CB world

For Citizens Band and two-way radio enthusiasts

June 1982 70p

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C.B. and the commuter

SWR meters reviewed

F.M. Rigs on test: Cobra 21X & Grandstand Home Base

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CB World CONTENTS

Number 16 June 1982

Shogun

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Signature:.....

Or please send me all particulars.

Please allow 28 days for delivery. CBW 6

Shogun Quality Wins!

"Europe's leading monthly c.b. and two-way radio enthusiast's magazine."

Number 16 June 1982

PUBLISHERS
IPC ELECTRICAL-ELECTRONIC PRESS LTD
Quadrant House,
The Quadrant,
Sutton, Surrey SM2 5AS
01-661 3500

ISSN 0263 0842

C'MON

Announcing C.B. World Rig of the Year Awards

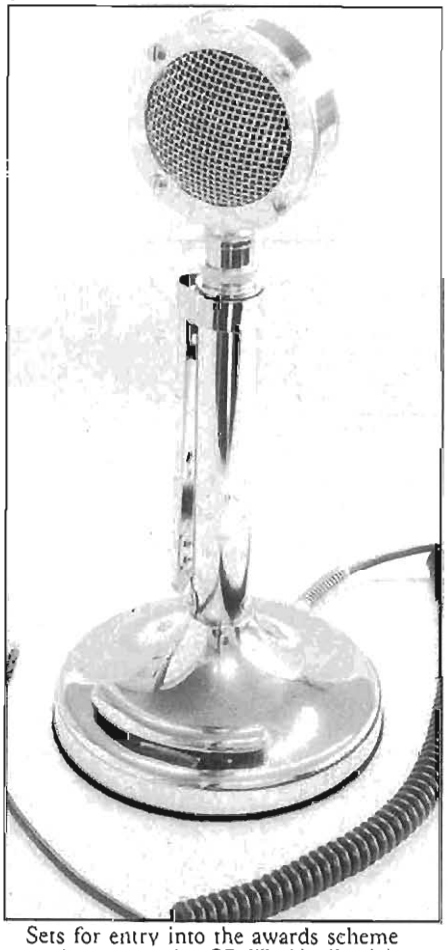
As Europe's leading c.b. and two-way radio enthusiasts' magazine we have decided to initiate an award scheme whereby the importers or manufacturers are invited to submit one or more c.b. sets for the consideration of a panel of judges.

The objective is to encourage designers of c.b. sets to use the latest in technological advances in circuit design and component manufacture to produce sets that are able to perform well within the parameters of the specifications laid down by the Government.

The awards will be divided into four classes.

1) Hand held walkie talkies
2) Mobile
3) Home base
4) The next generation

All except No. 4 are self expanatory. No. 4 is for futuristic design exercises and the entries will not be in current production.



Sets for entry into the awards scheme must be sent to the *CB World* editorial office by 1st October 1982 and suitably identified as award entrants and NOT test and evaluation examples.

Detailed specifications, a clear wiring diagram and workshop manual must also be included in the same package as the set.

The sets will be examined by a panel of three independent experts in their own particular fields. These will include two experienced in radio transceiver design and a third experienced in the field of ergonomics and external design. The judges will have an opportunity of examining the sets (with covers removed), carrying out tests in the *CB World* laboratory and using the sets in a working environment.

One winner will be chosen in each class and the awards will be presented in London on Tuesday 2nd November, the first anniversary of 'L' (legislation) day.

Winners will receive and retain a suitable inscribed home base microphone (see photo) and they will be able to use the title, "C.B. WORLD RIG OF THE YEAR AWARD WINNER 1982" for any advertising or promotion of the product for a period of one year. A *CB World* seal of approval label can also be attached to the rig.

We will also be giving away a further award and you, the readers, will nominate this winner. It will be a rubber duck, to be awarded to a specific named set which gave the owner most trouble, the situation being compounded by lack of co-operation from the supplier/importer/manufacturer by not honouring any warranty or taking excessive time in carrying out the repairs. The judging panel will include a solicitor so we will require a complete case history. Please send in your nomination and complete case history now.

Maxcom/Apollo 16E

Last month we said we would be reviewing the Apollo. However, because we were so impressed with the set, we decided to hold over details until July, when we will be publishing a full lab test rather than just giving a brief run down.

Brian L. Chalmers-Hunt

NEXT MONTH

The fine weather has now arrived so we will be telling you how to use c.b. whilst either on holiday or sitting beside the river trying to catch the elusive award-winning fish. Although we will be concluding our popular CB Patrols series we will of course have our usual regular features.

It is an offence to operate, import or install an unlicensed transmitter in the UK. *CB World* realises this and points out that it is not our deliberate intention to encourage the use of illegal c.b. equipment.

We are always pleased to receive letters from readers and club members, but we do reserve the right to edit them. Full names and addresses will not be published.

Part 4

C.B. Patrols

Reaction to this series has been fantastic and many clubs have expressed interest in setting up their own groups.
Every group must have a well co-ordinated communication system. Here are a few ideas which are easy to put into practice.

GENERAL

Radio transmissions must be held to a minimum but not to the detriment of operational needs.

Necessary transmissions must be brief, concise and conform to the procedures outlined in this series.

The transmission of obsenities, music, commercial information or advertising is prohibited under the conditions of a c.b. licence.

Common terms, including the phonetic alphabet and 10 code should be used to facilitate communication.

OPERATING INSTRUCTIONS

A. Signal checks

1. Under normal conditions signal checks to ensure the transceivers are operating correctly should be initiated by the base station at the beginning of a patrol, then once each hour and at the end of the patrol. Additional signal checks can be initiated by either base or mobile stations when there is reason to question the correct operation of equipment or test atmospheric conditions.
2. Procedure for signal checks could be as follows: BASE: "(mobile station control), this is (base station call), signal check, OVER."
MOBILE: "(base station call), this is (mobile station call), 10-2 (or) 10-1, OVER".
BASE: "10-4, (mobile station call), (base station identification), CLEAR".
MOBILE: "(mobile station identification), CLEAR".

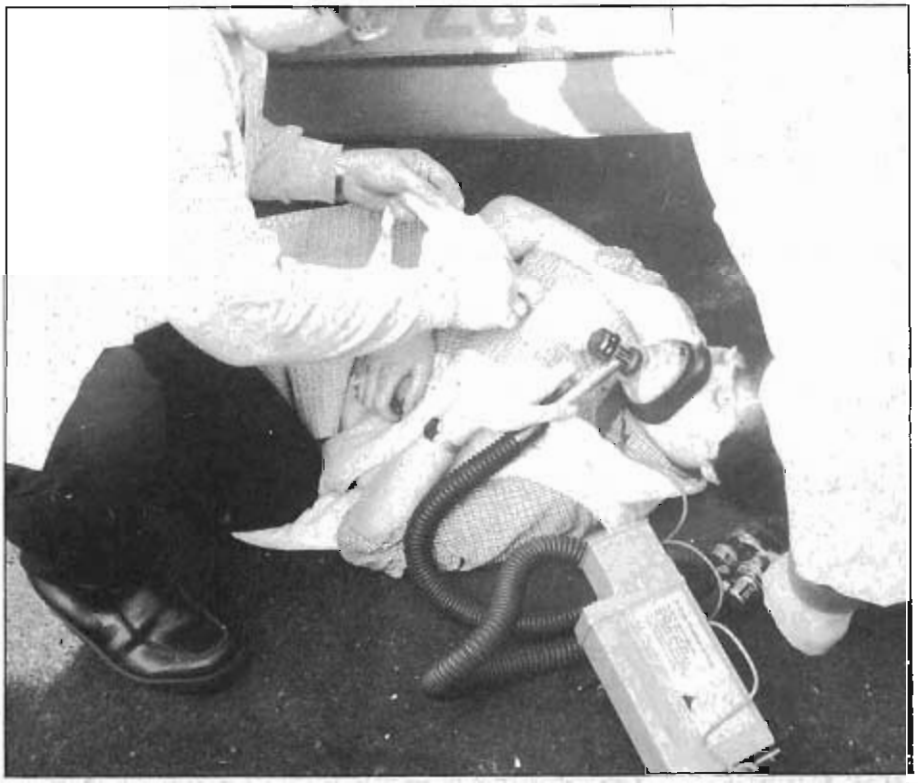
B. Operational reports

1. Operational reports should, for ease of understanding, conform to a fixed order of operation.
2. Procedure for operational reports could be as follows:
MOBILE: "(base station call), this is (mobile station call), OVER".
BASE: "(mobile station call), this is (base station call), GO AHEAD, OVER".
MOBILE: "(base station call), this is (mobile station call),
a) Nature of event or call (possible intruder/fire/road accident, etc.).
b) Location (number, road and district), (details if needed), (north west corner) (at rear) etc.
c) Additional information (last seen.....) (no personal injury) (car description).
d) Patrol status (will stand by at this location until.....) (continuing patrol), etc.
e) OVER."
MOBILE: "(base station call), this is (mobile station call), 10-4; (mobile station identification), CLEAR."

To bring immediate help radio transmissions must be kept short with clear and precise information being given.

C. Definitions

1. BASE (or mobile) STATION CALL — the authentication name(s) or word(s) prescribed for use by the co-ordinator for these units at the start of a patrol period.
2. BASE (or mobile) STATION IDENTIFICATION — the official station call which should be mutually agreed by the police and the c.b. patrol group committee.
3. R.E.A.C.T. — Radio Emergency Associated Citizens Teams — a volunteer civilian emergency radio service. The ultimate aim is to monitor the c.b. emergency channel 9 throughout the whole of the U.K. R.E.A.C.T. monitor operators are trained to provide emergency services including reports to authorities such as the police.
4. T.H.A.M.E.S. — Traffic Help and Monitoring Emergency service — offers a full 24 hours monitoring service in many parts of the U.K. The service is run totally on goodwill and help from c.b. clubs and users donations for finance.



THE PHONETIC ALPHABET

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

THE BASIC 10-CODE

This is not the complete list but a condensed version including all the most commonly used U.K. ones. There exists an official 10-code but it is pointless in including the whole list, the majority of them are not used on channel.

*10-1 Receiving a poor signal
10-2 Receiving a good signal
10-3 Stop transmitting
*10-4 Yes. Message understood
*10-6 Busy. Standy by
*10-9 Repeat message
*10-10 Signing off
10-11 Talking too fast
10-13 Report on road or weather
*10-20 Your location
10-27 Moving to channel
*10-32 Radio check
*10-33 Emergency
*10-34 Other trouble, need help
*10-36 Time check
10-39 Message delivered
10-44 Message for you
10-73 Speed trap at ...
10-77 Negative contact
10-84 My telephone is ...
10-85 My address is ...
10-90 I have TVI
10-91 Talk closer to mike
10-93 Check my frequency as this channel
10-94 Give me a long count

*most commonly used in the United Kingdom

Any c.b. patrol group must have a well co-ordinated communication system.

