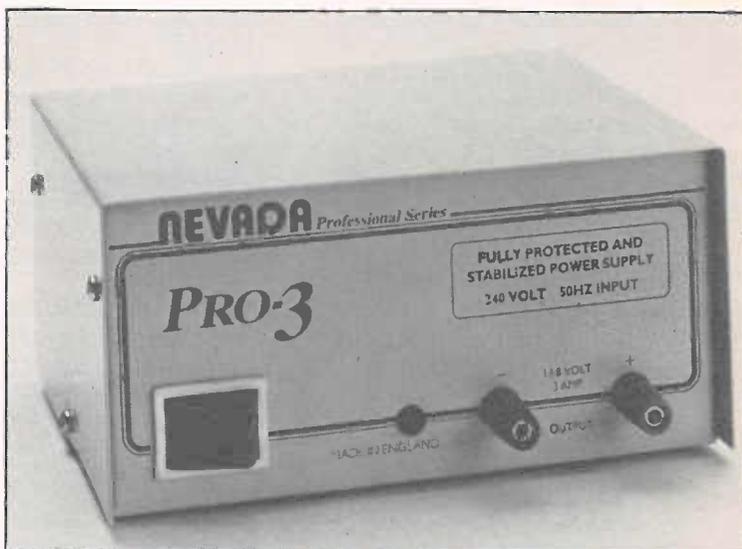
To celebrate seven glorious years of the existence of *Citizens' Band* magazine, here is your chance to win some fabulous goodies from some of the top suppliers in the world of CB.

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.

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Maxcom 7E portable 40-channel transceiver with antenna, magmount, battery pack, carry-case and power connector. Maxon 49-Hi voice-activated 2-way radio 49MHz transceiver with operator-to-passenger intercom. *All available from Sharmans Wholesale*

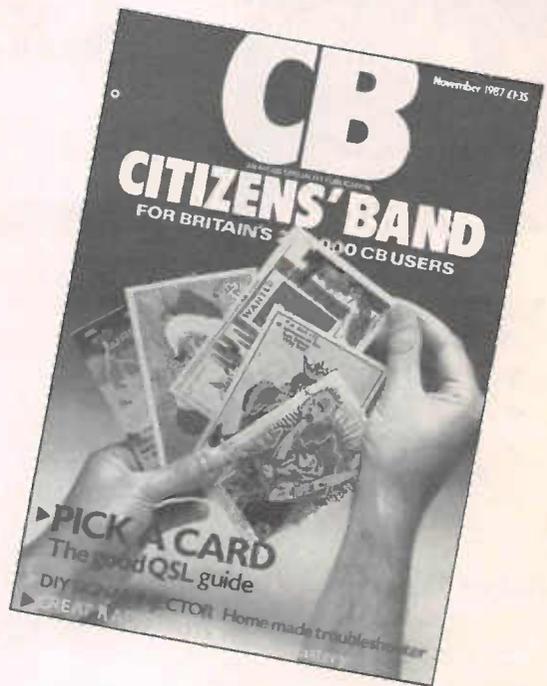


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Name

Address

Telephone

- QUESTION 4: What does RIS stand for?
- QUESTION 5: What does DTI stand for?
- QUESTION 6: What does CEPT stand for?

ANSWERS

- 1
- 2
- 3

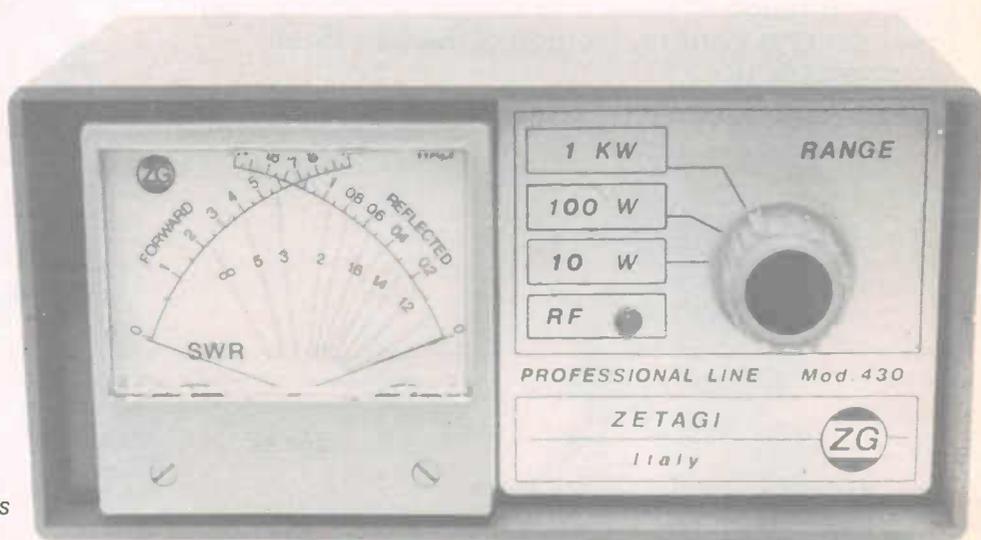


SWITCHES GALORE



Switches Galore

Mr D G Bellchambers, from Hove, needs some help in determining the functions of the various knobs and dials on his new rig...



First question – a SWR query

Q I have just bought a secondhand Midland CB rig but, unfortunately, there were no instruction books with it so that I hope you can help me out with the following problems.

1. What is the function of the small red light set in the fascia and marked 'SWR'?
2. What does the switch marked 'FIL/OUT' do?
3. What is the function of the switch marked 'LO/DX'? It seems to boost the received signal but, if this is its prime function, then why does the rig have a rotating knob marked 'RF Gain'?
4. Where is the 10dB attenuator, supposedly a legal requirement on all rigs? I thought it might be the 'LO/DX' switch but the use of a power meter and dummy load showed that this had absolutely no effect on transmitted power.
5. Amongst the earliest rigs designed to meet the first UK specification, the Midland 4001 was an instant success but, although it had a number of impressive features, later brands tended to eclipse it.

A Mr Bellchamber's first query relates to a small LED, against which the letters 'AWI' stand for Antenna Warning Indicator. Its purpose is to warn the operator of any significant mismatch between the rig and the antenna. In normal circumstances, it will not light up. However, no transmission should be made if it is flowing, as they could easily damage the transmitter.

Although I have been unable to find a circuit diagram for the 4001, if I remember correctly, the FIL/OUT switch controls a crystal filter designed to reduce the effect of bleedover from a strong incoming signal on adjacent channel.

The LO/DX switch is, in effect, a 10dB attenuator fitted to the receiver and is intended to reject unwanted signals when working 'local' stations. Midland were not the only manufacturers to fit this switch but, given the fact that on any FM receiver the strongest available signal will 'capture' the frequency, I can see little point to it. The RF Gain, on the other hand, allows far more flexibility. Like

many early rigs, the 4001 was designed before its manufacturers became aware of the requirement for signal attenuation in some cases, and so it does not incorporate a transmitter attenuator. Its use is perfectly legal, as the regulations did not specify that the means of attenuation must be contained within the rig and a number of devices for fitting into the antenna line appeared on the market.

Triumph or Defeat?

From Cumbria, Shogun, known to his mum as Ernie (how's the milk cart going?), has an all too common problem...

Q I have recently bought a three-year-old Triumph Acclaim after many years of driving old bangers. I quickly fitted my CB rig, using power leads connected directly to the battery and an antenna clamped to the boot lid, rather than on a magmount. I also connected earth straps from the bonnet and boot lid as well as replacing all HT leads and plugs. I then wrapped

the electronic module in silver foil, which I earthed. In fact, the only thing I did not bother to suppress was the alternator, which the manufacturers assure me has an internal suppressor fitted.

Despite my efforts and despite the fact that the broadcast radio is unaffected, running the engine has a marked effect on CB reception. Although the rig works well when the engine is idling, increasing the engine revs opens the squelch and the signal meter moves up and down in time with the engine speed. At a constant speed, the meter stays at around S5 to S6 and any signal below that cannot be heard, although stronger signals are crisp and clear. I have even tried using a different rig and antenna but the problem remains the same. Please have you any suggestions as to the cause of the problem as I am stumped?

A Well, Ernie, you certainly seem to have done everything by the book, although you do not say whether the outer casing of the rig is earthed. If not, it certainly should be, as this might be the root of your problem. Anyway, let us examine the other possibilities.

Firstly, try replacing the power leads with screened cable, to ensure that no unwanted radiation is being carried to the rig from under the bonnet. Secondly, strange as it may seem, your present precautions might be the cause of your difficulties, as one or other of your earth straps might actually be conducting the interfering signal. In order to eliminate this possibility, you should try running with first one and then the other disconnected. If this does not reveal the culprit then I would turn to the alternator. Nearly all modern alternators are suppressed internally but you would be surprised how many cause interference and the engine-related rise and fall which you describe fits the pattern exactly. In the course of three years, the suppressor may have broken down or the slip rings may have worn to the point where they are arcing so much that it can no longer cope. As a very rough test, try tuning your car radio to a point where there is no signal and see where the pattern is reproduced.

You can easily check on whether the problem is in fact related to the alternator by briefly disconnecting it from the circuit and allowing the engine to run on the battery. If the interference ceases, then you have found the culprit and a coaxial suppressor should do the trick. If not, we have to go a stage further.

I do not know whether your car is equipped with a manual or electronic petrol pump. In the event that it is electrical, then any interference would show up as a regular ticking noise which would also keep time with engine revolutions. Many electrical pumps are



Shogun is suffering from mobile interference

fitted at the fuel tank which often leads to trouble if the antenna feeder is close to the tank. Separating them is usually all that is required to cure this sort of interference.

Finally, and as a real outside possibility, the problem might even be related to either your exhaust pipe or your tyres. In a very small percentage of cases, interference can be conducted via the exhaust. In such cases, a simple earth strap from the pipe to the body is all that is required. In the even rarer event of trouble from the tyres, which would also appear to ebb and flow in time with your speed, the usual cure is to force a small amount of graphite powder into each tyre through the valve. As this problem usually only occurs in really hot weather, I would not bother to check it out until all else has failed.

Flight or Flight

Mickey, from Cheshire, is heavily into radio-controlled models. Does he have a problem?

Q I am a keen collector of radio-controlled models and have about a dozen aircraft plus a few cars. My brother has recently bought a CB set but before my parents will allow him to set it up in the house they want to be sure that the combined effects of our hobbies will not create a danger to either their property or to anyone standing in the garden, where I often fly my models.

We have tried explaining to them that we use different frequencies but they have remained unconvinced and have agreed to accept your judgement. Please can you help?

A Well, Mickey, it depends to some extent on the type of radio control equipment you are using. As you doubtless know, 35MHz was recently allocated to model aircraft and if you are using this band then there can be no danger of your brother's transmissions affecting the control of your models. If, on the other hand, you are still using 27MHz then the fact that you are both operating from the same site may well cause problems.

So far as your cars are concerned, they are most likely on 27MHz and are far more likely to suffer from the effects of nearby CB transmissions. Even so, there should be no danger as they run on the ground. All in all, I think your parents have little to fear, especially if you and your brother keep each other informed of when you are about to begin operating.

TV Fights Back

Up in Stoke on Trent, Pete Lawrence, aka Wolfman, is suffering from what seems to be a case of revenge...

Q I am suffering from what appears to be a great problem when the television is switched on downstairs. Both of my rigs, one in the bedroom and one in the car, make a terrific crackling noise when the TV is switched on. It sounds like the kind of interference caused by a car which is not properly suppressed and the engine is running.

Please can you help me with my problem, as it seems that long distance copies are impossible when the TV is switched on.

A Your problem is easy enough to diagnose but may not be so easy to cure. The interference is almost certainly the result of arcing somewhere within the TV set, either at the spark gaps on the cathode ray tube base or at the point where e.h.t. plugs into the back of the tube. Less likely, but still a possibility if the TV set is relatively new, the aquadag coating on the back of the tube may be acting as a charge for quite a long time and cause interference to the electron beam.

Arcing is commonly caused by condensation inside the TV set and is especially common in rooms heated by means of paraffin, or where tobacco smoke is concentrated in the atmosphere. It should be easy to spot by switching on the set in a darkened room and looking through the slots in the back of the set. I have known such cases be cured temporarily by the application of a hair dryer to the affected point but I do not recommend anyone without specialist knowledge to attempt their own television repairs, as extremely high voltages are present on the base of the tube, even when the set is switched off.

What's Cooking?

From Iver, Bucks, Disco 1 writes in hope of a solution to a problem we have not encountered before . . .

Q I have owned a Beta 3000 and a Thunderpole 3 antenna for six months. About a month ago we acquired a microwave oven and that was when my troubles began. Whenever the microwave is in use I get between 7 and 9 pounds of rubbish across all forty channels. Even breakers with 30 plus signals become very noisy whilst the oven is switched on. My antenna is between three and four metres away from the offending machine. Please can you suggest a cure?

A This is a tricky one, Disco 1. Although a number of possibilities have been suggested none of us is really into microwave technology and so all we

can do is to offer a few helpful suggestions.

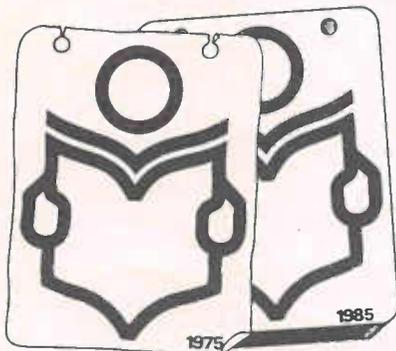
The first and most obvious thing to try is moving the microwave to another room, further away from rig and antenna. If the interference is cured or even reduced then resiting your antenna might provide a permanent solution.

Another possibility is that the interference is mains-borne, though most microwave devices appear to have this problem well under control, with capacitors between live and neutral lines, live and earth and even neutral and earth. It is conceivable but, in the case of a new oven, unlikely that one of these capacitors has failed.

Filtering the oven could prove quite expensive, since it would require a device capable of handling about 12 amps but a fairly simple filter in line with your rig might prove a workable alternative.

Just about the one thing we are all agreed upon is the fact that it would be sheer madness to attempt any adjustments to the microwave unit yourself. As one of my colleagues put it: the cemeteries are full of people who tried.

