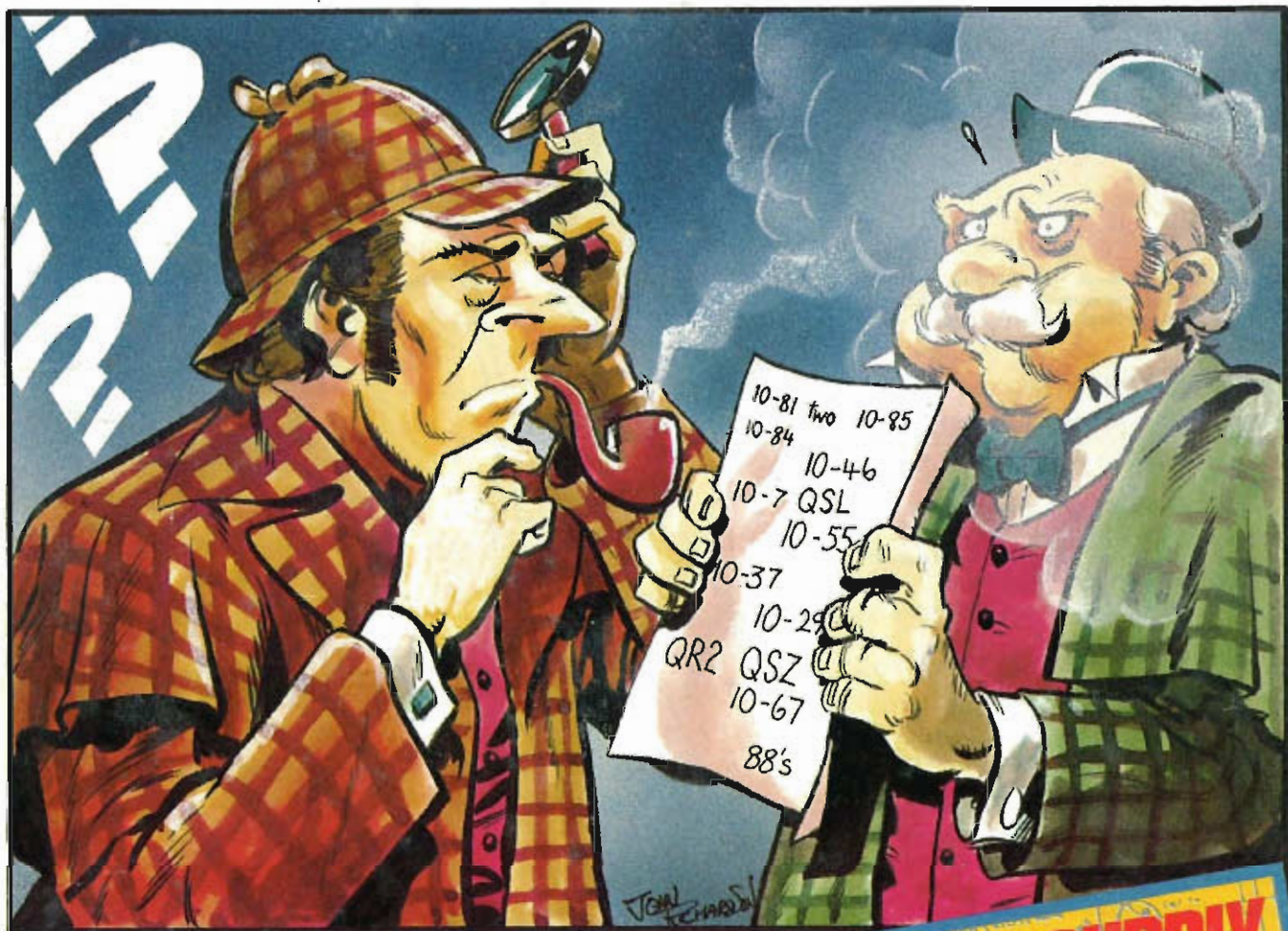


# CB

# Citizens' Band

Britain's Leading Communications Magazine

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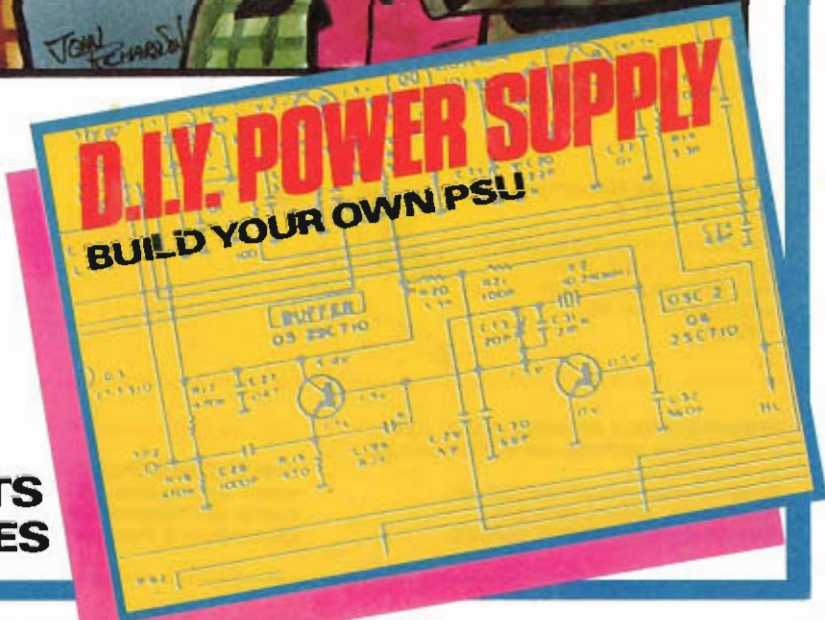


## CRACKING THE CODE

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Thunderpole Mk II & Mk III from the UK Market leader of the fastest selling high performance legal base station antennae.

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- Base loaded ribbed coil design on a single radiating element 1.5m long. Doubly encapsulated windings for maximum performance and all weather protection.
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- Base for 1 1/4" diameter. Pole mounting.

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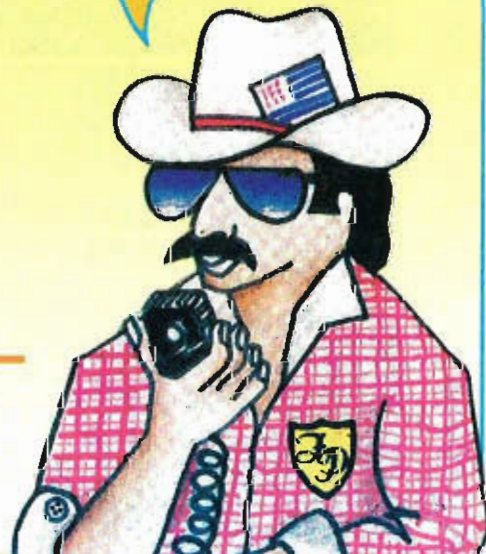
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# CB Citizens' Band

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### JANUARY 1986 VOLUME 5 NUMBER 2



#### Inside this month

Mack the Hack looks back over the past twelve months of citizens' band.

Editor ..... Eamonn Percival  
 Group Editor ..... Sue Sharp  
 Ad Manager ..... Tom Connor  
 Designer ..... Footprint  
 Managing Editor ..... Wendy Palmer  
 Editorial Director ..... Ron Moulton

Normally published on the third Friday of the month preceding cover date.

Citizens' Band Magazine A.S.P. Ltd., 1, Golden Square, London W1R 3AB, Telephone 01-437 0626. Typesetting and origination by Characters (Reading) Ltd., Reading, Berkshire. Printed by Simpson Drewett and Co. Ltd., 70 Sheen Road, Richmond Surrey. Distribution by Argus Press Sales and Distribution Ltd., 12-1B Paul Street, London EC2A 4JS.

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*Prices quoted are those prevailing at press dates and are subject to alteration due to economic conditions. You are advised to telephone prior to ordering or sending money.*



# TELECOMMS

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Measures power in three ranges up to 100W and direct reading of SWR. A must for the 934 MHz enthusiast.

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**UNIACE PRO 4000 934 MHz MASTHEAD PRE-AMPLIFIER**

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| Maxcom 30E Transceiver                      | £69.00 |
| Pulsar 27 Mini Beam                         | £8.50  |
| FM Car Radio Booster                        | £12.50 |
| AKD "Vampire" reduces bleedover             | £12.50 |
| AKD Signal Booster 27mhz Pre-amp            | £12.50 |
| CTE GP272 3.2dB Base Antenna                | £9.95  |
| Reconditioned 25 Watt Amplifiers Guaranteed | £8.50  |
| Zetagi V4 4 Way Switch                      | £37.50 |
| Harn International TW232 S Base Mic         | £6.95  |
| Standard Replacement Microphone             | £19.50 |
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| Sadelta HM30 Amplified Hand Microphone      | 39.95  |
| Eurasonic 40 Channel Transceiver            | £19.95 |
| Extension 'S' Meter For Delta 1             | £49.95 |
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| Practical CB Troubleshooting                | £1.50  |
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| CB Radio Service Manual                     | £1.50  |
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A new aluminium version of our successful 12 element loop quad. This beam is now better than ever.

- We guarantee this antenna has more gain than any similar 12 element Yagi array.
- Designed by Mike Walters one of the UK's leading microwave antenna engineers.
- Built in low loss noise feed system to a high quality 'N' socket.

**SPECIFICATIONS:**  
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Weight: 0.7 Kg Length: 53.5 ins.

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We are proud to have been involved in the development of this radio which was made for us by Cybernet, specifically for the UK market. It uses "state of the art" Technology with a sensitive receiver and many additional features. Already over 1,000 are in use around the UK. Contacts of over 200 miles range have been achieved with these sets under certain conditions.

- Sensitive RX (0.25 µV for 12 db SINAD).
- 16 memories available.
- Auto/Manual scan and search facility.
- External 'S' meter socket.

**£355**  
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40 Channel Hi-Spec hand held. This is the Rolls as standard, and rugged construction uses handy rubber duck antenna.

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High performance base antenna with a full 1/2 wave radiator handles up to 1 kw of power with a terrific 7 dB's of gain. Provides optimum sensitivity on receive. Our special price

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A super new, ultra-low noise pre-amp which is fully weatherproof and may be mounted in line, at the masthead, next to the set, or in a mobile installation. Guaranteed to give a staggering increase in received range - you will hear stations that were not audible before!

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This superb receiver covers 150 KHz to 30 MHz 76 MHz to 108 MHz.

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Manufactured by Uniden Corp. Japan.

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A new compact mobile amplifier giving up to 80 watt RF. output.

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This compact mobile power amp is one of our most popular models, giving 80W AM/FM and 160 W SSB. Freq. 26 - 30 MHz

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One of the finest base stations made for the UK. Each set is supplied with a full specification certificate from our service dept after individual pre-delivery checks.

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Solid state mains operated power amp of high quality for all HF Ham bands. Freq. 3-30 MHz. Power 120W AM/FM 250W SSB.

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Definitely the last word in base power microphones. This new microphone incorporates a unique processing circuit to give 'crisp' and 'punchy' audio that will cut through the hash and make your signal stand out in the crowd!

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**£39.95**

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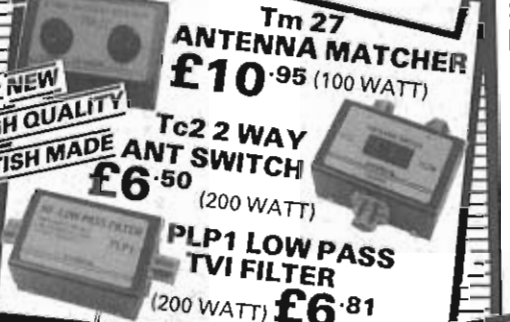


**Tm 27 ANTENNA MATCHER**  
**£10.95** (100 WATT)

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NEW HIGH QUALITY BRITISH MADE



**SADELTA ECHO MASTER PLUS Base Microphone**

An exciting new base microphone from Sadelta offering many new features. Together with that mellow but powerful echo Sadelta are famous for, they now offer a dual tone Roger Beep, adjustable reverb and echo, improved switching and internal 9 volt battery supply. A microphone which is guaranteed to make your rig sound like a million dollars.

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**NEW HIGH GAIN ANTENNAS FROM C.T.E.**

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3/4 wave Sigma II type base ant. 6.5 dB gain. Length 9.1 mtrs. The highest gain vertical ant. on the market.  
**£49.95** (Plus £6 delivery.)



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5/8 wave hi-gain base ant. 5.3 dB gain length 6.8 mtrs. High gain from a more modest length ant.  
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**MINI GP127 LOFT ANTENNA**  
An extremely efficient ant. Complete with loaded ground planes - suitable as a loft or outdoor mounted antenna.  
**£19.95** (Plus £3.00 delivery)



**NEW FROM C.T.E.**


Two new ultra - high quality mobile power amplifiers for all HF amateur bands. Switchable: Class AB linear Class C power amplifier AM/FM/SSB/CW

Modes: Remote control facility. Broad Band 10 - 30 Mhz.

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80/160 Watts  
**£48**

**MODEL 757**  
100/300 Watts  
**£112**

Remote control unit for either unit. **£9.95**



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Dear Breaker,

It would be impossible to do justice to our entire range of products in just two pages. Our 1985 27MHz catalogue does it much better. Packed full of pictures and technical information it is a must for any serious enthusiast. Why not send off £1 for your copy today. Also during this month we are including a full colour catalogue from Zetagi or CTE absolutely free!



Thousands of breakers have already discovered the speed and efficiency of our mail order team. Helen, Shirley and John pride themselves in giving unparalleled service - no 28 days waiting here, every order is dealt with SAME DAY - and quite rightly so!

With the backing of one of the most extensively equipped service departments in the UK you can purchase from us with the assurance that problems should they arise will be dealt with speedily by professionals. Incidentally they can offer full rig checks and repairs at very reasonable rates.

We've become the biggest by being the best with over 200 approved dealers around the UK - so why not write to us today and get on the Telecomms Wavelength too?

Yours sincerely

*Mike Devereux*  
MANAGING DIRECTOR

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**NEWS  
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# UPDATE

## Editorial

Well, although it's only just November as I write this and it's probably just late December as you read it, I still feel honour-bound to wish you a happy New Year.

1985 saw a few new introductions to the CB scene. The Commtel 934 rig arrived, as did the Uniace, along with various 934MHz accessories. The amazing Radiotechnic RT852 stopped us in our tracks towards the latter half of the year. A new company, Marksman Products, brought us the first of the Mister Stick range of antennas, a range a lot of people have shown a lot of interest in. All in all, a healthy outlook for citizens' band in general.

If you're not too busy searching the skies for Halley's Comet (don't dilly, Halley's on the way!), we hope you'll find plenty of interest in this month's issue. We take a look at the various codes used for CB and amateur radio, what they mean and how they're used. For any Christmas newcomers to the hobby, or for those who might need a refresher course, we detail the basic facts and figures about citizens' band

radio. Elsewhere, Keith Townsend explains how he built his own power supply unit — and if *he* can do it... (just joking, Keith!)

A couple of months ago, we carried a news story about a Radio Investigation Officer who, while attempting to track down the source of illicit radio transmissions, was dragged from his vehicle by a group of youngsters and beaten unconscious. We condemned that act then — as we do now — but it set our minds thinking. Just who are these masked men who allegedly creep up in the middle of the night and rip off your lovely AM/SSB rigs? Well, obviously, we cannot unmask them, because of the nature of their job, but Keith Townsend managed to secure an interview with one of them, and we think you will find his answers illuminating. The bad news? Well, because of production schedules, you will have to wait until next month to read the feature, but we guarantee it will be worth the wait.

Well, we're out of space again for this month so, until the next issue, happy reading.

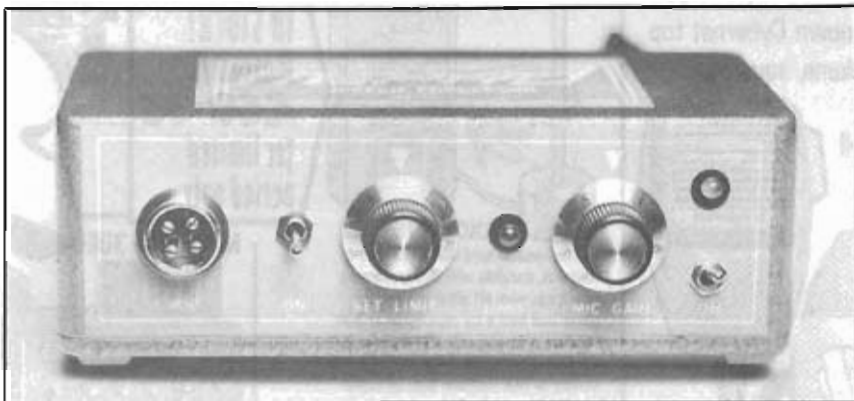
**Eamonn Percival**

## Exclusive Maxcom

Sharman's Wholesale, importers and distributors of a wide range of CB equipment to the trade, recently announced that they are now the sole distributors for the Maxcom 7E handheld transceiver. These sets, which

have been in short supply for the past few months, retail at £69.95 and come complete with retractable antenna and magmount. Trade enquiries should be directed to Sharman's Wholesale, 3 Bury New Road, Manchester, telephone 061-834 9571.





### Flying the Flag

A new South London company have introduced a range of all-British CB accessories. Repro Electronics Systems Ltd, of 251 a, High Street, Eltham, SE9,

produce, amongst the range, a speech processor (£34.50), a voltage dropper (£32) and a mike switcher box (£9.75). We hope to have a closer look at them in the next issue.

### Age Concern CB Lifelines

Age Concern in Cleckheaton are in the process of establishing a CB network for the elderly, housebound, blind or otherwise disabled, and need any spare CB equipment, working or otherwise.

The scheme will be based in Cleckheaton and it is hoped that anyone over the age of 60 living in the area who wishes to take part in the scheme will be provided with all the necessary equipment on a long-term basis, free of charge (subject to availability of funds).

Once the equipment has been installed in a house, that person's name will be entered on a register. They will receive a call once or twice a day from the base station at Cleckheaton to check that they

are OK. The rest of the time, they will be free to use the CBs for their own entertainment.

While Age Concern will do their best to install all the equipment and co-ordinate the scheme, they do need help. If you have any spare rigs, power packs, antennae or even coaxial cable, they would be most grateful. Similarly, if any individuals or clubs would like to raise funds or send donations to purchase equipment, they should contact the Chief Officer, Mrs Cathie Moore, at Age Concern, 3/5 Bradford Road, Cleckheaton, West Yorkshire. Also any readers who are over 60 and already use a CB but feel they would benefit from having their name on the Age Concern register, should contact the organisation at the address above.

### Attack on Natcolcibar

Natcolcibar will not survive much longer, according to a Kent-based CB monitoring organisation which is threatening to pull out, writes "Scoop".

Kent Coast Monitors, who operate from Kingsdown, near Deal, have made a blistering attack on the national council, saying it isn't strong enough or representative enough. The criticism follows the resignations of David Harding and Ken Forward — both KCM officials — from top jobs in the national council.

Ken had served as technical officer and David was administrative secretary. New officers were elected at the council's meeting at Macclesfield.

Kent Coast Monitors is one of the longest-running emergency channel monitoring groups in the country, and covers much of the country, 24 hours a days.

"We had hoped we could have brought KCM's sobering influence to bear on the council," said David. "But it is not held in esteem by the Department of Trade and Industry, the CB press, or the majority of breakers."

Council meetings were said to have dissolved into "aimless waffling and shouting matches".

KCM's delegate to the Macclesfield meeting said the highlight of the day was the train journey home!

"We think it will fold up in the not-distant future anyway. They haven't sufficient strength."

Membership of the council costs £20 a year and travelling to the meetings, held in various parts of the country, is also expensive. KCM's subscription runs out next March.

"We will not renew it unless a miracle happens," said David.

The Kent group produced a document aimed at improving CB throughout the country. Called *Blueprint for CB*, it was submitted to the council for discussion. But it has been deferred for the past 18 months.

"We will probably now re-draft it and submit it direct to the DTI," commented David.

### Talking Rigs for the Blind

In the November issue of this magazine, we made an appeal on behalf of the Royal National Institute for the Blind for talking rigs. A company called Coastal CB and Trophy got in touch with the Institute informing them that they had a few in stock and, if the demand was there, they would possibly be able to supply lots more. Our thanks, on behalf of the Institute, to Coastal CB.

### New from SSE

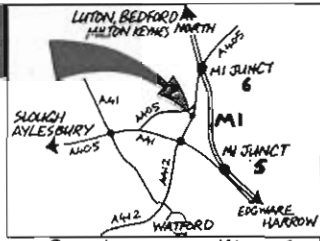
Two of Solid State Electronics' products now have a new look to them. Their two-way switchable mic extension unit and their antenna signal splitter have both been repackaged. The director of the company, James Finch, tells us

that the signal splitter has been improved upon from the first version and that the unit should not be compared with units from Italy and the Far East as the SSE model is the only unit with which you can transmit on 27MHz and receive on car radio *simultaneously*.



# TRUCK KING & CB STORE

U.K.'S No. 1 TRUCK  
 AS ONE OF THE UK'S OLDEST  
 ESTABLISHED CB SPECIALISTS (TRADING SINCE  
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 AND ACCESSORIES IN THE COUNTRY  
**ALL MAIL ORDER ITEMS ARE  
 CHECKED & TESTED BEFORE  
 DESPATCH AND FULLY GUARANTEED.**



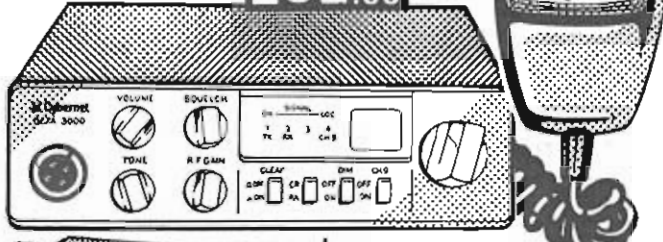
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We are open Monday to Saturday 9 to 6.00. We are 1 min. Junc 6 M1. Take A405 to Watford, left at Horseshoes crossroads and we're 100 yards on the right - no parking problems or yellow lines.