T.H.A.M.E.S. Paramedico was started in November 1981 to bring together and co-ordinate doctors, nurses and ambulance personnel with a common aim of being able to supply immediate medical aid at an incident until the arrival of the emergency services. (*CB World* are honorary members of the T.H.A.M.E.S. monitoring and Paramedico services.)

D. Operating frequencies

1. Signal checks and operating reporting will be accomplished using a channel specified by the co-ordinator. If traffic is in progress on that channel when need exists for operational reporting, a second or back-up channel, also specified by the co-ordinator or base station operator on duty, may be used.
2. The use of emergency channel 9 specifically is prohibited except in the case of a true emergency such as fire, road traffic accident with personal injury, or other activity which, in the opinion of patrol members on duty, may lead to such events. In such cases, involving a true emergency, or the risk of a true emergency, patrol units may switch to and use channel 9 or mobile units may if unable to contact the base station, report the incident to R.E.A.C.T. or T.H.A.M.E.S. monitors on channel 9.

3. Licences

Members of the patrol must be in possession of all required licences and permits and they must be current. This includes driving licence, insurance, M.O.T. (if required), c.b. licence and any official permits issued by the police or monitoring organisations.

4. Equipment

a) Base and mobile station equipment will either be provided by the patrol organisation, be the property of individual members or on loan from another source, e.g. local specialist c.b. and amateur radio shop or equipment importer.
b) Equipment belonging to or used by the patrol should be frequently checked at intervals not exceeding six months. Faults or deviations found during these checks are to be rectified at the patrol's suppliers or individual owner's expense and repair is to be reported to the patrol staff prior to further patrol use of the equipment.
c) All equipment used must comply with the relevant Government specification MPT 1320 and MPT 1321.●

Common terms including the phonetic alphabet should be used.

Equipment Review

Specifications: Model 129

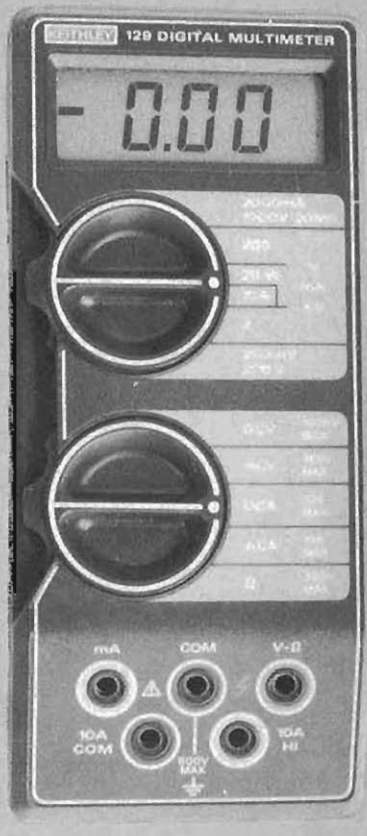
DC Voltage
Range
200mV
2 V
20 V
200 V
1000 V

Maximum Allowable Input:	1000V DC or peak AC non-switched, 750V peak switched
Input Resistance:	10M
Normal Mode Rejection Ratio:	Greater than 46dB at 50Hz, 60Hz
Common Mode Rejection Ratio:	Greater than 100dB at DC, 50Hz and 60Hz (1k unbalance)

DC Current Range	Resistance Range	AC Voltage Range	AC Current Range
2mA	200	200mV	2mA
20mA	2 k	2 V	20mA
200mA	20 k	20 V	200mA
2000mA	200 k	200 V	2000mA
10 A	20M	750 V	10 A

General

Display:	3½-digit LCD, 0.6" height, with polarity and range indication.
Overrange Indication:	3 least significant digits blanked.
Maximum Common Mode Voltage:	500V peak
Power:	alkaline or carbon-zinc battery.
Battery Life:	100 hours typical with carbon-zinc cells, 200 hours with alkaline cells.
Battery Indicator:	Display indicates BAT when less than 10% of life remains.
Dimensions Weight:	178mm long × 78mm wide × 38mm × thick (7.0" × 3.1" × 1.5"). Net weight 283gm (10 oz).



The electronic technique of analog to digital conversion, happens in a fraction of a second but the real-time process of digital acceptance has been a gradual interchange among consumers. However, there is now no excuse for any lack of enthusiasm as prices have reduced considerably over the past two years.

Keithley, a reputed name in the field of electronic measurement instrumentation for thirty years, have produced a range of hand-held digital meters at competitive prices.

Before introducing their first handheld digital meters Keithley made extensive preference surveys to find out the features most needed and then combined these features with practical controls and panel layouts designed by human-engineering principles.

Keithley claims, if you don't need a feature you shouldn't have to pay for it. You can get all the features you desire, at a price that makes sense.

Keithley call this their user-oriented, price performance philosophy. We interpret this as the right features at the right price!

The visual presentation and performance of any industrial or consumer orientated product is one of great importance. This criteria has often opened the door of 'high tec' competition to make the fight for supremacy an on going tussel, especially when you consider the numerous companies involved across the globe, breeding new revolutionary species over night.

LCD Vs LED

Accuracy is one of the major advantages digital meters have over analog types. Owing to the construction of a moving coil meters, the human error introduced arises when test personnels are faced with a cramepd scale and have to adjust for parallax error, resulting in an ambiguous meter reading.

Digital multimeters (DMMs) can be split into two main categories, LED (light emitting diode) and LCD (liquid crystal display). Both displays conform to a seven segment readout.

LEDs are popular for mains powered instruments because they are easy to drive from a suitable internal power supply and control circuitry. They also provide good visibility in dimly lit areas. However, because of their high power consumption, combined with poor visibility in direct sunlight, makes them unsuitable for portable service instruments.

LCD types offer a better solution for portable instrumentation. The basic operation involves aligning molecules with a polariser to prevent light passing through. The crystals require very little power, due to the fact that they generate no light of their own. They also offer a wide viewing angle in bright light.

The disadvantage of LCD are the complex waveforms which are required to drive them, they also have a slower response at low temperature.

Analog-to-digital

The basic building block of any DMM is centred around an analog-to-digital converter (A/D Converter). Basically, the A/D converts an analog input to an acceptable digital output which can be a seven segment display or BCD (binary coded decimal) output. The A/D converter is largely responsible for the performance characteristics of any DMM.

Low-cost handheld DMMs use a single integrated circuit, 3½ digit A/D converter. High accuracy 5½ digit meters use a microprocessor controlled discrete A/D. 4½ digit meters compromise between 5½ digit performance and 3½ digit price. 4½ digit A/D converters may be discrete or use LSI (large scale integrating) circuitry.

Handy Solution

The Keithley 128 and 129 are a pair of slimline, handheld meters designed for practical use. The meter control circuitry is housed in a high strength, impact resistant case. The LCD window is made of a tough, scratch resistant polycarbonate plastic to withstand the knocks and day-to-day handling by service engineers. The function dials are a novel arrangement which can be operated from a bench-top position or in one hand by turning the switches, using a thumbwheel action.

The 128 features a multifunction bleeper that provides an audible indication when a resistance is below a threshold or when a voltage or current is above a threshold. An arrow symbol on the display indicates whether the reading is above or below the threshold level.

The threshold level can be utilized for testing CMOS, TTL or other logic families. The level is set at the factory for 2V5 (2.5V) on the 20V range.

As a continuity tester, an audible tone is generated when detecting short circuits or checking point to point wiring in large systems where hand-eye contact is a matter of safety.

Conclusion

In comparison to most DMMs, the Keithley models receive full marks for their attractive and appealing brown and beige colour scheme, which adds a pleasing appearance to this range of meters.

Each meter is neatly packaged in a polystyrene case and is complete with a single PP3 battery, test leads and instruction leaflet.

After using the review samples in our lab, we have no doubt these meters will prove to be reliable in the harsh world of reality.

Keithley Instruments Ltd.,
1 Boulton Road,
Reading,
Berkshire (0734) 861287 ●

LCL BASE 20

The ideal housing for your home base

Complete Base Station Console. For any mobile rig (inc A.M.)

The LCL Base 20 makes a compact housing for any mobile rig. With most wires hidden and in place, it's much more portable – and convenient.

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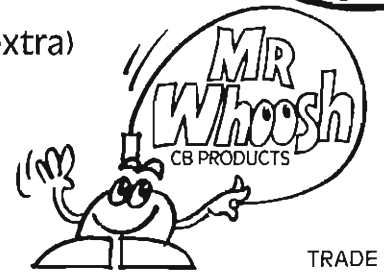
- ★ Q.S.L. card/note pad recess

Available from your local C.B. dealer

Power supplies. British Made. 12 months guarantee.



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TRADE ENQUIRIES WELCOME

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C.B. for the commuter

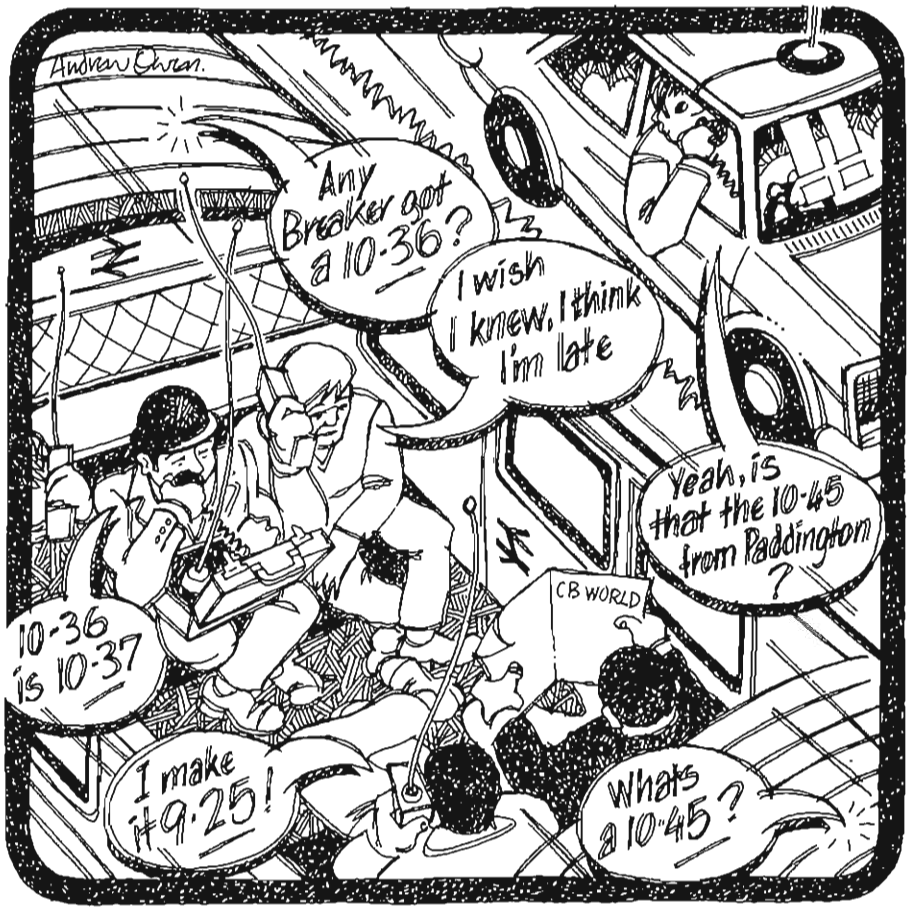
Have you ever stopped to think how much it costs to travel to work every day? Have you been a victim of the recent public transport disputes? C.b. can be used to benefit in times of spiralling costs and an unreliable expensive public transport system.