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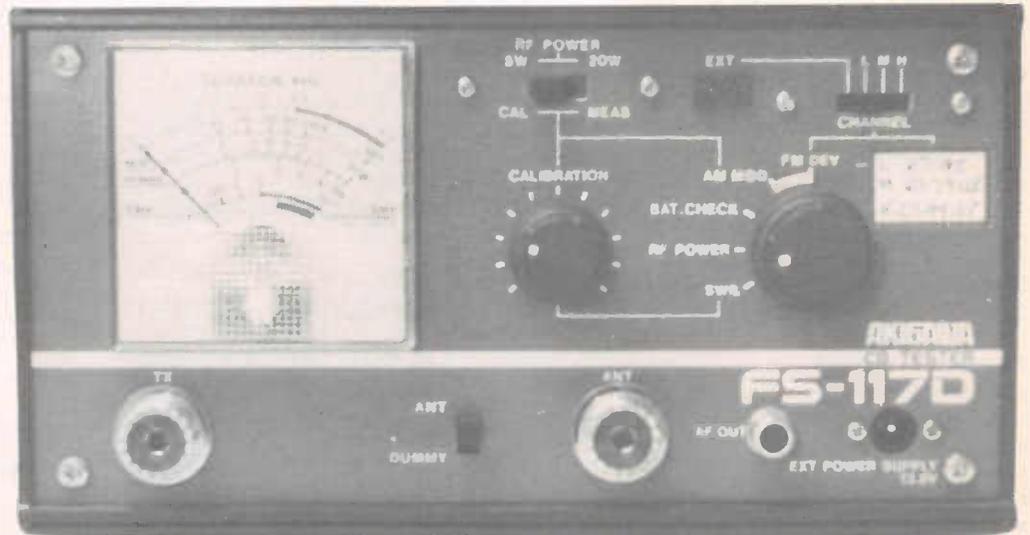
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CB TESTER

Paul Coxwell looks at the all-singing, all-dancing Akigawa FS117D



The Akigawa FS117D is one of those small boxes designed to combine several measuring facilities in one unit. The introduction in the instructions says it is "the all-round tester for 27MHz band AM/FM transceivers." On offer here are provisions for measuring RF power up to 20 watts, standing wave ratio, AM modulation depth and FM deviation on selected channels. All measurements can be taken into the internal dummy load if required.

First Impressions

The unit itself is constructed on a thin metal front panel which holds all the necessary controls, meter and connectors and the construction of the main wiring appears to be up to the usual far eastern standards. The housing is moulded plastic however, which whilst being cheap and reasonably rugged offers no electrical shielding – more of which later. The overall size is approximately 8 x 4¼ x 3 inches so space for storage and use shouldn't be a problem. The actual meter is about 2¼ inches square and has five separate scales – deviation, AM modulation, two RF power scales and SWR. All are easy enough to read although the SWR scale at the bottom is perhaps a little cramped.

To the right of the meter are two rotary controls, the first a calibrator for SWR and AM modulation measurements, the second being the main function selector. The latter

includes a position for checking the internal 9v battery (PP3 type). Above these are a crystal socket and two slide switches, one of which has several functions depending on the position of the main function selector. With the main selector at RF power it selects between 5W and 20W full-scale; these ranges are fairly sensible choices for most CB work. Obviously you cannot use this meter for checking big linear amplifiers! On SWR the switch selects between forward and reflected power and on AM modulation performs a similar calibrate/measure function.

If you are not familiar with these simple AM modulation meters the method employed is to select calibrate and with the mike keyed but no modulation set the meter to the appropriate "CAL" mark with the calibration control. The switch is then moved to the measurement position and modulation applied to the transmitter to get a reading. The other slide switch comes into operation only for FM deviation measurements.

The tester has what is basically a simple receiver built-in, but instead of feeding a speaker it feeds the meter movement. Just as any regular CB receiver must be switched to the correct channel so must the deviation meter and three crystals are fitted to allow checking on UK channels 1, 20 and 40. A fourth switch position selects the crystal socket so that you can plug in a crystal for any other frequency. You'll need some quick calculations for this but it shouldn't hurt much! The receiver has a 455kHz I.F. and the oscillator appears to run on the low-side so all

you need do is subtract 455kHz from the desired frequency. To get channel 19 mid band for example, which is 27.185MHz, you'll need a 26.730MHz crystal.

Continuing then, below the above-mentioned items are the coaxial sockets for transceiver and antenna and a switch to connect the input to the dummy load if required. A phono socket provides audio output for monitoring or analysing on an oscilloscope or similar and one more socket allows operation from an external supply instead of the internal battery. Power is only needed for FM modulation measurements. Two patch leads are supplied, one with a phono plug and two small crocodile clips for the audio output and one power cable. Operating instructions are included, but they're in the usual oriental-style English so you'll have to do the best you can when confronted with things like "intermediate frequency at optional channel of the regulated frequency band is possible to get." That said however a useful chart of crystal frequencies for all UK channels is included as is a schematic diagram of the unit.

In Use

Starting with SWR measurements, the accuracy was found to be adequate but not extraordinary. Far too many people place much too much reliance on SWR readings anyhow, and as an aid to adjusting antennas or checking for faulty cables the meter is perfectly satisfactory, just the same as most others. The RF power side is specified

as having an accuracy of 10%. This figure, once again, is typical of CB power meters and when checked against a suitable reference was found to be well within the 10% limit. Measurements into the internal dummy load showed a drop in reading of about 1dB however, which is not quite so good (1dB represents about 20%) and suggests a slight mismatch. The dummy load resistor is also fully enclosed within the shield around the strip-line board and must not be kept energised for any longer than is absolutely necessary, otherwise it may seriously overheat. These two points would lead me to suggest that wherever possible you use an external dummy load rated to at least 20 watts.

Undoubtedly the best method of checking AM modulation level is to use an oscilloscope but the cheaper meter method can suffice sometimes and the accuracy of this unit was found to be adequate. FM deviation readings were also satisfactory with good frequency response across the audio range. The external crystal socket could have been fixed more firmly as with use the clip works loose with the result that trying to remove a crystal pulls out the entire socket! Replacing the clip with a dab of superglue solves that problem.

Earlier, it was mentioned that the plastic case offers no shielding and with the meter set to FM deviation the internal oscillator tends to radiate a

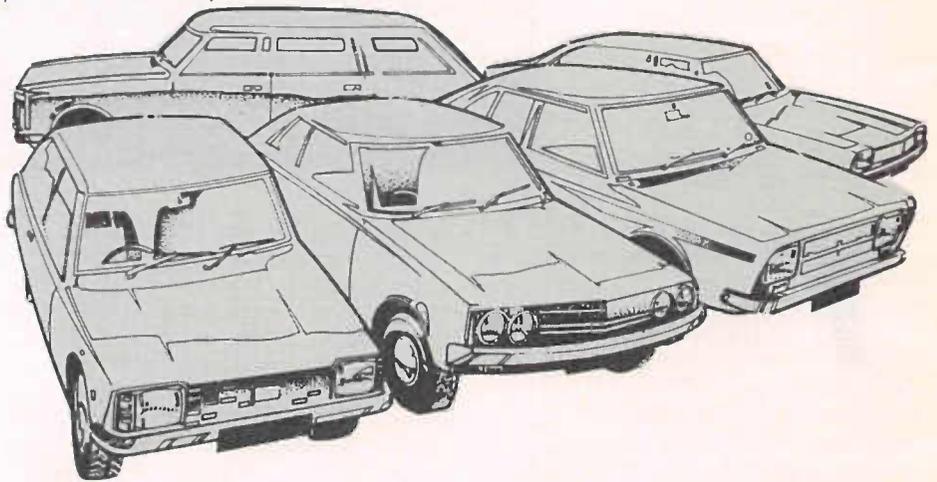
fairly strong signal – enough to give a +30 reading on a transceiver at the other end of the bench with no antenna connected! On several occasions I spent a few minutes trying to figure out where that spurious signal on mid or high band was coming from until I realised the tester had been left switched to deviation. There is certainly room for improvement here; whilst perfection is impossible I feel sure a little extra shielding could be incorporated to reduce the level of radiated RF. This doesn't affect the readings of course and will only be of any importance where several items of equipment are being used simultaneously and external signals may be detrimental.

Conclusion

Any tester of this type that incorporates many facilities at the lowest possible price must obviously take short-cuts in

both construction and performance. For the user who just wants a quick and easy check of his equipment the FS117D may well suffice, although you would be wise to weight-up the likely amount of use against the retail price of around £65. Look around though – this tester is being greatly discounted by many suppliers now. As the unit has internal presets for calibration it wouldn't be a bad idea to have it adjusted by your local engineer who can set it up against highly accurate bench equipment.

If you are planning to set up a service workshop the FS117D will not be sufficient; you'll need to spend a lot more money on more sophisticated equipment of laboratory standard. As a small portable to take out and about with you (calibrated against your bench equipment) it is worth considering however.



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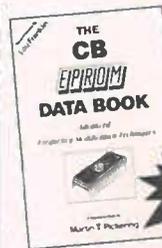
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COMMUNICATION THE

QSL WAY

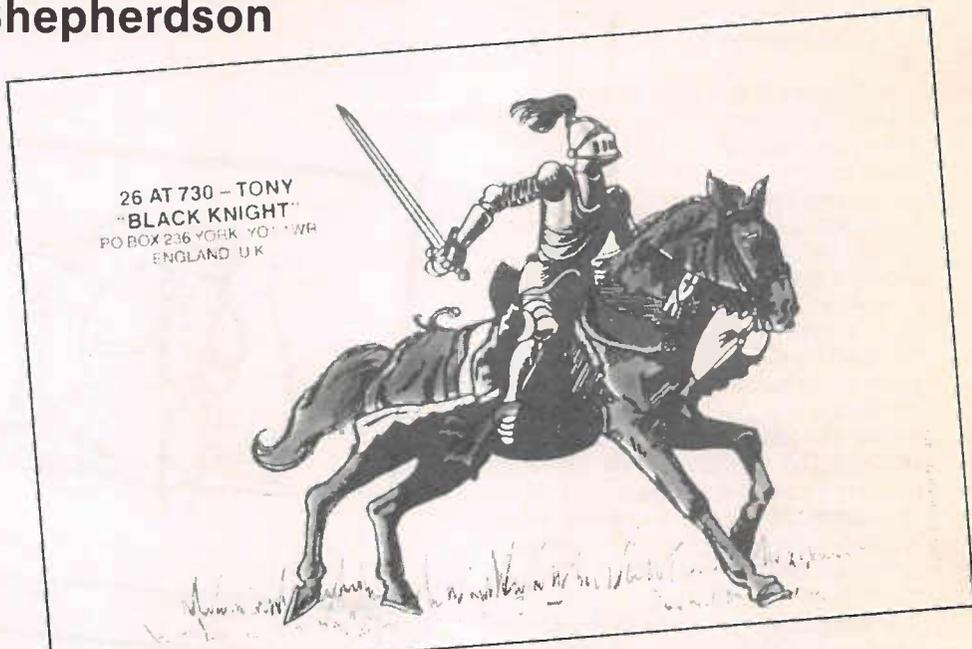


More names and addresses from QSLers all over the world, courtesy of David Shepherdson

Well, this issue is the first one to bear the cover date of 1988, so I guess it's time to wish all readers a very Happy Christmas and all the best for the New Year, hopefully it'll be a bit sunnier and drier than 1987 has been!

Taking into account that this is supposed to be the New Year issue, perhaps now is as good a time as any to make a few suggestions on how to try to get yourselves a mention within these pages. First of all, you have to ask! That obvious bit out of the way, the question that still puzzles some people is "How do I ask?" Well, the thing is to write to me, either c/o the mag or direct to 3 Tarn Villas, Cowpasture Road, Ilkley, West Yorkshire. LS29 8RH. In the case of individuals, a short note asking for a mention, plus one or more of your cards; you know the sort of thing, the type of package you send out when you QSL. Please don't just send a bit of paper saying you want to have a mention in the next issue and nothing else! Any requests for such a mention without at least one personal card will more than likely be ignored in preference to people who send their cards or package.

In the case of a club, then as for an individual QSLer, a short note asking for a mention, a card or three, and most importantly, an up-to-date application form! This last item will allow me to see what your club currently offers and how much it is going to cost people to join. It also helps me in case I haven't either heard of you before or have only a 2 or 3 year-old form to hand. In all cases, if I can't read your writing, or the address on your cards is unreadable, then I cannot use it! When you have your cards etc made, always ensure that your return postal address and personal



MAD QSL Club

To Station

Date Time

Heard your QSO with

Received your card via

Received your name via

Please QSL & pass on this card

TNX for QSO Heard you over skip

TNX QSL PSE QSL Swap 1 4 1

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details are clearly displayed and easily readable, not just by me, but by anyone wherever they live! If you want a reply from me, then return postage is essential. If you wish simply a "confirmation of receipt" then a pre-addressed postcard is quickest, but if you want a long reply or details of when any mention may appear, please be patient. Also, please do not write asking for a mention in next month's mag! Last year, I received quite a few letters from some QSLers who wrote in one month, told their friends that they would be mentioned in the following month's issue and then got very stropy and offensive when there was no mention of them or their cards! To them and anyone else in this position, all I can ask is please be patient! When you write in your letter goes in the pile and I try to use all I receive in order of receipt. This means that if you write in now, by the time I get your letter, the February issue will be at the printers, I will be working hard on the column for May's issue and I probably won't get to yours until July or later!