**All Prices quoted Include Post & Packing.**

**BETA 3000 - BACK IN STOCK** Back in stock again, our special purchase this month is the well-known Cybernet top of the range unit with a host of features. Volume, squelch, tone control, RF gain, speech booster, PA facility, LED dimmer and Channel 9. A well proven, top quality unit.

**£82.00**



**NOW BACK IN STOCK!**  
**Maxcom 7E**  
**£69.95**  
 for limited period only.



**MAXCOM 7E**  
 A really versatile hand held 40 channel 4 watt unit, complete with its own carrying case it can work off either its own 12v power load from a car cigar lighter or from standard or rechargeable 1.5v batteries (not supplied). Its telescopic antenna detaches to fit onto its own magnetic base for mobile use. Ideal for any form of outdoor activities, emergency mobile use and can be quickly and easily swapped between vehicles.



**MAXCOM 30E**  
**£69.95**  
 This top of the range radio features crystal filtering, RF & mike gain, PA facility, DX switch, tone switch and high SWR indicator, (this radio is featured in 'Citizens Band' reference section). Excellent value and performance. **Maxcom 30E**  
 40Ch £69.95 160Ch £118.00

**UNIACE 100**  
**£69.00**  
 Generally accepted as being the best mobile radio for UK CB frequencies. The controls whilst basic provide all that is absolutely necessary for mobile use. The excellent rejection quality ensures minimal bleedover and de-sense. Features volume, squelch, power attenuator and PA facility. Highly recommended for those who must have the best.



**UNIACE 200**  
**£89.00**  
 Specifications as for the Uniace 100 but this unit has in addition variable mike and RF gain, bass/treble tone control and a dimmer facility. The Uniace brand is unsurpassed for quality and performance.  
**Uniace 200**  
 40Ch £89.95 160Ch £138.00



**UNIACE 300 BASE STATION**  
**£169.00**  
 Without a doubt the finest Base Station made for the UK market it features Volume, Squelch, Tone Control, PA facility 240 or 13.8 volt power feed, variable power and mike gain, but the crunch is in its excellent circuitry and filtering which kills bleedover and cross-mod without being deaf.  
**40Ch £189.00 160Ch £217.00**



**ONE HANDER AUDIOLINE 342**  
**£66.00**  
 The greatest security CB ever - you just unplug it and take it with you! Slim calculator-style hand unit has all the control features - LED Display, Up/Down Scan, Volume, Squelch, Hi-Low Power, Channel Lock-on Switch, Tone Control and Internal Speaker plus of course the usual excellent Uniden Circuitry which gives crisp, clear copies. The compact power box which feeds the hand unit stays away out of sight under your seat or in the glove or dash. Beat the car thieves and still enjoy excellent CB performance.  
**Audioline 342**  
 40Ch £66.00 160Ch £126.00



**MAXCOM 20E**  
**£45**  
 Just back in stock this compact unit is the smallest available for the UK market, 4 1/2" wide 1 1/2" high and just 6" deep. Ideal where space is limited. Features volume, squelch, Hi-Low power and Ch. 9.



**HARVARD H-402**  
**£69.95**  
 40 Channel hand held with 4 or 0.4 watt output, telescopic antenna, volume, squelch, LED Channel display, built in mike, external power and antenna sockets and Nicad charger facility. 8x1.5 volt or 10x1.2 Nicads power supply (not included).



**WALKIE-TALKIE ACCESSORIES**

**RUBBER DUCK**  
**£7.50**  
 SCREW ON TYPE FITS ALBA, DNTY, HARVARD, MAXCOM, REALISTIC ETC.



**CHARGER**  
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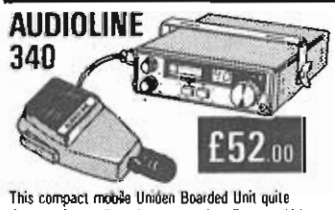


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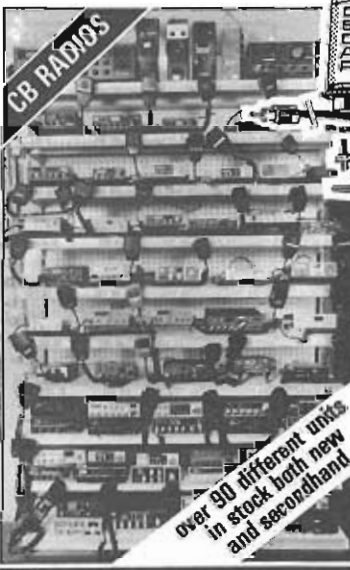


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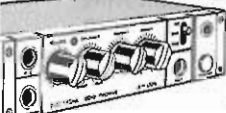


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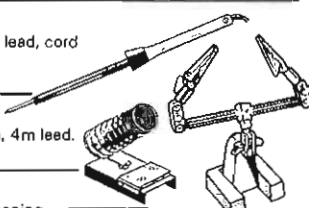
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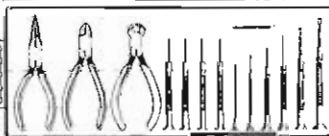
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#### HIGHLIGHTS:

- How to diagnose and repair the most common antenna/SWR problems;
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# QUESTIONS & ANSWERS • QUESTIONS & ANSWERS • QUESTIONS & ANSWERS • QUESTIONS & ANSWERS • QUESTIONS & ANSWERS

## Smart Alec tackles some more readers' problems

### Side by Side

*T. K. Pritchard, who also goes by the name of "Nightowl" and hails from Blackburn, Lancs, is also worried about the neighbours...*

**Q** I have been a breaker since very soon after CB first became legal. About eighteen months ago my next door neighbour became interested and as soon as he bought his first rig my problems started. We discovered that even if we were working at opposite ends of the band neither of us could hear any incoming signals, no matter what the S-meter reading, so long as the other was transmitting. Since we had been friends for many years we soon reached an agreement whereby we either did not operate if the other was already on the air, or we joined in the same conversation, in order that we did not transmit simultaneously.

Whilst I have been content with 27MHz, my neighbour has decided to play in the big league and has passed the radio amateur's exam and will shortly be setting up his new gear. Since power levels are far higher in amateur radio and the use of SSB is allowed, along with some very hefty antennae, I would like to know what are likely to be the effects on my CB signals, both received and transmitted?

**A** *Nightowl*, your problems may all be over. On the other hand, they may just be beginning. If your friend has passed the exam but not the Post Office Morse test he will hold a Class "B" licence, allowing him the use of frequencies above 100MHz which, in practice, means 144 to 146MHz and 430 to 440MHz, both of which are so far removed from your signals at 27MHz that you will not even know when he is on air unless he is using SSB, when some of the components within your CB rig may directly pick up an unintelligible signal. If, however, he has passed the Morse test, then the Class "A" licence will allow him the use of an additional wide variety of frequency bands between 1 and 30MHz, many

of which could cause you problems.

The 10 metre band, which stretches from 28 to 30MHz, is so close to CB frequencies that you would find it impossible to hear anything if he were using the band, though he is equally likely to have serious problems from even your puny 4 watts. Power levels are, as you say, very much higher within the amateur bands and with a peak envelope power of 400 watts on SSB he may even disrupt your reception when using the 14 or 21MHz bands. The use of FM on HF amateur radio is far less common than SSB but even FM on a close frequency band with a high power output will "flatten" your receiver.

There is little likelihood of your transmissions being affected, other than the slight possibility of some signal reflection if the antennae are sited close together.

Perhaps your best remedy lies in the old adage, "If you can't beat 'em, join 'em". The RAE is by no means as daunting as many would-be amateurs believe and an amateur licence opens up a whole new vista of communications. Just so long as you do not entirely desert CB.

### Video Interference

*Blossom, Mrs D Freter, from Walsall, Staffs, has found a great way to annoy the neighbours...*

**Q** I am getting complaints from my next door neighbour, who tells me that my CB transmissions are interfering with his video recorder. Because the TV feeder cable goes first into the video recorder and then to the TV he regularly suffers TVI as well. Both he and his TV dealer have had several unsuccessful goes at curing the problem and the RIS have told him that although they will offer advice to the dealer, they require a fee of £21 in advance before they will offer direct assistance.

The interference occurs even on low power, despite the fact that my CB antenna is low to the ground, and I have tried moving the antennae further from the house but this also proved unsuccessful. Removing the video machine from the TV feeder line seems to cure the problem but my neighbour naturally wishes to use his video recorder, regardless of whether I am transmitting

or not. Inserting a strong filter into the input side of the recorder appears to cure the problem but significantly degrades the picture quality. Please have you any advice?

**A** *Interference to video recorders is a very common problem and one which is not at all easy to cure. Unfortunately, the filter which your neighbour has already installed seems to be attenuating the wanted signal, as well as the RF from your antenna and I feel inclined to suggest that the use of a less meaty filter might prove to be an acceptable compromise, in that it should be sufficient to keep your signals out but still allow sufficient TV signal through.*

TV aerial and feeder systems are designed to plug direct into the TV set. Inserting a video recorder into the line can create a significant impedance mismatch and this is the root cause of the problem. From your comments I feel sure that your signal is entering via the aerial and not by means of direct breakthrough, so it is unlikely that shielding the video machine will have the desired effect, though taking your antenna even further away from your neighbour's house could be the ultimate answer.

### Confusion Reigns Supreme

*Tim Flack, a newcomer to CB, is concerned about the future...*

**Q** I have only been on the air for a couple of months and have a Harrier CB for mobile working and a Murphy Home Base. Together with aerials, echo mike and a few other accessories this equipment represents a considerable investment, yet now I hear that I may have to throw both rigs away before long, as it would seem that neither can be easily converted to work on the new frequencies which the Government intends to introduce. Please can you tell me why it is necessary to change the frequencies in the first place and what I can do to minimise the expense which such a change will incur?

**A** *Whilst you are correct about the Government's intention to introduce new operating frequencies for CB, these are unlikely to come into force for at least eighteen months and should not involve you in any involuntary*

expense, since there are no plans to discontinue the use of existing frequencies at the time of introduction and the decision on whether to retain your existing rigs will, for the time being, remain yours.

The reason for the intended changes is that Britain has agreed to abide by the recommendations of the European Postal and Telecommunication Conference (CEPT), which, if adopted by all the member countries, will create a common European CB system, thus eliminating the current problems which can occur when travelling abroad with a rig. We do not, as yet, have any information about the likelihood of any common, or reciprocal form of licensing, though we hope that some such arrangement might be possible.

Since it would seem that no decision has yet been reached as regards the closure of the existing channels, it seems that, once the new frequencies come into use, we will have the choice or either, or both sets of frequencies, at least for the foreseeable future.

### It's Quicker by Air

John Affen, Unit 509, from South Shields, is puzzled by an exceptional contact...

**Q** I have a 934MHz rig which I run into a four-element beam. I have been very pleased with the set-up and, when conditions are right, have achieved some great DX. I understand that high atmospheric pressure can significantly affect my workable range but I have discovered one phenomenon which I



Tim Flack will be able to use his Harrier for the next two years at least (see third letter).

simply cannot understand.

Whenever I point my beam in a south easterly direction I find that for short periods I can copy stations up to a hundred miles away. These contacts never last for long, two or three minutes being the maximum, after which conditions appear to return to normal. They then seem to rise and fall in an irregular pattern, allowing spasmodic contact with many stations whom I normally cannot work. Please can you offer any explanation?

**A** I cannot be absolutely certain about this one, John, since there are so many factors which can affect pro-

pagation, such as signals being reflected from large objects, such as tower blocks, cooling towers and other fixed structures, as well as changes in atmospheric conditions. For instance, a misty morning can often mean some unusual DX, as your radiated signal becomes trapped in the "duct" between two layers of air at different temperatures. It must then travel along this corridor in search of an escape route and the results can be most rewarding.

The irregularity of the lift which you describe, together with the fact that it is always short-lived and always in the same direction, suggests the possibility that you are beaming in the direction of a busy airfield. If this is so, then you are probably experiencing reflection of signals from the moving aircraft as they enter and leave the circuit. Are your contacts stable, or do you notice a degree of "flutter" on receive? If you are getting flutter, then this would serve as another indication that your signals are being reflected by a moving object.

Problems should be sent to:  
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# Mack chat

Mack the Hack looks  
back at the past year's  
CB happenings



**Y**et another year gone and a brief look back to the past year of the CB happenings. I thought the 27 mode was getting better with the 'wallies' of the band appearing to be on the decline, but as the year progressed the 'wallies' must have tired of or broken their Christmas toys and returned to our CB to annoy and aggravate the more serious users. Once more it was, at times, almost impossible to find a clear bit of the frequency for a waffle, and if a clear bit was found it wasn't long before the 'wallies' started their tricks.

As you are aware, very little new 27Mhz equipment appeared on the market, still more dealers packed up shop and it seems people are beginning to have problems even finding a rig doctor to repair their equipment. What a different story on the 934 scene. Although three new rigs appeared on the market, only one seems to have made any impression with the users, the Cybernet Delta One. What a superb rig.

Quite a few accessories found their way onto the 934 dealers' shelves such as preamps and antenna switches, and plenty of antennas were made available at respectable prices. Many frustrated 27 users came over to the 934 looking for and finding a piece of the radio spectrum that is unabused and capable of supporting a two, three or more-way intelligent communication.

As I have mentioned before, some of the users of the 934 suffered interference from the cellular mobile telephone system, but most found that they could nearly always find a clear spot for a waffle with their friends. Mind you, listening to some of the telephone conversations can be very enlightening and entertaining. It seems that the users of this phone system do not realise that they can be overheard.

Many stories are circulating of incidents that have resulted from conversations that have been heard on the phone. A recent one is that a 934 user was listening to this chap on the phone who was trying to arrange a cash loan for a dead-cert, jet-powered

greyhound that could not possibly lose. The amount of cash involved for the bet was in four figures. The 934 listener was convinced that he must have a piece of this action and put a few quid on at his local betting shop. Guess what. Yep, that's right, the dog is still running! The 934 listener only lost a few quid, but will we ever know what happened to the chap on the phone. Did he get his loan and, if so, is he still paying it back?

Another story that did the rounds was that another 934 telephone listener heard of a rare collectable motorbike that was for sale by a third party. Details were being passed over, price and a telephone number were given. The interested party said he would contact the seller within a few days. The 934 listener, who was also interested in such transport, called the number and ended up purchasing the bike. The seller was puzzled as to how the 934 user had heard of the sale, but a few porky pies (lies) were told.

## Entertaining

As for the telephone love dramas that one can hear over this mode, remembering that this is a family magazine, at times it can be more entertaining than any radio or TV story, as what one is listening to is real life. I now realise why people spend hundreds of pounds for radio scanners to 'spy' on other people's problems, fantasies, or just family gossip. They are not nosey, just looking for true life entertainment. Listening to these telephone conversations through a 934 rig has one setback at times. One could miss parts of the conversation (usually the best bits) because if the vehicle is mobile, as it moves from one area to another the signals are swapped to a different repeater frequency and can't always be found on the 934 rig. She at home says that I should buy a scanner.

The workings of the DTI continue to baffle me. If you read Pegleg's letter in the November issue of this mag you will see that the DTI are not happy if licenced amateur stations work un-

licenced ones. It's not complying with the licencing conditions. Yet I can talk to anyone on 27Mhz or 934 CB (so can my family), I can talk to another radio amateur on CB and then switch on my 2 metre box and talk to them on that if I wish. My family can talk to them on CB but not on the 2 metre box, not even if I hold the mike. Being only a 'B' licence holder, I can walk around the corner to one of my many mates who is an 'A' licensee and use his high frequency equipment and, let's say I use 28Mhz, I can converse to another licenced station. I could use this same HF equipment in my own home if an 'A' licence holder accompanied me. I, and anyone else, can use 27Mhz but not 28Mhz. Now it becomes even more confusing. If I want to use 28Mhz or any other HF from my home unaccompanied, I would have to pass the morse code test. Nothing else, as I have already satisfied the authorities that I am confident as a radio operator by passing the RAE. I know all about interference, its cause and its cures, correct radio operating procedures, radio propagation, gardening, plumbing, and electrical circuits. Yet if I pass the morse test, I can then use the HF bands but I need never use morse again.

If I did, I would do what many others do and that is to purchase a computer or an add-on for my present computer to send and receive the dits and dahs and all would be revealed on the visual display unit's screen. Over the last few weeks, I have asked some of the 'A' licence holders that I know "Can you still read CW (carrier wave, morse code) at 12 words a minute? (test speed)". I tested those who said they could and even they had to admit that they would have failed the test. Now, no-one can tell me why one needs the morse to pass the 'A' licence test. If any reply "It's so you can pick up emergency calls or something", well I also have a CW reader/sender for my computer. Oh, by the way, with an extension to my 'B' licence that I can obtain for the asking, I can use morse code on my 2 metre box to any other 'A' or 'B' licenced station. You think you are confused by the workings of the DTI? Me, I'm baffled.

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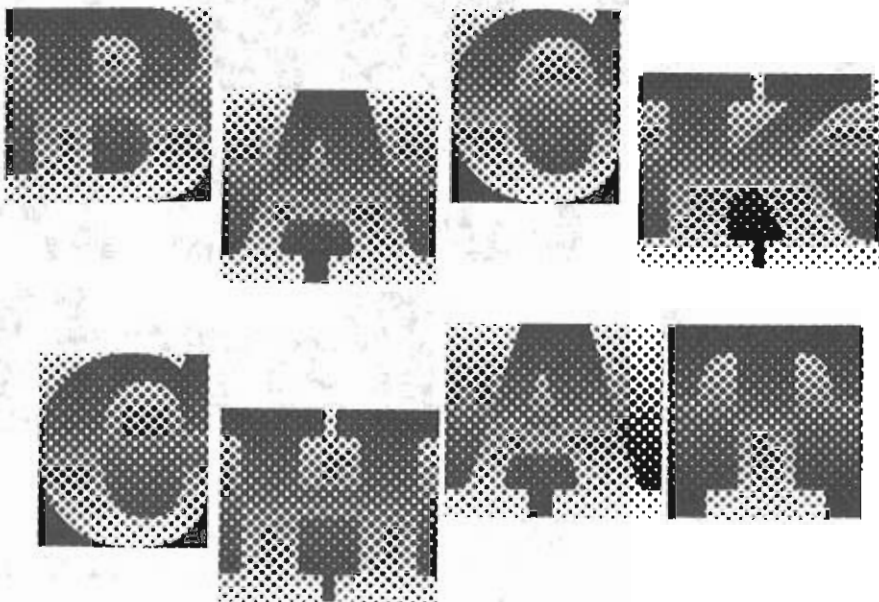
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## More thoughts and opinions from readers

### An Opposite View

*Pegleg, a few issues ago, commented on the D.T.I.'s actions concerning Tom McClean on Rockall. Mike Bender puts another view, that also touches on Tim's letter on SSB...*

I am extremely surprised to read the letter from Pegleg in Perthshire regarding the action of the D.T.I. against Mr. Tom McClean and his illegal activities on Rockall and I think certain facts should have been checked into before putting pen to paper.

In the first place, Mr. McClean was not present on Rockall in order to keep it as a British possession. Rockall has not been invaded or taken over by some foreign power and even if it had, it would not have been his responsibility to rescue it. The fact that he was there for charity purposes does have some merit, but to blatantly break the law by transmitting on the amateur bands without a licence is just as inexcusable as breaking the law for any other reason.

The other point is that over 50,000 amateur licence holders in this country alone have studied for and passed the RAE and pay an annual licence fee to the authorities in order to use the internationally agreed amateur bands. Most importantly, every amateur licence holder is breaking the terms of his licence and is in serious danger of losing that licence should he or she work an unlicensed station, even if this is done innocently. Why should Mr. McClean put legitimate users of the band in this position?

The authorities would have turned a blind eye had there been an emergency situation. In this case there was none. Mr. McClean clearly broke the law. What right does he have to do this? The authorities have a right to uphold the law and were indeed acting properly on this occasion and exactly the same situation would arise if the offending transmitter were located in Perthshire

or anywhere else in the U.K.

Incidentally, there are plenty of C.B. users at the present time being convicted for using their equipment without a licence, and the D.T.I. have made it clear that they intend to pursue the policy of licence enforcement — a policy which any legitimate user of any band surely must endorse!

### Give Us Our Due

*Moody Blue and Sierra Lima 17 of Kent write an angry letter...*

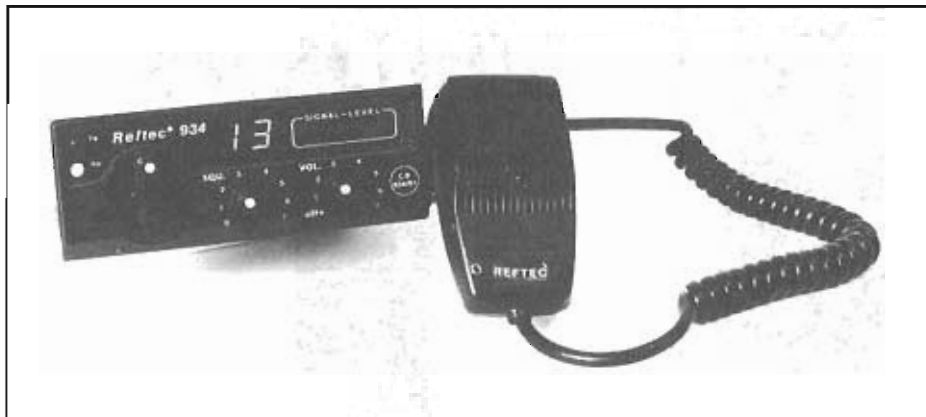
I am writing in response to the letter from Keith Wesley CB (October 1985) who criticises illegal breakers. By his own admission, Mr Wesley has only been breaking for a short time. People like him would do well to remember that it was due to pressure by illegal breakers that his paltry 40 FM channels were legalised in the first place.