There are many ways in which we travel to work each day, walk, cycle, motorcycle, car or public transport. Just stop and think how much it is costing you.

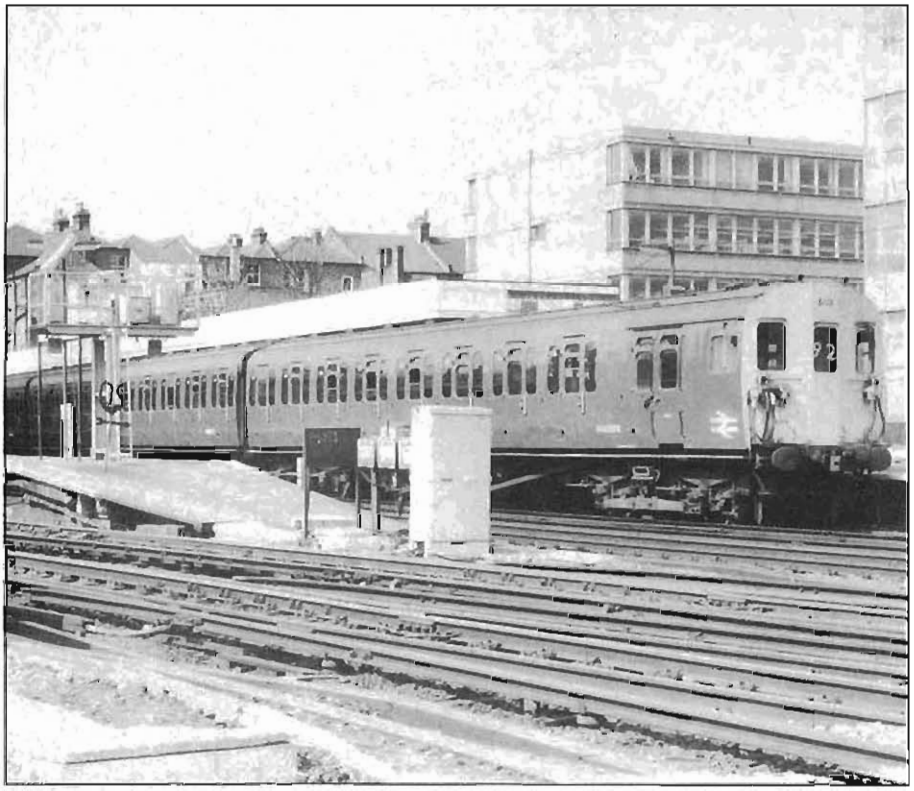
The next time you are stuck in a traffic jam just look at the number of cars with three empty seats and the number of motorcycles without a pillion passenger. This is being very wasteful not only in petrol but also in time because of the unnecessary additional traffic at peak travel times of the day.

One of the main contributory factors is a lack of communication. If every motorist made an effort to find others who travelled the same route every day, the petrol costs could be shared, the running costs such as servicing and MOT testing, would be reduced as well as lowering the annual mileage of the car. This last point alone can help the car to maintain its secondhand value where cars are used on a rota system.

Contd on page 12



Rail travel has become unreliable and expensive due to the recent number of industrial disputes. This is driving regular long distance commuters to seek either a job nearer home or alternative methods of travel.



Our city commuter can use his hand held to call his home and tell his wife he is at the station. The businessman in the telephone kiosk looks as if he is there for the evening.

Radiotechnic presents its new, supertuned, M40 FM Special

Anticipating the need for more reliable and trouble-free CB transceivers, Radiotechnic confidently presents its new M40 FM Special designed for exceptional performance as a Base Station as well as a Mobile.

Based on the existing DNT rig, already widely recognised both here and on the Continent as one of the best designs available, the M40 FM Special has been supertuned by Radiotechnic and given two important additional features: a crystal-filtered circuit to cut down cross-modulation, and a special bi-polar J-FET transistor to minimise "blocking."

The result is exceptional sensitivity, clarity and long-distance range.

And before any rig receives Radiotechnic's unique Seal of Guarantee, it must be rigorously inspected and tested by Cleartone Electronics Ltd., an independent firm of electronic engineers with a national reputation for quality and efficiency.

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All Radiotechnic sets are fully guaranteed. Free parts and labour for 12 months.

and Europe's leading hand-held...

The DNT HF-12/3. Over 500,000 of these award-winning 3-channel transceivers have already been sold in Germany alone. The ideal intercom on land and sea. Range up to 20 miles.

Price £37.85 excluding VAT

dnt Radiotechnic

NUMBER ONE IN EUROPE

Details from: Radiotechnic Ltd., Grove View, Bel Royal, St. Lawrence, Jersey, C.I. Telephone: 0534 78831. Telex: 4192376.

C.B. for the commuter

Contd from page 10

Providing the owner does not make a profit, car (or motorcycle) sharing is legal and now covered under the terms of the vehicle's insurance policy.

Listening to local radio has indicated that car sharing does work — there are now computer bureaux in many areas giving introductions to regular travellers.

We say why pay these companies money when you can make your own enquiries? Start by asking your colleagues at work, neighbours in your road and at your local pub and c.b. club. Even one passenger will halve the weekly petrol bill.

For those breakers who have the inclination to experiment but have yet to make contact with a driver travelling the same route why not make enquiries over the airwaves? Why not stand beside the road with a handheld and see if contact can be made with a motorist? Breakers who do not make the effort will not succeed.

Do you walk or cycle to work? This is great when the weather is bright and sunny or if you are a keep fit addict but arriving at work or home clean, dry and cool is conducive to an even temper and more relaxed attitude. Again try to find a car driver who could give you a lift at least during the winter months.

If you are successful in linking up with a fellow traveller there are three golden rules:

1. Make the offer of contributing to the journey costs before he (or she) does.

2. Don't be late at the pickup point. If you have a day off or go on holiday don't forget to tell your travel colleague. There is nothing worse than waiting for someone who is always late.

3. If the driver is a non-smoker don't smoke in the car.

C.b. radio really comes into its own when regular users of public transport suddenly find that they have bus or train strikes on their hands. What can be simpler than walking to the main road, opening the briefcase, lifting out a 27 MHz. F.M. hand held, extending the antenna, switching on and asking if there are any motorists — or truck drivers — who can offer a lift? This way contact can possibly be made for at least a return journey or even better arranging a lift on a regular basis, when the buses or trains have returned to some semblance of normality.

Our city commuter can use a hand held and base station to let his "other half" know when he has reached the station and requires picking up. This makes life so much easier when public telephones are either out of order or booths permanently occupied, particularly when returning on an earlier or later train.

C.b. radio can also be used by breakers who are suffering a reduction in the number of buses or trains serving their home area. The time standing at bus stops or windy railway stations can be used to benefit by trying to locate fellow breakers with the same travel problems and making alternative long term travel plans.

For the top bracket wage earners travelling between home and work in a taxi is great but what an expense! However, when there are disputes in the public transport sector taxi sharing is worth considering as one method of overcoming an immediate transport problem — that is if you can find a taxi.

There are an increasing number of taxis who have c.b. radio and are on channel particularly at night. Again out comes the hand held and calling for a cab can produce one quicker and easier than trying to hail one or by telephoning a cab company.

C.b. radio can also be used in rural areas particularly if the local bus company has fitted c.b. to its vehicles. A call on channel can tell the driver that you are rushing down the road but may not arrive at the bus stop at the same time as the bus.

Do not wait until there is another petrol price or fare increase. Ask yourself can I get to work using a different method of transport which is cheaper than I am using at the moment? If the answer is yes and arrangements are made the savings can be treated as a supplement to this year's annual pay award!

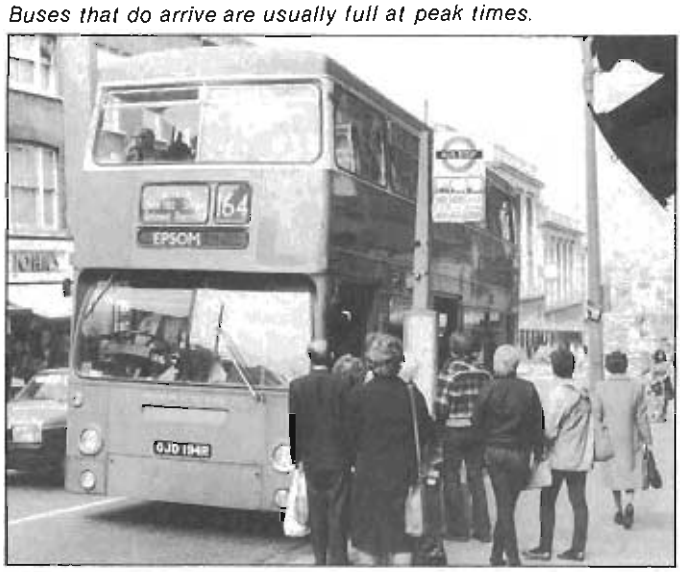
C.b. is a public local two-way radio communication system and one of its great benefits is that it breaks down social barriers. The more use a breaker makes of his c.b. equipment the more benefits he will obtain from it. This is yet another example of how c.b. can be of benefit to the community.●

Taxi travel can be expensive for an individual but is more economic if it is shared with two, three or four other people.

If all cars carried their full allocation of passengers the roads could look a little more less crowded.

All this photograph needs is tumbleweed rolling down the tracks. There are talks of even more reductions in train services.

Buses that do arrive are usually full at peak times.



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NAME .....

ADDRESS (Block Capitals) .....

.....