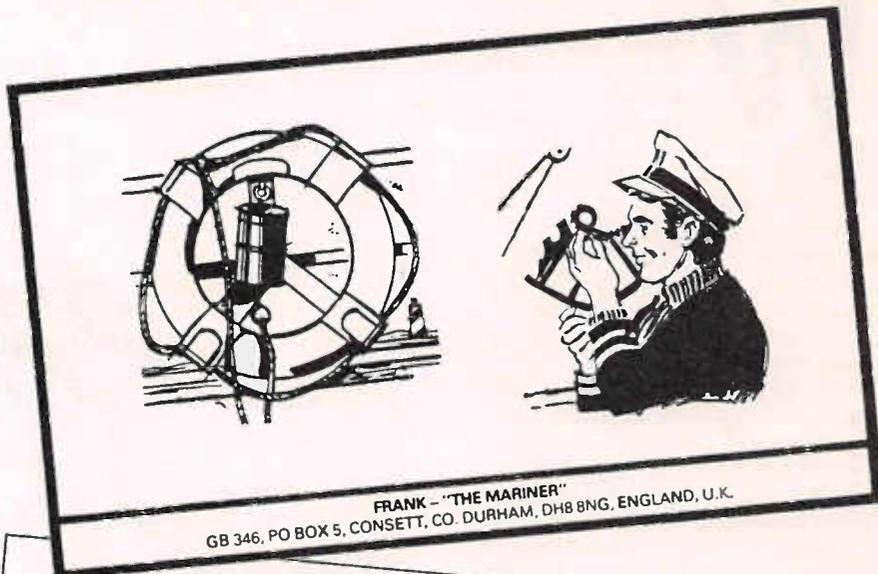
In the case of a club (or anyone) organising an event, it helps if you can mark your envelope "EVENT" clearly which means I can spot it easily and put it in a separate pile for inclusion in the Forthcoming Events slot. Please do bear in mind my comments on dates and allow me plenty of time to work in. Even if you have only the broadest for a May or June event, send them in for possible inclusion now! Just a date, time and place along with a contact address will do for now, then follow it up with full details as soon as everything is finalised! This way you at least get early publicity for the event. Two groups who have borne this in mind and let me know in plenty of time are Mile Oak Breakers of Sussex, and the Steel City Breakers of Sheffield.

The first to be held is the Sheffield one which is on Sunday June 19th at the British Steel Sport's Ground at Tinsley, Sheffield. The Mile Oak Breakers Eyeball is, in fact, the Sixth Annual South Coast Eyeball which is on July 17th at Portslade Community College, Portslade. More details a little nearer the time.

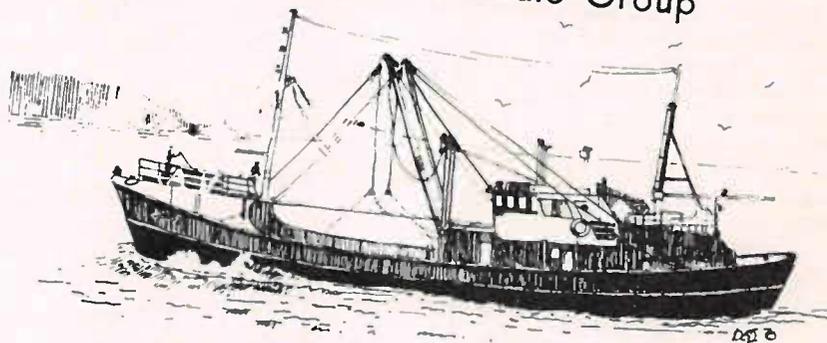
One club that has taken to heart everything I've just said about asking for a mention is the 1. Austrian Radio Group of Rekawinkel. Memberships costs \$17 (US) dollars and 20 signed and dated QSL cards (or picture postcards). The club accepts only US dollars in cash so I do recommend that you call at your local Postal Office and get a Registered Post envelope of sufficient size to hold your cards and money should you decide to join. For a current application form or for information only a request accompanied by a couple of International Reply Coupons (IRC's), again from your local Post Office, should suffice. For your \$17 you can look

QSL SERVICES ADDRESSES:-

Currie Cards	89 Derwent St, Blackhill, Consett, Co Durham, DH8 8LT.
Raymac Display	No. 2 Showfield No. 2 Showfield Ind. Units, Pasture Lane, Ind. Est., Morton, North Yorks. (Send £2 for Sample pack & £4 credit towards order)
Sharp Graphics	PO Box 3, Grangemouth, FK3 9BD. (0324-473432)
Twrog Print	Penybont, Gellilydan, Blaneau Ffestiniog, Gwynedd, LL41 4EP, Wales.
Vine Lodge Products (Labels)	11 Mill Lane, Butterwick, Boston, Lincs, PE22 0JE.
Glass Engraving	Bob McWilliam, 150 Yoden Road, Peterlee, Co Durham, SR8 5DU. Tel: 091 5868889
Scottish C.B. Newsheet	C/o 'Arnail', Patison, Neilston, Glasgow, G78 3AT. One year's Subscription £2.10



BEAMER International Radio Group



President and Founder 1 Bravo 01 DON

QSL from TROUBLE

FRIED



Black Rabbit 013

forward to receiving your 1.ARG Unit Number, ID card, large (card) certificate, 20 club cards, 20 exchange cards, club pen, 10 club stickers, roster, mounted club stamp, viewcards, tourist info etc. Also, a little something extra!

A selection of names starting now with that of Harry and Carol (*Brewery Man* and *Slimcea*) of Prestatyn who QSL with a well-filled package of several types of cards. Another great package comes from Mick (*Mookee*) of Newmarket. He has an excellent hot-foil card by Sharp Graphics. From the States comes a reminder that Jim (*Explorer*) is still trying to collect one million QSL cards! Any help would be appreciated he says, the cards don't even have to be from active QSLers, so if you can help, please do. Staying in the States for a moment longer, a package has arrived from Robert and Penny (*Pitbull* and *Southern Belle*) who, in addition to collecting QSL cards, also collect picture viewcards and would appreciate any you can spare. Moving back to the UK here with a selection of cards from Wilf (*G2*) of Consett, from Meridan near Coventry hails young Mick (*Bedbug*) who has just started QSLing and would appreciate a good start to his collection. Yet another card done by Sharp Graphics now, this time from Trevor (*Firefly*) of Rotherham and, staying in Yorkshire, with George (*Grandad*) of Garforth, Leeds.

Some news that you may have already heard from one source or another but it's the first space I've had for it, is that the Ham Int' Radio Club of Mirfield is up for sale! Martyn says that due to pressure of work he no longer

has the time to run the club effectively and therefore asks if any members of the Group would be interested in taking it over. If so, would they please get in touch with Martyn via PO Box 8. Martyn also runs Geefor Enterprises which issues a regular "Barter News" which lists many items for the CBER and ham and is available for a SASE.

Back to the clubs now. I've news in from Tony (*Black Knight*) of York that he has been made UK Director for the Meminger May Moon Club of Germany and any enquiries about the MMM Club or package can be directed to Tony.

Membership costs 20 personal cards and \$13 (US) but please check with Tony for current costs and if UK Sterling is acceptable but don't forget a SASE for his reply. The MMMC package consists of your unit number, certificate, Roster, Stamp, 10 club cards, stickers, assorted cards and forms and tourist info.

From Wales comes a letter and plenty of info from Don of the Beamer International Radio Group whose membership is spread throughout Wales and many parts of the world, but not too many within the rest of the UK. Membership to the BIRG costs £5 (UK)

QSLer ADDRESSES:-

Fred (<i>Trouble</i>)	KB 147, PO Box 96, Sheffield, S31 8JZ.
Joyce (<i>Regal Lady</i>)	PO Box 8, Cramlington, Northumberland, NE23 9HX.
Zac (<i>Silver Striker</i>)	Hillside, Hunsingore, Wetherby, W. Yorks. LS22 5HY.
Steven (<i>Power Slave</i>)	PO Box 5, Consett, Co Durham, DH8 8NG.
Frank (<i>The Mariner</i>)	GB 346, PO Box 5, Consett, Co Durham, DH8 8NG.
Tony (<i>Black Knight</i> - MMMC UK Rep)	PO Box 236, York, YO1 1WR.
George (<i>Grandad</i>)	PO Box 4, Garforth, Leeds, LS26 8UZ.
Trevor (<i>Firefly</i>)	237 Cemetery Rd, Wath-on-Dearne, Rotherham, S. Yorks.
Mick (<i>Bedbug</i>)	2 Leys Lane, Meriden, Nr Coventry, CV7 7LQ.
Wilf (<i>G2</i>)	GB88, PO Box 5, Consett, Co Durham, DH8 8NG.
Robert & Penny Bell (<i>Pitbull</i> & <i>Southern Belle</i>)	3517 Bessie St, Norfolk, VA 23513, USA.
Jim (<i>Explorer</i>)	725 Littlestown Road, Littlestown, PA 17340, USA.
Mick (<i>Moore</i>)	PO Box 6, Newmarket, Suffolk, CB8 0DZ.
Harry & Carol (<i>Brewery Man</i>)	PO Box 35, Prestatyn, Clwyd, LL19 9YH.

QSL CLUB ADDRESSES:-

1.Austrian Radio Group	PO Box 22, A-3031 Rekawinkel, Austria
Beamer Int' Radio Group	PO Box 1, Cardigan, Dyfed, SA43 1BW
Boomerang Radio Group	PO Box 156, Wolverhampton, WV6 9DX
Ham International (For sale)	PO Box 8, Mirfield, West Yorks, WF14 0XR
MAD QSL Club	PO Box 44, Aldershot, Hants, GU11 1YP

When writing to a QSL Club or QSL Service, always remember to include return postage to assist with their reply. It really does help!

FORTHCOMING EVENTS:-

1988 CONFIRMED!

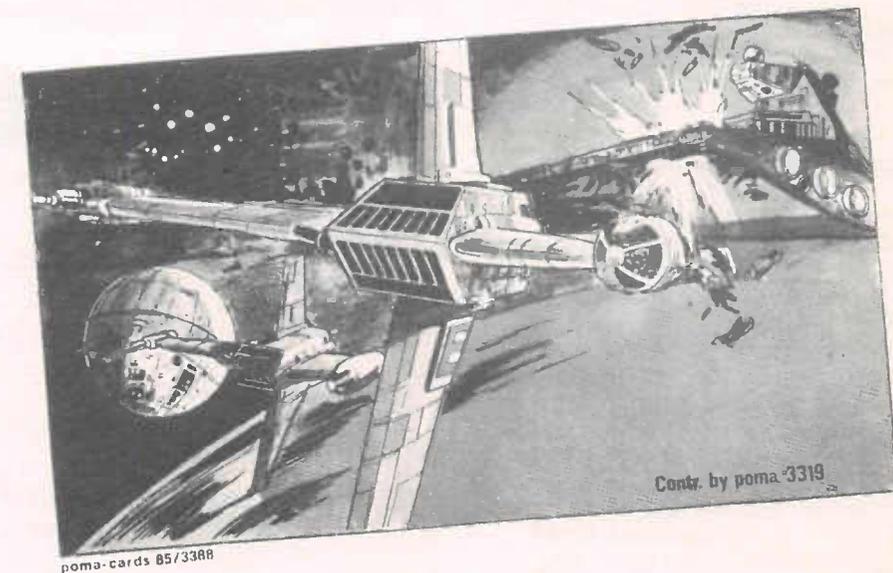
June 19th 1988 - Sheffield Charity Gala & CB Eyeball held once again at the British Steel Sport's Ground, Tinsley, Sheffield. The venue is approximately one mile from Junction 34 (M1). Contact Derek (Roadrunner), PO Box 275, Sheffield, S2 5HY for further details a little nearer the time.

July 17th 1988 - Mile Oak Breakers 6th Annual South Coastal Eyeball held at the Portslade Community College, Chalky Road, Portslade from 10.30am to 5.30pm. Admittance free, Grand Raffle, Club & Trade Stalls, Tombolas etc. On site parking available at 50p. Contact Ad: Mile Oak Breakers (Eyeball), PO Box 161, Portslade, Sussex.

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

cash for which you can expect your BIRG number, ID card, certificate, group cards, prefix list, welcome letter, stickers, exchange invites etc. A mounted club stamp is available for £3 (plus P+P) and gloss cards which come in nine colours of card cost £5 per 100, again, plus P+P. More names here with that of Frank (*The Mariner*) starting off, rapidly followed by Steven (*Power Slave*), both of Consett. If the Editor has seen fit to show Steven's card here let me add that Steve has a couple of newer ones now and they are pretty impressive! Zac Adams of Wetherby asks for a mention, while from Cramlington hails Joyce (*Regal Lady*) with a wide selection of cards and tourists info leaflets. I thought at first, looking through this next QSL, that it was from a club, but I was wrong! A bumper package indeed from Fred (*Trouble*) of Dudley who has had some cards done by Black Rabbit (Contact Boomerang Radio for details) among many others!

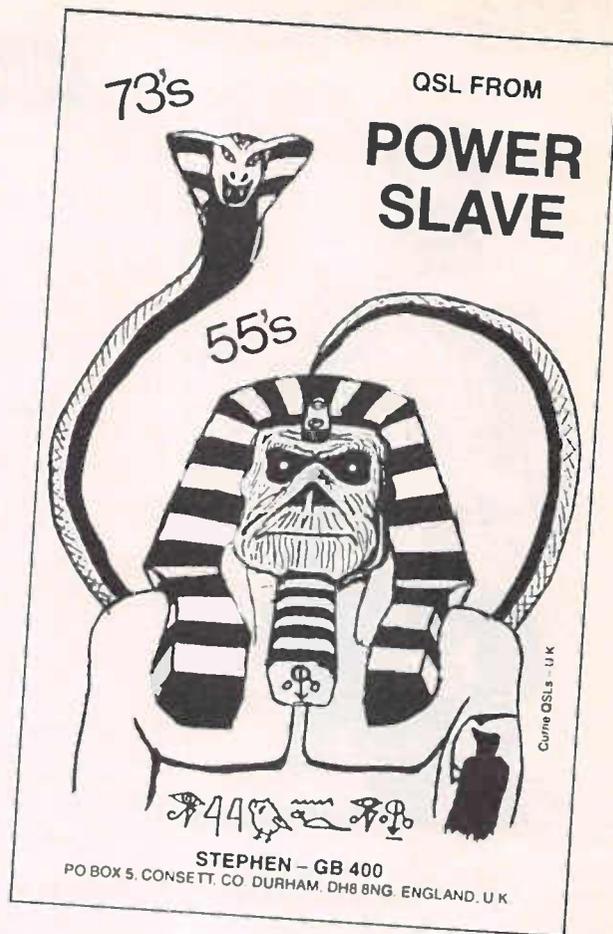
This month I think there's enough room for a Browse Through a Club's Package and this month it's the turn of the MAD QSL Club of Aldershot. Just a reminder here, this is *not* a "Club of the Month" slot, but a more detailed examination of a Club's package. Costs of joining this club do, in fact, vary. If you do not wish a club stamp, then the cost is £4 plus 10 personal cards, otherwise it's £6.50 including the stamp. There is also a mini-package for £1 plus SASE and 5 cards, but the package I'm reviewing here is the £4 one. It arrived in a very full and reasonably strong envelope! It took me several minutes



just to sort out where to start! The package contains your MAD number, an 8" by 6" gloss card certificate, though perhaps surprisingly, no ID card. There are several bundles of QSL cards contained within the package. Twenty of them are Club QSLs for your own use, 10 mixed club POMA's, again for your use, a large selection of swop cards from both members and non-members, a selection of President Mark's own cards and a large number of MAD No. 19's own POMA collection. Then there's a local view card, invitations for the MAD Club and recommendable clubs

and plenty of them too. Club stickers, Roster, tourist info, pen, and leather key fob help make up the package.