I have been operating the 27MHz AM, FM and SSB for the past six years and was busted once prior to September 1981 for doing so. A lot of people took a lot of chances and lost a lot of money so that Mr Wesley and his like could have the privilege to work the 27MHz band. People like him would do well not to forget their roots quite so quickly.



Pegleg backs amateur licence holders

Letters should be addressed to: Back Chat, Citizens' Band, 1 Golden Square, London W1R 3AB



Have the wallies invaded 934MHz (see letter)?

## CB in Poland

*Andrew 'Hotel Hotel' of Gloucestershire writes with news of Polish CB . . .*

I feel I had to put pen to paper concerning the query by Echo Foxtrot of Luton (Q & A, October). I can assure him that CB is alive and well in Poland. I — and a couple of colleagues — have copied five Polish breakers so far, with QSLs to boot!

It seems most equipment is home-built from scratch. The one I copied had a 200-channel FM/AM/SSB operating 1 watt maximum! It was mostly made from broken portable radios etc.

I copied one of the stations last month (22nd September 21.10 GMT, channel 35, UK FM). I did cheat a little as I speak fluent Polish.

## Back to Business

*Roderick Buck, of CTVR Communication, Grantham, comments on the pros and cons of CB for business . . .*

Well, it didn't take long, did it? The idiots are out in force on 934.

Never mind about those suffering from the well-known "frozen trigger finger" syndrome; you know it, the guy who rambles on for ten minutes, saying absolutely nothing before letting go of the mike. My complaints about the band is as follows: We have a number of customers, mostly small businesses who have bought 934 equipment to use for passing messages from base to mobile or mobile to mobile. Typically, they might be a one-or-two man taxi outfit.

They complain to us that whenever they try to use the equipment (please note I say *use*, not "play with") they are constantly interrupted with many different calls of "QSK", or other requests to join in. When they *politely* tell the interrupter that they haven't got time to indulge in general chit-chat, but only wish to pass essential messages to each other, they are met with barrages of abuse, mike keying, etc.

Now, I can't understand the QSK callers, since they must be able to hear the content of the messages, which is

obviously business talk. That being so, a little imagination would surely tell them that the user doesn't have time or inclination to engage them in conversation.

Also, I'm puzzled as to why so many CB enthusiasts seem to think that it's illegal to use CB for business purposes. I've been told time and again over the air that the CB licence doesn't allow it.

When I ask them, (again, politely) to fetch their licence and read me the clause concerned, they seem unable to do so, and fade out; or, more often, commence another barrage of abuse.

For the information of your readers, can I clarify the situation? *Anybody is allowed to use CB for business purposes.* The only bar is clause 12 of the licence; to wit: "The apparatus shall not be used for the purpose of advertising goods or services of any kind".

Provided the user follows the Code of Practice, and does not do any of the inconsiderate things, such as using the breaker or emergency channels, he is perfectly legal using his sets for business purposes. Those breakers who persist in trying to interrupt or key over such legal users themselves break the code of practice.

We have had to resort to installing CTCSS in our customers' sets, to defeat the intruders. (CTCSS is a low-frequency hum which is broadcast along with the signal, and the squelch is re-wired so that only signals with this special hum will open it. Therefore, anyone without this "tone squelch" who transmits on the same channel will not be heard by the user).

So, if you hear voices on the radio accompanied by a humming noise, and they ignore you when you try to join in, don't get mad. They're not being ignorant, *they can't hear you.*

My main point is, though; surely there's enough room on 934 that this sort of behaviour isn't necessary? I thought we left that sort of idiot behind on 27!

On the occasions this sort of thing has happened in my presence, I have checked the channels, and only one was in use — the one my customers were using. The other 19 were empty! Obviously, what's happening is that hobby users are leaving their sets on "scan", and when a signal (any signal)

is heard, there they are, eager to butt in.

It's obvious that my one business user was not operating to the detriment of hobby users — not with 19 other empty channels, he wasn't. Also, business contacts tend to last about 10 seconds — not the 10 minutes or more of a hobby contact. The reason being that they are passing essential information, not passing the time. Which of the two users can then be honestly accused of hogging the channel to the detriment of other users?

In case anyone is wondering why 934 should be used for business instead of licenced PMR sets, there are several reasons: (By the way, we supply both types of radio, so have no axe to grind.)

Firstly, and most important, most business users of licenced radio are *not* allowed to have mobile-to-mobile contact. Their sets must use split channels — one channel for the base to talk out to the cars, and another channel for the cars to talk back to base. Under this arrangement, (which is insisted on by your old friends, the DTI) the cars *cannot* hear each other, as they are transmitting on a different channel to the one they are listening on — and the sets have no facility for channel change.

To be fair to the DTI, there are some good technical grounds for this arrangement, which I won't go into here. It does, however, limit the usefulness of the radio system.

Again, PMR equipment has to meet a *very* tight spec, and is therefore considerably more expensive than 934. A PMR installation of a base and one mobile can commonly cost £1300 or more.

The PMR licence costs £60 a year, instead of £10 (although you can have up to 5 mobiles for this, instead of three sets).

Also, the DTI commonly takes three to six months to issue a licence and frequency for PMR purposes. Many potential users can't wait that long.

Therefore, for the small one-or-two man business, CB is a much more viable proposition.

In fact, CTCSS is not a complete answer, as a stronger interfering signal can sometimes destroy the reception of CTCSS tone, due to the FM capture effect. Therefore, we are equipping sets with random channel scan, so that when the transmit key is pressed, the set searches around, finds an empty channel, then stops and transmits on it, including the CTCSS tone. The other set is meanwhile scanning, checking each channel in turn for CTCSS tone. Within a second or so, it will find the first set, and they can then talk in the normal way. The next time they call each other, they will again find a random "clean" channel, avoiding any busy ones. This way, business users cannot be accused of monopolising any one channel.

However, such extreme technical solutions are only necessary due to the inconsiderate and pig-headed attitude of so many 934 users. Can I plead for a little tolerance on the airwaves?

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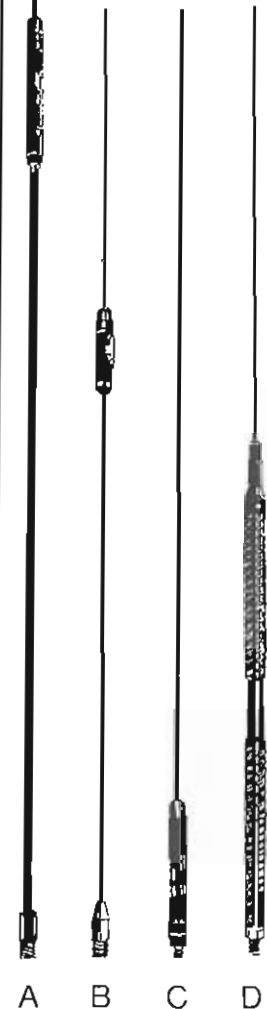
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 21 22 23 24 25 26 27 28 29 30 31 32  
 33 34 35 36 37 38 39 40 41 42 43 44  
 45 46 47 48 49 50



## David Shepherdson with more news about QSL clubs and QSLers

**W**ell, once again the time of year has come around and I would like to wish one and all of you a very merry Christmas and a VERY HAPPY and, hopefully, profitable and safe New Year. My thanks go to everyone who sent Christmas Cards, my only regret is that I have been unable to reply to the hundreds of them, sorry — but thanks anyway!

Whilst mentioning Christmas cards, and indeed the stamps used to send them around, can I ask you if you would be kind enough to send them to Ann MacArthur up there in the Shetland Isles as she collects used postage stamps to help raise funds for the RNLI, and old Christmas cards for fund raising activities like the purchasing of guide dogs. If you do feel able to send your bundles of Christmas cards up to her, please do watch the weight of these as, depending on the amount of cards and stamps you send, you may find it cheaper to send them by parcel post. Also, please wrap them well, don't be yet another victim of the Post Office's sorting machines! Thanks in advance to everyone who feels able to manage this again this year. Also, do you have any Co-Op divi stamps to spare? If so, would you consider sending them to Greybeard, he of the Greybeard's Gleanings. He is collecting these for a charity for the disabled so it's all in a very good cause. If you want a reply from Greybeard, please do enclose a

# COMMUNICATION THE QSL WAY

SASE. (Self Addressed Stamped Envelope).

Okay, moving on now into the large backlog of post that almost fills an apple crate, I've news from a couple of printers, and a couple of club changes so please read on! (A little further on, there's even more club news!). Right, the clubs first and in both cases, there have been changes at the top. With the Freightliners DX Club of Essex, some while ago Ian, who set up the Club, handed it over to Barry whilst he, Ian set up a DX section or two. Well, due to personal commitments, Barry has handed back the Freightliners to Ian which means that the new address for the club is P.O. Box 455, Braintree. Ian has also asked me to ask any clubs which have invites showing P.O. Box 314 to destroy them, please. By the time you read this Ian probably have sorted out a new issue of invites and most clubs will probably have these and know about the changes anyway, ah well!

The other club to have changes is the Mercia QSL Club of Coventry. Don (Copycat) has written to let me know that he has resigned due to some differences of opinion with other committee members as to how the membership fee was to be organised. The committee wished to remain with a yearly membership, ie: annual payments, whilst Don wanted to change to a once only lifetime membership fee. Good luck to both Don and the Mercia Committee members.

Moving on to printer's news now, regular readers may remember that I had asked for info on "D'Zine" of Preston recently. This firm first came to my notice quite a while ago and rapidly gained a loyal following of QSLer's who liked the cards, and it must be said, they are very good too. However, a couple of months ago I and the Editor started getting letters stating that people had sent money off to "D'Zine", but without getting any reply or cards. Also there were now two addresses. Letters from the Editor and many worried people got no reply and I

myself wondered if there was another postal strike in Don's (Vanguard) area, but I can now report that everyone should have had their cards by now as what had happened was this. Don is a one man business and he had an accident which totally "laid him up" for about eight weeks, and this meant that there was no one to do any designing or printing until he got better. All the best Don, look after yourself mate.

The other printer to get a mention this month is Raymac of Hounslow in Middlesex. I've had a letter of complaint from Ray of Raymac to the effect that his firm has only had one mention in the two years or so that I have been writing in this column. Well, as it's the first letter I've had, and about the second time I've seen a Raymac card it's understandable. As I've said before in these pages, if a firm does something connected with QSLing, if they don't get in touch with a little info, then I cannot write about them, I do not make anything in these pages up, and I only use what I receive, and receive in writing only!

Anyway, to get back to Raymac. This firm's cards are not cards as such, (printed onto card), but are, in fact, superbly printed on rigid plastic! Their prices of the QSL Collector Cards work out in the region of £20 per 100, £36 per 200 and £60 for 500. All prices are plus 5% for P & P, but artwork and VAT costs are included. There's a PS here that the artwork remains the copyright of Raymac by the way, but this is usual practice with most printers of course, except where you supply the actual design to be printed. Raymac do supply a samples pack for £2, BUT should an order be placed then this becomes £4 credit deductible from that order. This sample pack is made up of most of the firm's products like badges, QSL, eyeball & club cards (all plastic), stickers and wallets. My favourite of the Raymac cards that Ray was kind enough to send to me has to be Road Runner's (Brian) whose card was printed some while ago, but as a close runner up I do like Lame

Duck's eyeball cards! Well done to the artist there!

Right, moving on to a few names and addresses from the ever growing pile now. First up is one from Hector & Queenie of Gloucester who ask for a mention, but also say that for a reply, please include a SASE. A localish QSLer to me is young Richard (Hot Rod) who QSL's 100% and can be contacted via P.O. Box 14, Harrogate. From South Wales comes Chris (Desert Fox) who promises a 100% return with the message "PSE QSL for regular cards and lots more if you send me post cards of your area. Swap 1-4-1 or 20-4-20!" Just for a change, here's one from abroad now, don't seem to get too many from overseas these days, but from Switzerland hails Rene Baud (Presta 69). Now Rene writes no English, and I write/read no Swiss/French so I can't pass on what he's said, sorry! From Notts hails Alan (The Gaffer) who requests a mention. I don't know who does his cards, but I'm sure I know the signature on them!

My thanks go now to Miss Prim of Sleaford, she'll know who I mean, who has brought to my notice yet another chain letter. Who the devil starts this trash? In this particular case the recipient was an elderly QSLer who found the threats of "misfortune will befall you if you do not make 20 copies and pass them on" and so on very upsetting indeed. This sort of thing is *not* part of good QSLing and I do ask you if you get one of these things, either throw it away or send it back to the wally who passed it to you pointing out the distress these things can cause. Or send it to me, with a covering note, and I'll burn it or shove it in a waste bin which is the best place for this sort of trash.

Now, sticking with letters for a mo, I've had a funny one passed on to



### QSL Printers:

D'Zine

Raymac Display

POMA (UK Rep)

48 Downing Street, Preston PR1 4RJ, UK  
 P.O. Box 75, Hounslow, Middlesex TW3 2HZ, UK  
 Ray, P.O. Box 106, Canterbury, Kent CT1 3YN

### QSLer Addresses:

Ann MacArthur (Devil Woman)  
 Chris (Greybeard)

Hector & Queenie

Richard (Hot Rod)

Chris (Desert Fox)

Rene Baud (Presta 69)

Alan (The Gaffer)

Mike (Road Mender)

Jack (Quadman)

Terry (Star Rider)  
 Dave (Fire-flash)

Tango Victor One

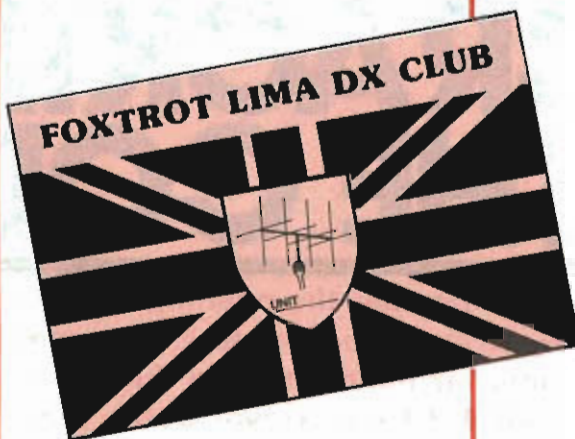
P.O. Box 5, Stornoway, Isle of Lewis, Scotland  
 24 Sally Ward Dr, Walsall Wood, West Midlands  
 17 Avebury Close, Tuffley, Glos GL4 0TS  
 NY 144, P.O. Box 14, Harrogate HG1 4DQ  
 P.O. Box 10, Caerphilly, South Wales CF8 1XX  
 Chemin de Bellevue 4, 1005 Lausanne, Switzerland  
 16 Carnarvon St, Neterfield, Notts NG4 2PL  
 P.O. Box 279, Newcastle, Staffs ST5 1PA  
 20 Causeway Road, Seaton, Workington, Cumbria CA14 1PJ  
 P.O. Box 75, Hastings, Sussex  
 38 Gairloch Drive, Perkinsville, Chester le Street, Co Durham DH2 1JA  
 P.O. Box 4, Montrose, Angus, Scotland DD10 9SZ

me by Mike (Road Mender) of the Mike Whiskey Kilo DX Club (more info on this club next month as I'm not going to have enough room this time). Now, the letter refers to a "Deck of Cards Club" which, due to the nature of the club, and to respect the wishes of the club itself, I won't go into details — but what I would like to do is to ask if the person, or persons, who are organising this club would like to get in touch with me, in confidence, just to confirm that this is a genuine undertaking, as one or two people are wondering just a bit. I would then mention this in a further column.

Now, as promised earlier, here's that other club news. The Zodiac Club of Spain has decided to wind down and to close at the end of the year, December 1986. The year's notice is to give anyone who wishes to join time to do so, but please note that no applications will be accepted after 1st August 1986. Membership of this Club cost a mere £2 which covers the cost of postage from Spain to the UK for your unit number, ID card, certificate,

club QSL cards and so on. Club QSL's are currently available at £3 per 100. Don't forget to include 5 signed and dated personal QSL's when joining. After the period of wind down, any remaining club cards will be despatched by the Galaxy Group of Brighthouse, to which membership costs £5 (more details of the Galaxy Group next month too). Anyway, that's in the future, there's still plenty of time to join this club if you wish.

A quick round up of some Clubs that are still on the go and intended to stay that way, starting with the Jumbo Colour Card International DX Swap Club of Holland. Please note that this club is open *only* to holders of full



**QSL Club Addresses:**

|                       |   |
|-----------------------|---|
| Freightliner DX Club  | P.O. Box 455, Braintree, Essex CM7 7XY                                      |
| Galaxy Radio Group    | P.O. Box 14, Brighthouse, West Yorkshire HD6 2SE                            |
| Jumbo Color Card Int' | P.O. Box 113, NL-5680 AC Best, Holland                                      |
| Mercia QSL Club       | P.O. Box 158, Coventry CV6 6BD  |
| Mike Bravo DX Club    | P.O. Box 167, Maidenhead, Berks SL6 4YZ                                     |
| Mike Whiskey Kilo DX  | P.O. Box 279, Newcastle, Staffs ST5 1PA                                     |
| Zodiac QSL Club       | P.O. Box 168, Sant Feliu de Guixols, (Gerona), Spain                        |
| Dragonrider One       | c/o DR Club, 3 Tarn Villas, Cowpasture Rd, Ilkley, West Yorkshire, LS29 8RH |

*When writing to an QSL Club, please remember to include return postage for their reply.*



colour collector series cards (FCC) eg: POMA, BBM, Lil'Queen, DB, Sundown etc. I may seem to be overstressing this point but I do so only to try to save anyone applying with non-FCC cards only to have their cards returned! To join send your 10 *personal* FCC cards with £6 (or US \$8) to receive your unit no, ID card, rubber stamp, certificate, roster, stickers, car sticker, pen, exchange cards & invites. The club's FCC cards are in the BBM series, number 950. From the Mike Bravo DX Club of Maidenhead writes "Stoney", the club's Secretary who asks for a mention for the club but forgot to include any details of it, so if you are interested in joining this one, you'll have to write to P.O. Box 167 asking for some! And don't forget a SASE, will you?

Okay, one last skim through the names and then that'll be it for yet another time. From Jack (Quadman) comes a real selection of cards, always worth a QSL, from Terry (Star Rider) of Hastings, a mixed bunch of POMA & Earlybird designs, while from Chester le Street comes a couple from Dave (Fire-flash), and from Montrose in Scotland come a couple from Tango Victor 1.

Before I close this time, I would just like to point out that some letters I receive asking for a mention for clubs

**Forthcoming Events**

| Date  | Event                | Location                        |
|---|----------------------|---------------------------------|
| 5th/6th April   | Cutty Sark POMA Meet | Cliftonville                    |
| Contact: Dave Bradshaw, DA16 2JG  |                      | 16 Bradenham Ave, Welling, Kent |
| 27th April  | "Big Eyeball No.2"   | Stanley                         |
| Contact: Des Currie, P.O. Box 5,  |                      | Consett, Co Durham              |
| 10th May  | Tango Papa Eyeball   | Southport                       |
| Contact: Tango Papa Group (Eyeball '86), P.O. Box 13, Southport PR9 0AA |                      |                                 |

never do get into print for various reasons. The main reason is that I simply do not have enough room to mention everyone, so if you've written and still haven't had a mention please do bear with me, drop me another line, I may have lost your letter or something! But please do ensure that I have sufficient details to work with and that your club caters for QSLers, after all, these are the QSL pages. Okay, that's it again, if you want a mention drop me a line, my address is at the end somewhere, or via the mag, but allow an extra month before I see any sent that way. If you want a reply, please do

enclose some return postage. Any forthcoming events that you know of or are organising, please do let me know in *good time*, not a couple of weeks before the actual date! That's it, all the very best for 1986 and I'll catch you next month with more names, more clubs and hopefully some more news from around the world of QSLing. Take care!  
Yet another final point, who's this "Tutor" guy?

# CRACKING THE CODE

Remember the opening titles to TV's *Highway Patrol*? Broderick Crawford leaning into his mike, uttering the (then) cryptic "10-4"? Here, Trevor Butler looks at the value, use and meaning of various radio codes

**C**odes of various sorts are used widely in differing forms of radio communication, from aeronautical, defence, police and radio amateurs to CB operators. These codes are necessary in order to enable international communication to take place with operators who speak little or no English, and also to save time in conveying a message.

The advantage of using codes was realised by commercial operators in the early days of telegraphic communication, with the result that a number of international codes, such as that known as the 'Q Code', have been established for many years. They have been adopted by a variety of radio users and altered slightly to meet particular needs. In addition, many informal abbreviations have been adopted to form today a sort of international language, often referred to as "radioese".

These codes take a number of different forms; perhaps the most widely

known is morse code. Formed of just two sounds and the correct use of silence (spaces), an experienced operator can send accurately at high speeds. Popular words and phrases are shortened to save time and these short forms are really the morse code operators' shorthand. For example, to send "Good morning old chap, please repeat your message about the weather conditions, go ahead", an operator would send simply "GM OC PSE RPT UR MSG ABT WX CONDX GA"; thus saving time.

Another popular form of code is the Phonetic Alphabet. There are several types but one recommended form was agreed at a Geneva convention for international radio use to save any confusion. The Q-Codes can be used to ask questions of the other person in the communication, or as nouns to state facts or to provide answers. The codes are widely used amongst aeronautical radio operators, with codes such as QBF meaning 'low cloud' and

QNH meaning 'altitude'. These proved of little use to, say, radio amateurs, so various alterations have been made in order to make the system more usable.