Send to: **HAM INTERNATIONAL (UK), 24 Buckland Road, Leicester. (Tel: 0533 761731)**

Part 1 Introducing Marine VHF radiotelephony

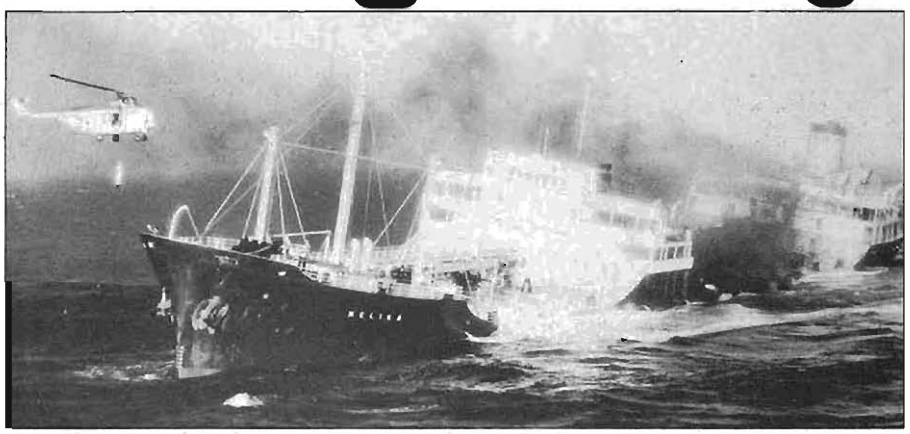
Last month we started to look at the MAYDAY procedures. This month we continue this very important aspect of Marine VHF radiotelephony.

When a distress message is being transmitted by a station, not herself in distress, this fact must be made quite clear. If this is done, direction-finding bearings might be taken on the station making this transmission and assistance could thereby be directed to the wrong position. Therefore in the cases mentioned above, where the stations sending the distress message are not actually in distress themselves, and in any other circumstances where a distress message might be repeated by a station not itself in distress, the transmission of the transmitted of the distress message must always be preceded by the following call:
— the signal 'MAYDAY RELAY', spoken three times;
— the prowords 'THIS IS' —
— the callsign or other identification of the station making the transmission, spoken three times. For example let us imagine that the ship Endurance heard Catspaw transmitting her distress message. Endurance is not in a position to render assistance herself and has heard no other acknowledgement of Catspaw's distress message. Endurance decides to retransmit the distress message. Endurance transmits:—
MAYDAY RELAY — MAYDAY RELAY — MAYDAY RELAY —
THIS IS ENDURANCE — ENDURANCE — ENDURANCE —
MAYDAY —
CATSPAW —
ONE EIGHT ZERO CALDY ISLAND ONE MILE —
STRUCK ROCK AND IN SINKING CONDITION —
REQUIRE TUGS —
WILL FIRE A DISTRESS ROCKET AT INTERVALS —
OVER.

A yacht should not not acknowledge receipt of a distress message transmitted by a Coast Radio Station as a MAYDAY RELAY under the conditions mentioned above unless she is in a position to render assistance.

Control of Communication During Distress

The responsibility for the control of distress traffic, which includes all communications concerned with rendering



immediate assistance to a vessel in distress, lies with — either, the station in distress;
or, the station sending the distress message on behalf of a ship in distress, i.e. MAYDAY RELAY;
or, A Coast Radio Station or Coastguard station which has responsibility delegated to it by the station in distress.

In coastal waters it is preferable to delegate the response to the Coastguard or a Coast Radio Station. They have better facilities available to control the frequency being used for distress, and the Coastguard has direct communication with the Search and Rescue organisations.

Imposing Radio Silence

The station controlling distress traffic may impose silence either on 'All Stations' or any individual station which interferes with distress traffic. To impose silence it transmits:—
MAYDAY —
SEELONCE MAYDAY — SEELONCE MAYDAY — SEELONCE MAYDAY —
THIS IS SEVERN RADIO — SEVERN RADIO — OUT.

The expression 'SEELONCE MAYDAY' is reserved for the use of the station controlling distress traffic and no other station may use this expression.

If any other station near to the station in distress believes it essential to do so, it may impose silence, but in this case it must use the expression 'SEELONCE DISTRESS.

To impose silence the station transmits:—
MAYDAY — SEELONCE DISTRESS —
SEELONCE DISTRESS — SEELONCE DISTRESS —
THIS IS ECLIPSE — ECLIPSE —
OUT.

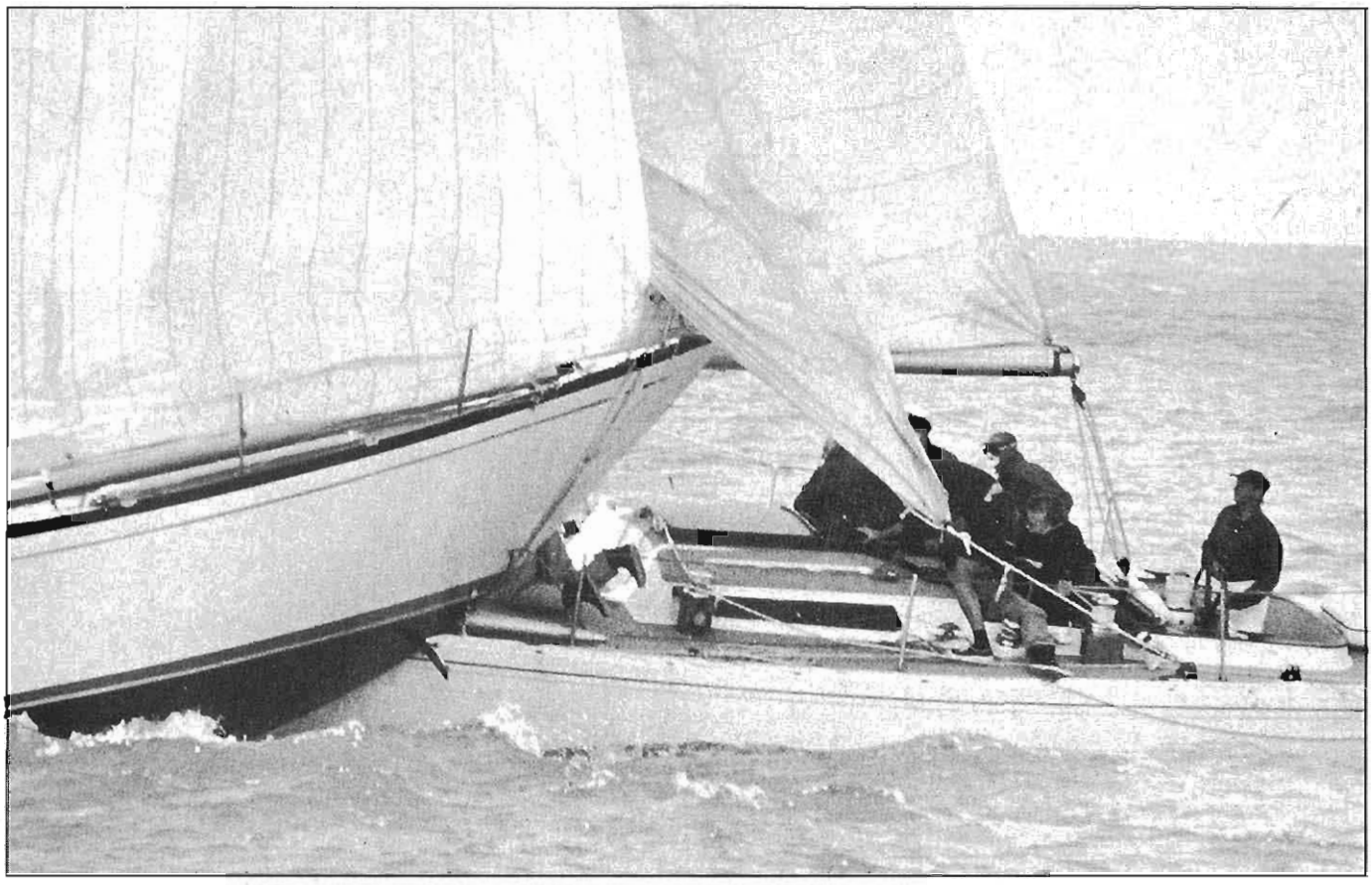
Note the difference between the two expressions used to impose radio silence.
SEELONCE MAYDAY — Station controlling distress traffic imposing silence.
SEELONCE DISTRESS — Station near to the station in distress, believing it essential to do so, imposing silence.

All stations which are aware of distress traffic, and are not taking part in it, are forbidden to transmit on the frequency or channel being used for distress except in the circumstances described below.

Relaxing Radio Silence

When distress traffic is being handled on either of the two distress frequencies, 2182 kHz (M.F.) or channel 16 (VHF) all normal communication is suspended. Both distress frequencies are also the International calling frequencies and, while a distress incident is being handled, delays in handling normal traffic are inevitable.

When complete silence is no longer considered necessary, the station controlling distress traffic, will indicate that RESTRICTED working may be resumed by making the following transmission on the distress frequency:
— the distress signal 'MAYDAY';
— the call 'HELLO ALL STATIONS', spoken 3 times;
— the prowords 'THIS IS';
— the call sign or other identification of the station sending the message;
— the time of the message;
— the name and callsign of the mobile station which is in distress;
— the French word 'prudence' (pronounced 'PRUDONCE'.)
MAYDAY —
HELLO ALL STATIONS — HELLO ALL STATIONS — HELLO ALL STATIONS — HELLO ALL STATIONS



THIS IS SEVERN RADIO — SEVERN RADIO —
TIME ZERO THREE FOUR — CATSPAW CALLSIGN MIKE BRAVO DELTA DELTA —
PRU-DONCE —

Cancelling Radio Silence

When the distress traffic has completely ceased, the station which has controlled the distress traffic must let all stations know that normal working may be resumed. This is done by sending a message in the following form to 'ALL STATIONS'.
— the distress signal 'MAYDAY';
— the call 'HELLO ALL STATIONS', spoken 3 times; the prowords 'THIS IS';
— the callsign or other identification of the station sending the message;
— the time of the message;
— the name and callsign of the mobile station which was in distress;
— the words 'SEELONCE FEENEE'. (Again derived from the French language).
MAYDAY —
HELLO ALL STATIONS — HELLO ALL STATIONS — HELLO ALL STATIONS —
THIS IS SEVERN RADIO — SEVERN RADIO —
TIME ZERO FOUR FIVE ZERO —
CATSPAW CALLSIGN MIKE BRAVO DELTA DELTA — SEELONCE FEENEE —

'Emergency Only' Equipment

Sets are available which are capable of transmitting and receiving only on the MF distress frequency of 2182 kHz. The procedures for using these sets to transmit a MAYDAY signal are identical to those already described in this chapter, except of course the communication is on 2182 kHz MF instead of VHF Channel 16.

One additional type of signal may be used during distress working on MF. Lifeboats and SAR aircraft are fitted with MF D/F receivers and may request a yacht in distress to transmit a signal suitable for D/F.