That's it, out of room once more; if you want a mention then please take note of what I said at the start. If it's urgent then I'd suggest you send it direct rather than via the mag as depending on just when you post it off, it could be six weeks before I see it! Any news of Forthcoming Events are always welcome, the sooner the better please and if you want a reply, then please don't forget a SASE or similar. Many thanks and do have a great Christmas and New Year!



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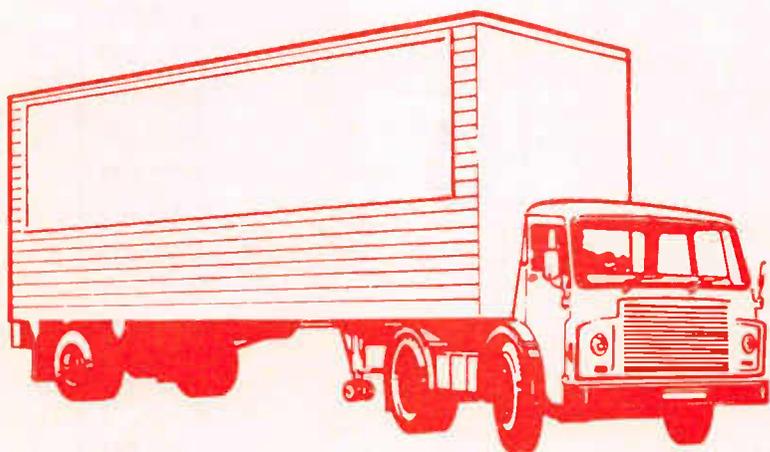


TRUCK STOP



MISSING TRUCKERS

Amongst other things, Brandybird calls out for ships that passed in the night



To start with, on my first page of 1988, can I wish you ALL a happy and prosperous New Year. Prosperous enough, in fact, to continue buying your copies of CB and to carry on reading and hopefully enjoying my column.

Looking back over 1987, we had a superb 'Truckfest' at Peterborough, despite the endless, almost torrential, rain. We've had a smashing truck racing season around the country's circuits and a programme all about truckers and trucks on the good old Beeb. There have been far too many accidents, fatal or otherwise, involving trucks, for which the truckers always seem to get the blame, and we've also had the horrendous ferry disaster which took the lives of many drivers. More bad publicity for truckers came with the arrest of a 'trucker', for the indecent assault of little girls all over the country.

I read somewhere recently that a major motoring organisation has got together with one of the road haulage people and produced a leaflet which,

they say, shows motorists the problems that lorries encounter, and shows trucks the problems that cars encounter. Well I can say that it's not before time. What I cannot understand is why someone like the Royal Society for the Prevention of Accidents hasn't stepped in and produced an advertisement to be shown on TV of the same problems. After all, how many people who drive both cars and trucks, *don't* watch TV at some time or other? Be honest, how many car drivers *know* why trucks won't overtake you in the fast lane of motorways or realise that when you pull into the left-hand lane at traffic lights and indicate to turn right that you *need* a wide berth to prevent demolishing traffic lights and bollards! Times I've seen this and watched cars pull up alongside them wondering why the trucker is swearing at them. Those cars that insist upon driving at 45-50mph in the middle lane of motorways, probably wondering why you are right up their backsides flashing your lights and honking the air horns, just don't know that you *can't* overtake them as it is illegal for trucks to

use the fast lane. It's really time that the powers-that-be organised some advertising to show motorists these problems. I'm sure that if they knew they wouldn't do some of the seemingly idiotic things that do get done. The only problem that I have come across, as a motorist 'against' trucks, is when, at night, they attach themselves onto your rear bumper with their headlights shining through the back window, blinding you, so that instead of making you speed up, as they're trying to do, they only succeed in making you slow down, because you just can't see what is coming towards you.

Backpeddling a bit, what about *Truckers* then? I thought the programme was one of the most enjoyable things that I've seen on the BBC. I even tried to change my committee meeting night so that I could watch it. Possibly they crammed too much into each episode for it to be really lifelike, but everything that I saw does happen, though sometimes it did seem to go a bit over the top. Let's hope that it was popular enough for the Beeb to want to make another longer series. I'd like to hear your views on the programme. If we can get enough feedback, perhaps we could approach the Beeb with *your* comments and they might even consult more with drivers before they make another series.

Once again, I'd welcome your letters on anything to do with trucks and CB. (I've only had a couple so far, so have I really only got five readers?) Write to: Brandybird, PO Box 158, Coventry, CV6 6BD and please enclose an SAE should you want a reply.

Referring back to the couple of letters I have had, I had a lovely one from AC McIntyre, (The Field Marshall) who picked up and commented on most of

my recent points. Like many others, he avoids a certain motorway service area due to two bad experiences. He knows lots of lady truckers (naughty lad) agree that bikes should be road-taxed and likes the Volvos best of all, even though he drives a Daf 2800 ATI. Proves that he regularly reads this page. That was the first letter that I've had from a Proper Trucker and it's good to know that they do find something of interest in my pages. So come on drop me a line, and let me know what you'd like to read about.



Field Marshall also tells me that he likes to read his colleagues' names on these pages, so I'd better hunt out my little black book again. If you know any of the names mentioned, give them a nudge, tell them their names are in the mag. Recently I mentioned an old friend, Steve, (Harry O) from Liverpool. He was in Wales a couple of months ago, asked for directions, and the chap that helped him asked if he was the Harry O he'd just been reading about! I've also recently had a visit from the

long-lost, much asked-about, Red Robin (Ron) from Luton. So, much to my relief, he did survive the ferry going down.

Righto, here's this month's 'lost' breakers: Tommy (Aggravator) who drives for Brand Paper in a yellow Merc, Beefeater from Manchester, Alan who drove a black Seddon Atkinson, Bob (Bulldog) from Stafford, an owner-driver with a flashy Scania, Eddie (Bolero), a Belgium lad driving for Danzas, in their eye-catching yellow trucks. He would me up one day, saying he couldn't speak English. I'd invited him round for coffee. I didn't have a chance to tell my parents that he couldn't speak the language, and went into the kitchen to make coffee. When I came back, there he was, gossiping away, ten to the dozen with my parents! I'd been talking to him for months trying to speak slowly and clearly so he could understand me. I wanted to kill him that day. And what about Blue Denim John, driving for TI Bainbridge, from Stoke-on-Trent, Commanche (Don) and Brian (Cruiser) from London.

Regards also to Nick (Chicken George) from Lincoln, driving a nice red/blue F10 belonging to Tomlinsons. Nick seems lost without his mate Roger, who's now changed jobs. Also Stuart (Handyman) from Coventry, driving for Federal Express. Best wishes to Jim (Firdove), known in Coventry as the Burnt Matchstick.



Right now, back to something that I've gone on about before, which I wish you lot would pass on, via your CB, to others who don't read the mag. If you are in a strange place and want directions, please, please state *where* it is you are looking for. Don't shout "19 for directions", but call out "19 for directions to such and such road". Us homebases don't want to look a fool by not knowing the place you're after so we keep quiet. Listen out when you're near a town. Those who call for directions seem to be calling forever. Those who name where they want are usually answered immediately, if not sooner. If you name the road, if we know it, we will help you. There is a lot of timid people out there, so please pass this on.

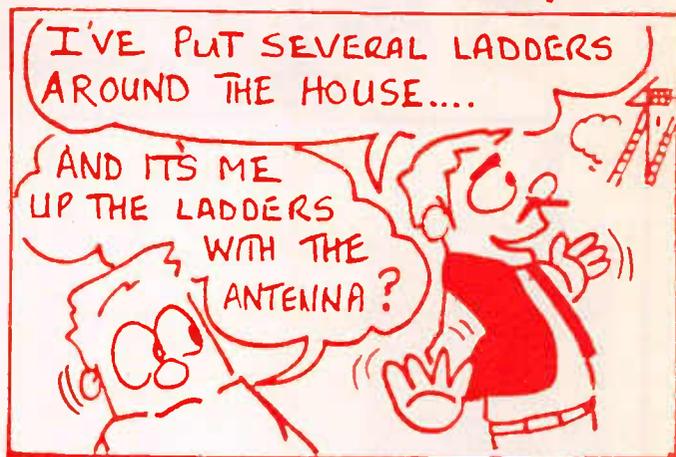
Well, that's enough of me for another month. Let's have a good 1988, put pen to paper and let me know you are really out there, and what you'd like to see on these pages. It's YOUR page, for you the truckers, so let's hear a bit more from you and hope that Field Marshall's letter is only the first of many.

Brandybird

WIRES

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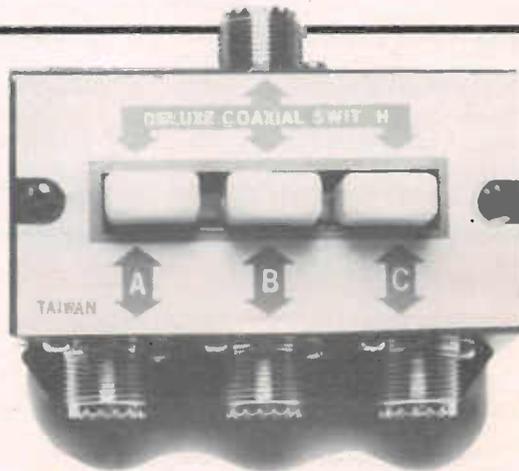


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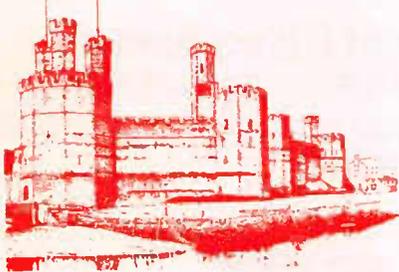
TALKING TARTAN

**Our Scottish correspondent,
Tony Jaconelli, reports on the
state of CB north of the border**

Citizens' Band Radio is still alive in Scotland, not bubbling like it was after legalisation in 1981, but surviving nonetheless. Gone are the halcyon days of 1982 and '83 when clubs flourished in almost every town and village throughout the country. When everyone wanted to put a face to a handle or to a voice heard over the airwaves. Nowadays, clubs are few and far between and those that are still operating are struggling to keep membership numbers up. This scenario probably holds true throughout the UK.

The gradual withering away of stations has had the effect of bringing those left closer together. Breakers tend to stick together and clubs have close inter-group ties, supporting each other in their various activities and promotions. CB is in itself a community within the community. Breakers not attached to a club still attend functions, visit Eyeballs and support charity drives.

In Scotland, CB has become a strong social apparatus, a vehicle for carrying news of events or get-togethers. It is so successful in this area that most breakers will confess to being unable, either because of time or money, or both, to attend all that is going on. Indeed there is so much going on that it is just impossible to get involved in everything.



Central Scotland lays claim to the biggest concentration of CBers in a broad belt from West to East, though there are pockets of activity all over the country right into the remotest places. Wherever they are there are strong

social links between them. So much so that several annual events are developing into National Institutions:- the Scottish Association Annual Cabaret/Dance, Auchenlarie and Southernness Caravan Eyeball Weekends, the Falkirk and the Comrie to Crieff Raft Races, the Seamill Eyeball to list but a few.



The 'Scottish' Annual Dance is a Dinner/Cabaret affair held in the Carronshore Club, Grangemouth, in the third week in May (22nd in 1988). This will be the 5th year, each a success in its own right. There have been a few hiccups but they have always been value for money. For £3.50 per head it is merrymaking from eight till late, a choice from five dishes on the food menu and the drinks are something else! Two visitors at the bar ordered two shorts and two half pints, the cost £1.62. When it was pointed out to the waitress that the two orders were together she replied, "That's the correct price for your order". On overhearing the tail end of the conversation a local piped in, "I think it is scandalous that the bar prices have been put up because this is a private function."

All these nights have been successful for one simple reason, 150 breakers turn up with the express intention of having a good time. The only reason why there seem to be a lot of empty seats is that their users are up dancing, moving around the other tables having an on-the-spot modulation or sneaking into the Lounge Bar to partake of such reasonably priced refreshments!