To the CB radio operator, the most used code must be the 10 code. In use by various police forces world-wide, it was adopted by CB users in the States, and soon spread. Indeed it was CB jargon which, for a while, attracted the most attention from the media. The so-called American trucker-talk metamorphosed into a strange private language comprising a compendium of words and phrases from a number of sources. This 10 Code which is established by using a number code by the figure 10, used by law enforcement agencies in America and seen widely on networked television 'cop adventure' series did more to establish it in the minds of the people who were to become CB radio fans than anything else.

With this code there were several items which bore little relevance to

## 10 CODE MOST OFTEN USED BY CBERS

|  |   |   |
|--|---|---|
| 10-1 Receiving poorly                          | 10-29 Time is up for contact                  | 10-69 Message received                      |
| 10-2 Receiving well                            | 10-30 Does not conform to FCC rules           | 10-70 Fire at _____                         |
| 10-3 Stop transmitting                         | 10-32 I will give you a radio check           | 10-71 Proceed with transmission in sequence |
| 10-4 OK, message received                      | 10-33 Emergency traffic at this station       | 10-73 Speed trap at _____                   |
| 10-5 Relay message                             | 10-34 Trouble at this station, help needed    | 10-74 Negative                              |
| 10-6 Busy, stand by                            | 10-35 Confidential information                | 10-75 You are causing interference          |
| 10-7 Out of service, leaving air, not working  | 10-36 Correct time is _____                   | 10-77 Negative contact                      |
| 10-8 In service, subject to call, working well | 10-37 Wrecker needed at _____                 | 10-81 Reserve hotel room for _____          |
| 10-9 Repeat message                            | 10-38 Ambulance needed at _____               | 10-82 Reserve room for _____                |
| 10-10 Transmission completed, standing by      | 10-39 Your message delivered                  | 10-84 My telephone number is _____          |
| 10-11 Talking too fast                         | 10-41 Please tune to Channel _____            | 10-85 My address is _____                   |
| 10-12 Visitors present                         | 10-42 Traffic accident at _____               | 10-88 Advise phone number of _____          |
| 10-13 Advise weather/road conditions           | 10-43 Traffic tieup at _____                  | 10-89 Radio repairman needed at _____       |
| 10-16 Make pickup at _____                     | 10-44 I have a message for you (or for _____) | 10-90 I have TV interference                |
| 10-17 Urgent business                          | 10-45 All units within range please report    | 10-91 Talk closer to mike                   |
| 10-18 Anything for us?                         | 10-46 Assist motorist                         | 10-92 Your transmitter is out of adjustment |
| 10-19 Nothing for you, return to base          | 10-50 Break channel                           | 10-93 Check my frequency on this channel    |
| 10-20 My location is _____                     | 10-55 Intoxicated driver (DWI)                | 10-94 Please give me a long count           |
| 10-21 Call by telephone                        | 10-60 What is next message number?            | 10-95 Transmit dead carrier for 5 seconds   |
| 10-22 Report in person to _____                | 10-62 Unable to copy, use phone               | 10-97 Check test signal                     |
| 10-23 Stand by                                 | 10-63 Network directed to _____               | 10-99 Mission completed, all units secure   |
| 10-24 Completed last assignment                | 10-64 Network is clear                        | 10-100 Restroom stop                        |
| 10-25 Can you contact                          | 10-65 Awaiting your next message              | 10-200 Police needed at _____               |
| 10-26 Disregard last information               | 10-66 Cancel message                          | 73's Best wishes                            |
| 10-27 I am moving to Channel _____             | 10-67 All units comply                        | 88's Love and kisses                        |
| 10-28 Identify your station                    | 10-68 Repeat message                          |   |

Please note that there are variations in this code and local use may differ slightly.

CB, so an unofficial code was adopted. However, this has led to the situation where one piece of code has several meanings, or where one message is represented by two separate ten-signals. The CB jargon is, fortunately, much simpler, although still largely based on that established in the States, principally by the truck drivers. It must be stated that it has become 'Anglo-Saxonised' since the inception of CB in this country, and has become more acceptable.

A slight variation is the CB 13 Code, or the insult code, comprising some interesting statements like: 13-1 ('you're an idiot') to 13-26 ('next time you eat garlic, speak further from the mic')!

Signal strengths are also reflected in code form, known as RST; Readability, Signal strength and, if morse is being used, Tone. Readability 1 is Unreadable, 5 is Perfect and various degrees in the range between. Signal strength can range from S1, faint signals, barely perceptible, through to S9, which means extremely strong signals. The final part of the RST format is used to indicate the tone and is used when reporting on morse code signals. T1 means an extremely rough hissing note, whilst T9 is used to indicate purest DC note. If the note appears to be crystal-controlled, an X is added after the appropriate number. Where there is a chirp, a C is added, a D for drift and a K to indicate clicks.

It can be seen, then, that it has long been a part of radio procedure that certain short cuts may be taken in airborne conversation, both to cut down on the amount of time needed to complete a transmission and also to render it as unambiguous and as simple as possible. Using the spoken word can lead to unwanted people monitoring your transmission and understanding things which perhaps should remain uninterpreted. The equally pressing need for brevity has also led to the establishment of various codes using letters, numbers of words, and the increasing use of such signals.

## MOST WIDELY USED Q CODES

- QRG** Will you tell me my exact frequency? Your exact frequency is . . . . . kHz.
- QRH** Does my frequency vary? Your frequency varies.
- QRI** What is the tone of my transmission? The tone of your transmission is . . . . . (amateur T1 — T9).
- QRK** What is the readability of my signals? The readability of your signals is . . . . (amateur R1 — R5).
- QRL** Are you busy? I am busy. Please do not interfere.
- QRM** Are you being interfered with? I am being interfered with.
- QRN** Are you troubled by static? I am troubled by static.
- QRO** Shall I increase power? Increase power.
- QRP** Shall I decrease power? Decrease power.
- QRQ** Shall I send faster? Send faster.
- QRS** Shall I send more slowly? Send more slowly.
- QRT** Shall I stop sending? Stop sending.
- QRU** Have you anything for me? I have nothing for you.
- QRV** Are you ready? I am ready.
- QRX** When will you call me again? I will call you again at . . . . . hours.
- QRZ** Who is calling me? You are being called by . . . . . (on kHz).
- QSA** What is the strength of my signals? The strength of your signals is . . . . . (amateur S1 — S9).
- QSB** Are my signals fading? Your signals are fading.
- QSD** Is my keying defective? Your keying is defective.
- QSL** Can you give me acknowledgement of receipt? I give you acknowledgement of receipt.
- QSO** Can you communicate with . . . . direct or by relay? I can communicate with . . . . direct (or by relay through . . . .).
- QSP** Will you relay to? I will relay to . . . .
- QSV** Shall I send a series of VVVs? Send a series of VVVs.
- QSY** Shall I change to another frequency? Change to transmission on another frequency (or on . . . . . kHz).
- QSZ** Shall I send each word more than once? Send each word twice.

- QTH** What is your location? My location is . . .
- QTR** What is the correct time? The correct time is . . . . . hours.

## PHONETIC ALPHABET

|           |            |           |
|-----------|------------|-----------|
| A Alpha   | J Juliet   | S Sierra  |
| B Bravo   | K Kilo     | T Tango   |
| C Charlie | L Lima     | U Uniform |
| D Delta   | M Mike     | V Victor  |
| E Echo    | N November | W Whiskey |
| F Foxtrot | O Oscar    | X X-ray   |
| G Golf    | P Papa     | Y Yankee  |
| H Hotel   | Q Quebec   | Z Zulu    |
| I India   | R Romeo    |           |

## THE RST CODE

### Readability

- R1 Unreadable.
- R2 Barely readable, occasional words distinguishable.
- R3 Readable with considerable difficulty.
- R4 Readable with practically no difficulty.
- R5 Perfectly readable.

### Signal strength

- S1 Faint, signals barely perceptible.
- S2 Very weak signals.
- S3 Weak signals.
- S4 Fair signals.
- S5 Fairly good signals.
- S6 Good signals.
- S7 Moderately strong signals.
- S8 Strong signals.
- S9 Extremely strong signals.

### Tone

- T1 Extremely rough hissing note.
- T2 Very rough AC note, no trace of musicality.
- T3 Rough, low-pitched AC note, slightly musical.
- T4 Rather rough AC note, moderately musical.
- T5 Musically modulated note.
- T6 Modulated note, slight trace of whistle.
- T7 Near DC note, smooth ripple.
- T8 Good DC note, just a trace of ripple.
- T9 Purest DC note.

## THE MORSE CODE AND SOUND EQUIVALENTS

|   |                |   |                     |
|---|----------------|---|---------------------|
| A | di-dah         | T | dah                 |
| B | dah-di-di-dit  | U | di-di-dah           |
| C | dah-di-dah-dit | V | di-di-di-dah        |
| D | dah-di-dit     | W | di-dah-dah          |
| E | dit            | X | dah-di-di-dah       |
| F | di-di-dah-dit  | Y | dah-di-dah-dah      |
| G | dah-dah-dit    | Z | dah-dah-di-dit      |
| H | di-di-di-dit   | 1 | di-dah-dah-dah-dah  |
| I | di-dit         | 2 | di-di-dah-dah-dah   |
| J | di-dah-dah-dah | 3 | di-di-di-dah-dah    |
| K | dah-di-dah     | 4 | di-di-di-di-dah     |
| L | di-dah-di-dit  | 5 | di-di-di-di-dit     |
| M | dah-dah        | 6 | dah-di-di-di-dit    |
| N | dah-dit        | 7 | dah-dah-di-di-dit   |
| O | dah-dah-dah    | 8 | dah-dah-dah-di-dit  |
| P | di-dah-dah-dit | 9 | dah-dah-dah-dah-dit |
| Q | dah-dah-di-dah | 0 | dah-dah-dah-dah-dah |
| R | di-dah-dit     |   |                     |
| S | di-di-dit      |   |                     |

(0 is sometimes sent as one long dah and 9 as dah dit)

### Punctuation

|               |                       |
|---------------|-----------------------|
| Question Mark | di-di-dah-dah-di-dit  |
| Full Stop     | di-dah-di-dah-di-dah  |
| Comma*        | dah-dah-di-di-dah-dah |

\*Sometimes used to indicate exclamation mark.

### Procedure Signals

|                            |                       |
|----------------------------|-----------------------|
| Stroke                     | dah-di-di-dah-dit     |
| Break sign (=)             | dah-di-di-di-dah      |
| End of Message (+ or AR)   | di-dah-di-dah-dit     |
| End of Work (VA)           | di-di-di-dah-di-dah   |
| Wait (AS)                  | di-dah-di-di-dit      |
| Preliminary call (CT)      | dah-di-dah-di-dah     |
| Error                      | di-di-di-di-di-di-dit |
| Invitation to transmit (K) | dah-di-dah            |

One dah should be equal to three di's (dit's). The space between parts of the same letter should be equal to one di (dit). The space between two letters should be equal to three di's (dit's). The space between two words should be equal to from five to seven di's (dit's).

# NEWCOMERS' FACTS AND FIGURES

By Trevor Butler

The world of CB can be confusing to the newcomer. We asked Trevor Butler to provide the answers to some typical questions expressed from the newcomer to the hobby, and to fight his way through the technical jargon and legal stipulations

**W**hatever you do, you will first need a licence. In fact even to receive CB signals a licence will be required, because although the old radio receiving licence was abolished back in 1971, it is now an offence to have a CB set without a licence, because it is available for use. Application forms are available from main Post Offices, and from the CB Licensing Unit in Chesterfield. Post Offices may license up to 15 sets, at a present cost of £10 per three sets or part thereof. The conditions are set out on the reverse of the licence together with the Schedule. Once purchased, the licence allows the use of both allocated frequencies, 27MHz and 934MHz. The conditions relate to both frequencies, whilst the information set out in the Schedule specifies information relevant to each frequency.

The basic conditions are that the licence holder must be at least 14 years of age, and that the equipment may be used by the licensee, by someone under the direct supervision of the licensee, by anyone who normally lives with the licence holder, or by anyone who has hired equipment from the person holding the licence, for a period not exceeding 28 days. Operation is permitted by those under the age of 14 if working under direct supervision of the licensee or a person appointed by the licence holder over 14 years and normally living with the licensee. It is now the responsibility of the licensee to ensure that these conditions are met, and indeed the age restrictions were only implemented recently.

Other licence clauses relate to the operation of the equipment such that it won't cause interference to other radio users, that only plain speech may be transmitted with the exception of selective calling and identification tones, that music shall not be transmitted, that the re-broadcast of other radio or television signals shall not take place, that there shall not be any transmission containing offensive or indecent language, that there shall be no advertising, and that equipment

shall not be installed in airborne vehicles nor in sea vessels without the permission of the ship's Master.

The Schedule, which appears in the same small print on the reverse of the licence, relates to the operating restrictions. These are that, on 27MHz, the power produced by the rig shall not exceed 4 watts, and that if there is provision for connection to an external antenna that the antenna must not exceed 1.65 metres in length or 55mm in diameter, including any loading coils, but excluding any ground planes which are connected directly to the outer braid of the feeder. If the antenna is on a structure which is more than 7 metres above ground then the power must be reduced, by 10db, to 0.4 watts.

At the higher frequency of 934MHz, the maximum power must not exceed 8 watts, and any external antenna must not consist of more than four elements, none of which must exceed 17cm in length. If the antenna is situated above 10 metres above ground level, the power is to be reduced to 0.8 watts.

The licence also states that the equipment used shall conform to the published specification and that equip-

ment should be certified by manufacturers as complying with the specification, and this is identified by either of two symbols: CB27/81 or CB934/81, within a circle. The specifications are MPT 1321 and 1320, one for 27MHz and one for 934MHz.

Since 27MHz is used far more widely than 934MHz at the moment, and since equipment for the former is less expensive, this article will concentrate on 27MHz operation. There was an extensive guide to the 934MHz band published in last month's Citizens' Band Magazine, and this should be used in conjunction with the information here.

Having waded through the licence, and obtained your piece of blue paper you are able to operate. 27MHz is divided into 40 set channels, fixed channels must be provided on all legal rigs, starting at 27.60125 to 27.99125MHz. It is illegal for equipment to provide transmission on frequencies other than those stated.

After listening for a few minutes, a number of operating conventions will become apparent. Channel 9 is usually reserved for emergency use and for assistance, Channel 14 for general calling and Channel 19 for conversations

Many home-base rigs have more controls than their mobile counterparts





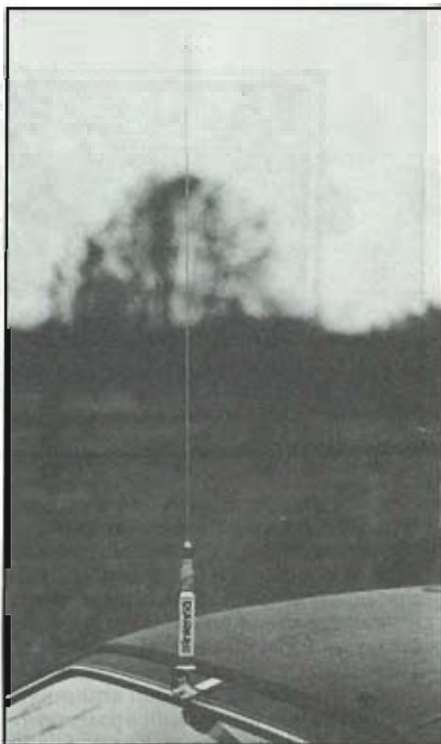
among travellers on main roads although other groups in your area may have preferred channels for particular purposes.

Careful choice of antenna is important to operate legally and also to ensure that the best use is made of that valuable commodity you are producing every time you transmit, the RF or power output. Choosing an antenna is partly a matter of personal choice. Initially, the restriction for 27MHz was the use of a base-loaded antenna with a radiating element of up to 1.5 metres but this has now given way to the slightly more liberal one, permitted the use of all antennae which do not exceed 1.65 metres in length.

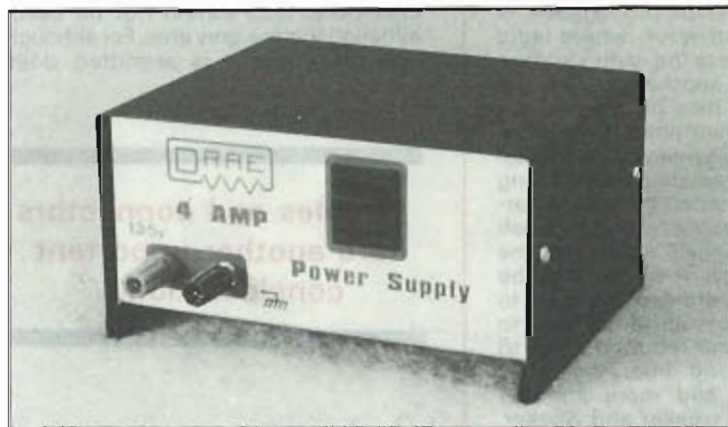
So how to choose? Well the siting of the aerial will have to be a consideration. Is a loft space to be used, a pole in the garden, the chimney, a dormer window, or whatever? It is advisable to avoid siting the antenna near any TV or radio receiving aerials, for although operating at different frequencies, it is likely that the receiver attached to them will be overloaded each time you key-up. An outdoor site is also preferable over an indoor or loft space provision, and for this reason ensure that the antenna can withstand all that the British climate throws at it.

The original base-loaded vertical aerials still prove popular and are widely available, yet the centre-loaded types do offer the advantage of a lower angle of radiation, which means that a greater proportion of the signal is directed towards the station you are trying to work, and less wasted in the atmosphere. We shall look more closely at propagation of signals later in the article, and try to understand the way radio waves travel from A to B. Centre-loaded antennae tend to be shorter than their base-loaded counterparts, and are therefore more manageable and less conspicuous. Since the slight relaxation, or to be more precise, greater clarification of the regulations, a number of continuously wound aerials are now entering the market for base station operation, and we eagerly await the introduction of top-loaded antennae to see how their performance fares. In practice there is not much to choose between two aerials of a similar design, and whilst dipoles have their fans, they do not provide much of an advantage over a loaded whip which is really the most suitable for a beginner.

For mobile operation, different factors need to be considered before choosing an antenna. Try to avoid types where the cable cannot be replaced since it is usually fixed in a sealed part of the structure. Mag-mounts too are mostly intended only for short term use, and do come off, even strong ones, so many people prefer a gutter-mounted type, a boot-mount or even a fixing for a tail gate in this day of hatchback cars without gutters. The positioning of the aerial relative to the car will affect its radiation pattern; moving the antenna just a few inches may help to improve the performance. In a mobile installation, the car's bodywork forms part of the antenna and, therefore, mobile aerials cannot be easily be used as base station devices. The greater amount of



A typical hatchback mounting



When choosing a power supply, bear safety in mind

signal will be received and transmitted in the direction of the highest proportion of car.

Mounting the aerial to either side of the car will mean that the best signal is developed towards the opposite side of the vehicle. Twin antennae should be avoided to start with, and only really prove effective on large wagons.

Having installed your antenna, is it matched to your rig? The impedance of rigs is a nominal 50 ohms, and it is important to ensure that the whole system is at a constant 50 ohms. To check this an SWR, or Standing Wave Ratio, bridge is needed. If you don't own one, try to borrow one, because a periodic check is ample. If the unit is left in line it presents a loss of signal which can't really be afforded. Connect the SWR bridge between the rig and the antenna, and transmit, adjust the knob so that the 'set' meter is at full scale or on a 'set' mark. Now take a reading from the 'reflected' meter; this should be below 3, and ideally as low as possible. If it is high, check all the connections, and try moving the position of the aerial slightly, and changing its

length by a few millimetres, if possible, until the situation improves.

Having said that a mobile antenna can't really be used at a base station because the car forms part of the device, this is not the case with rigs. Mobiles tend to be smaller, and, perhaps more importantly, cheaper than their base station sisters. Granted, there may be more knobs and accessories on a specifically designed home-base, but all the basics are there on a mobile, apart from a power supply.

There are a whole range of rigs available, and they are listed in the back pages of this magazine, together with details of their features. It can be argued that the basic controls are all that are required, and any extra which may be switched in should be designed into the circuit in the first instance. If you feel you need any of the additional features then this will ultimately be the factor upon which you buy a rig, but really 'you pays your money and takes your choice'. Can you live without a little light which glows to say you're transmitting? Do you think you need a mic gain? Probably not, since only FM transmissions, or angle modulated signals, are permitted, and once the internal mic gain control has been

fixed it should not need adjusting. But it is possible to argue that almost every extra is superfluous, and it is possible to operate successfully on CB without them!

So now you've got your licence, your twig, your rig, a good SWR and a mobile set-up. To use the mobile rig at home and to save buying a base station as well, at least to begin with, you need a power supply. You could use a car battery, as if you were in a car, and charge it when the rig is not in use, or charge it slowly (trickle charge it) whilst operating the rig, and in fact using the battery as a big smoothing capacitor to improve the DC being produced by your battery charger. Never run a rig from a charger direct.

A number of power supplies are on the market; most very good, but some rogues still lurk despite the publicity surrounding power supplies which caught fire or allowed the casing to become live at mains potential. Look for a good name, ask advice and, if possible, ensure the unit has good rectification, decent smoothing and a protection circuit to ensure that the

output voltage will never exceed 13.8v and so damage the rig. There should be a fuse in the output stage, and another, of the rating quoted by the rig manufacturer, in line between power source and rig.

A good test is to connect the two output terminals together and, standing back, switch on the power supply; if there is adequate protection nothing will happen, but if not... bye bye power supply! So if the person selling the equipment is not keen for you to carry out this test, be wary.

Right, so now you're on the air, but why do you do better on some days than others? How do those signals you produce reach the other chap? Well, radio propagation is a subject about which many books have been devoted, so here, we will just summarise the situation with regards to 27MHz, which is classed as High Frequency, HF or short-wave.