For example, a lifeboat going to the assistance of a yacht in distress and wishing to take a D/F bearing would transmit —
MAYDAY —
CATSPAW — CATSPAW — CATSPAW —
THIS IS —
MUMBLES LIFEBOAT — MUMBLES LIFEBOAT — MUMBLES LIFEBOAT — FOR D/F PURPOSES WILL YOU HOLD YOUR 'PRESS TO SPEAK' SWITCH CLOSED FOR TWO DASHES OF TEN SECONDS EACH — FOLLOWED BY YOUR CALLSIGN — AND REPEAT FOUR TIMES ON THIS FREQUENCY OVER.

The reply to this request should be —
MAYDAY —
MUMBLES LIFEBOAT — MUMBLES LIFEBOAT — MUMBLES LIFEBOAT —
THIS IS —
CATSPAW — CATSPAW — CATSPAW —
— 10 secs — 10 secs CATSPAW
— 10 secs — 10 secs CATSPAW
— 10 secs — 10 secs CATSPAW
— 10 secs — 10 secs CATSPAW
OVER.

The request for a transmission for D/F may be repeated at intervals as the lifeboat closes the yacht.

The second type of emergency set is the Emergency Position Indicating Radio Beacon (PIRB). This is a device which will automatically transmit an alarm signal when it is switched on. The beacon can be mounted on deck so that it floats off and automatically switches on if the yacht sinks. Some of EPIRB's are automatic transmitters only, without any reception facility.

Such 'EPIRB's suffer from two disadvantages which two-way radio sets do not share. If switched on accidentally, they will transmit a distress signal which cannot be cancelled. The beacon can only transmit a distress signal it does not have a voice transmission facility and it does not have a receiver.

Misuse of the Distress Signal

The use of the distress signal 'MAYDAY' is absolutley forbidden except in the case of distress. It is provided for use in cases of imminent danger when immediate aid is necessary.

Its use for less urgent purposes might result in insufficient attention being paid to call from ships or aircraft who really require immediate assistance.

IMPORTANT
CB World as a responsible journal does not under any circumstances suggest that c.b. is used as an alternative to marine transceiver. There are however many small pleasure boats where the fitment of a marine transceiver would not be practical. Many families who own cars and trail or carry boats on their roof racks will probably have a c.b. set in them so it will be a natural progression to have one in their boat, be it a powerboat, sail boat or even canoe.

We would like to thank the Royal Yachting Association for the valuable assistance in the preparation of this series of articles. Thanks are also due to VTronix Communications Equipment and Accessories (Unit 10D, Dawkins Road, Hamworthy, Poole, Dorset BH15 4JP. Tel: 02013 82844) and also Greenham Marine Ltd (Enefco House, The Quay, Poole, Dorset. Tel: 02013 6363) for the supply of marine VHF radiotelephone equipment and antennae to *CB World*.

More next month. ●

High Voltage

Kills

If you are considering installing a homebase antenna, certain safety precautions must be taken, read on ....

Breakers who browse the shelves of c.b. and amateur radio shops must have noticed that printed on packaging or c.b. antennae instruction leaflets are warnings about siting antennae well away from power lines.

In America alone, which is considered by many to be the home of c.b., there are on average over 200 persons electrocuted every year in incidents involving communications antennae.

However, despite warnings electrocutions occur and although we do not have the same number of home base antennae in the U.K. as in the States the hazard is the same.

Sometimes electrocutions do not involve the antenna itself but rather the metal pole supporting the antenna.

One antenna known as the Super Big Stick, developed by Shakespeare, is a five eights wave antennae that has no external electrical conducting parts. It is not in any way a compromise because of its exterior non-conducting properties and the only metal part on it is covered with a thick rubber boot at the mid section with only a trace of metal necessary for mounting it at its base.

Shakespeare, being a responsible as well as a leading manufacturer of antennae, have developed the following guidelines for the installation of any type of radio antennae:

1. If you are installing an antenna for the first time, for your own safety as well as others, seek professional assistance. Consult your specialist dealer. He can explain which mounting method to use for the size and type of antenna you are about to install.

2. Select your installation site with safety in mind. Remember, to the non-technically minded person, electric power lines and telephone lines can look alike. For your safety assume that any overhead lines can kill you.

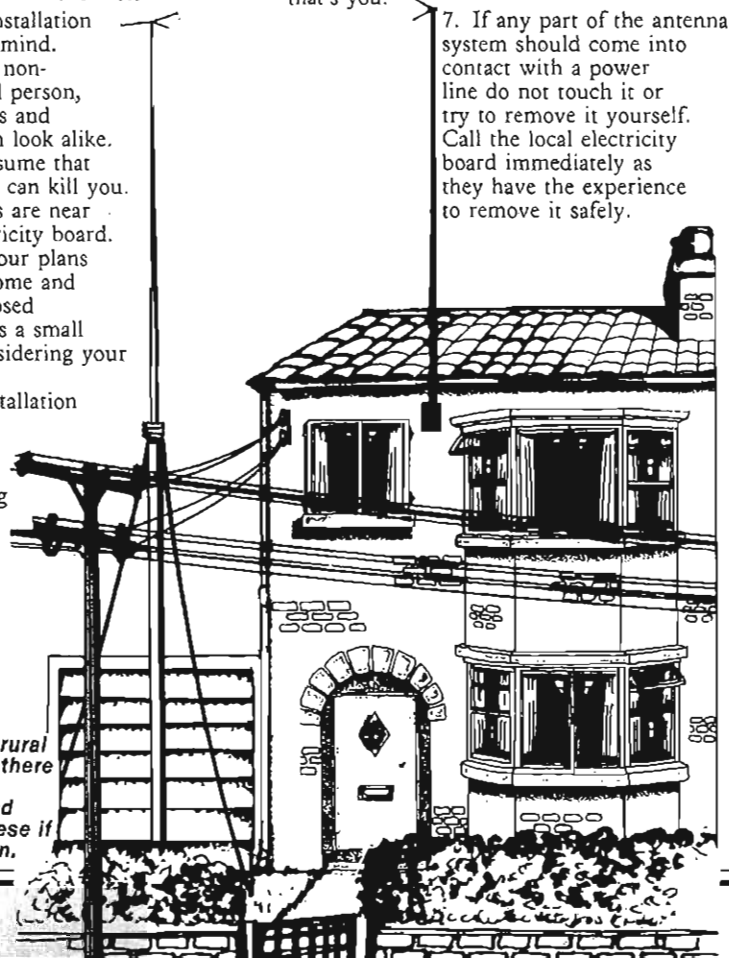
3. If power lines are near call the local electricity board. Tell them about your plans and ask them to come and look as your proposed installation. This is a small inconvenience considering your life is at stake.

4. Plan your installation carefully and completely before you begin. Successfully raising a mast or tower is largely a matter of co-ordination. Each person involved should be assigned to a specific task and should know what to do and when to do it. One person should be the leader of the operation to call out instructions and watch for signs of trouble.

5. When installing your antennae REMEMBER:
*DO NOT use a metal ladder,
*DO NOT work on a wet or windy day.
Increase your personal safety — dress properly — shoes with rubber soles and heels, rubber gloves, long sleeve shirt or jacket.

6. If the assembly starts to drop then get away from it and let it fall. REMEMBER the antenna, mast, cable and metal guy wires are all excellent conductors of electrical current. Even the slightest touch of any of these parts to a power line completes an electrical path through the assembly and the installer — that's you.

7. If any part of the antenna system should come into contact with a power line do not touch it or try to remove it yourself. Call the local electricity board immediately as they have the experience to remove it safely.



Overhead power and telephone lines are a common sight in rural areas. Make sure there is no possibility of the antenna and mast touching these if it should fall down.

Keep antennae well away from power lines. If the mast touches the cables sparks will fly.

8. Should an accident occur and the victim is in contact with live wires do not touch him or her. Move the victim away from contact using DRY wooden boards, wooden broom handles, DRY rope, sheet or blanket. If breathing has ceased apply artificial respiration and have someone call for medical help — a good use for c.b.!

Site selection

Before attempting to install your antenna, think carefully where you can best place it for safety and performance.

To determine a safe distance from wires, power lines and trees:
*Measure the height of your antenna.
*Add this length to that of the tower or mast.
*Double this total for the minimum recommended safe distance.

If you are unable to maintain this safe distance STOP and seek professional help.

Most c.b. antennae are supported by a pipe mast attached to the chimney, roof or side of the house. Generally the higher the antenna is above the ground, the better is its performance.

Good practice is to install your vertical antenna about five to ten feet above the roofline and away from power lines and obstructions.

Remember that in some areas there is a local byelaw which stipulates antenna height.

Check with the local council's architects' department before installing an antenna system if it is to be higher than that of any other television antennae in the road.

If possible find a mounting place directly above your set, where the antenna co-axial cable can take a short, vertical drop on the outside of the house for entry through a wall or window near to the set. Your local specialist c.b. and amateur radio shop will be able to supply all the necessary hardware for home base antenna installations. ●

Femme Scene

by smiler

I arrived back in the office last week after a fine (liquid) lunch at the IPC social club. The sun was shining and I was full of the joys of Spring. Someone got stuck in the swing doors and that made me laugh and I really was feeling very cheerful as I sat at my desk and prepared myself for the afternoon's hard slog.

Then I got a letter from Mr. Stoker of Kippax in Leeds, and to be perfectly frank it upset me so much that I was thankful there was nobody around to see me brush away the tears.

Mr. Stoker referred to our C.B. Patrol series, and then went on to explain that he had heard a breaker called Lumberjack trying, via the airwaves, to purchase a rig for his friend for about £40.00. Mr. Stoker, who is 50 years old and disabled, helps out in his local c.b. shop, and he told Lumberjack that he would buy a Maxcom for that price from the shop and that Lumberjack and friend could collect it from his home.

Lumberjack called the following morning, dressed in motorcycle gear with helmet and face mask on. He looked at the rig and said he would return later with his friend.

At 12.20 a.m. Lumberjack and his friend knocked on the door of Mr. Stoker's first floor council flat, and in spite of Mr. Stoker's plea for them to come back at a more reasonable hour, insisted on seeing the rig.

Mr. Stoker opened the door, and much to his horror, was punched in the face before being bundled up the stairs. Fighting for breath, he was trussed up at the ankles and wrists with cable and left on his stomach, bleeding from two stab wounds, with a bag over his head. Terrified, he listened to them tear his possessions to bits, pull electrical fittings from walls, slash his electric and ordinary blankets and totally ruin everything they could not take with them.