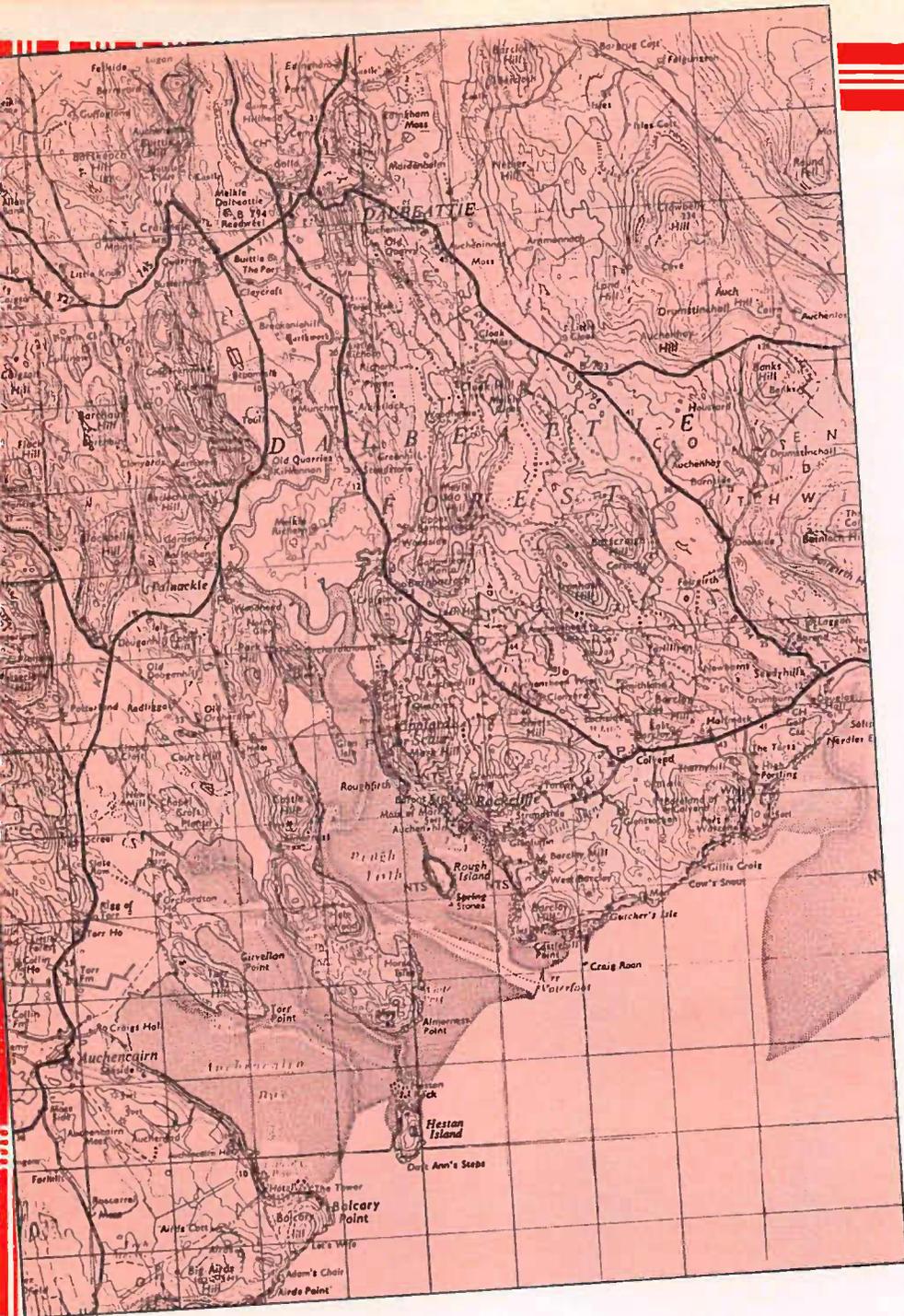
The Scottish Association of CB Clubs (SACBC) came into being from an



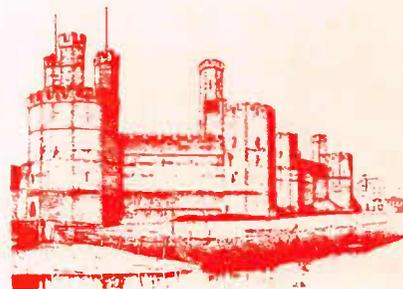
unusual source; the National Foster Care Convoy of June 1982. Tony Jaconelli, the Rock A Jock, was involved in that venture along with fellow Club Members of the Second City Breakers, Glasgow. An involvement which took him the length and breadth of Scotland, meeting CBers all along the way. Many of those he met felt that an Association or Federation of CB Clubs was badly needed to better the system and do something about the abusers who were, even at that time, messing up the channels. Amazing how little things have changed in five years.



With the full backing of his Club he gathered addresses and sent circulars out to all and sundry. By 6th November an exploratory meeting had been arranged in Rosyth which 13 clubs attended. A steering committee was elected to draw up a Constitution and once this had been ratified by the Membership a full Committee was elected and SACBC was off the ground. Originally Tony intended to get the thing going and then take a back seat but no



handling of the proceedings which were first class. Southernness is on the Solway Coast near Dumfries and in-camp amenities include swimming pool and jacuzzi, mini market, chip shop, bar and coffee bar, pool and amusement arcade and children's play area. There are also a couple of hostels in the nearby village.



The Seamill Eye Ball in June is a charity fund raiser for a disabled lad Robert Mitchell and was the province of Helenburgh Breakers Club. This year, the event was in doubt when the Club folded but such is the social conscience of CBers in Scotland that Johnstone Breakers stepped in at short notice and took over the organisation. All credit to Peter (Victor One) and his members for a grand job. The weatherman was kind again this year and some 300 plus breakers turned up to make it a great eye ball.

The Spring Fling Raft race is only one of many such events which CBers get involved in. This one is organised by Falkirk District Council in aid of CB Radio for the Blind (Scotland) and is held on the Callander Park Loch, Falkirk, on 8th May.

Entry fee is £25 per raft, which can be raised from sponsors, and the minimum age limit for the 5-man crew is 15 years. There is a special prize for the funniest raft and closing date for entries is 25th March 1988. Entry forms are available from CB Radio for the Blind (Scotland), PO Box 8, Falkirk, FK2 8YB. Gus (Sea Wolf) and his team from Foxtrot Mike hope to have another go at this one. Although they have never won it, neither have they got the wooden spoon. Foxtrot Mike will also be entering an 'It's a Knockout' competition in August, again sponsored by Falkirk District Council.

Another annual charity event, this time involving the Earn Valley breakers under their Chairman Colombo (Eddie) is the Bed Push held in August on Auchtertyre Estate. Some of the fancy dress turn-outs at this event have to be seen to be believed. But then so are the antics of some of the CBers involved. Earn Valley are another very active club and they also monitor the Comrie to Crieff Raft Race.

The Scottish CB Newsheet was first published in November 1986 so it has just celebrated its first birthday. Congratulations! This bi-monthly publication is fast growing in popularity thanks to the fine efforts of Evelyn

one felt up to chairing the new group and he was pressured into agreeing to take the Chairmanship on a trial basis. That was five years ago! Perhaps one of the reasons why SACBC are successful as a functioning body is that they work as a team. There are no glory hunters or dictators here.

Auchenlachie Holiday Farm is a modern Caravan facility near Kircudbright in the South West of Scotland. The weekend is organised by Murray Hearn, Saltire, and his Club Cree Valley Breakers and it takes place on the Bank Holiday weekend early in May. Six, seven or eight-berth luxury caravans can be hired for £12 per night and there are areas for private caravans or tents. On site facilities include mini market, restaurant, take away, bar, lounge and function rooms, disco, prize bingo and amusement arcade. The surrounding countryside is a sight to behold but by far the best views can be seen at around 11 pm when the Tryst Bar empties!

The weekend is organised for Charity and each year, this is also their 5th, Cree Valley support designated groups. This year, donations will go to Deep Sea Fishermen, RSPCA and a local breaker Robert (Weetabix Kid) who suffers from Psoriasis and has to travel to Kilmarnock for treatment. To that end, various competitions and events are on the cards and this year there will be a special trophy put up, the Howard Forsyth Memorial Trophy. Regular visitors to the Auchenlachie Eye Ball weekend were shocked to learn of the sudden death, from a heart attack, of the jovial compere of the weekend's proceedings.

The Southernness Eye Ball weekend is held on the first weekend in October (see Shepherd Man's report on this year's meet). The original weekend was organised by Mike (Autopipe) on behalf of the Solway Pirates but unfortunately he had to pull out of this year's event because of ill health. Hugh (Big H) and his team are to be congratulated on their

Scottish CB Organisations

SACBC Secretary,
PO Box 35,
Falkirk.

SACBC, Chairman,
Tony Jaconelli,
73 Springboig Road,
Glasgow G32 0DB.

Second City Breakers,
PO Box 1,
Glasgow G69 6EF.

ALC ALERT,
John Hill,
22 Cessnock Place,
Galston KA4 8LS.

Kilmarnock CARES,
Clifford Parker,
Methusela,
14 Charles Street,
Kilmarnock.

Parkhill Breakers,
PO Box 4,
Bellshill.

Tartan Breakers,
PO Box 6,
Wishaw.

Cree Valley Breakers,
PO Box 1,
Wigton.

Solway Pirates,
PO Box 15,
Kirkcudbright.

REACT International,
PO Box 288,
East Kilbride,
G75 8SR.

Foxtrot Mike CB Club,
PO Box 35,
Falkirk.

Earn Valley CB Club,
PO Box 4,
Crieff.

Johnstone Breakers,
PO Box 4,
Johnstone.

Romeo Mike CB Club,
PO Box 275,
Uddingston.

Riverside Breakers Club,
PO Box 16,
Perth.

Girvan Breakers,
PO Box 1,
Girvan.

Esk Valley Breakers,
PO Box 5,
Bonnyrigg,
EH19 3HG.

Jacobite Warriors,
PO Box 27,
Inverness.

Scottish CB Newsheet,
c/o Arnail,
Patison,
Nielston,
G73 3AT.

McMaster (Bunny) and her team, but mainly thanks to the response from CBers, both locally and nationally, weighing in with items, articles and letters on a variety of subjects which keep the pages full and interesting. Subscribers are not confined to Scotland, copies are mailed to England, Wales and Ireland.



The Newsletter is also available on tape free to any registered blind person thanks to the kind co-operation of KLD Tape Services, Kilmarnock, and Bunny is also mailing copies of the Newsheet to libraries, again free of charge. If you know of a library which you think will accept, and display, the Newsheet let her know. By the way Evelyn and her Busy Bee team will be heading for the South West of Scotland later in the year for a sponsored modulation. Listen out for the ladies on the UK FM channels, somewhere above 30.

So much for a brief look at the social side of CB in Scotland. This is only a small fraction of the activities which go on north of the Border. We know we are not alone in these efforts. We know there are similar activities going on in every corner of the UK. We know this is the good side of CB which seldom gets a mention. It's a twist on the old adage Good News is No News!

The number of users may have diminished but the drive and enthusiasm of those remaining has not weakened. There are still working groups of every description. Monitoring groups still abound though few have the membership for 24-hour coverage of whatever channel they supervise. REACT has gone but some former members are still active under that name and one at least has retained the name in a different form, REACT International, East Kilbride. Other groups still around providing assistance in emergencies, helping with 10-13 reports and giving directions and information include Clyde Coast Search, ALC ALERT, Kilmarnock CARES, Ardrossan Pedal Pushers. And that is only in the West of Scotland.

Perhaps the best known of the working groups is CB Radio for the Blind (Scotland). Ken Callow (Supertramp) got this Registered Charity Group moving shortly after Legalisation Day. Since Ken returned South, Jack (Crabby Daddy) has led the group in their efforts to raise funds to provide rigs for Registered Blind persons wishing to get on channel. They

are always on the lookout for equipment so if you have anything, working or in need of repair, get in touch and help provide someone less fortunate with the opportunity to extend their horizons.

CBRB(S) have established a network of clubs and individuals who assist in setting up equipment and offer guidance to intending new blind breakers. If you are interested in aiding the group and have some free time, get in touch. If you or your club would like to organise a fund-raiser on their behalf you will find them more than appreciative. This is a particularly trying time for them since the new frequencies came in. They have upwards of 60 blind members on their books and the cost of supplying new rigs is giving them a few headaches. At around £90 apiece they need £5,500 just to get the rigs, not to mention all the other wee bits and bobs they need. Sadly, although the group cannot extend their service to include twigs they will erect antennae if one is provided. They do, however, fit their sets with talk-back chips.



There are one or two groups in Scotland who specialise in charity work but because every club up here sponsors at least one charity, or provides funds for deserving cases, it would be unfair to single any group out for special mention. Listing the recipients would fill up the rest of the magazine. In order to inform the media of the great work done by CBers, Bunny (CB Newsheet) is compiling a dossier of monies donated to charity. Let her know about all your efforts and help her to tell the world what CBers are really like.

This is perhaps not the best time of year to mention holidays but to anyone down there planning a trip in this direction, be prepared to have all your impressions of the Scots (and it is Scots [Scotch is what we drink, hic!]) knocked for six. We are a much maligned race and Harry Lauder and others of that ilk have much to answer for in portraying us as tight-fisted and mean. CBers are even a cut above the ordinary and if you feel inclined use any of the following addresses to request information about any travel plans you might have, do so. But back to the present and since it is that time of year take it as read that every CBer up here wishes you a Merry Xmas and everything that you wish for yourself for the New Year.

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CB IN DEPTH

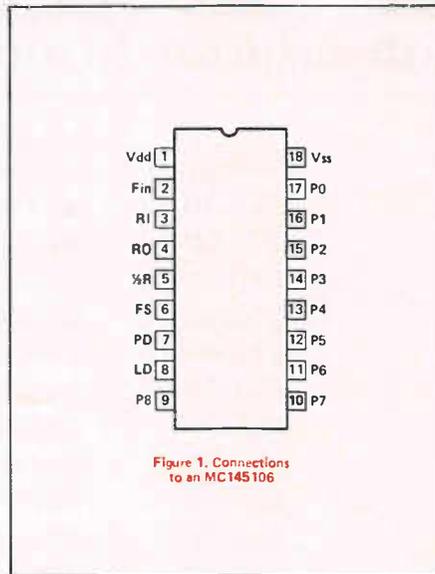
(part 10)

Chips with everything –
Paul Coxwell gets wired up

We have now considered a few of the types of phase-locked loop circuitry found in CB transceivers and it is finally time to examine the wiring in detail. Much of the PLL circuitry is in integrated form in a chip so we'll start with a look at the connections typically found on such an I.C.

In figure 1 we have the pin-out for the MC145106, known in this country mainly for its use in the ever popular Cobra 148. As you can see it has 18 pins arranged in the usual dual-in-line format. Vss is the designation commonly used with I.C.s for the ground connection and Vdd is the positive supply rail. P0 through P8 are the binary programming lines with weights from 1 to 256 as we saw last month. One annoying point you may come across is that some manufacturers number their pins from P0 as here, whereas others start at P1; it's just something you have to get used to. R1 and R0 are the reference in and out pins to which the 10.24MHz crystal is connected. On chips that do not have their own internal oscillator there is only an input to which the external VCO is linked. The output of the external VCO is fed back to the Fin pin and in the IC this goes to the programmable divider input. The output from the phase detector to the VCO is on PD thus completing the loop.