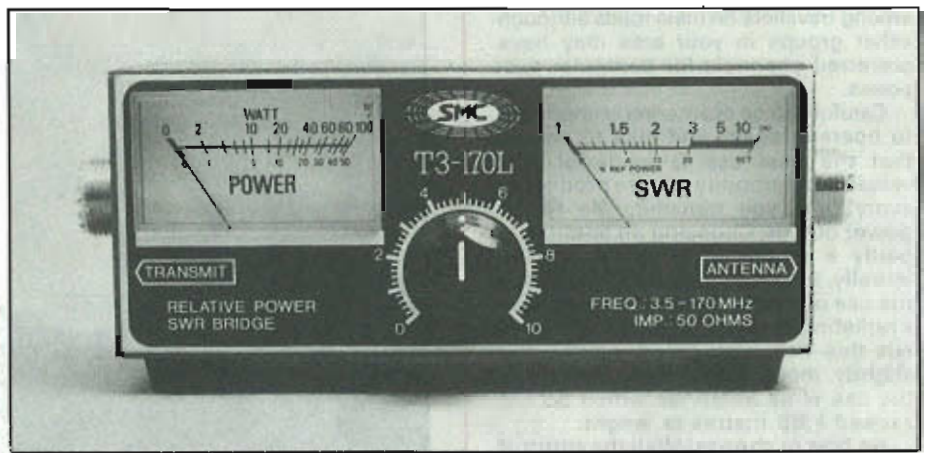
Direct long distance communications at HF are possible by skywave or ionospheric propagation. The ionosphere is an area of atmosphere some 250 km above the earth's surface. Their characteristics are produced by natural phenomena and change hour by hour, or in some cases year by year. At 27MHz the only permanent and reasonable means of propagation is that called ground-wave, where radio waves travel close to the earth's surface from one point to another, but here the distances which may be covered are limited, being determined by environmental changes. Sky-wave propagation relies upon the radiated signal being reflected and refracted by ionised particles in the atmosphere, and by small absorption, for signals which become absorbed are lost. A signal may be reflected from the atmosphere, back to earth as a first hop, and then back to the ionosphere and returned again to earth as a second hop, the wave spreading more and more and the signal becoming weaker and weaker.

There will be an area, between that where the direct signal by ground wave has petered out, and before that where the first reflected signal is received back at earth, where no signal can be heard, and this is the skip distance. This area will often vary depending upon the other propagation changes.

Newcomers to the hobby will generally find it useful to meet and discuss the changing times with others who share the interest, and there is probably no better way than by attending a meeting of a local club. Many such clubs exist up and down the country, some meet weekly, others, in more remote areas, less frequently. Many will operate weekly nets on the area, give out local CB news and invite comments, which can be discussed further at the next meeting.

To find your local club, listen on the air, ask others, look in the Club News section of this magazine, enquire at your local library or Citizens' Advice Bureau, look in any local community information booklet or ask your local CB dealer.

Talking of dealers, they tend to offer, as too do many advertisements,



An SWR meter is a very useful accessory

lots of extras to add on to your installation — such as burners (amplifiers), pre-amps, echo-chambers, etc. Looking back at our Licence Schedule, it states that power amplifiers are not permitted; indeed the specification does not make provision for such separate amplifiers, even if their output power is within that of the licence, so such equipment will not obtain the specification approval mark, and again under the conditions, such equipment should not be used.

It could be argued that echo-chambers, too, should not be used, although this is a grey area. For although only plain speech is permitted, does

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### **“Cables and connectors are another important consideration...”**

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the use of an echo chamber alter the intelligibility? In any event, echo-chambers can't really improve transmissions and must really be regarded as a gimmick extra. The same may not be the case for an additional pip or K-tone or Roger Bleep which may be used each time the mic is de-keyed to indicate that the transmission is over, and transmitting a little tone. This can be useful if copy is poor and the other station needs to know if you have finished so that they may go ahead.

At 27MHz, a pre-amp is not normally needed, if it is found that a rig is 'deaf', i.e. it cannot receive stations that it can reach with its transmitted signal, then the antenna or rig or both should be looked at first, rather than automatically turning to the additional expense of a pre-amp.

Cables and connectors are another important consideration, although the choice at 27MHz is less crucial than at higher frequencies; a poor connection can be the downfall of a whole installation. Use a good-quality cable from the aerial whenever possible, such as UR 67, and for mobile use choose something such as UR 76 which is a multi-stranded thinner type which

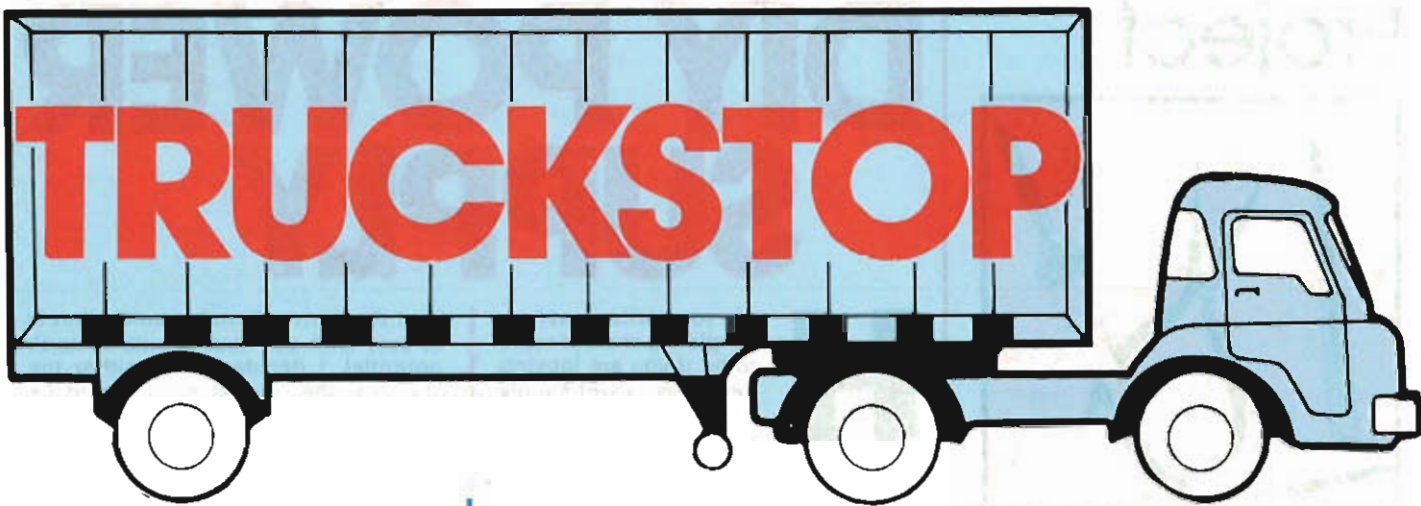
should be suitable. Connectors at 27MHz tend to be the PL259 series with SO239 sockets, and these are adequate for the frequency, but again, at higher frequencies a better connector is required, and the 'N' series is recommended.

Looking to the future, it seems unlikely now that further relaxations in the strict operating conditions will occur, although the term CEPT will be banded about more and more. In simple terms, these are frequencies recommended by the Confederation of European Posts and Telecommunications Union, and it is known that the government hopes in the long term to adopt these which would provide for common European frequencies for FM CB. The Department of Trade and Industry have stated that in moving towards these, at the lower part of 27MHz, there will be a need to relocate the existing users of the frequencies, notably private radio paging systems. The Department has been in negotiation with all parties, but it is unlikely that any changes will be made before 1987 at the earliest.

It seems that the existing 27MHz allocation service would run in tandem with the CEPT operation for some time until a decision is taken on what to do with the present service. For operators of rigs, it should be possible to modify the arrangement which in effect does the channel selection, the programmable divider, and there should be no immediate cause for concern that any existing equipment would be redundant in the future.

In trying to keep the regulations simple, there was much ambiguity, so several official pamphlets were produced on various aspects of the conditions relating to the operation of CB and they have helped to clarify the situation. One leaflet which you will still find in most Post Offices is the "Code of Practice" and this details the common-sense approach to the actual operating, without giving advice on the hobby.

If you feel you've exhausted the hobby, or you are tired with your new toy, look at 934MHz; it is a different world, as last month's article explained, and if you are still disenchanted there's always amateur radio, and you may remember our feature back in July 1985 on how to pass the test and get the ticket. Whatever you decide... happy transmitting.



## More observations from our trucking correspondent Big T

**T**he months roll by and here we are again — October has brought the first bad fog of the year and I am sorry to report the first spate of bad accidents. It was a miracle that no one was killed this week (don't forget we are two months behind with the magazine) on the M6/M1 split. I had a delivery for Northampton but because of a small fender bender near gate 11 M6 had decided to go via the A5. Thank goodness for the C.B. otherwise I could well have been held up for hours or even worse, involved in the accident.

### Fog

Why do so many drivers travel so fast in the fog? Each year we see the terrible carnage, men, women and children killed or maimed — will they never learn? My eyesight is as good as most but visibility can be down to 20 — 30 yards so, of course, I travel to my stopping distance but other drivers fly by me with no regard for their own or anyone else's safety. Then when the inevitable accident happens and the three carriageways are blocked solid, the 'clever' people use the hard shoulder as an extra lane to travel to the next exit and as often as not, the smokies sit and watch them — let a truck try it and watch them move!

This week saw the worst motorway accident ever involving a coach; thirteen people lost their lives and this included four children. The accident happened in good conditions with very good vision and a dry surface and, at the time of writing this article, the police do not seem to know the cause. What I would like to see is coaches restricted to 60 mph and of course being banned from using the third lane, the same as HGV's.

It seems ludicrous for vehicles who carry up to 70 passengers being able to do such excessive speeds. My Scania will do 70+ but most of the coaches go by me like I am standing still — by the way, I don't very often exceed 60 as it does not make sense to me to get fined two days wages to pay for a speeding fine.

### Coach

I had first-hand experience this week of a coach driver's lot as our club put on a trip to the famous Blackpool Illuminations. We hired a coach from Hotspur and were lucky enough to have a fellow CB'er drive us, so on behalf of myself and the gang, thanks Bob (Ten Pin), Lima November 11 for a safe and enjoyable trip.

### Cafe of the month

This month it is Gill's Services Ltd., Weyhill Road, Andover (telephone Andover 23037). The cafe is situated on the Andover ring road where it joins the A30. On my travels I often stop here for my evening meal and can honestly say I have never had a bad meal — the service is excellent, the cafe is always spotlessly clean and bed and breakfast is available for 23. Sleeper cabs are welcome in the large lorry park. The cafe opens at 7.00am until 6.45pm Monday to Friday, Saturdays 7.00am until 2.00pm. A very well stocked shop is built onto the cafe and a full Shell diesel/petrol service is available. On my last trip to the cafe, I went with one of Telford's best known breakers — Badger (John). John and myself left Telford early am. My first drop was Basingstoke, John's was Southampton — after we went our separate ways at Newbury the plan was to give each other a shout on each hour on a pre-arranged channel. In the past this system has worked admirably and on this occasion it couldn't have been better. I had finished my deliveries for the day and was running through the New Forest near Ringwood. John was on the motorway just out of Portsmouth and as arranged, I shouted for him and was immediately answered, so arrangements were made to meet at Rowham Services. After a cup of tea we decided to run up to Gill's cafe in Andover for our evening meal after which we had a couple of pints in one of the local pubs which made for a most enjoyable day. The following morning John and myself ran back to Telford — this to me is CB at its very best and thanks to all the lads and ladies who came in on the side to have

a natter with John and myself — only one complaint, why is it always my turn to buy the tea?!!

### Roads

It's nice to see the government spending a little of our road fund licence money on building a few new roads — three spring to mind which I am sure will be time-saving to me and my fellow truckers. The St. Neot's, Bulwick and Oundel by-passes are all due to open in 1986.

### QSL Cards

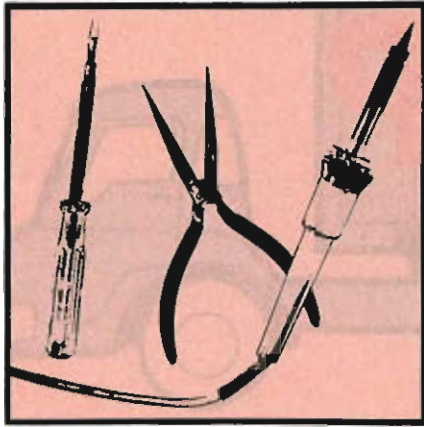
This month I would like to say a word to anyone thinking of buying QSL cards from Happy Cobbler of Northampton. Our club ordered cards last May paid for by cheque which was duly cashed and to date we have not received any cards, no replies to our letters and no explanation. Chris has just not informed us of any difficulties — so please be careful as I believe he is still looking for business.

### Extinguishers

One thought to close this month's article — most of the thirteen people killed in the M6 accident were burned to death and I wonder if any of these people could have been saved if all the cars, trucks, etc. nearby had been carrying fire extinguishers. Seat belts were made compulsory as were crash helmets for motor cyclists — how about fire extinguishers for trucks, cars, vans, etc? I am sure most of you have seen how efficient they are on the T.V. when the racing cars set fire and I am sure if enough had been available on that day more people would have been alive today. I know it would cost us all a few pounds but in my eyes it would be money well spent and I am sure most people would agree.

Well that's all for this month and I sure hope you have found something of interest in this issue so until next month, stay lucky.

# Project



Keith Townsend discloses his secret formula for constructing an inexpensive but effective psu

# DIY POWER SUPPLY

**H**ave you noticed just how simple the choices seem to be if you are looking for a new power supply unit? A few quid will buy you a little black box capable of delivering a few amps at 13.8 Volts but a really good quality unit will set you back an arm and a leg.

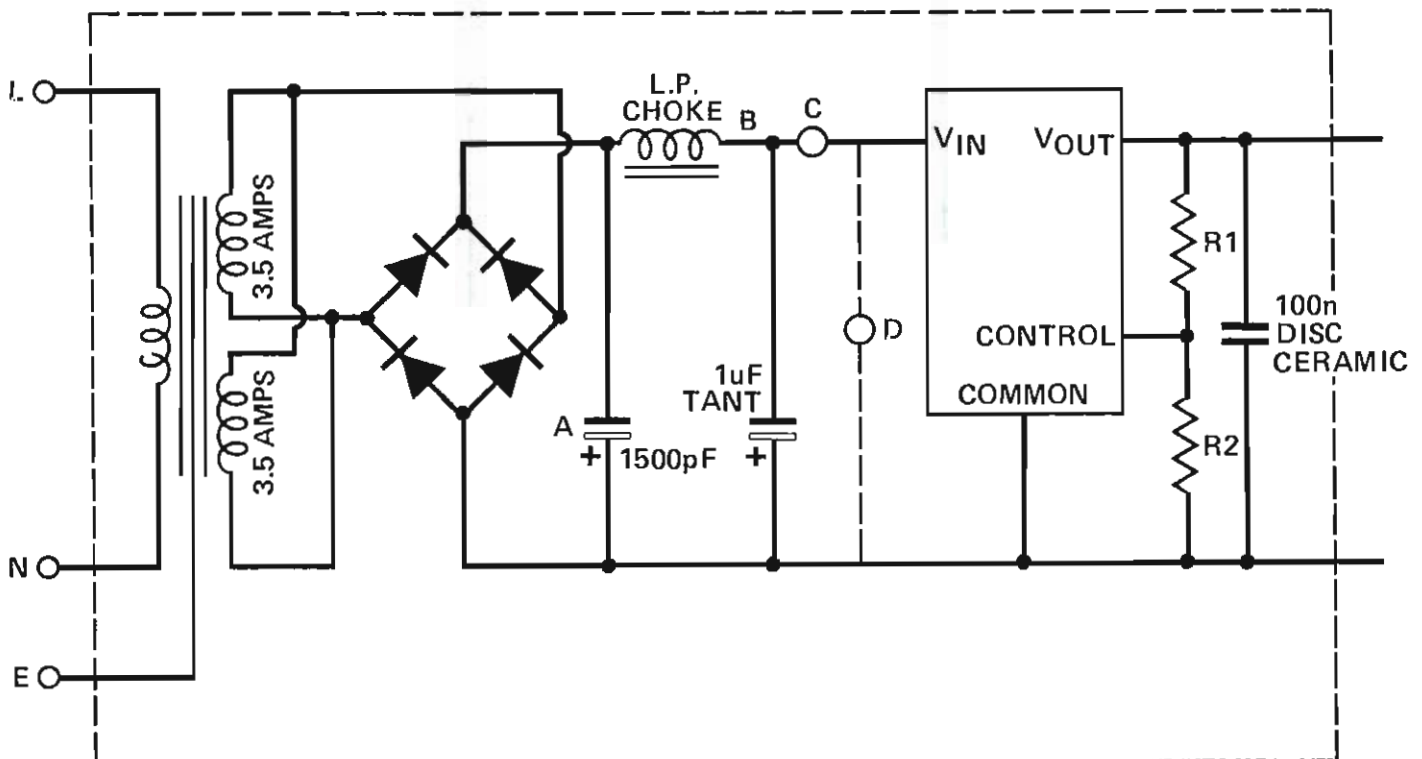
Although many of the cheaper varieties you see in the shops work well I have come across occasional examples where the stated output could only reasonably be described as approximate and even the odd example that was electrically unsafe, though it is only fair to say that these have now largely disappeared from the shelves, as the better quality manufacturers have taken the lion's share of the market.

My most recent incursion into the market found me entirely unable to find a power supply which met all my requirements at a price I was willing to pay and so I decided to build my own. My first requirement was for a very highly stabilised voltage, coupled with current limiting. In order that the unit should never be overworked, I decided that it would have to deliver a constant 5 amps whilst working at no more than 75% capacity. A third important consideration was that it should be absolutely foolproof. So, rather than build

it in the conventional manner, that is to say, with the neutral side at earth potential, I decided that neither the live, nor the neutral side should be earthed, but that the case should have a separate earth. Thus the supply unit would cut out instantly in the event of reverse polarity but would also be capable of powering either negative or positive earth rigs. Naturally, I made sure that the line fuse was fitted on the live side, not as I have occasionally seen with commercially produced units, on the neutral side.

Before considering which components to use on the construction I was anxious to purchase the right box for the whole works to fit into. It was important that it should have adequate ventilation to adequately dissipate the heat which the components would develop and, for the same reason, I bought the largest heat sink that the box would accommodate. I had already decided that my unit would need to incorporate both voltage and current meters, both of which were readily available from any one of a number of electronics stores, in order that I would be able to monitor both the level of current being drawn and any drop in voltage which might occur.

In building the goodies which would eventually fit into the box, my first priority was to obtain a really good



mains transformer. One of the most commonly complained of features of many of the cheaper power supply units is an annoying hum from the transformer, often the result of loosely wound laminations. Although this problem can often be cured by dipping the windings into a vat of lacquer, I was determined that I would avoid the need to solve problems wherever possible, by buying the best components I could get. Accordingly, I chose a transformer with a capacity of 18 Volts, governed down to 13.8 Volts, since this would provide really good stability. I also made sure that it was capable of delivering 7 amps from the windings, in order to ensure that, in use, it delivered a steady and accurate 5 amps to the rig.

Rectification of the incoming alternating current to the required direct current was an important, but easily solved problem, since very high quality full wave rectifiers are readily available at economical prices. I chose one with a capacity for 18 amps at 150 Volts, because, here, as at every other stage, I wanted to ensure that it was working at well below its maximum capacity.

Next in line came the smoothing capacitor. For a while I was tempted to cut corners here, because capacitors with a value of around 15,000pf are not exactly cheap. Finally, my better judgement won and I decided that maintaining the high quality which had been my original aim was worth more than the couple of quid I might have saved by buying a smaller capacitor

and in went the heavy 15,000pf model.

To smooth out any ripple which might result at this stage, the next component is a low-pass choke and here I opted for a 1,000ohm, 10 watt, wire-wound device. A 1uf tantalum capacitor then takes care of any spikes which might still be flying about.

It is important to consider the fact that the power supply unit itself will consume about 5 Volts, so, for a steady 13.8 Volt output, you should be able to read around 19 Volts at a point before the smoothing capacitor (point "A" in diagram), which will be reduced slightly, to around 18.8 Volts at a point immediately after the choke (point "B").

### Ammeter

If, like me, you decide to use an ammeter, it should be included in the live rail, after the tantalum capacitor but before the regulator (point "C"), whilst a volt meter should be connected between live and neutral rails (point "D").

In order to achieve instant cut-out in the event of any malfunction, I decided upon the use of a regulator which would deliver up to a maximum of 7 amps, always remembering my initial requirement that nothing should be asked to work at much more than 75% of its capacity, but which would go on strike the instant it was asked to exceed this figure. Here a word of caution to the inquisitive is in order because, in devices such as the regulator, it is necessary to achieve a high

level of power dissipation, yet maintain low thermal resistance and the usual means of achieving this is to fill the device with a very nasty substance called barilium oxide, which, although very effective as a dissipator of heat, has the slightly unfortunate reputation of giving rise to cancer. Because the regulator is well sealed, there is no danger in the use of this substance but I would not like to be the one to go opening one up to find out what makes it tick.

Here is where the extra 5 Volts on the line gets swallowed up, leaving the required 13.8 Volts on which your rig depends. This voltage is then divided by the following two resistors.

The value of the resistors which follow the regulator will depend very much on the regulator itself but their values may be determined by means of the Formula:

$$V. \text{ out} = V. \text{ control} \left( \frac{R1 + R2}{R2} \right)$$

and, in the case of the device I used, V. control = 5 Volts.

The final component, a 100nf disc ceramic capacitor ensures that any RF energy which might be fed back into the power supply, from the rig, is not returned along the power input.

I have used my home-brew unit for the last two years or more, without any problem and was somewhat surprised when one manufacturer told me that I could expect to pay more than £100 for a commercially produced equivalent, since the whole thing cost a fair bit less than half of that price.