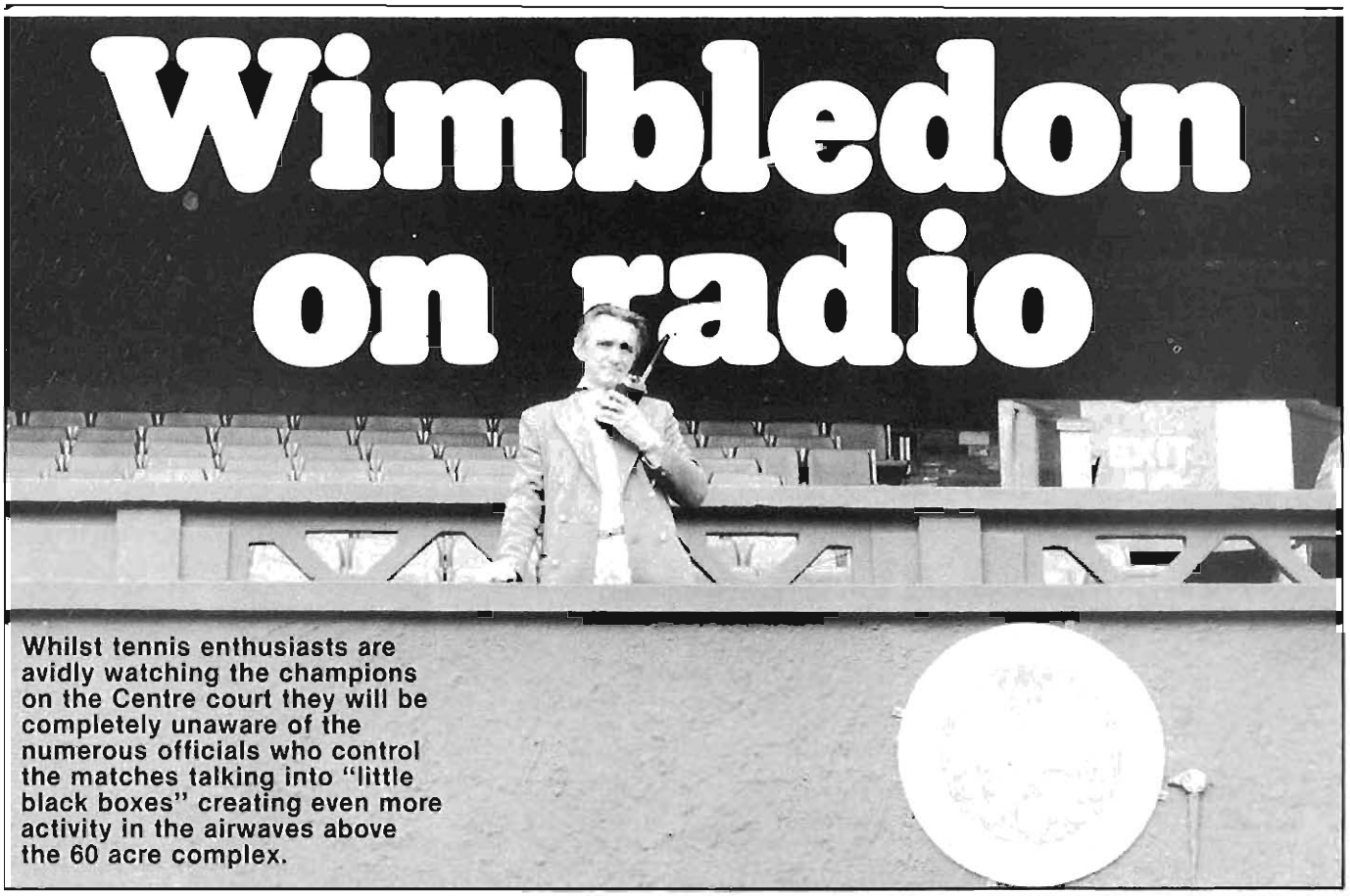
They stole what sounds like the contents of the Generation Game conveyor belt — without the cuddly toy — projector and super 8 cine camera, Zenith TTL still camera, Cokin creative filters, new LCL rig, new Maxcom rig, hi fi system, cassettes of operas, classical music and musicals like The Merry Widow, £130.00 in cash (rent money), credit cards, wallet containing addresses, papers and money, purse containing loose change. Altogether, they got away with over £1,000 — possessions Mr. Stoker had worked hard for as a nurse, instead of drinking and smoking, so that he could enjoy his home. There is no way that he can replace the stolen items — many of them cannot now be bought. He says, "It's ruined my life and trust in fellow c.b.ers although members of my club, The Kippax and Garforth Club, raised £44.00 and a nearby smaller club raised £5.00 to help restore my faith. The very things I needed to be close to when the police had finished with me — a grilling of five hours — were no longer there when I stretched out my hand for the familiar, and now there is dreadful aching and longing for those things which I shall never get back."

Mr. Stoker's letter was passed around the office and we all felt pretty choked up. We were disgusted that these animals bullied a disabled man and took everything he had worked for — possessions he had gained by "going without" what most of us take for granted, but what really sickened us was the way they destroyed everything else. What satisfaction could they possibly have derived from this action?

Oh yes, one other thing. The serial number of Mr. Stoker's LCL rig is 00239. If you see anyone using it, or are offered it 'on the cheap', do report your discovery.

If you have any tapes you no longer need, why not send them to us and we will forward them to Mr. Stoker. Any ideas for replacing his photographic equipment and rig would also be welcome. ●

Wimbledon on radio



Whilst tennis enthusiasts are avidly watching the champions on the Centre court they will be completely unaware of the numerous officials who control the matches talking into "little black boxes" creating even more activity in the airwaves above the 60 acre complex.

On the day we set out to visit the All England Tennis Club, the weather was obviously having a 'dry run' before the world famous annual event. It was ideal tennis weather as we approached the wrought iron gates where the familiar Wimbledon queues of spectators and campers would wait patiently to enter the ground. We wondered how many spectators would be taking their handhelds with them to help relieve the many hours of waiting for play to commence.

Soon it will happen all over again as the build-up of 'Wimbledon 82' draws to a close and the height of activity is once again stepped-up as thousands of tennis enthusiasts flock towards Southfields Underground Station on the District Line.

The growth of this championship has increased from strength-to-strength each year. Wimbledon's roots date as far back as 1877 when the first meeting was arranged in the delightful and pleasant surroundings of a garden party atmosphere.

The attendance was then a mere few hundred people, in complete contrast to the highly competitive and professional tournament that now attracts an annual figure of nearly 350,000 people.

Many local residents take their summer holidays during Wimbledon week as the nearby roads become completely blocked with badly parked cars and access to private drives becomes impossible.

Players from over thirty nations regularly compete on the 'green carpet' demonstrating back-hand vollies, forehand drives and passing shots that in many ways reduce an opponent to either tears or shouting at the officials while increasing the bank balance.

However, because the promotion and exposure of tennis is supported by radio and television networks, the press and, of course, the players who make the game what it is today, venues like Wimbledon must expand and provide even better facilities for supporters.

With the increased popularity of the sport, developments are continually being made to the complex. The installation of electronic scoreboards and extra seating accommodation for the Centre and Number One courts are now being completed to handle the demands of 1982. This investment involves a workforce consisting of builders, maintenance, ground and administration staff who are spread over the whole of the Wimbledon complex.

A staggering 5,000 people are at the ground during the period of the Championships to do a job in connection with the tournament. These include contractors, temporary staff and the BBC and NBC Television crews.

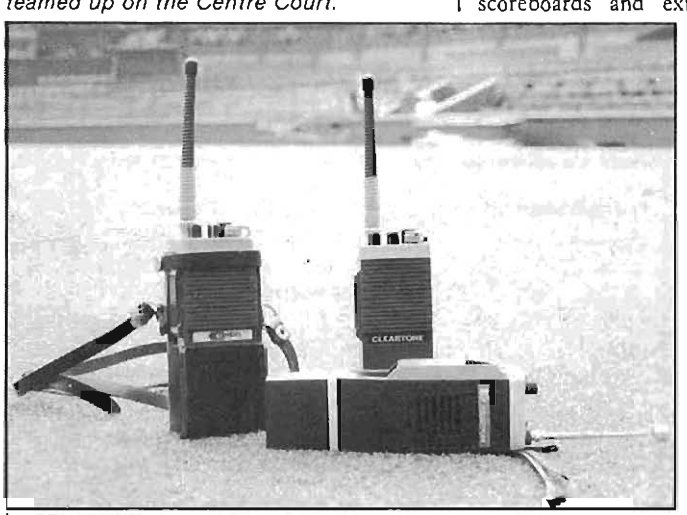
Mobile Radio Hire

The obvious problem facing the organisers is that of relaying information to members of staff around the 60 acres of Wimbledon soil.

To counter this communication barrier two-way radios are frequently used by key members of staff to organise a smooth and efficient work flow and transfer of information.

As the requirements for such equipment is

The Cleartone and PYE Pocketfone are teamed up on the Centre Court.



The Wimbledon 1982 logo.

very much in demand within the two weeks of the championships, it is an advantage and a more cost-effective venture to hire these radios rather than to purchase them outright and have valuable equipment under-utilised throughout the remainder of the year.

A recent contrct between Wimbledon and Comhire, who are authorised suppliers of two-way radio equipment, was agreed. Although many of the radios are on loan from Comhire for the duration of the event, Wimbledon Officials have purchased 10 P5000 'Pocketfones' from PYE Telecom because of the savings in time and money two-way radio communications has achieved.

The process of hiring out mobile radio equipment is a relatively straight forward matter but the changes in the licensing arrangements, which became effective from 1st April 1982 has placed more responsibility on the authorised supplier who wishes to hire out base stations, mobile units, transportables and handportables.

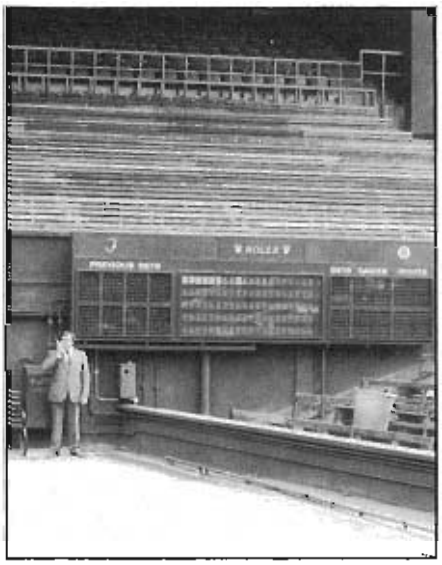
For any of these units a maximum ERP (effective radiated power) is restricted to 5 watts, with the following frequencies for short term use (up to one year).

VHF
169.0125 MHz
169.1375 MHz
169.1625 MHz
169.1875 MHz
169.4375 MHz
169.4750 MHz
169.4875 MHz
169.5750 MHz
169.6375 MHz
169.7625 MHz

The following frequencies are available for limited period use (up to 28 days) as dual frequencies or as single frequencies:

base stations transmit —	85.875 MHz
mobile transmit —	72.375 MHz
single frequency —	140.96975 MHz
Base transmit —	167.200 MHz
mobile transmit —	456.925 MHz
mobile transmit —	462.425 MHz

The portable sets that Comhire hire are the Ranger CH900 and CH800 from Cleartone.