That leaves three pins which we have not yet even glossed-over so some explanation is in order. LD stands for Lock Detect and is generally connected into the transmitter driver or pre-driver stages. The reason for this is that, under certain fault conditions, the loop could fail to "lock-in" on the correct frequency and just settle at some undetermined frequency. This could well result in out-of-band transmissions and to prevent this the LD pin is activated when the VCO is out of lock. The signal on this pin then disables the transmitter, often by removing forward bias on an RF amplifier. Whether the pin goes high or low to signal out of lock varies from chip to chip, on this one high indicates locked, low out of lock. $\frac{1}{2}R$ is an output at half the reference input – 5.12MHz. A couple of months back we saw that the reference oscillator is sometimes used (via frequency doublers or triplers) as a



source of the loop mixing signal. This $\frac{1}{2}R$ output just allows some more versatility for obtaining this signal. One chassis for example, takes 5.12MHz, feeds it through a tripler to get 15.36MHz which is then mixed with 17MHz from the VCO to give an input to the divider of around 2MHz. The last remaining pin is FS, or Frequency Select. Setting this input high causes the 10.24MHz reference to be divided by 1024 resulting in the phase detector running at 10kHz thus giving 10kHz steps. Connecting the pin to ground introduces an extra divider stage to divide by 2048 giving 5kHz steps. This input makes the PLL very versatile, as it is used in transceivers other than for CB.

Typical Circuit

Figure 2 shows a complete PLL frequency generator based around the MC145106 chip. Although this IC has its own reference oscillator, the designer in this case used a separate transistor oscillator constructed around Q24. This resembles the standard crystal oscillator we examined a few months ago and should therefore be familiar to you. Q26 and associated parts form the voltage-controlled oscillator and this is similar to the crystal of course.

Collector feed is via R141 which correct DC bias being set up by R139 in the emitter and R137/138 at the base. C104/105 operate as before and the tuned circuit is coupled to the base with

C103. The resonant circuit itself is formed by L18, C96 and varactor diodes D31/32. A varactor diode, or varicap as it is often called, behaves like a capacitor but by varying the reverse bias on it the capacitance can be changed. Altering the capacitance in a tuned circuit naturally affects its resonant frequency and in this position causes the frequency from the oscillator to change accordingly. The output from the phase detector on IC5 pin #7 is connected to the diodes through R126, 128 and 134 to give the necessary DC control of the VCO. C96 prevents DC getting any further as well as forming part of the tuned circuit's capacitance.

There is an important circuit that is inserted between the phase detector and VCO which we have just skipped over. The values of the resistors coupling the IC to the varicap diodes along with R125, C89 and C91 are chosen to form a low-pass filter. Because digital circuitry is used in the PLL I.C. and DC output will contain "spikes" of signals from the fast switching and sampling used. If this were allowed to reach the VCO it could cause frequency jittering, or flutter. To prevent this the low-pass filter is used to smooth out these rough spikes leaving a clean DC voltage for control. Q26 emitter feeds a buffer amplifier which in turn feeds the first mixer in the receiver and the transmitter chain.

In this particular chassis the VCO runs at 16 to 17MHz and a 10.695MHz oscillator is used for transmission; the VCO is mixed with a 15MHz signal to give an input to the programmable divider of about 1 to 2MHz. Q25 is the loop mixer which also holds no surprises. Both the VCO signal from Q26 and a separate 15MHz from an oscillator (not shown) are injected at the base, the resultant output being fed to the I.C. at pin #2 through an L/C filter combination. The decoupling capacitors liberally scattered throughout should be obvious now. The program codes are selected on pins 9 through 17 from the channel switching circuitry. This diagram is incidentally, a simplified schematic of the Cobra 148 radio.

Moving on to the newer ROM-type PLLs we have a typical arrangement using the 7137 in fig. 3. The internal oscillator is utilized this time with just a crystal and a few capacitors hung on

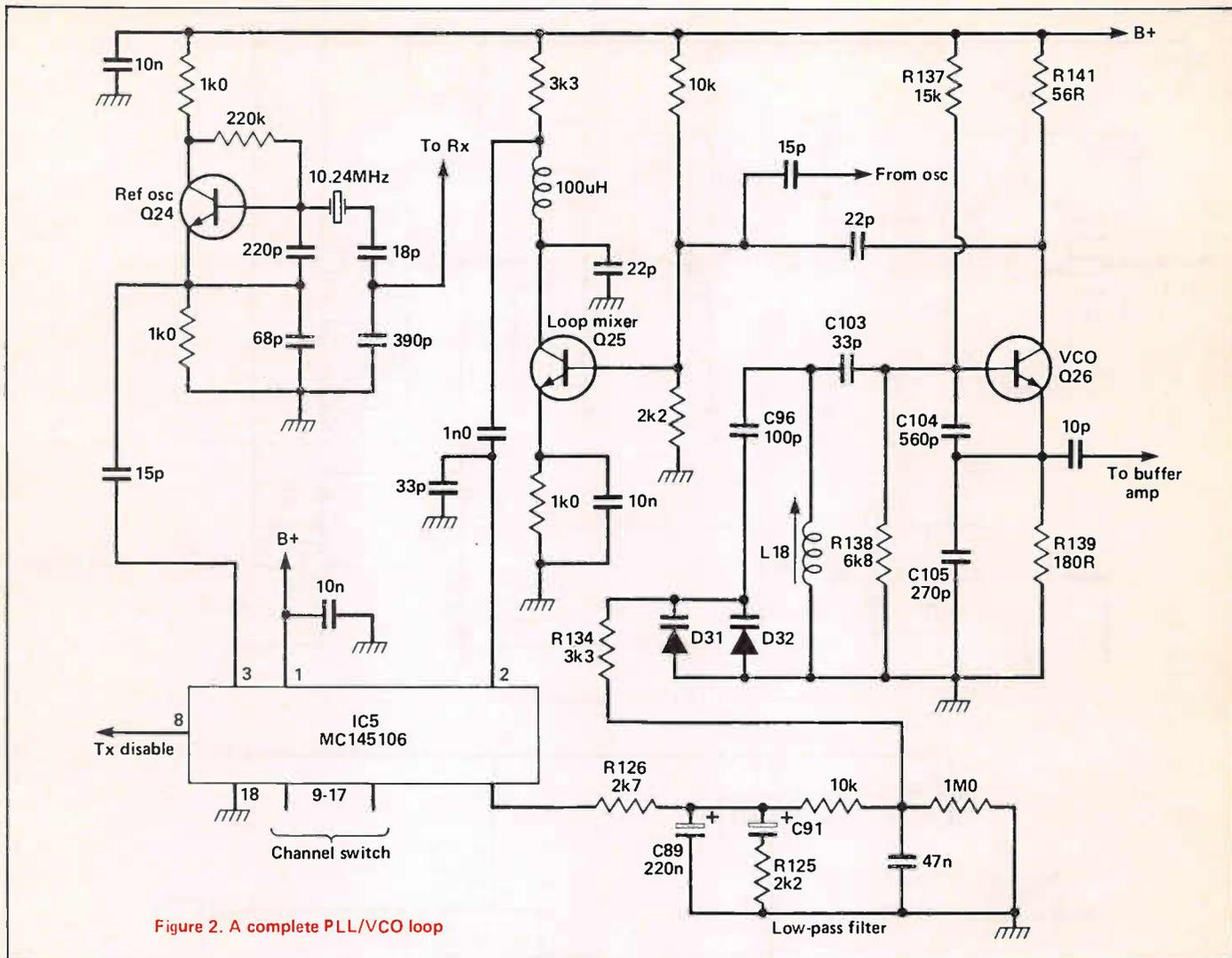


Figure 2. A complete PLL/VCO loop

the input/output pins 11 & 12. The preset is adjusted for exactly 10.2406MHz. BCD channel codes are fed into pins 1 through 6 and the phase detector output comes from pin #15. This I.C. has a low-pass filter built in connected to pins 16 and 17 so use is made of this. The final DC control voltage is at pin 17 which connects to VCO circuit around Q114. A signal is tapped off the secondary of L116 to feed the transmit chain and buffer stage Q113. This amplifier applies the signal to both the receiver and the input of the PLL's divider at pin 19. The 7137 runs the VCO at 13/14MHz on transmit and 16MHz on receive (see last month) and one extra piece of circuitry is required. Q115 has its base connected to a transmit/receive control line which is positive on transmit, grounded on receive. In the latter mode there is no forward bias on the transistor and it remains cut-off. When the mike is keyed, however, the positive bias turns Q115 hard-on connecting extra capacitance C221 into the tuned circuit to lower its resonant frequency from 16MHz to 13MHz. This done, the PLL recaptures lock almost instantaneously. Figure 4 shows how the lock detect output disables the transmitter should anything go wrong. On the 7137, the pin is

grounded when out of lock, this shorts out the bias at the junction of R138/139 causing the transistor to be fully cut-off. In this condition no RF passes and off frequency transmission is prevented.

Channel Selection

This part of the circuit is relatively simple. The channel switch has numerous pins to connect to the PLL program inputs and The channel display. The display segments are wired with series limiting resistors across the supply through the switch so as to indicate the appropriate numbers. On the PLL, the switch may connect each pin to ground or positive supply, depending on the chip. Some have internal pull-up resistors, others have pull-down resistors. Many of the latest chips, including the 7137 above, also have special pins that immediately select channel 9 or 19 irrespective of the normal pin settings. This is where the channel 9 switch would be wired to, in addition to a diode matrix to make the display read "9". These chips generally revert to channel 9 if the normal code is invalid too, in case part of the transceiver was damaged in an accident and emergency communications are required. Alternatively you may find that

another disabling pin labelled MC for Micode is activated turning off the transmitter as for the lock detector. Exact arrangements are dependent on the manufacturer.

Now what about those rigs with more than one band of channels? There are two main methods of switching more than 40 channels, changing the divider programming and changing the loop crystal. In some units the band switch arranges that a different code be sent to the programmable divider in the PLL I.C. to generate the necessary channels. Binary adders may be used which have two sets of inputs, one from the channel switch and one from the band switch. The output is simply the sum of the inputs which is fed to the main PLL device (computer stuff again!). The circuit from a 5-band rig is shown in fig. 5. Pull-up resistors on the board keep the A inputs high until connected to ground through part of the channel switch (the resistors have been omitted from one part of the diagram for clarity). This generates binary codes of 15 to 59 for channels 1 to 40 respectively. The B inputs of the adders are linked to ground through pull-down resistors and the diode matrix causes appropriate voltages to be routed to select one of five fixed numbers from the band switch.

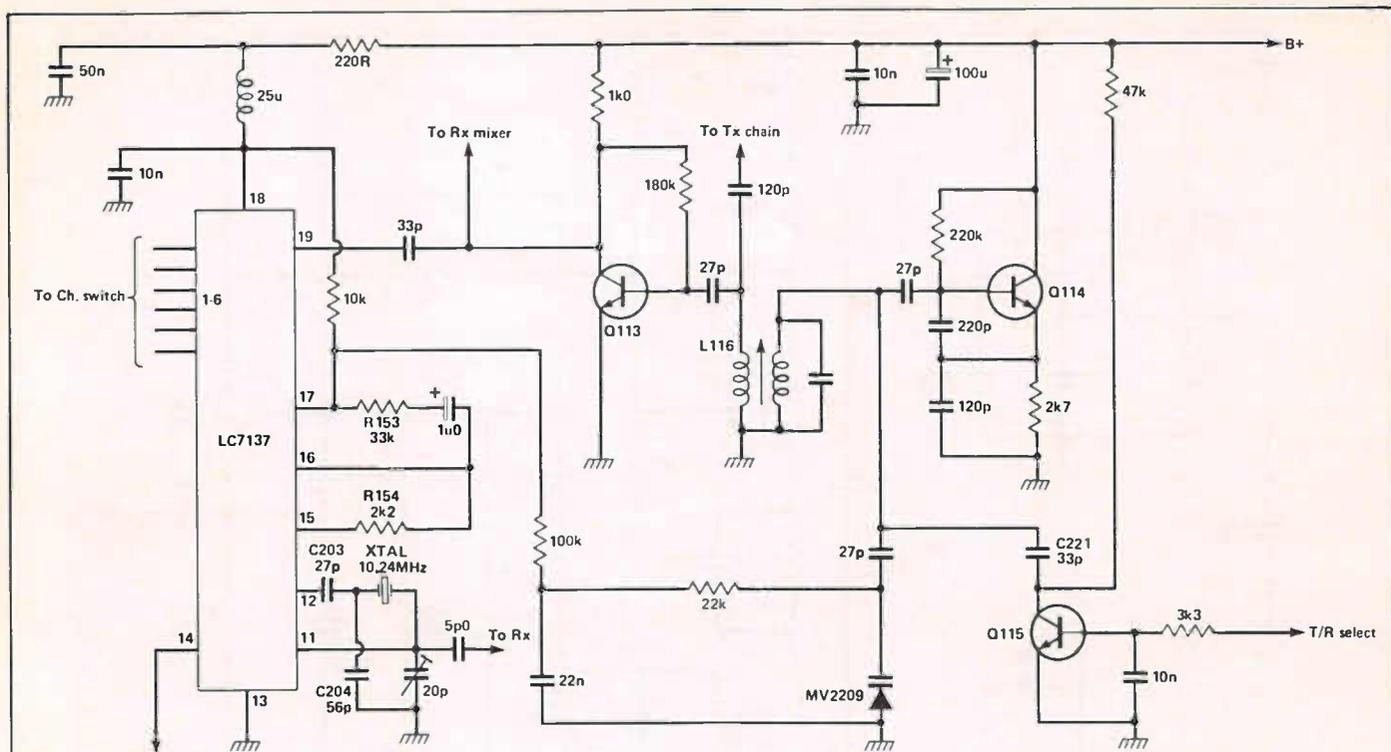


Figure 3. The 7137 arrangement

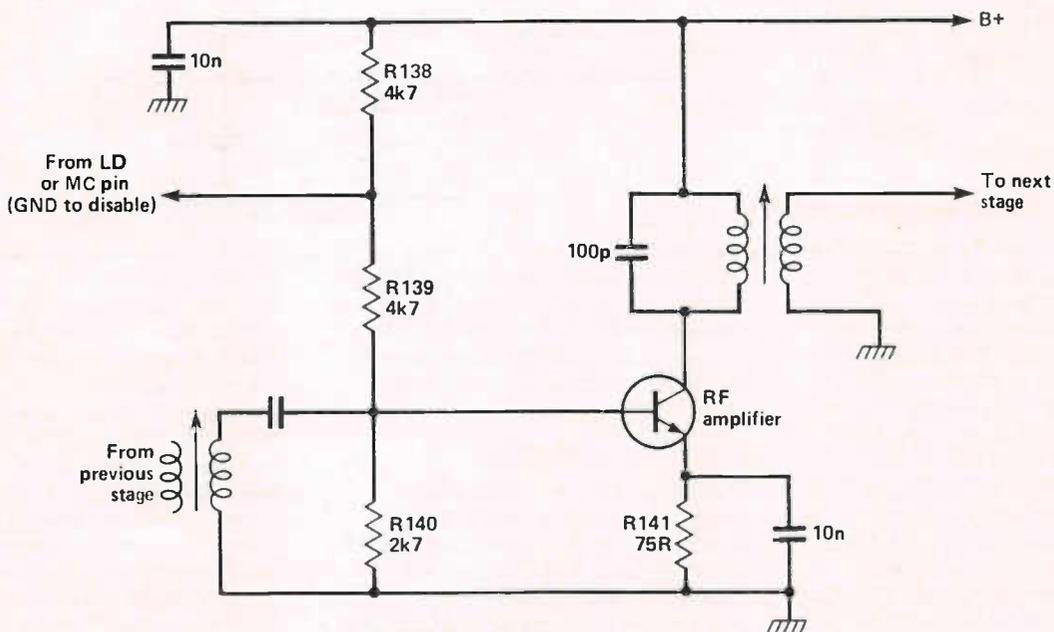


Figure 4. Disabling the transmitter

The final output is a code running from 82 for channel 1 on band A to 306 for channel 40 on band E. The two halves of the adder are linked by a "Carry In" and "Carry Out" pin, just like you carry digits over from units to tens, tens to hundreds etc in decimal.