# CB Citizens' Band

### Letters

We are always pleased to receive letters from readers, but at times it is impossible to answer them all. We do try to get round to answering letters with an S.A.E. but this may take some time.

It is assumed that letters we receive are intended for publication unless they say otherwise. Letters for particular features like Back Chat, Q & A and Club News should have that marked on the envelope and the correspondent's full name and address, although this will not be published if requested. Readers who are hoping for publicity for events and competitions should bear in mind that the magazine goes to press at least two weeks before the magazine appears

in the shops, and editorial copydates are usually a month before the 'press' date. Please remember this when sending any information in.

### Writing for CB

We welcome readers' contributions, especially if they cover a new aspect of CB or are D.I.Y. projects. You may not be aware of how work should be presented — if in doubt write for advice!

### Telephoning

It is very difficult to deal with telephone queries as most of our energy has to go into putting the magazine together. If you can deal with it by letter, please do.



# CLUB NEWS

## More news from around the clubs

### Whiskey Delta X-Ray Club

The Whiskey Delta X-Ray club is a fast growing DX/QSL club. Membership is open to anyone interested in DXing or QSL swapping.

The club has three different QSL cards and one of these is a club POMA which is a much requested card.

Please drop us a line, no SAE needed, and we will send you an application form and samples of our club cards.

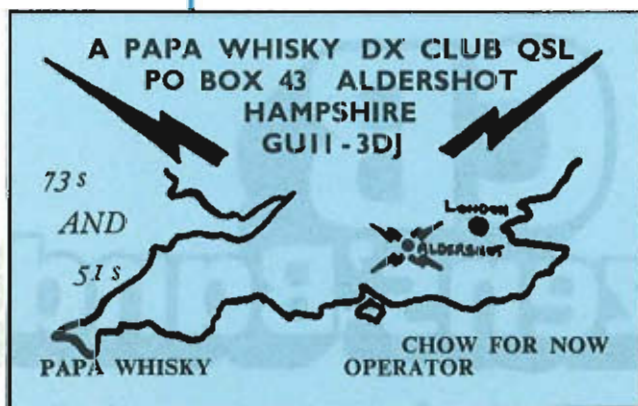
The President,  
The Whiskey Delta X-Ray Club,  
P.O. Box 284,  
Guernsey. C.I.

### Radio Tango International DX Group.

We are a new DX group formed in August 1985, with the aim of promoting goodwill through radio throughout the world. We aim to travel the world by radio airwaves and thus we are the Radio Travellers International.

We have at present 21 members. If anyone wishes to join, send £5.00 for unit number, 50 QSL cards, rubber-stamp, key ring etc.

Peter Compton,  
Radio Tango International DX Group,  
P.O. Box 558,  
London NW5 1HW



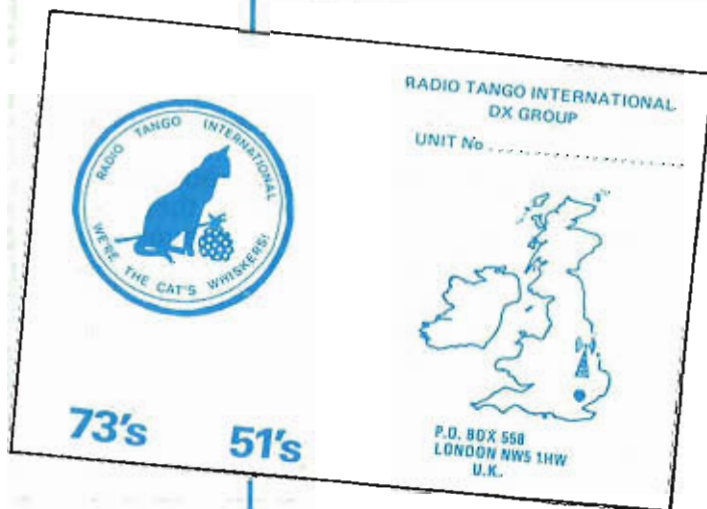
### New Town Breakers Club

The New Town Breakers Club was formed in October 1984 so has now had its first anniversary.

We have enjoyed quite a successful year in spite of a slow-growing membership.

We have held several well attended functions, including a float and stand in the local three day carnival, which raised a considerable amount for charity.

We meet every Tuesday evening and new members over 18 are always welcome. Any visitors or members of other clubs will always be sure of a



warm welcome and an enjoyable evening.

November Tango 02,  
New Town Breakers Club,  
P.O. Box 18,  
Warrington,  
Cheshire WA2 9QE.

### Papa Whiskey DX Club

This club was formed eighteen months ago and, after some internal problems, now has a new committee, a new venue and a good club atmosphere.

We meet every other Monday night at the Prince Albert, in North Lane, Aldershot at 8.00pm and everyone is welcome.

Membership is £2.00 at the moment which includes 25 club QSL cards, club list, id. card and use of the P.O. Box. On club nights, we charge 30p entry to cover sandwiches etc.

Disco Trucker,  
Papa Whiskey DX Club,  
P.O. Box 43,  
Aldershot,  
Hants GU11 3DJ.

### Central DX Group

As chairman of the Central DX Group, I would like to thank you on behalf of all our members for including our first edition QSL card in the August magazine.

We now have a second edition which will be of interest to people that collect edition cards.

Our membership now extends to Stourbridge, Maidstone, Liverpool and Northern Ireland.

We still turn away more breakers than we accept, due to bad behaviour etc., so we get the best members and a good name on the air. However, our books are still open at present for membership to both local and out-of-town breakers.

We also intend having a QSL competition soon, so we hope to catch readers for that copy that wins the trophy.

Barcardi Man,  
Chairman, Central DX  
Group,  
P.O. Box 530,  
Birmingham B38 9SB

### C.B. Crazy Bunch Charitable Club.

We would like to let breakers know that there has been a change of venue for our club.

We are now to be found by all good buddies, every Thursday, at the Links Hotel, Prestwick, Ayrshire. We have had the pleasure of meeting many visitors to our club and look forward to welcoming more.

Keep on coming!

Maverick Queen,  
Citizens Band Crazy Bunch Charitable Club,  
P.O. Box 6,  
Prestwick,  
Ayrshire KA9 2LX

### Legal Forty DX Club

I thought I would drop you a line about the Lima Foxtrots, based in Alloa, Central Scotland. It was first formed in February, 1985 and is growing fast.

Life membership costs £1.00 with £1.50 per annum for the P.O. Box. Membership is open to all serious DXers and QSLers alike and the aim of the group is to promote friendship — not only between all races and creeds but also between all other DX and QSL clubs.

As president of the club, my handle is well known world wide as a 100%

QSLer. We have our own QSL cards and many club extras at reasonable prices.

I would like to thank, through your columns, all the breakers who QSLed our members after skip copies.

Anyone interested in our club can contact me at the address below and I will send them an application form.

Happy Duck (Robert)  
P.O. Box 12,  
Alloa, Clacks.  
Scotland.

**A Scottish QSL**  
Lima Foxtrot \_\_\_\_\_  
Handle \_\_\_\_\_ Personal \_\_\_\_\_  
PO BOX 12, ALLOA, CLACKS, SCOTLAND  
QSO WITH \_\_\_\_\_ TIME \_\_\_\_\_  
DATE \_\_\_\_\_ R \_\_\_\_\_ S \_\_\_\_\_ T \_\_\_\_\_  
MODE \_\_\_\_\_ WATTS \_\_\_\_\_  
FREQ/CHANNEL \_\_\_\_\_  
MY TX/RX \_\_\_\_\_  
ANT \_\_\_\_\_ MIC \_\_\_\_\_  
 BASE  MOBILE OTH  
 PSE QSL  TNX QSL  
**Legal Forty DX CLUB**

WORLD DX GROUP  
GUERNSEY  
73's  
51's  
UNIT NO 010

Second Edition  
CENTRAL  
CHARLIE DELTA  
GROUP  
P.O. Box No. 530, BIRMINGHAM B38 9SB, ENGLAND.

# FREE READERS' ADS

**HAM International** Concorde II, legally stamped, also splits £145, Ham multimode £120, taking amateur exam. Phone 0283 221870.

**WANTED:** Service manual and circuit diagrams or information about where I can get hold of FM modifications on Hygain 5. Contact Jimmy McKenna, 5 Brunt Terrace, Trillick, Co Tyrone or telephone 036 555 505. Circuit diagrams should include FM mods.

**YAESU FT 707** amateur transceiver USB/LSB/CW/AM, full coverage 80 metres through to 10 metres, output 100 watts SSB, 50 watts AM, £290 ono. Telephone Brighton (0273) 422704.

**FOR SALE:** Hygain 5, usual frequency, suitable for conversion to 2m, Amtech 300 ATU, £35. Phone 0283 221870.

**MURPHY** home base rig, boxed, as new. Modulator Saturn home base antenna, unused. Offers over £50 (will split) or swap for 48K Spectrum Computer. Write to Graham Johnson, 95a Coventry Road, Nuneaton, Warwickshire or telephone 0203 341368 at after 5pm.

**RELUCTANT sale:** Cobra 148 GTL DX, currently blasting the continent, £150, good condition, no offers, any trial. Telephone 0296 631235.

**FOR SALE:** Commodore 64, £100 or swap for Cobra 148 GT2DX Superstar 360 or small beam. Also wanted: circuit diagrams for Cobra 148GTLDX and Tristar 777. Telephone Terry on 01 739 9522 after 7pm.

**STALKER XX** circuit diagram wanted (also known as Stalker IX AM SSB or President Madison). Original or copy, all postage covered. Any info, please write to PO Box 16, Heaton, Newcastle upon Tyne.

**FOR SALE:** Seven mobile twigs, all in original packaging and none ever used. Five Valor and two Z27s, £25 the lot or £5 each. Also, home base Silver Rod 5/8 wave, £10. Buyer collects. 01-262 7056 (office hours), ask for Nick.

**HAM INTERNATIONAL** Jumbo 26 to 28.495 Alfa. Speedy CTE 100 watts, linear amplifier £200. Contact Tom, PO Box 16, Livingston, Scotland.

**HAM** Jumbo 26MHz to 28MHz, very good condition, owned by me from new, complete with frequency counter, £250 ono. Bremi linear 200 £40. PDL 2 quad £50. Sadelta MPA22 base mike £20, Yaesu 700 receiver 2m converter and ATU £250. Telephone (0249) 720410.

**COMPUTER ZX81** cassette deck, games, books, mags, £50 or swap mains burner, Zetagi BU131, Bremi BR1210, Silver Eagle, Turner 500 or CB Hygain, Concorde, Colt 1200. Contact Tony, 88 Lake Street, Ferndale, Rhondda, Mid Glam, South Wales.

**BRL 210** burner, vgc, £50 or will exchange for all bands receiver. Contact I Tayler, 38 Hatherleigh Court, Park North, Swindon, Wiltshire.

**COMMODORE 64** home computer for sale plus cassette recorder, many games, joystick, still boxed, over £400 new (one year old), will sell for £200 ono or part-exchange for multimode CB radio and 5-7 amp power supply if possible. Telephone Robert Ham, on 0203 335901.

**WANTED:** Belcolm LS102L, 26 to 28MHz frequency readout or similar. Exchange Colt 1200 DX, low, mid high bands, AM FM SSB, excellent condition, boxed, manual, bracket, never used mobile, A1 condition, cash adjustment either way by agreement. Write to B Thomas, 4 Jersey Terrace, Port Tennant, Swansea.

**WANTED:** AM/FM/SSB base station with Kc shift. Must be in mint condition. Also linear amplifier wanted. Telephone Mr Fowler on 021-770 3115.

**VIC 20** pulpar personal home computer, cost new £250, sell for unbelievable £50! Commodore C2N cassette deck, joystick and many cartride and cassette games. Also, swap for Sadelta Echomaster base mike. Phone Paul after 6pm on 01-462-6249.

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

## CONDITIONS

1. These adverts. are offered as a free service to readers who are not involved in the trade of CB equipment or operate such services on a commercial basis. If this service is abused by trade advertisers, it will be withdrawn. The advertising dept. is always willing to hear from potential trade advertisers!
2. Adverts. will be inserted as and when space becomes available and will used on a 'first come, first served' basis. We will not be able to guarantee the insertion of a particular advert. into a particular issue of the magazine.
3. Although we cannot accept responsibility for printer's errors, we will do our best to ensure that legibly written advertisements are reproduced correctly. In the event of a gross error, a corrected version may be printed in the earliest available issue at the Editor's discretion.
4. The magazine or its publishers cannot accept responsibility for the contents of the

adverts., and by acceptance of these conditions the advertiser undertakes to indemnify the publisher against legal action arising out of the contents of the advert.

5. The magazine reserves the right to refuse adverts. or to delete sections where this is judged necessary. Adverts. are accepted in good faith and the publisher cannot be held responsible for any misrepresentation or for the activities of advertisers or respondents.

6. Advertisers must supply their names, addresses and (if available) telephone numbers and sign the form to indicate acceptance of these conditions. Unsigned forms will not be used.

7. All that is to be reproduced in the advertisement should be entered into the space provided on the form printed in the magazine. All advertisements must give either a telephone number and/or address for repliers to contact and this must be included in the wording of the advertisement. Advertisements must be 40 words or less. Telephone numbers normally count as two; exchange or exchange code as one, the number as the second.

8. Readers should write their advert. in block capitals or type it, underlining any words that are to appear in bold.

Name .....

Address .....

Telephone: .....

I accept the conditions listed above.

Signature .....

Send this form to:  
**Free Readers' Ads Service,**  
**Citizens' Band,**  
**1, Golden Square,**  
**London W1R 3AB**

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If you order goods from Mail Order advertisements in this magazine and pay by post in advance of delivery will consider you for compensation if the Advertiser should become insolvent or bankrupt, provided:

1. You have not received the goods or had your money returned; and
2. You write to the Publisher of this publication; summarising the situation not earlier than 28 days from the day you sent your order and not later than two months from that day.

Please do not wait until the last moment to inform us. When you write, we will tell you how to make your claim and what evidence of payment is required.

We guarantee to meet claims from readers made in accordance with the above procedure as soon as possible after the Advertiser has been declared bankrupt or insolvent (up to a limit of £2,000 per annum for any one Advertiser so effected and up to £6,000 per annum in respect of all insolvent Advertisers. Claims may be paid for higher amounts, or when the above procedure has not been complied with, at the discretion of this publication, but we do not guarantee to do so in view of the need to set some limit to this commitment and to learn quickly of readers' difficulties.)

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**HAM INTERNATIONAL MAIN DEALER FOR SOUTH WALES**

**C B T**

1 Prince of Wales Rd.,  
Swansea  
(0792) 463821

|   |         |     |
|---|---------|-----|
| Ham Relax Power Mike.....   | £22.50  | (C) |
| Ham 232S Processor Base Mike.....                                   | £44.99  | (D) |
| Ham 232DX Processor Base Mike.....                                  | £49.99  | (D) |
| Ham Antenna Matcher with through switch.....                        | £10.99  | (C) |
| Ham 10-12 amp Power Supply.....                                     | £69.95  | (E) |
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| Ham High Power Ant 5/8 wave.....                                    | £49.95  | (E) |
| Ham Sexy base antenna 7/8 wave.....                                 | £65.00  | (E) |
| Ham Big Mac Base Ant 7/8 Wave.....                                  | £85.00  | (E) |
| Frequency Counter 5 digits.....                                     | £59.99  | (E) |
| Ham extension speaker with filter.....                              | £10.99  | (C) |
| Ham LA 120 100 watt am/fm - 200 watts ssb variable with preamp..... | £179.00 | (E) |
| Ham LA 60 50 watt am/fm - 100 watt ssb variable with preamp.....    | £130.00 | (E) |
| SEIF reverberator RA 201.....                                       | £34.95  | (D) |
| Ham ROS-90 SWR-FS-Antenna Matcher.....                              | £19.99  | (B) |
| Ham ROS-4 SWR-Power-FS.....   | £12.99  | (B) |
| Ham ROS-6 SWR-Power modulation meter.....                           | £49.00  | (B) |
| Ham HFC 03 Frequency Counter.....                                   | £85.00  | (D) |
| Ham HFC 04 Frequency Counter.....                                   | £89.95  | (D) |
| Ham Standard Mike as originally supplied by Ham.....                | £7.99   | (B) |
| Fidelity 2000 160ch. FM.....  | £99.99  | (D) |
| York 861 40 channel FM Cybernet chassis.....                        | £59.99  | (D) |
| York 861 60 channel FM Cybernet chassis.....                        | £75.00  | (D) |
| Yrk 861 160 Channel.....  | £90.00  | (D) |
| York 861 120 channel.....   | £90.00  | (D) |

*Other range available on request*

|   |             |     |
|---|-------------|-----|
| 120 channel expansion boards (state rig) for FM rigs..... | £29.99      | (C) |
| Sunny 200s 100 watts AM/FM 200 watts SSB.....             | £89.99      | (D) |
| Cobra 148 original rig bracket.....                       | £4.99       | (B) |
| Multimode II or Concorde II handbook copies.....          | £1.50       | (A) |
| Multimode Two rig bracket.....                            | £4.99       | (B) |
| Super Star 360 handbook copy.....                         | £150        | (A) |
| Cordless Telephones.....                                  | from £50.00 |     |
| Auto squelch for FM rigs (state model).....               | £12.95      | (B) |
| Service manual for FM Rigs.....                           | £3.00       | (B) |
| Service manual for SSB Rigs.....                          | £6.00       | (B) |

Spares available for Ham Models

POSTAGE RATES: (A) 50p (B) £1.00 (C) £2.00 (D) £3.00 (E) £5.00

To obtain our catalogue on C.B. equipment send £1.50 to C.B.T., 1 Prince of Wales Road, Swansea, Catalogue contains the MMIII CONCORDE III & JUMBO III

**ACCESS AND BARCLAYCARD ACCEPTED**

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# LADY BREAKERS



## Filly remembers a true-life Winter's Tale

**S**itting by the fire on these chilly winter evenings, I am reminded of the time I got myself snowbound during that appalling winter three years ago. I'm reminded of it every time I find myself by a fire, as a matter of fact — the moment when I tottered, frozen, through the door of a friend's house into the blissful warmth and welcoming glow of a real fire ranks as one of those memorable moments I'll never forget.

I've always believed that there is very little excuse for those who get themselves caught in the snow in this country. Unless it's a dire emergency,

you should simply not drive when the roads look dodgy. I've got no excuse at all, which is why I've kept quiet about it all this time. I took a risk that wasn't justified (I can't even remember, now, where I was driving to), thinking, like all mugs, that I knew better. I didn't.

It had stopped snowing some 24 hours before, and it didn't seem particularly thick on the ground. It wasn't mushy, but it didn't look too frozen either. I remember thinking how pretty the countryside looked under snow, like a Christmas card. Huh!

I had not taken the Mini out the day before, but there seemed no particular reason not to now. Other people had been out driving (the herd mentality, this — if other people are doing it, it must be OK). There hadn't been a hard enough frost to make the roads treacherously icy, I reassured myself. I would be driving over familiar country, only a few miles. Minis have front wheel drive. And of course, I would have CB to call up help, in the extremely unlikely event of my needing any help.

Having said that, I really don't think I would have gone out if I had had any idea I would need to broadcast a distress signal. When it's your fault you're in trouble in the first place, and the weather conditions are such that you could be putting rescuers at risk, it's — well, it makes you feel a real burden on society. And anyone silly enough to go careering over snowed up countryside is just that.

So off I went, driving with extreme care (I thought), out of the village, down the hill (a bit slippery, but nothing I couldn't handle) and off through the lanes. The roads out in the open were not bad at all, and I began to relax. Every mile I drove meant a correspondingly longer walk home should I get stuck, but I began to think I would get away with it.

Four miles out, I began to get worried. I had lived in the area for a couple of years, but the snow made everything look different. It made it difficult to pick out some of the signposts against a background of white fences, hedges and bushes. Some of the sheltered lanes with high hedgerows were badly blocked with snow which had drifted. Everything was very white, very silent and very still. At the start of the drive, I had picked up a few voices on the rig,

but even those seemed to have stopped. Finally, on a long stretch of road lying between empty, rolling fields, I decided to turn back.

And of course, the moment I made this laudable resolve, the car chose to conk out.

I wasn't too bothered at first. I fiddled about under the bonnet and achieved nothing. I sat in the car, blowing on my fingers, and waited for a copy. I began to notice how cold it was...

I refused to make use of channel nine. This wasn't an emergency, I told myself sternly. Other people need help more than you do. Anyway, it's all your own silly fault.

In spite of the good reception I had experienced earlier in the afternoon, the airwaves were unusually silent. Everyone else, of course, had had the good sense to stay off the roads. I wasn't sure enough of where I was to start walking—I was wearing Wellington boots and my feet were already frozen. I had had the sense to bring a flask of coffee, but it had not occurred to me to throw a blanket in the car.

An hour later, I had not managed to contact anyone, and I was feeling very cold. Since the engine had conked out, there was no heat to be had from the heater. I got out of the car and did some energetic exercises to warm up. It was beginning to get dark...

I began to wonder if I should start walking, but decided against it. I was on a road, someone would come eventually, or someone would answer me on the radio. Wouldn't they? I began to wonder if I would be forced to spend the night in the car. And it was then, just as I felt the first stirrings of real panic, I heard voices, clear as crystal. Praise be, one of them turned out to belong to a lady in a Range Rover, a blessed, warm, four-wheel drive, reliable Range Rover, on a road just half a mile away.

And immediately, of course, all my fears seemed ridiculous. But still, when I curl up next to a cosy fire, I find myself thinking of those two cold, uncomfortable hours spent stranded in a car in the snow, when it seemed for a time that even the CB link to the outside world wasn't going to help me out of a mess for which I had only myself to blame...