Here, information is being relayed to the electricians and builders installing the electronic scoreboards.

Wimbledon will be using eighteen of the CH800 series during the Championship.

The CH800 is available with either a 2 or 4 watts RF output, offering six channel selection, local/remote operation and selective calling options.

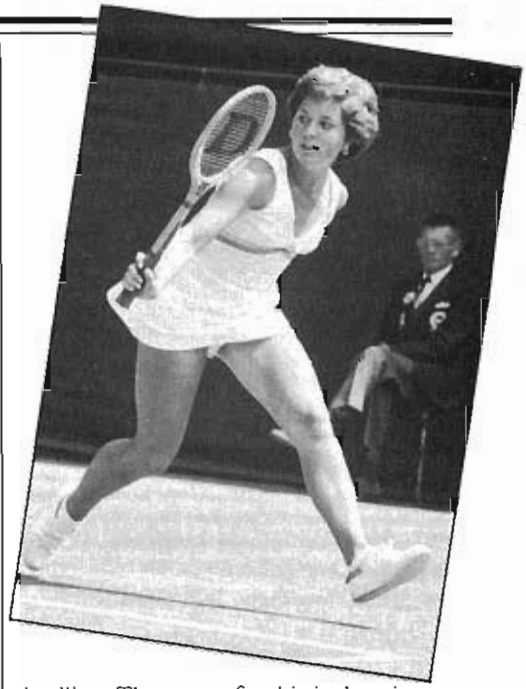
Detailed specifications of these sets can be found at the end of this feature.

Two way radio has significantly increased the organisers efficiency and flexibility during the weeks of pre-tournament preparation. The communication difficulties that once created problems for ground staff maintenance crews, referees and administration personnel at Wimbledon is now history.

Radio Link

Two way radio link enables the head referees to monitor the latest possible situation at all matches by maintaining radio contact with other referees around the courts.

Communication to the umpires sitting on their high chairs by the net is made by



landline. The reason for this is that airwave activity would be transferred across the PA system.

The inclusion of a mute switch might cause more problems than it intends to solve because of the small area the umpire has available, thus making it easier to accidentally activate the switch.

Linesmen do not have two-way radios but have to rely on hand signals or a break in play to communicate with the umpire.

The club secretary and officers are 'on channel' during Wimbledon fortnight to ensure that from the time the gates are open in the morning, to the late evening hours, there are no problems with administration requirements for the 350,000 visitors or players.

Spectators using private transport to and from the site always present a problem especially when all local available space is quickly filled (c.b. enthusiasts — why not keep up to date by asking on channel for advice from local breakers?).●

CH800 SPECIFICATIONS

GENERAL

Frequency Range:	148-174MHz Spread between highest and lowest frequency. 2MHz Tx—Rx
Channels:	6
Power Supply:	Nickel Cadmium re-chargeable batteries (11.2VDC)
Power Consumption:	Tx: App 500mA (CH800/2) 800MA (CH800/4) Rx: 100mA full AF Output. 15mA sq
Operating Temperature:	—30°C to +60°C
Dimensions:	6 × 1.770 × 2.440 (151 × 45 × 62 mm)
Weight:	1.8lb (0.75kg)

Transmitter

R.F. Power Output:	2 or 4 watts
Frequency Stability:	0.0005% —30°C to +60°C
Modulation:	16F3: ±5KHz for 100% 1000Hz
Spurious & Harmonics:	Better than 60dB
FM Noise:	50dB below ⅔ rated deviation 1000Hz
AF Response:	+1dB to —3dB or 6dB/Octave pre-emphasis characteristic from 300-3000Hz

Receiver

Intermediate Frequency:	10.7MHz & 455 KHz
Frequency Stability:	0.0005% —30°C to +60°C
Sensitivity:	Better than 0.5 microvolts for 20dB Quieting 0.35 uV for 12dB SINAD
Spurious Response:	Better than 60dB
Audio Output:	500 mW less than 10% distortion
Selectivity:	Better than 70dB
Intermodulation	More than 60dB

CH900 SPECIFICATIONS

GENERAL

Frequency Range:	420-440/450-470MHz Spread between highest and lowest frequency. 2MHz Rx 5.5MHz Tx
Channels:	4
Power Supply:	Nickel cadminm rechargeable battery (11.2VDC)
Power Consumption:	Tx-600mA 2.0W (900mA 4.0W) Rx 100mA full AF output 20mA sq
Operating Temperature:	—30°C to +60°C
Dimensions:	6 (H) × 2.45 (W) × 1.8 (D) (152.40 × 62.2 × 45.72mm)
Weight:	1.8lb (0.75Kg)

TRANSMITTER

R.F. Power Output	2 or 4 watts
Frequency Stability:	0.0005% —30°C to +60°C
Modulation:	16F3: ±5KHz for 100% 1000Hz
Spurious and Harmonics:	66dB below carrier
FM Noise:	50dB below ⅔ rated deviation at 1000Hz
AF Response:	+1, —3dB per octave pre-emphasis characteristics from 300 to 3000Hz

RECEIVER

Intermediate Frequency:	21.4MHz & 455KHz
Frequency Stability:	0.0005% from —30°C to +60°C
Sensitivity:	Better than 0.5 microvolts for 20dB Quieting 0.35 uV for 12dB SINAD
Spurious Response:	—60dB or better
Audio Output:	500mW less than 10% distortion
Selectivity:	—70dB
Intermodulation:	—60dB or better

NiCad batteries for hand helds

There's nothing like a set of NiCad batteries to power a portable c.b. radio. NiCads, short for nickel-cadmium are available in various sizes and voltages to power almost any type of two-way or one-way receiving radio.

The NiCad rechargeable battery is considered a dry cell, although it really isn't. Within the battery a moist chemical reaction converts chemical energy into electrical power. Unlike the disposable dry cell battery (that also isn't really dry on the inside) the NiCad battery may be recharged over and over again.

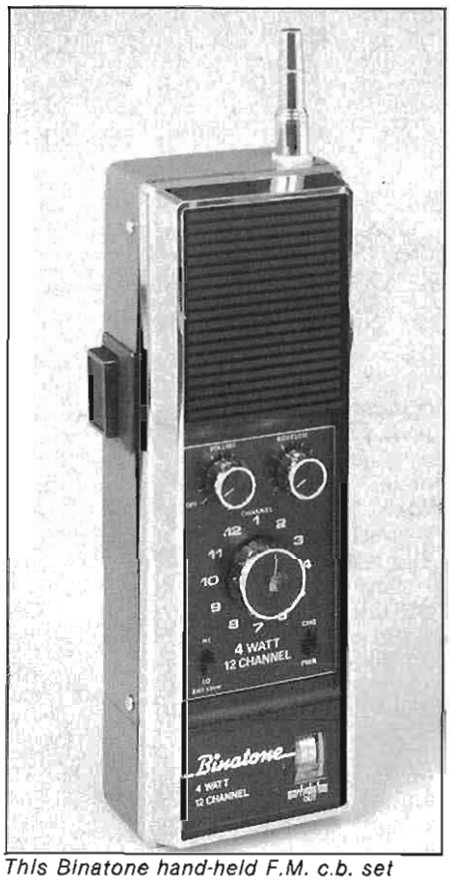
Except for the rectangular nine volt transister battery, most portable radio cells are cylindrical. The AA penlight cell is most popular, and may be grouped together as a battery pack in certain pieces of two-way radio equipment.

The NiCad battery is capable of producing long lasting high-current from an extremely small package. This current capacity remains relatively stable until the cell is completely depleted. This means that a handheld c.b. transceiver will perform at almost full output until the very last seconds when the battery goes dead.

Unlike the less expensive Alkaline or

The Gould "Again & Again" rechargeable battery system and universal battery charger.

All these sets require batteries. An expensive exercise for today's teenager who requires noise (music) during all hours of the day and night.



This Binatone hand-held F.M. c.b. set requires eight AA or HP7 batteries. NiCad batteries will reduce its operating cost.

Carbon-Zinc batteries, there is no gradual reduction in voltage as the battery is used up. A fresh set of NiCad Batteries will deliver almost the same amount of voltage as disposable batteries.

The actual voltage of a single NiCad cell is 1.34 volts as opposed to 1.5 volts in a typical disposable premium AA penlight battery. This means that a handheld transceiver won't have quite the voltage with NiCad batteries as it will with regular penlight cells.

When a NiCad battery or set of NiCad batteries goes dead, it is time to recharge them. NiCads must be charged at a specific current level commensurate with their size.

Over charging a NiCad battery will rapidly heat it and possibly damage it. An overcharged NiCad may also rupture when red hot like an M-80 going off!

Be careful when charging NiCads!

It's safe to charge NiCads at 10% of their rated ampere-hour rating. By carefully monitoring the temperature of the NiCads, it is possible to charge at a higher rate — but you should only do so in manufacturers supplied equipment such as the chargers that are now supplied with popular c.b. handheld units.

The built-in charger will automatically sense the warm NiCad cells and taper off the charging current. This allows a speedy recovery of a set of dead cells in a battery pack. So charge them often and use them regularly for best results. Be sure not to leave them on the charger without using them periodically.

Occasionally a NiCad battery will lose its memory completely — not knowing which end is positive and which end is negative. Many times this type of battery will resist any type of charge, and is eventually thrown away.

A non-recommended way to sometimes revive a completely lifeless NiCad is to give it shock therapy. Although this magazine and manufacturers warn against it, users have applied a quick burst of over voltage to the cell, positive to positive and negative to negative, and this seems to repolarize the cell and it will once again take a charge.

Although this process is dangerous, *CB World* have never heard of a quick burst ever causing any harm — and we have heard of plenty of cases where a set of dead cells have been revived.

A perfectly good set of NiCads completely charged up may only be effective a week after charging. Before using radio equipment, be sure to recharge them if they have been sitting unattended for some time.

Although NiCad batteries are certainly more expensive than conventional disposable long-life batteries, they may be reused for years. Some manufacturers indicate 500 recharges before they begin to give out. *CB World* thinks that this figure is fairly accurate — using your equipment every day, a good set of NiCads will go for about a year and a half.

When an older set of NiCads give out, it is easy to see. Your radio equipment will operate fine for about an hour, and then suddenly die.

NiCads don't slowly fade away — the voltage suddenly goes from a full charge to almost no charge in a matter of seconds.

In an emergency situation with a portable handheld, turn the equipment completely off and leave it off for twenty minutes. Then quickly turn it on and scream for help. The NiCads might give about five more seconds of full voltage use.

If you are presently using expensive disposable batteries in your radio equipment, consider the NiCad as an economical alternative. Although your radio will not run quite as long as with "long life" disposable batteries, you won't have to throw away the NiCads when they go dead.