Also shown in the diagram is the +10kHz shift switching, which applies a voltage to the carry input of the lower adder causing one to be added to the final result. This shifts the rig up by one channel, naturally. Generally, where such wide ranges are covered, you will find that additional capacitance is switched in to the VCO on the lower ranges, either by using a transistor as in

fig. 3 or by the use of a varicap.

The other way of switching bands involves selected different loop mixer frequencies. The crystal oscillator that feeds the mixer is arranged with two or more crystals that are electronically selected from the band switch. The input to the programmable divider and the N-codes are therefore the same on all bands but the VCO must be driven to its new frequency to obtain the correct downmix signal. It may appear easier to simply switch between the crystals directly but at high-frequencies the wiring must be kept extremely short and it is not always convenient for the circuitry to be placed next to the band

switch. Electronic switching allows the wire to the switch to be any length with no undue effect. Figure 6 shows how this might be done using switching diodes. When a diode is forward biased due to the positive voltage from the switch through the resistor and choke the corresponding crystal is in operation. Other crystals are effectively cut-out because their diodes have no forward bias to make them conduct. The chokes keep the RF from the DC switching so that the wiring does not upset the oscillator. You may sometimes find that transistors are used in place of diodes with similar DC switching. Indeed there are add-on boards available designed

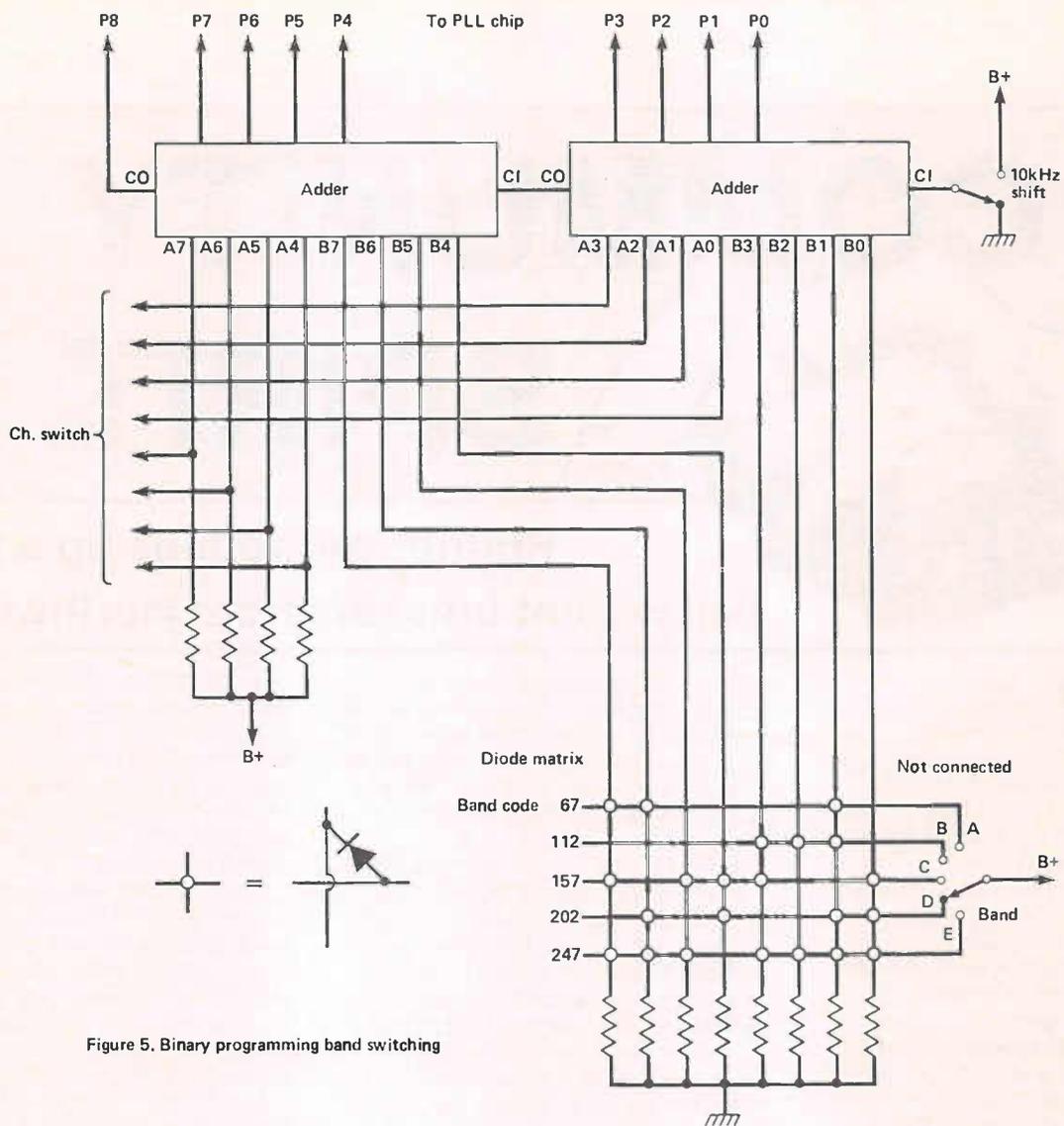


Figure 5. Binary programming band switching

specially for adding bands in this way to transceivers.

Occasionally, you may find band switching in a rig that uses both the above methods. One President 120-channel transceiver for example uses one crystal with binary selection for mid and high bands but for low band uses the same codes as for mid but with a different crystal. The trend is to go for binary programming as opposed to loop crystal switching wherever possible, because (surprise, surprise) it's cheaper. Even two ICs, lots of diodes and resistors and board space can be less than the cost of additional crystals.

Farewell to the PLL . . .

That wraps it up for the PLL so you can relax at last! We will come back to it briefly when we consider SSB operation much later but next month we get to the odds and ends that haven't conveniently fitted into the logical order so far.

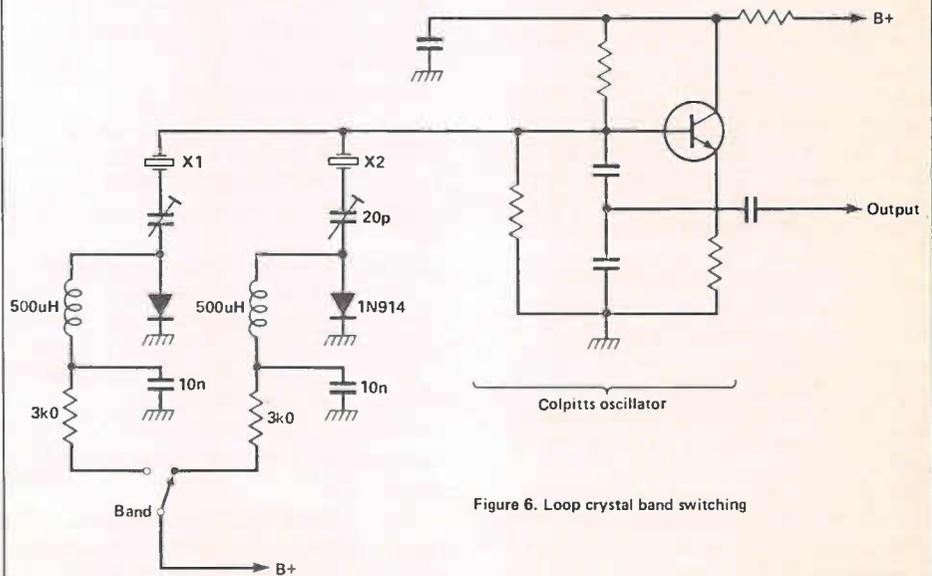


Figure 6. Loop crystal band switching

COMMUNITY SPIRIT



Roundhead rounds up a few benevolent breakers from Northwood

My travels have taken me to Northwood, Middlesex and I learned, through Tequilla Sunrise (Jan) and her husband B.J. (Les) of the excellent work being done for handicapped and blind breakers who wish to use the CB network as a means of "getting out" and making new friends. Together with Mighty Midget (Ray) the committee of the Northwood Warrior Breakers Club meet at the local community association in Carew Road, Northwood once a fortnight on a Friday evening and there is keen support from CB enthusiasts who include four blind members: G.R. (George) from Oxhey; Dark Angel (Marie) West Watford; Crazy K (Ibby) and wife Bunny Blue (Jackie) South Oxhey. There are also three members with disabilities: Mighty Mickey (Kevin) Chair Hopper (Peter) Northwood and Asti (Linda) Uxbridge who are all much indebted to the Rotary Club of Hillingdon for so generously providing three sets of rigs, power packs and twigs. This is in the best spirit of rotary ideals of service to the community.

Watching over her flock is the very active chairman Tequilla Sunrise and I have nothing but admiration for all the members of the Northwood Warrior, so named after the nearby naval station. Moving through the Northwood 20 I modded with both Black and Tan and Thunderbox at Harrow Weald.

Back in the more familiar territory of the Waveney Valley, I met up with young Gizmo (Melanie) from Brampton near Beccles and was obliged to both Sunny Jim at Metfield and Black Dog, Rumburgh for trying to ten/five for me on a particularly difficult day. I was but a few miles from home and couldn't hear Guinea Pig. But the conditions were just

right for long-distance DXing. I had copies with breakers in Rothesay on the Isale of Bute and with breakers in South Wales. You will recall that I wrote earlier about the escapades of the genial Sir Harry and Sir Gerald who delight breakers on the Channel 4. Well, everyone's agog since I introduced Sir Harry to Mary Queen of Scots (Judy), who hails from Belsize Park in London. With her soft Scottish burr, Mary Queen of Scots charmed Sir Harry to such a degree that he has promised to give up sending his man Johnners out looking for virgins. As Johnners hasn't been seen for some time it was believed he was dressing up in disguise, perhaps as a woman PC.

"I say Roundhead, old chap" Sir Harry gushed, "Have you seen Johnners? We are all in a bit of a state as Mary Queen of Scots has promised to use her influence to get me elevated to the nobility if I give up this caper. I would then be Viscount Hamilton-Smythe, with an 'e' of course. Sounds much more impressive don't you think?"

I murmured agreement.

"Mark you, Roundhead", Sir Harry continued with barely a pause for breath, "It's a bit difficult to speak to her as her head is at such an unusual angle."

At that moment a frantic voice came over the air. "Got to go quiet for a moment Siry Harry, just moving out to pass a police car." Considering he was in a muddy wheeler the police vehicle must have been stationery.

"Gracious me there are two policewomen in the car!" The surprise was audible.

"Don't just sit there", snapped Sir Harry, "Wave at them. Better still, see if one of them is Johnners in disguise . . ."

At that moment, as in all good adventure stories, the air crackled with QRM and I never did hear the end of the tale, or whether anything has been heard of Sir Harry's manservant, or whether Sir Harry has worked out the best posture to adopt to speak with Mary Queen of Scots.

Down to earth, and on a much more realistic level, I learned that a presentation was made at the Old Red House pub at Carlton Colville to Triumph (Nick) of an electric wheel-chair from his breaker friends. This hugely successful venture, initiated by Tilley Lamp, Hairy Haggis and Mr Whippy, has resulted in the formation of the CB Helping Hands club which is dedicated to raising money to help those with disabilities in the Waveney and District area. It seems to have got off with much enthusiasm and the committee is making plans to become a registered charity. For details of membership, write to Tilley Lamp (Tony), 9 Tye Close, Carlton Colville, Lowestoft.

A date for your diaries is 14th November at St James Village Hall, again in the Waveney Valley 20, with dancing to the Saturn Five Discotheque. It will be a "Tarts, Toffs and Tramps" fancy dress so there's plenty of scope. Further information from Brampton 691.

During the summer, I parked next to a fellow breaker in a Beccles car park. We got into conversation, particularly about rigs and twigs. He said his handle was Minstrel, personal Terry, from Crewe. I told him I was Roundhead. "Oh! the same handle as the chap who writes in the CB magazine. I like his stuff. Interesting, amusing and informative . . . ever come across him?" he enquired. I thought to myself what a nice, handsome, charming, courteous, intelligent breaker." Well, "I tried to sound modest," once or twice."

MONITORS AND MORE



There are numerous CB organisations throughout the land, many of which are dedicated to monitoring channel 9. Some, however, go further in their assumed duties. Monitoring Service of Great Britain (Voluntary Organisation) are one such group so we tracked down their National Establishments Officer, Ian Oliver, to get the low-down.

When did you form the organisation?

Monitoring Service of Great Britain was formed in December 1983. From the outset, we felt the need to go further than 'just being monitors'. To which we now find ourselves not only assisting fellow CB'ers but helping the whole community. We are actively involved with NATCOLCIBAR and have a very large affiliation membership from groups and clubs that share the same outlook towards CB of all modes.

Every organisation has a different way of working. How do you define the structure of yours?

Even though we are a national organisation, we are totally democratic and all of our members have the right to elect the Officers including those at national level. Each county has its own constitution based on the national one, and they hold their own bank account. This means that they, and only they, decide on how they spend their funds. Our members may receive basic radio training which shows the best way to deal with a call received over CB and, as we assist the police with many different tasks including searches for missing persons, we must maintain a very high standard. And from our affiliated friends and contacts within other monitoring groups, we are always informed of things around the country. It is our belief that everyone has something to offer, and that we should all work alongside each other to better CB.