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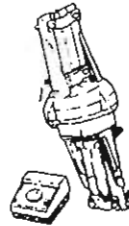
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## 934

|                  |      |
|------------------|------|
| <b>RIGS</b>      |      |
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| Commtel NP1 934  | £375 |
| Reftec           | £275 |
| Uniace 400       | £299 |

|                      |     |
|----------------------|-----|
| <b>AERIALS</b>       |     |
| Nevada P7M-E         | £44 |
| Nevada P7R-E         | £44 |
| Nevada PA7-E Base    | £66 |
| TC12L Loop Quad Beam | £49 |

|                    |        |
|--------------------|--------|
| <b>MODULATOR</b>   |        |
| 5/8+5/8 co-Linear  | £12.35 |
| 8.½ wave co-Linear | £41.95 |
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|--|-----|
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| 14B GTL DX Mk 1   | 3 2703      | 360 FM Mk 3   |
| 148 GTL DX Mk 3   | 5 2795 Mk 1 | 2000 Mk 1     |
| GTL 150           | 5 2795 Mk 2 | 2000 Mk 2     |
| COLT              | 5 2795 DX   | 2200          |
| 320               | 5 8795      | TRISTAR       |
| 320 FM            | INTEK       | 747           |
| 485               | 1200 FM     | 777           |
| 720               | LAFAYETTE   | 797           |
| 870               | HB940       | 84B           |
| 890               | 1200 FM     | SUITABLE MAIN |
| 1200 DX           | 1800        | BOARD No.     |
| 1200 Excalibur    | MARCO       | PB010         |
| 1600 DX           | 444         | PC879         |
| 1600 Excalibur    | 747         | PC893         |
| FORMAC            | Excalibur 1 | PC999         |
| 80                | MAJOR       | PTBM 059      |
| 88                | M12D        | PTBM 094      |
| 120               | M588        | PTBM 106      |
| HAM INTERNATIONAL | M360        | PTBM 121      |
| Concorde 1        | MIOLAND     | PTBM 125      |
| Concorde 2        | 6001        | PTBM 131      |
| Concorde 3        | 7001        | PTBM 133      |
| Jumbo 1           | NATO        | PTBM 137      |
| Jumbo 2           | 2000        | PCMA 001      |
| Jumbo 3           | PRESIDENT   |               |
| Multimode 2       | McKinley    |               |
| Multimode 3       | Grant       |               |

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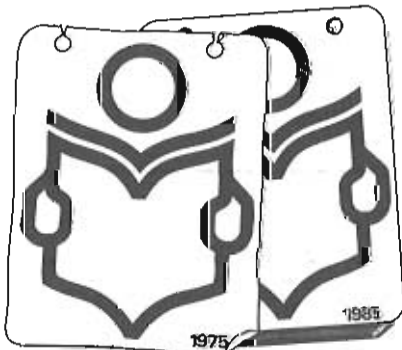
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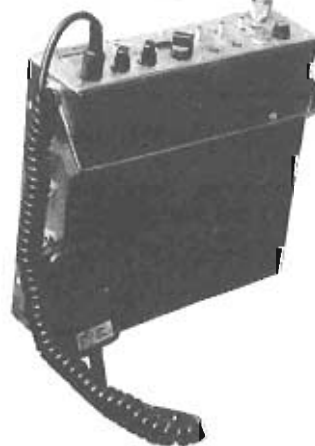
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# CB Citizens' Band

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| April 1985     | QSL History                    |
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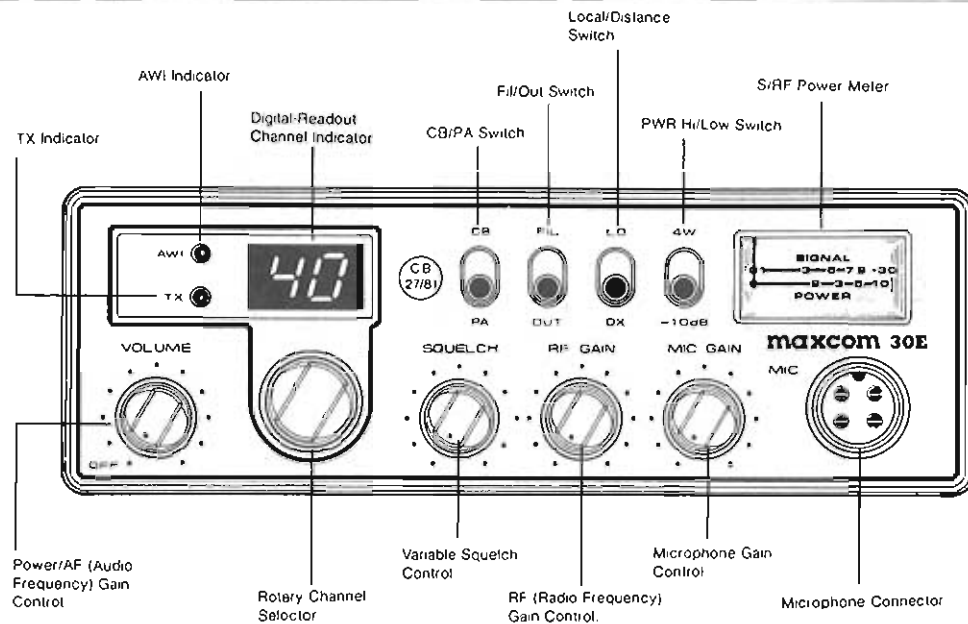
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# Citizens' Band

## REFERENCE SECTION



### A CB SET AND ITS CONTROLS

#### VOLUME

Sometimes called *Audio Frequency Gain* control. Usually combined with the 'power on' switch. The volume control will only increase or decrease the loudness of the incoming signal — it won't alter the strength of it or affect the transmitted signal.

#### CHANNEL SELECTION

For choosing the channel you transmit and receive on

#### CHANNEL INDICATOR

Displays, usually by LEDs, the channel you have selected. Some channel displays are of liquid crystal or fluorescent. The digits are normally bright red, green, orange or blue and visible in all but the most direct sunlight.

#### SQUELCH

The squelch control is used for quieting background hiss or the babble of distant signals. The control is turned slowly, usually to the right, until the background noise disappears. The squelch circuit will then only open to let through a stronger signal than those you have quieted out. As soon as the stronger signal goes, the circuit closes. Care must be taken not to turn the squelch control up too far, as then only a very strong signal will open it.

#### SIGNAL/RF METER

On most sets this is of the 'moving needle' type against an analogue background. Some sets do have a bar of LEDs that light up to show the strength of either the received signal or the transmission. It shows the *relative* strength, not a reading in dB or Watts. These meters cannot be 100% accurate and different rigs will give slightly different readings for signals of the same strength.

#### RF GAIN

This controls the reception sensitivity of the set. When decreased the set is less sensitive, and when increased the set is more sensitive to weaker signals. Reducing the gain helps prevent overloading when talking to someone who is very close.

Some sets, instead of having a suitable rotary control, have a flick two position switch marked *local* and *distance*. Full sensitivity is the distant position

#### MIC. GAIN

Adjusts the sensitivity of the microphone amplifier circuit and controls the audio from the microphone that is used to modulate the signal.

#### CB/PA SWITCH

This switch turns your CB set into a low public address amplifier, when an external speaker is fitted into the socket on the back of the rig. Anything said into the microphone is amplified and broadcast through the speaker and not transmitted from the antenna.

#### tone or Filter Control

This can either be a rotary or flick switch. It controls the tonal quality of received signals in accordance with the users preference

#### POWER ANTENNA

Reduces the transmitter power from 4Watts to 0.4Watts. The attenuator should be used if your antenna is mounted more than 7 metres above the ground

#### RX/TX INDICATORS

These light emitting diodes light up to show if you are receiving (RX) or transmitting (TX).

#### ANTENNA WARNING INDICATOR

This is a warning indicator which is activated by trouble in the antenna system e.g. a bad mismatch or damage to the antenna or cable. You should stop transmitting if this lights up, and correct the problem.

Your set may also have the following controls . . .

#### CHANNEL 9 SWITCH

This is an 'over-ride' switch that will immediately select channel 9 without using the channel selector to find it. It is fitted to save time in an emergency.

#### DELTA TUNE

This is not a common feature on British sets, where frequency and stability are closely specified. It is a fine tuning device for tuning in stations that are operating slightly off frequency.

#### DIMMER

Works on the same principle as a domestic light dimmer, and reduces the amount of illumination on displays and dials on the CB set. A few sets have an automatic dimmer built in, which measures the lighting level through a photo-electric cell and adjusts the illumination accordingly.

#### ANL/NOISE BLANKER

The Automatic Noise Limiter or Noise Blanker is designed to reduce interference from a car's ignition system by desensitising the receiver slightly. If the ignition circuit is already adequately suppressed it will not make any difference.

#### CHANNEL BUSY/FREE INDICATOR

This is usually a LED that illuminates when a particular channel is in use or is free. This is gauged by the amount of 'traffic' on the channel which has to be at a certain level before the indicator is activated. Sets have either a 'free' or 'busy' indicator, not both.

# FM RIG CHECKLIST



| NAME          | MODEL         | RETAIL PRICE | NO. OF CHANNELS | SUPPLY VOLTAGE | SQUELCH | NB SWITCH | AML SWITCH | MIKE GAIN | RF GAIN | STONE CONTROL | S/RF METER | S/RF LED R/O | HI/LO OUTPUT | PA FACILITY | EX. SPEAKER JACK |
|---------------|---------------|--------------|-----------------|----------------|---------|-----------|------------|-----------|---------|---------------|------------|--------------|--------------|-------------|------------------|
| AUDIO LINE    | 341           | £60          | 40              | 13.8VDC        | •       |           |            | •         | •       | •             | •          | •            | •            | •           |                  |
| AUDIO LINE    | 340           | £40          | 40              | 13.8VDC        | •       |           |            | •         |         | •             | •          | •            | •            | •           |                  |
| AUDIO LINE    | 342           | £115         | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| COLT          | 295           | £49.99       | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| COMMTEL       | GT888         | £30          | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| COMMTEL       | GT688         | £35          | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| COMMTRON      | CB40F         | £70          | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| COMMTRON      | CXX           | £69.95       | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| COMMUNICATORS | NI-440DX      | £50          | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| CYBERNET      | BETA 1000     | £70          | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| CYBERNET      | BETA 2000     | £85          | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| CYBERNET      | BETA 3000     | £169         | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| CYBERNET      | DELTA 1       | £355         | 20              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| INTERCEPTOR   | INTERCEPTOR   | £80          | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| INTERCEPTOR   | TC400         | £95          | 40              | 13.8VDC        | •       |           | •          | •         | •       | •             | •          | •            | •            | •           |                  |
| INTERCEPTOR   | ONE HANDER    | £100         | 40              | 13.8VDC        | •       |           |            | •         | •       | •             | •          | •            | •            | •           |                  |
| JOHNSON       | JOHNSON       | £50          | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| LAKE          | MANXMAN 850   | £32.50       | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| LAKE          | MANXMAN 950   | £37.50       | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| LOWE          | TX 40         | £50          | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| MAGPIE        | AUTOSCAN 5000 | £120         | 40              | 13.8VDC        | •       |           |            | •         | •       | •             | •          | •            | •            | •           |                  |
| MAXCOM        | 4E            | £50          | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| MAXCOM        | 6E            | £48          | 40              | 13.8VDC        | •       |           |            |           | •       | •             | •          | •            | •            | •           |                  |
| MAXCOM        | 20E           | £50          | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| MAXCOM        | 21E           | £50          | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| MAXCOM        | 16E           | £40          | 40              | 13.8VDC        | •       |           |            |           |         | •             | •          | •            | •            | •           |                  |
| MAXCOM        | 30E           | £65          | 40              | 13.8VDC        | •       |           |            | •         | •       | •             | •          | •            | •            | •           |                  |





This listing includes most of the rigs available for FM CB. Some rigs are still not on the market, but may be picked up second-hand or may be found in old stock at some shops. The prices quoted are recommended retail prices or typical price — they may vary considerably from shop to shop and area to area.

# MOBILES

| TX IND. LIGHT | RX IND. LIGHT | CH 9 SWITCH | MIKE POSITION | COMMENTS               | ADDRESS   | NAME        |
|---------------|---------------|-------------|---------------|------------------------|---|-------------|
| •             | •             |             | SL            |                        | Telecomms, 189 London Rd, North End, Portsmouth         | AUDIOLINE   |
| •             |               |             |               | Report Feb '82         |   | AUDIOLINE   |
| •             | •             |             |               |                        |   | AUDIO LINE  |
| •             |               |             | FL            |                        | K B & Co Ltd., 202 Cheetham Hill Rd, Manchester         | COLT        |
| •             |               |             | SL            |                        | Globe, 168 Brooker Road, Waltham Abbey, Essex           | COMMTEL     |
| •             |               |             | SL            | Dimmer Switch Features |   | COMMTEL     |
| •             |               | •           | FL            |                        | Roger D, 831 Mansfield Rd, Notts                        | COMMTRON    |
| •             |               |             | FL            |                        |   | COMMTRON    |
| •             | •             | •           | FL            | Roger Beep Feature     |   |             |
| •             |               |             | SL            |                        | Telecomms, 198 London Rd, North End, Portsmouth         | CYBERNET    |
| •             | •             |             | FL            | Report May '83         |   | CYBERNET    |
| •             | •             | •           | FL            | Report September '83   |   | CYBERNET    |
| •             |               |             | FR            | Report Oct '84         |   | CYBERNET    |
| •             | •             |             | SL            |                        |   | INTERCEPTOR |
| •             | •             |             | FL            |                        |   | INTERCEPTOR |
| •             | •             |             | FL            |                        |   | INTERCEPTOR |
| •             |               |             | FL            | Great GT868 chassis    | Star Warehouse, Chaik Farm Rd, London                   | JOHNSON     |
| •             |               |             | FL            |                        | Roger D, 831 Mansfield Rd., Nottingham NG5 3GF          | LAKE        |
| •             |               |             | FR            | Report April '83       |   | LAKE        |
| •             | •             |             | FL            | Report March '83       | Lowe Electronics, Matlock, Derbyshire                   | LOWE        |
| •             |               | •           | FL            | Report November '82    | Mappie Electronics, PO Box 35, Andover, Hants SP10 2LG  | MAGPIE      |
| •             |               |             | FL            |                        | AM House, 9A Old's Approach, Tolpits Ln, Watford, Herts | MAXCOM      |
| •             |               | •           | FL            |                        |   | MAXCOM      |
| •             |               | •           | FL            |                        |   | MAXCOM      |
| •             |               | •           | FL            |                        |   | MAXCOM      |
| •             |               | •           | FL            |                        |   | MAXCOM      |
| •             |               | •           | FL            |                        |   | MAXCOM      |
| •             |               |             | FL            | Report Jan '84         |   | MAXCOM      |



# REFERENCE



| NAME         | MODEL          | RETAIL PRICE | NO OF CHANNELS | SUPPLY VOLTAGE  | SQUELCH | NB SWITCH | ANL SWITCH | MIKE GAIN | RF GAIN | TONE CONTROL | S/RF METER | S/RF LED R/O | HI/LO OUTPUT | PA FACILITY | EX. SPEAKERS |
|--------------|----------------|--------------|----------------|-----------------|---------|-----------|------------|-----------|---------|--------------|------------|--------------|--------------|-------------|--------------|
|              |                |              |                |                 |         |           |            |           |         |              |            |              |              |             |              |
| MERCURY      | 10 40          | N/A          | 40             | 13.8VDC         | •       |           |            |           | •       |              | •          |              | •            | •           | •            |
| MUSTANG      | CB1000         | £49.95       | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| MUSTANG      | CB3000         | £69.99       | 40             | 13.8VDC         | •       |           |            |           | •       | •            | •          |              |              | •           | •            |
| NATO         | 40M            | £69.95       | 40             | 13.8VDC         | •       |           |            | •         | •       | •            |            |              |              | •           | •            |
| NATO         | 2000           | £189.95      | 40             | 13.8VDC         | •       | •         | •          |           | •       | •            | •          |              |              | •           | •            |
| OSCAR        | OSCAR I        | £85          | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| OSCAR        | OSCAR II       | £49          | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| RADIOTECHNIC | SUPERTUNED M40 | £59.95       | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| RADIOTECHNIC | RT 852         | £69.95       | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| ROTEL        | RVC 220        | £50          | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| ROTEL        | RVC 230        | £70          | 40             | 13.8VDC         | •       |           |            |           | •       | •            | •          |              |              | •           | •            |
| ROTEL        | RVC 240        | £90          | 40             | 13.8VDC         | •       |           |            | •         | •       | •            | •          |              |              | •           | •            |
| SIRTEL       | SEARCHER       | £40          | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| TANDY        | TRC2001        | £80          | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| TANDY        | TRC2002        | £70          | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| TANDY        | TRC2000        | £100         | 40             | 13.8VDC         | •       |           |            | •         | •       |              | •          |              |              | •           | •            |
| TANDY        | TRC1004        | £79          | 40             | 12VDC           | •       |           |            |           |         |              | •          |              |              | •           | •            |
| TANDY        | TRC2003        | £130         | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| UNIDEN       | UNIACE 100     | £69.95       | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| UNIDEN       | UNIACE 200     | £89.95       | 40             | 13.8VDC         | •       |           |            | •         | •       | •            | •          |              |              | •           | •            |
| WESTERN      | COMPACT 40     | £34.50       | 40             | 13.8VDC         | •       |           |            |           |         |              | •          |              |              | •           | •            |
| WESTWARD     | P.T.2          | £159.95      | 40             | 13.8VDC<br>240V | •       |           |            |           |         |              | •          |              |              | •           | •            |



| NAME      | MODEL      | RETAIL PRICE | NO OF CHANNELS | SUPPLY VOLTAGE | SQUELCH | NB SWITCH | ANL SWITCH | MIKE GAIN | RF GAIN | TONE CONTROL | S/RF METER | S/RF LED R/O | HI/LO OUTPUT | PA FACILITY | EX. SPEAKERS |
|-----------|------------|--------------|----------------|----------------|---------|-----------|------------|-----------|---------|--------------|------------|--------------|--------------|-------------|--------------|
|           |            |              |                |                |         |           |            |           |         |              |            |              |              |             |              |
| AUDIOLINE | 345        | £139.95      | 40             | 240VAC         | •       |           |            | •         | •       | •            | •          |              |              | •           | •            |
| COMMTEL   |            | £65          | 40             | 240/12V        | •       |           |            |           |         |              | •          |              |              |             |              |
| HAM INT.  | JUMBO      | £254         | 40             | 240VAC         | •       |           | •          | •         | •       |              |            |              |              | •           | •            |
| HARVARD   | H401       | £149.95      | 40             | 240VAC         | •       |           |            | •         | •       |              | •          |              |              | •           | •            |
| HARVARD   | WT44       |              | 40             | BATTERIES      | •       |           |            |           |         |              | •          |              |              | •           | •            |
| KAISER    | CBX40      | £80          | 40             | BATTERY        | •       |           |            |           |         |              | •          |              |              | •           | •            |
| MAXCOM    | 7E         | £69.95       | 40             | BATTERY        | •       |           |            |           |         |              | •          |              |              | •           | •            |
| TANDY     | TRC1001    | £119         |                | BATTERY        | •       |           |            |           |         |              | •          |              |              | •           | •            |
| UNIDEN    | UNIACE 300 | £149.95      | 40             | 240VAC         | •       |           |            | •         | •       | •            | •          |              |              | •           | •            |
| WESTWARD  | P.T.2      | £159.95      | 40             | 240V/12V       | •       |           |            |           |         |              | •          |              |              | •           | •            |

# MOBILES

| POWER JACK | TX IND. LIGHT | RX IND. LIGHT | CH 9 SWITCH | MIKE POSITION | COMMENTS                            |
|------------|---------------|---------------|-------------|---------------|-------------------------------------|
| •          | •             |               |             | FR            | Report July '83                     |
| •          | •             |               |             | FL            |                                     |
| •          | •             | •             |             | FL            |                                     |
| •          |               |               |             | FL            |                                     |
| •          |               |               |             | SL            | Report January '83                  |
|            |               | •             |             | FL            | Cybernet 134 chassis rep. April '82 |
|            |               |               |             | FL            | Report Oct '83                      |
| •          | •             |               |             | FL            | Report July '82                     |
| •          | •             |               |             | FL            | Report Nov '85                      |
| •          |               |               |             | FL            | Cybernet chassis                    |
| •          | •             | •             |             | SL            | Cybernet chassis                    |
| •          |               |               |             | SL            | Cybernet chassis                    |
| •          |               |               |             | FL            |                                     |
| •          | •             |               |             | SL            |                                     |
| •          |               |               |             | SL            |                                     |
| •          |               |               |             | SL            |                                     |
| •          |               |               |             | —             |                                     |
|            |               |               |             | SL            | Report Nov '82                      |
| •          |               |               |             | SL            | Report Sept '82                     |
| •          | •             |               |             | FL            | Report Feb '83                      |
| •          | •             |               |             | SL            |                                     |
|            |               |               |             | FL            | Report Nov '83                      |

| ADDRESSES   | NAME         |
|---|--------------|
| E.M.S. Communications, Grove St, Wantage, Oxon LX21 7AD   | MERCURY      |
| K.B. & Co Ltd, 202 Cheetham Hill Rd, M/cr.  | MUSTANG      |
|   | MUSTANG      |
| Roger D, 831 Mansfield Rd, Nottingham NG5 3GF   | NATO         |
|   | NATO         |
| S.M.C. Runbridge St, Totton, Hants SO4 4OP  | OSCAR        |
|   | OSCAR        |
| Radiotechnic Ltd, Rue des Buttes, St Mary, Jersey, C.I./23 Telford Rd, Fern Down Industrial Estate, Fern Down, Wimborne, Dorset | RADIOTECHNIC |
|   | RADIOTECHNIC |
| Rotel Hi-Fi, 2-4 Erica Rd, Stacey Bushes, Milton Keynes   | ROTEL        |
|   | ROTEL        |
|   | ROTEL        |
|   | SIRTEL       |
| Tame Way, Tower Bridge St, Walsall, Staffs  | TANDY        |
|   | TANDY        |
|   | TANDY        |
|   | TANDY        |
|   | TANDY        |
| Cravenminster Ltd, Unit B, Ind Est, Llandudno Junct, Gwynedd  | UNIDEN       |
|   | UNIDEN       |
| Western Electronics, Fairfield Est, Louth, Notts  | WESTERN      |
| Westward Electronics, The Mill House, Westward Tuckenhay, Totnes, Devon 086423 336/370  | WESTWARD     |

# BASES & PORTABLES

| POWER JACK | TX IND. LIGHT | RX IND. LIGHT | CH 9 SWITCH | MIKE POSITION | COMMENTS  |
|------------|---------------|---------------|-------------|---------------|---|
| •          |               |               |             |               |   |
|            |               |               |             | FR            | Report December '83. Also comes with telescopic antenna |
| •          |               |               |             | SL            |   |
| •          |               |               |             | FL            |   |
|            |               |               |             |               | External antennae facility                              |
| •          |               |               |             |               |   |
| •          |               |               |             |               |   |
| •          |               |               |             | FL            | Reviewed August '83                                     |
|            |               |               |             | FL            | Report Nov '83  |

| ADDRESSES   | NAME      |
|---|-----------|
| Telecomms, Portsmouth and Globe, Essex  | AUDIOLINE |
|   | COMMTEL   |
|   | HAM INT.  |
|   | HARVARD   |
| Globe, 168 Brooker Road, Welham Abbey, Essex                                  | HARVARD   |
| Telecomms, 189 London Road, North End, Portsmouth                             | KAISER    |
| Sharmen's Wholesale, 3 Bury New Rd, Manchester (061-834 9571)                 | MAXCOM    |
| Tame Way, Tower Bridge Street, Walsall  | TANDY     |
| Cravenminster Ltd., Unit B, Industrial Estate, Llandudno Junction, Gwynedd    | UNIDEN    |
| Westward Electronics, The Mill House, Tuckenhay, Totnes, Devon 080423 336/370 | WESTWARD  |

# ANTENNA CHECKLIST

## The Citizens' Band Antennas

**Name**  
Lists antennas by name and model number and gives you, where possible, the name and address of the manufacturer or distributor.

**Construction**  
The majority of home base antennas are made of aluminium and mobile antennas from stainless steel, but fibre glass can be

The D.T.I. specs for CB antennas are now more liberal than those originally in force, with the base loading restriction removed to permit any type of loading as long as the antenna is 1.65m in length (or less) and no more than 55mm in diameter. This revised checklist now includes the many new antennas released after this change of heart.

| NAME                  | ADDRESSES  | MODEL           | CONSTRUCTION   | LENGTH  | MAX POWER | TYPE   | LOADING                    | MOUNT                              | PRICE RANGE |
|-----------------------|--|-----------------|----------------|---------|-----------|--------|----------------------------|------------------------------------|-------------|
|                       |  |                 |                |         |           |        |                            |                                    |             |
| AERIAL SUPPLIES       | Aerial Supplies (Radditch) Ltd. 6 Widney House, Bromsgrove Road, Redditch, Worcs. (0527 62620/60107) | Silver Star     | AL             | 1.5     | 100       | B      | B                          | Pole                               | D           |
|                       |  | Silver Arrow    | AL             | 1.5     | 500       | B      | B                          | Pole                               | E           |
|                       |  | Javelin         | AL             | 1.64    | 500       | B      | C                          | Pole                               | E           |
|                       |  | Javelin Dipole  | AL             | 1.64    | 500       | B      | C                          | Pole                               | C           |
| ALLGON                | Communications, 10 North Street, Strood, Kent.   | Various         | FG<br>SS<br>AL | Various | Various   | B<br>M | T<br>C<br>B<br>C<br>W<br>B | Various                            | A-H<br>inc. |
|                       |  | 466             | SS             | 1.4     | 10w       | Marine | C<br>W<br>B                | Mast/Cabin                         | F           |
| ARMSTRONG             | Stateside Trading Ltd. Audley Avenue, Newport, Shropshire  | SAM 10          | SS             | 1.06    | 1000      | M      | B                          | Surface                            | F           |
|                       |  | SAM 20          | SS             | 1.06    | 1000      | M      | B                          | Spring Surface                     | F           |
|                       |  | TAK 10          | SS             | 1.06    | 1000      | M      | B                          | Boot lip                           | F           |
|                       |  | TAK 20          | SS             | 1.06    | 1000      | M      | B                          | Spring Boot lip                    | G           |
|                       |  | MAG 10          | SS             | 1.06    | 1000      | M      | B                          | Mag.                               | G           |
|                       |  | MAG 20          | SS             | 1.06    | 1000      | M      | B                          | Spring Mag.                        | G           |
|                       |  | BDY 20          | SS             | 1.06    | 1000      | M      | B                          | Side                               | G           |
|                       |  | PEC 20          | SS             | 1.06    | 1000      | M      | B                          | Side, Fold over & Quick Disconnect | G           |
| ARCHER                | Tandy Corp. Tameway Tower, Bridge Street, Walsall, West Mids.  | 21-904          | SS             | 0.6     | 50        | M      | B                          | 3/8" threaded                      | D           |
| BANDIT                | Telecomms, 189 London Road, North End, Portsmouth  | B10             | SS             | 1.42    |           | M      | B                          | Mag.                               | G           |
|                       |  | B15             | SS             | 0.61    |           | M      | B                          | Mag.                               | F           |
|                       |  | B15             | SS             | 1.22    |           | M      | B                          | Mag.                               | F           |
|                       |  | B20             | SS             | 1.42    |           | M      | B                          | Mirror                             | F           |
|                       |  | B30             | SS             | 1.42    |           | M      | B                          | Drill Thru                         | E           |
|                       |  | B30             | SS             | 1.22    |           | M      | B                          | Drill Thru                         | E           |
|                       |  | B40             | SS             | 1.42    |           | M      | B                          | Various                            | D           |
|                       |  | B40             | SS             | 1.22    |           | M      | B                          | Various                            | D           |
|                       |  | B50             | SS             | 1.42    |           | M      | B                          | Various                            | D           |
|                       |  | B50             | SS             | 1.22    |           | M      | B                          | Various                            | D           |
| BREMI UK LTD.         | Unit 6, Innage Park, Holly Lane Industrial Estate, Atherstone, Warks.                                | B27S            | SS             | 1.62    | 1000      | M      | B                          | 3/8" threaded                      | C           |
|                       |  | C27S            | SS             | 1.38    | 1000      | M      | C                          | 3/8" threaded                      | C           |
|                       |  | HB27S           | AL             | 1.66    | 1000      | B      | T                          | Pole                               | E           |
| CB SERVICES           | 37 Crab Lane, Harrogate, North Yorks.  | Bullwhip        | SS             | 1.5     |           | M      | B                          | Various                            | C           |
|                       |  | Knuckleduster   | AL             | 1.5     |           | B      | B                          |                                    | D           |
| COMMTEL               | Near Third Drove, Fengate, Peterborough  | Rocket          | SS             | 1.5     |           | M      | B                          | 3/8" threaded                      |             |
|                       |  | Shuttle         | FG             | 1.5     |           | M      | B                          | 3/8" threaded                      |             |
|                       |  | Starlight       | SS             | 1.5     |           | M      | B                          | 3/8" threaded                      |             |
|                       |  | Shuttle Star    |                | 1.5     |           | B      | CW                         | Clamp                              |             |
|                       |  | Signal searcher | AL             | 1.5     |           | B      | B                          | Pole                               |             |
|                       |  | Messenger       | SS             | 1.5     |           | B      | B                          | Clamp                              | E           |
|                       |  | Signal keeper   | SS             | 1.5     |           | B      | B                          | Tripod                             | F           |
| FREEMAN AND PARDDE    | Tything Road, Arden Forest Ind. Est, Alcester, Warks.  | Invader         | AL             | 1.6     | 250       | B      | B                          | Pole                               | E           |
|                       |  | Thunderpole II  | AL             | 1.6     | 500       | B      | B                          | Pole                               | F           |
|                       |  | Thunderpole III | A1             | 1.66    | 500       | B      | C                          | Pole                               | F           |
| GAMMA AERIAL PRODUCTS | Lye, West Midlands. (0384 891132/891474)   | Skybreaker      | AL             | 1.5     |           | B      | B                          | Pole                               | D           |
|                       |  | Avenger         | AL             | 1.5     |           | B      | B                          | Bracket                            | C           |
|                       |  | Lofty           | AL             | 1.5     |           | B      | B                          | Bracket                            | D           |
|                       |  | Skybreaker II   | AL             | 1.66    |           | B      | C                          | Pole                               | E           |
|                       |  | Avenger II      | AL             | 1.66    |           | B      | C                          | Bracket                            | E           |
|                       |  | Lofty II        | AL             | 1.86    |           | B      | C                          | Bracket                            | E           |
|                       |  | Firefly         | SS             | 1.66    |           | M      | C                          | 3/8" threaded                      | E           |

## na Checklist will give you the following information:

used in some models. The list tells you what material the antenna is manufactured from.

### Length

The legal maximum length of an antenna is 1.65m, base or mobile.

### Maximum Power

This is intended as a guide

only, as the law only permits an effective radiated power of two watts. The power rating will give some indication of sturdiness. Figure refers to watts.

### Type

Indicates whether a mobile or base antenna.

### Loading

Indicates the type of

electrical loading of the antenna; top, centre, bottom or continuously wound.

### Mount

This gives some idea of the mount or type of mount appropriate for the antenna concerned. Home base antennas are usually pole

mounted, but can be house gutter mounted. Mobile antennas are either mag. mounted by a strong magnet, attached to the car gutter or boot lid edge whilst others are physically attached in the same way as a car radio antenna. Mobile antennas with 3/8" thread usually will fit a range of mounts.

| KEY                |                       |              |
|--------------------|-----------------------|--------------|
| Construction       | Loading               | B—£5-£9.99   |
| SS—Stainless Steel | T—Top                 | C—£10-£14.99 |
| AL—Aluminium       | C—Centre              | O—£15-£19.99 |
| FG—Fibreglass      | B—Base                | E—£20-£24.99 |
| Type               | CW—Continuously wound | F—£25-£29.99 |
| B—Base             | Price Bands           | G—£30-£39.99 |
| M—Mobile           | A—£1-£4.99            | H—£40 plus.  |

| NAME              | ADDRESSES  | MODEL  | CONSTRUCTION | LENGTH  | MAX POWER    | TYPE | LOADING     | MOUNT   | PRICE RANGE |
|-------------------|--|--|--------------|---|--------------|------|-------------|---|-------------|
| HAM               | Cognet & Co, Whitegate, 12 Farden, Bitterley, Ludlow, Salop                              | Big Mac<br>Thunderbird<br>Hlpower<br>Quatro<br>Saxy  | AL           | 9.9m  | 2k           | B    | B           | Various   | H           |
|                   |  |  | AL           | 8.5   | 2k           | B    | B           | Various   | I           |
|                   |  |  | AL           | 8.5   | 2k           | B    | B           | Various   | J           |
|                   |  |  | AL           | 5.0   | 2k           | B    | B           | Various   | K           |
|                   |  |  | AL           | 7.5   | 2k           | B    | B           | Various   | L           |
| HOT ROD           | Steteside Trading Ltd. Audley Avenue, Newport.   | FM UK  | SS           | 1.27  |              | M    | 1/8" Thread | B   |             |
| LES WALLEN MANF.  | Pembroke Works, Ramsgate Road, Sandwich.   | Modulator LC<br>M.D.X. Long<br>M.D.X Short<br>Mini M.D.X.<br>Mini 27<br>T-Bolt<br>Saturn<br>Exper  | SS           | 1.66  | 1000         | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 2.00  | 1000         | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 1.66  | 1000         | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 1.10  | 100          | M    | B           | 3/8" Thread                                       | B           |
|                   |  |  | SS           | 1.40  | 500          | M    | B           | 3/8" Thread                                       | B           |
|                   |  |  | SS           | 0.83  | 200          | M    | B           | 3/8" Thread                                       | B           |
|                   |  |  | AL           | 1.00  | 500          | B    | CW          | Pole/wall   | D           |
|                   |  |  | AL           | 1.00  | 1000         | B    | C           | Pole/wall   | F           |
|                   |  |  | MARKSMAN     | Marksman Products, PO Box 40, Milton Keynes MK6 2UT (0908 668916) | Mister Stick | SS   | 1.19        | Above legal limit                                 | M           |
| R.W. BADLAND LTD. | Roetan Trading Estate, Providence Street, Lye, Sturbridge, West Midlands (Lye 3160/5051) | Rebel 1<br>Rebel II<br>Rebel Raider<br>Rebel Bullet<br>Red Devil   | SS           | 1.5   | 500          | M    | B           | 3/8" Thread                                       | B           |
|                   |  |  | SS           | 1.5   | 500          | M    | B           | 3/8" Thread                                       | B           |
|                   |  |  | SS           | 1.6   | 500          | M    | C           | 3/8" Thread                                       | B           |
|                   |  |  | SS           | 0.61  | 50           | M    | B           | 3/8" Thread                                       | B           |
|                   |  |  | SS           | 1.52  | 500          | M    | CW          | 3/8" Thread                                       | B           |
|                   |  |  | REVCO        | Telecomms. 189 London Road, North End, Portsmouth.                | Revco        | SS   | 1.0         | 100   | M           |
| SMC               | Rumbridge Street, Totton Street, Hants   | Oscar CBA 11GP<br>Oscar 11V11S11<br>Oscar 11CM<br>Oscar 11CE<br>Oscar 11NE<br>Oscar 11SE<br>Oscar 11ZE   | SS           | 1.6   |              | B    | B           | Mag.<br>Foldover Base<br>Pull up<br>Foldover Base | F           |
|                   |  |  | SS           | 1.6   |              | B    | B           |   | F           |
|                   |  |  | SS           | 1.2   |              | M    | B           |   | F           |
|                   |  |  | SS           | 1.2   |              | M    | B           |   | F           |
|                   |  |  | SS           | 1.5   |              | M    | B           |   | F           |
|                   |  |  | SS           | 1.5   |              | M    | B           |   | F           |
|                   |  |  | SS           | 1.5   |              | M    | B           |   | F           |
| TAGRA             | CB Radio Centre, 337 Kenton Road, Middlesax.   | T40  | SS           | 1.4   | 500          | M    | B           | Various   | F           |
| THOROBRED         | Pixtron UK Ltd. 14 Victoria Street, Newark, Notts. (0636 74988 Telex: 377627)            | Z 27<br>Z Mag<br>251   | SS           | 1.52  | 1700         | M    | B           | 3/8" Thread                                       | B           |
|                   |  |  | SS           | 1.62  | 1700         | M    | B           | 3" Dia Magnet                                     | C           |
|                   |  |  | SS           | 1.60  | 100          | M    | B           | 5" Dia Magnet                                     | C           |
| VALOR             | W.T.A. Electronics Ltd. 111 Cromer Road, Halesdon, Norwich (0603 47694)                  | Warrior 650<br>Half Breed 520<br>Half Breed 610<br>Half Breed 500<br>Dial-a-Match 540<br>Dial-A-Match 530<br>Rubber Duck 300<br>Pro Am PLB 27<br>Road Hog 338<br>Road Hog 336<br>Road Hog 335<br>Road Hog 337<br>Road Hog B31<br>Road Hog 838<br>Road Hog 835<br>Road Hog 836<br>Black Magic 333 1/2<br>Black Magic 333<br>Black Magic 332<br>Black Magic 333 1/2<br>Black Magic B33 | SS           | 1.52  | 1500         | M    | C           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 1.52  | 1500         | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 1.2   | 1500         | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 0.9   | 1500         | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 1.2   | 100          | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 0.8   | 25           | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 0.35  | 25           | M    | CW          | 3/8" Thread                                       | C           |
|                   |  |  | SS           | 1.52  | 200          | M    | B           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 0.9   | 1000         | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 1.2   | 1000         | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 1.52  | 1000         | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 1.75  | 1000         | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 0.6   | 500          | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 0.9   | 1000         | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 1.2   | 1000         | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 1.52  | 1000         | M    | T           | 3/8" Thread                                       | C           |
|                   |  |  | FG           | 0.76  | 500          | M    | T           | 3/8" Thread                                       | D           |
|                   |  |  | FG           | 1.2   | 500          | M    | T           | 3/8" Thread                                       | D           |
|                   |  |  | FG           | 1.52  | 500          | M    | T           | 3/8" Thread                                       | D           |
|                   |  |  | FG           | 0.76  | 500          | M    | T           | 3/8" Thread                                       | D           |
|                   |  |  | FG           | 1.2   | 500          | M    | T           | 3/8" Thread                                       | D           |
| WTA               | W.T.A. Electronics Ltd. 111 Cromer Road, Halesdon, Norwich (0603 47694)                  | Wot Pole 1<br>Wot Pole II<br>Wot Stick 1<br>Wot Stick II   | AL           | 1.5   | 1000         | B    | B           | Pole  | B           |
|                   |  |  | AL           | 1.5   | 1000         | B    | B           | Pole  | C           |
|                   |  |  | SS           | 1.6   | 1000         | M    | B           | 3/8" Thread                                       | A           |
|                   |  |  | SS           | 1.5   | 1000         | M    | B           | 3/8" Thread                                       | B           |
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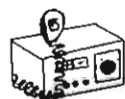
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# MOONRAKER

## MOONRAKER MINOR

TRANSMITTER SECTION  
 POWER OUTPUT ..... 4 Watt Max (AT 13.8V DC)  
 EMISSION ..... F3E (FM)  
 SPURIOUS RESPONSE REJECTION ..... All harmonic and spurious suppression greater than MPT 1320 requirements  
 FM DEVIATION ..... ±1.5KHz typical

RECEIVER SECTION  
 CIRCUIT TYPE ..... Dual conversion superheterodyne with RF stage and 455 KHz ceramic filter  
 FREQUENCY ..... 1 crystal-controlled PLL, 40 channels in the 27 MHz Citizens Band

SENSITIVITY ..... 1.0µV for 10 dB S/N  
 SQUELCH RANGE ..... 1mV  
 SELECTIVITY ..... 60 dB down at +10 KHz  
 IF FREQUENCY ..... 1st IF: 10.695 MHz  
                                 2nd IF: 455 KHz

IMAGE REJECTION ..... 55 dB  
 AUDIO OUTPUT ..... 2.5 W maximum at 8 ohm load  
 CURRENT DRAIN ..... 250 mA on standby (no signal)  
 CURRENT DRAIN (MAXIMUM) ..... Less than 1.5 A  
 ANTENNA ..... Nominal 50 ohms impedance  
 POWER SOURCE ..... Operates from nominal 13.8 volts DC, negative ground system

DIMENSIONS (HOUSING) ..... 5.12"W×6.85"D×1.34"H  
 WEIGHT ..... 1.9 lbs



## MOONRAKER MAJOR

TRANSMITTER SECTION  
 POWER OUTPUT ..... 4 Watt Max (AT 13.8V DC)  
 SPURIOUS RESPONSE REJECTION ..... All harmonic and spurious suppression greater than MPT 1320 requirements  
 FM DEVIATION ..... ±1.5 KHz typical

RECEIVER SECTION  
 CIRCUIT TYPE ..... Dual conversion superheterodyne with RF stage and 455 KHz ceramic filter  
 FREQUENCY ..... 1 crystal-controlled PLL, 40 channels in the 27 MHz Citizens Band

SENSITIVITY ..... 1.0µV for 10 dB S/N  
 SQUELCH RANGE ..... 1mV

SELECTIVITY ..... 80 dB down at ±10 KHz  
 IF FREQUENCY ..... 1st IF: 10.695 MHz  
                                 2nd IF: 455 KHz

IMAGE REJECTION ..... 55 dB  
 AUDIO OUTPUT ..... 2.5W maximum at 8 ohm load  
 CURRENT DRAIN ..... 250 mA on standby (no signal)  
 CURRENT DRAIN (MAXIMUM) ..... Less than 1.5A  
 ANTENNA ..... Nominal 50 ohms impedance  
 POWER SOURCE ..... Operates from nominal 13.8 volts DC, negative or positive ground system

RF GAIN RANGE ..... 30 dB  
 SEMETER SENSITIVITY at S-9 ..... 100µV  
 DELTA TUNE ..... ±1.2 KHz MIN.  
 DIMENSIONS (HOUSING) ..... 18.5cm W×22.1cm D×5.8cm H  
 WEIGHT ..... 1.75 Kg

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**TAGRA MOBILE**

**MODEL** : K-120  
**Type** : ¼ wave  
**Impedance** : 50Ω approx.  
**Frequency** : 27 MHz  
**Polarisation** : Vertical  
**S.W.R.** : <1.25  
**Net Weight** : .38 kg  
**Length** : 1.54 metres  
**Material** : Stainless Steel  
**Max Power** : 250w  
**Connection** : U.H.F. Coax

**TAGRA MOBILE**

**MODEL** : DV 27  
**Type** : ¼ wave  
**Impedance** : 50Ω approx.  
**Frequency** : 27 MHz  
**Polarisation** : Vertical  
**S.W.R.** : <1.25  
**Net Weight** : .44 kg  
**Length** : .665 metres  
**Material** : Stainless Steel  
**Max Power** : 40w  
**Connection** : U.H.F. Coax

**TAGRA BASE**

**MODEL** : BT 104  
**Type** : ¾ wave  
**Impedance** : 50Ω approx.  
**Frequency** : 27 MHz  
**Polarisation** : Vertical  
**S.W.R.** : <1.2  
**Net Weight** : 5.5 kg  
**Length** : 8.21 metres  
**Material** : Cast Aluminium  
**Radials & Fittings** : Heavy gauge gold anodized aluminium  
**Max Power** : 2000w  
**Connection** : U.H.F. Coax