I know you do a lot of work for charity and general 'community aid'. Which ones are you involved with?

Since our start in 1983, we have been involved both directly and indirectly with work for many charities, such as the Heart Foundation, Cancer Research, CB



4 The Blind, Variety Club and Club Appeals, at which our members are kept busy at events throughout the year. We are always interested in visiting other groups and clubs throughout the UK so that we can meet others and make new friends, but we will only do this with the agreement of those who contact us. All of our members are voluntary and unpaid, and our whole organisation relies on the donations made to it. We ourselves like to give financial support to various charities and others throughout the community. One of the ways we feel to help the new breakers and the youngsters is through education, and when possible we like to visit youth clubs. Most of the older new breakers can receive help and guidance through fellow CB'ers or clubs, but not many people are willing to take the time to help and educate those of a young age group, and yet this could be one way to solve a lot of problems we have. Although, not every young breaker sets out to cause problems or is the whole problem, we could all give help in this area. Maybe more clubs should start up a junior section. We, through these types of visits, have become more aware of the problems young breakers are faced with.

Another area of concern is the way that some clubs and groups become isolated and we try whenever possible to put them in contact with others. They may share the same interests or just wish to make social visits to each other so we do our best to help out. Like others throughout the UK we do receive information from the DTI, NATCOLCIBAR and others, which we pass on to our affiliated members and friends around the country.

Do you have much contact with the Department of Trade and Industry on CB matters?

Yes, we're in fairly constant contact. We are always invited to the DTI 'forum' meetings as a main user group and, generally, as representatives for CB users.

It's been said in the past that some monitoring groups have a bad name for getting a little over-involved with direction-finding activities. What are your feelings?

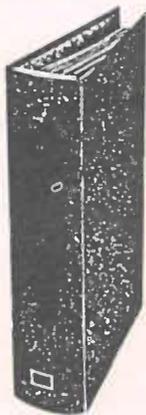
As a national monitoring organisation we are aware of the problems involved with being a monitor. But we as an organisation are not connected with or involved with DF'ing breakers in any way, shape or form. We feel that this type of action will incite some breakers who in turn make our work harder. This type of organised DF'ing should be left to the RIS. However, we do respect the rights of every CB'er in that as an individual you should and must be able to report problems to the DTI.

Finally for now, I'm sure there are many people who would like to find out a bit more about MSGB. Where can they get in touch?

We're always pleased to talk to anyone about the organisation and we would welcome anyone to get in touch, either at School House, Meadway School, Littleton Street, London SW18 3SZ or, alternatively, 60 Caister Road, Balham, London SW12 8PZ.



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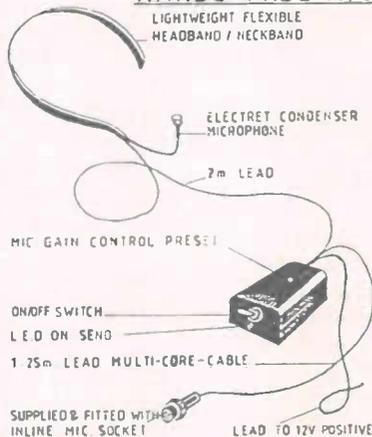
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HIGHLAND NEWS

Shepherdman introduces the famous Tartan Lad



I would not be surprised to know that many of you may have had contact with this breaker whilst DX'ing on 27MHz FM in the wee early hours of the morning. Or even to know that you have met him

(and his wife) at an Eyeball somewhere around the UK. His handle is 'Tartan Lad' and he lives just across the Scottish border near Kirkcudbright.

David (Tartan Lad) claims to be 'the luckiest' breaker on the legal frequency

and from his collection of DX cards I saw, I certainly am envious of his setup. You see, believe it or not, David runs a 100% legal setup and still manages to DX to places many of us can only dream of. Places such as Spain, Sweden, Brazil and even Australia. Yes, Australia - I have seen the cards which total some 9,000 plus from all over the world. His set up consists of a Midland home base, fed into a Thunderpole 3. With a total power output of 4 watts. It is hard to believe but his setup has been checked by many who visit him and he does run a legal station.

A few years ago he moved from his home town of Aberdeen down to a small vilage just outside Kirkcudbright to manage two large sheep farms, and even then whilst tending to the shepherd's duties of lambing he still managed to get in some DX'ing. His stories are endless and a tribute to him is the ode put together by The Shepherdess. He seems to attract breakers as soon as he picks up the mic, and they zoom in on him like bees to a honeypot. He is always cheerful and makes you feel like a long-lost relative when you meet.

When we visited his home 20, we were treated to some real Scottish hospitality by him and his wife Margaret (Tartan Lass). His house is not easy to find and we had to negotiate some very small and tight roads, taking care not to hit the kamikaze wildfowl that jump out from the bushes and hedgerows. But it was worthwhile and we were pleased to add our names to the nine hundred or so, in his visitors' book. It would be very easy to spend days, if not weeks, talking to him about CB and the stories, so we hope to go back again - soon. To him, a local copy is over a distance of between 30 and 40 miles. He is a credit to everything that is good about CB and it was an experience to meet him.

I look forward to having the chance to work him when the skip is right. So listen out for him around the middle to high channels on UK FM. Or, if you attend a lot of CB clubs and Eyeballs. Keep your eyes open for a Scotsman with a broad smile, wearing a kilt - it may be the 'Tartan Lad'. His PO Box address is: PO Box 1, Kirkcudbright, Scotland.

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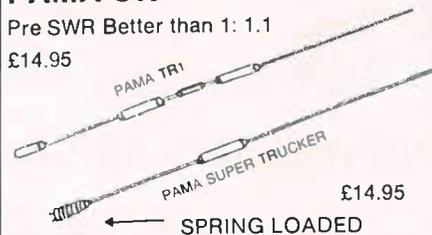
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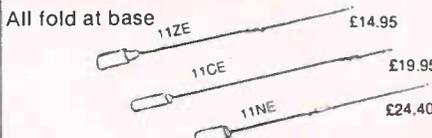


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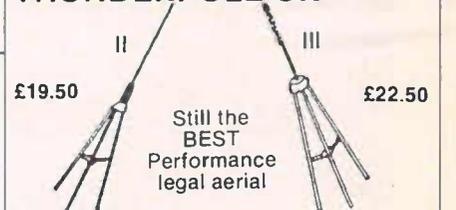
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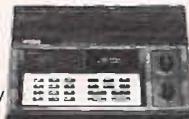


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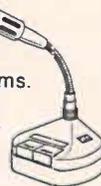
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LADY BREAKERS

MYSTERY BREAKER

Filly discovers there's a new kid in town



We've got a new breaker in town. Now, that may not sound very interesting to you, but to those of us living in the close, cosy confines of our village in the wilds of rural England, it's nothing short of a sensation. Royal weddings are nothing to it. Add to the drama the fact that *we don't know who it is* and you have all the makings of the mystery of the century, a veritable *cause celebre*. To those of us living in Little Puddlefoot, that is (as usual, the name has been changed to protect the innocent!).

You see, in a place like this everyone knows everyone else. A certain breaker by the name of The Shepherd might *think* no one knows who he is, but of course we know perfectly well it's the vicar. So when an unfamiliar voice made itself heard on the local airways the other day, we naturally spotted it at once.

The new voice had a handle, of course – The Voice. It gave us no clues at all, which is not playing the game. If the local garage mechanic has to call himself something like Oily Rag, and the vicar feels obliged to make himself known as the Shepherd, why couldn't the mysterious newcomer at least give us a hint? (It's no good criticising the obscure nature of *my* handle, either – I'm the local CB celebrity, so hang the rules. Anyway, it's been just 'Filly' for so long, I bet no one can remember the full version.)

Still, we did have one clue – someone had recently moved to the village, about the time The Voice appeared. This someone, a gentleman in his fifties or thereabouts, had bought the old manor house, situated in its own extensive grounds on the outskirts of the village, and turned out to be something of a recluse. We were instantly suspicious. The Voice was a man, albeit of indeterminate age, and his reluctance to say anything at all about himself seemed to fit in with the nature of a recluse.

One Saturday, about a week after he

arrived, we were discussing it in the post office/newsagent/general stores. Saturday mornings in the post office are the main forum of village debate; the queue for stamps steadily lengthens while Mrs Hambley the postmistress lectures her captive audience on various village topics. Now she offered it as her opinions that The Voice couldn't be the gentleman at the manor, because it stood to reason, a gentleman so unwilling to see or talk to anyone would hardly communicate with the village at large over the radio, now would he?

"But he doesn't say much about himself," said one of the local farmers dubiously. "Just discusses the weather, and that."

"Besides, if he doesn't like seeing people, CB is a good way to keep in touch – communication at a distance, if you like," I remarked, feeling the discussion could benefit from a touch of intelligent reasoning. I wasn't gossiping, note. I never gossip.

"Yes, but there's none of them TV aerial things on that big Rover of his," objects Mrs Hambley (not a breaker herself, you might guess.)

"He might have a base station," speculated Miss Corby, the grocer's wife. Miss Hambley looked blank. "A radio in his house," Miss Corby explained kindly.

"I dunno – Micky ain't never seen no aerial on his roof," said Red Top (the milkman, a bosom friend of Micky the postman). "I haven't, neither, and I been all round the place!"

"Really, I think Mr Haldane might be allowed his privacy," protested Tom Shaw, the organist/choirmaster at the parish church and another notorious non-CB user. "What does it matter, anyway, if he uses Citizens' Band or not? If you ask me, there are already more than enough radios around here, causing television interference." Dr Morris, one of our two GPs, nodded his agreement, looking disapproving.

"Personally, I think the man is an escaped master criminal, holding up where he thinks the police won't look,"

announced Miss Lassiter, an eighty-year-old spinster living in the flat above the post office. But since she always accuses single men living alone of being escaped master criminals, we took not notice. We took no notice because we were all gawping at the door where Mr Haldane himself had just entered. Miss Lassiter stared at him accusingly. The rest of us tried to look as though we hadn't spent the last fifteen minutes discussing him.

Mr Haldane nodded at us civilly, smiled at Miss Lassiter, bought a newspaper and birthday card and left. Miss Hambley decided to start selling stamps and the sheepish queue slowly dispersed.

Now, I said at the beginning that we don't know who The Voice is. That was slightly misleading – I do know who it is, having found out completely by accident. It is not, of course, poor Mr Haldane, who had been forced to retire from his job in the City through ill-health and, worried about his wife in hospital, was disinclined to socialize. It was, in fact, one of the participants in the post office discussion that Saturday.

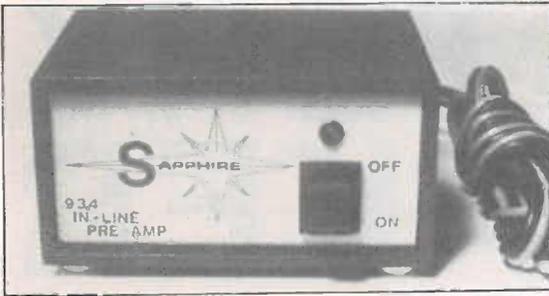
Someone who had never been heard on the airwaves before, and who we had never expected to hear, and so sounded unfamiliar. Someone who was suffering from the usual first-time nerves and so never had much to say for himself. Someone too embarrassed to say who he was, but who had, indeed, given us a clue in his choice of handle.

Yes, it turned out to be Tom Shaw, local choirmaster and long-time opponent of Citizens' Band. "If you can't beat 'em, join 'em," he said grudgingly when I tackled him. "I've found out far more about what goes on around here since I started listening in." He paused. "Seems CBers aren't the bunch of weirdos I'd always imagined," he added.

Mystery solved. Excitement over. Now all I have to do is convince old Miss Lassiter that Mr Haldane is not, in fact, a master criminal in hiding, and that no, Scotland Yard would not really be interested in his whereabouts . . .

by

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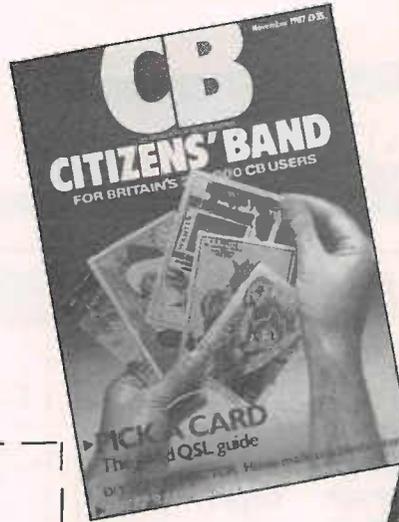
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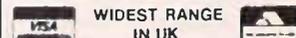
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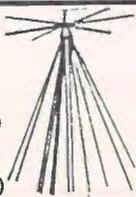
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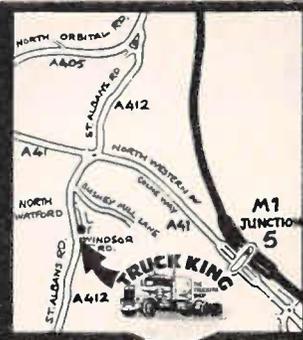
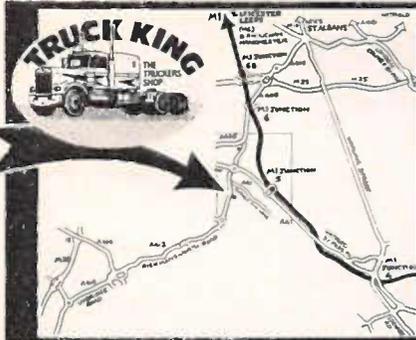
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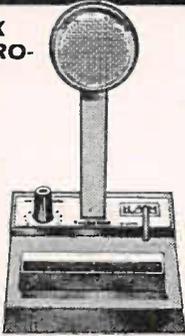
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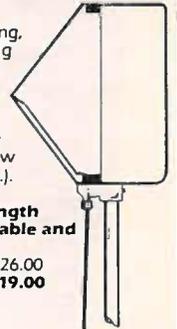


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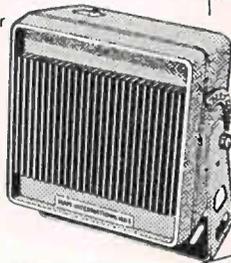
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