NiCads will generally power a radio up to 75% of the time that a regular set of disposable batteries will produce usable voltage. And although your radio equipment will not have quite the amount of voltage that disposable batteries have, the voltage you do receive from NiCads will be steady up to the very end.

The NiCad battery is indeed a powerhouse if used and charged regularly. If you are not working your NiCads out, start doing it now before you really need to depend on them.

Rechargeable NiCad batteries are commonly available in penlight "AA" sizes, and "C" cell sizes, and "D" flashlight cell sizes. The small "AA" NiCad batteries are most common because they fit a variety of products such as c.b. radios, calculators, cordless telephones, and pocket stereo sets.

Purchasing the more expensive "C" and "D" size NiCads is certainly a thought when you want to use a battery operated device again and again. Devices that make ideal use of rechargeable NiCads in larger sizes would be flashlights, toys, drills and other handhelds electronics.

A unique system that allows you to use "AA" cells for larger NiCad applications has been developed by Burton Products Corporation in the USA. The battery adaptor will take the common "AA cell NiCad battery and adapt it to "C" cell and "D" cell sizes.

"Aside from the convenience," comments Burt Trattner, "there is a great cost savings. Rechargeable batteries can be used hundreds of times . . . in many cases they can be passed on from generation to generation."

Trattner, who is the inventor of the patented "ADAPT-A-CELL" says that you can end the expensive habit of throw away carbon and alkaline batteries by using nickel cadmium rechargeable batteries. He suggests buying only the "A" NiCad batteries and using his system to adapt them for larger battery size application.

The system is easy to use. The small NiCad battery is inserted into the adaptor, and depending on which size you need, slip the adaptor into the appliance. When the NiCad requires recharging, simply disassemble the adaptor, and place the NiCad battery in the charging assembly. The NiCad may be recharged up to 1,000 times using this method.

The charger supplied is designed to charge either two or four "AA" cell NiCads. It will also charge the rectangular 9 volt NiCad battery. Carefully follow the instructions before plugging in the NiCad battery.

CB World test data

A pair of fully charged 450 MA NiCads discharging into a PR-2 lamp will last to 9 volts cut off for 66 minutes. One regular throwaway "D" cell under the same load and cut off voltage lasts 64 minutes.

The "C" disposable cell rated at 9 volts and under the same load lasts 15 minutes, and the "AA" non-rechargeable cell only two minutes. The low internal impedance of the NiCad permits the adaptor system to be practical.

This test validates the idea that a single charged NiCad "AA" rechargeable battery will last longer than a regular carbon "D" cell with a current averaging 500 MA during the entire discharge cycle. ●

Even this ELFtone bicycle burglar alarm and A.M./C.B. radio requires batteries. These would make a large hole in junior's pocket money (or mum's housekeeping!).

Cobra 21X FM Transceiver

Rigs, rigs, rigs! and judging by the influx of c.b. sets that arrive in our lab each month, it's beginning to look like the local c.b. emporium.

Unfortunately there is little time to admire the omniferous packaging because as soon as a set is unpacked, it is connected, switched on and 'soak' tested. This allows the components to fight it out amongst themselves and settle down to their normal working temperatures.

After this heated conflict has subsidised, we then set out to provide a comprehensive report on each rig. This entails carrying out appropriate test measurements and finally putting the transceiver through its 'paces', "Rome wasn't built in a day" so some pretty fast work is required to publish our monthly findings.

The Cobra 21X FM transceiver has served its sentence to emerge with favourable results.

Face Value

The 21X is a compact set that measures 193mm × 134mm × 55mm so there should be no problem in finding a suitable home for this in your wrapper.

Despite its size the volume, squelch and channel selector controls are spaced as far as their physical size would allow. The control knobs and switches proved to be smooth in operation and were easily manipulated.

A simple looking unit, yet its appearance is sure to bring out an immediate love/hate acceptance of chrome finished front panel layouts — the choice is yours.

Controls

Volume, Power On/Off.

Turning this control past the 'click' position applies power to the transceiver. Advancing the potentiometer increases the output of the AF amplifier.

Squelch/PA.

Both facilities are operated by the centre control knob. Rotating the control knob counter clockwise until it 'clicks' into position, enables the PA circuit.

Channel Selector.

This switch selects any one of the forty c.b. channels.

Power Selector.

The —10dB attenuator switch is located beside the S/RF meter. The 'HI' and 'LO' positions select 4 watts or 0.4 watts transmitter power.

TX Indicator.

This is a red LED situated between the POWER SELECTOR SWITCH and the CHANNEL DISPLAY. The LED will light when the transceiver is in the transmit mode.

S/RF Power Meter.

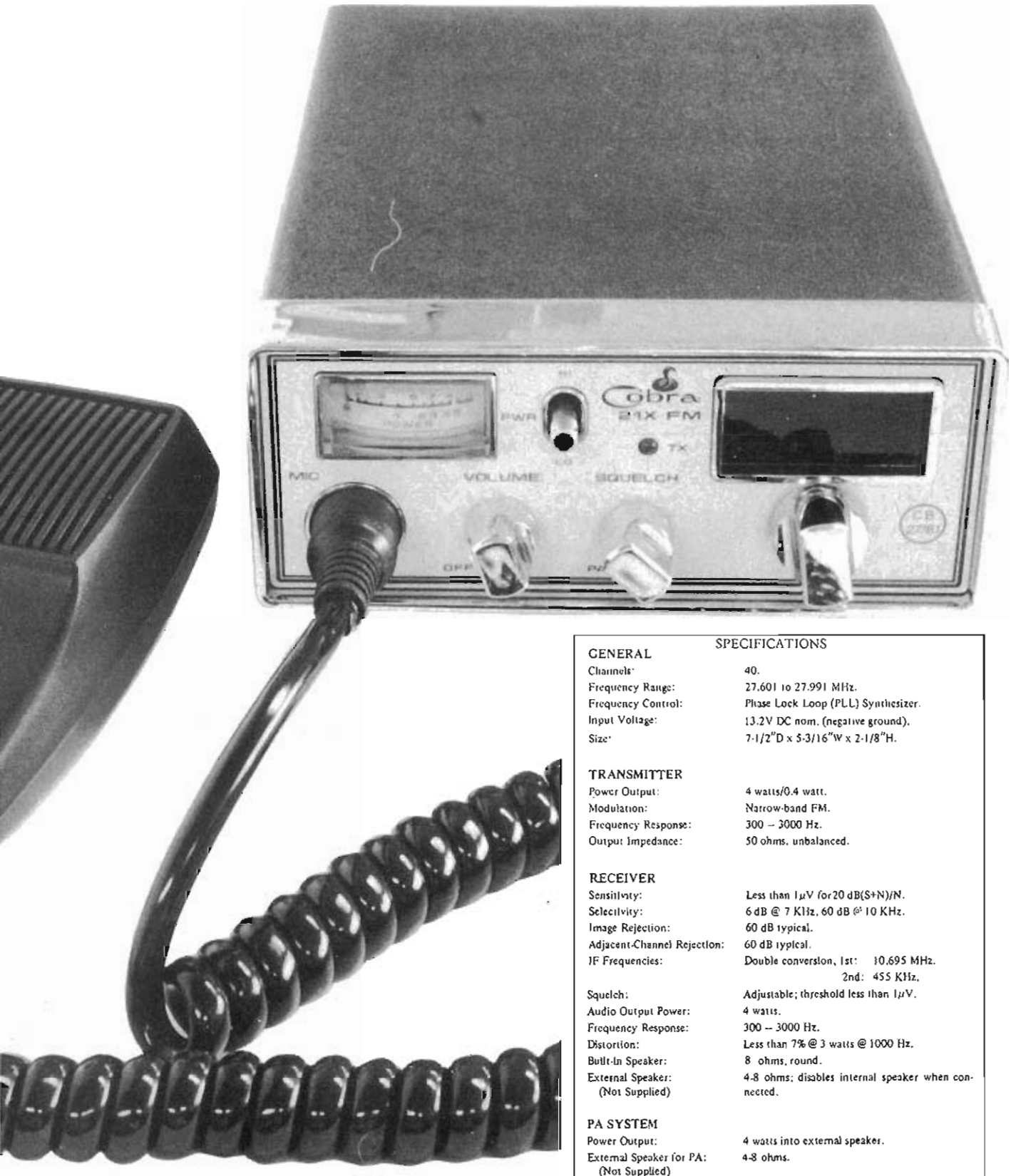
A large easy to ready meter that is illuminated when the transceiver is switched on. The accuracy of these meters leave a lot to be desired. However, they are constantly used by breakers as a guide line for a rig's performance.

Inside Job

Removing the lid we peered into the set. Looking at the spacious interior, there seemed to be a shortage of components as if it were on some kind of silicon controlled diet. However, after a careful inspection and comparing the component count with the supplied schematic diagram, we found no missing links or empty component holes.

The bulk of the circuitry is mounted on a square PCB measuring 121mm. A second PCB accommodates the channel selector switch and the fourteen current limiting resistors for each seven segment display.

The standard of construction is good,



SPECIFICATIONS

GENERAL	
Channels:	40.
Frequency Range:	27.601 to 27.991 MHz.
Frequency Control:	Phase Lock Loop (PLL) Synthesizer.
Input Voltage:	13.2V DC nom. (negative ground).
Size:	7-1/2"D x 5-3/16"W x 2-1/8"H.
TRANSMITTER	
Power Output:	4 watts/0.4 watt.
Modulation:	Narrow-band FM.
Frequency Response:	300 – 3000 Hz.
Output Impedance:	50 ohms, unbalanced.
RECEIVER	
Sensitivity:	Less than 1μV for 20 dB(S+N)/N.
Selectivity:	6 dB @ 7 KHz, 60 dB @ 10 KHz.
Image Rejection:	60 dB typical.
Adjacent-Channel Rejection:	60 dB typical.
IF Frequencies:	Double conversion, 1st: 10.695 MHz. 2nd: 455 KHz.
Squelch:	Adjustable; threshold less than 1μV.
Audio Output Power:	4 watts.
Frequency Response:	300 – 3000 Hz.
Distortion:	Less than 7% @ 3 watts @ 1000 Hz.
Built-In Speaker:	8 ohms, round.
External Speaker: (Not Supplied)	4-8 ohms; disables internal speaker when connected.
PA SYSTEM	
Power Output:	4 watts into external speaker.
External Speaker for PA: (Not Supplied)	4-8 ohms.

particularly the interwiring connections. These were neatly harnessed and the shortest route taken to each point.

Lab Test

The Cobra complies with the Home Office MPT 1320 specifications, we confirmed the manufacturers claims by conducting our usual tests procedures.

Frequently stability of the set was excellent, all channels were within ±1.5 KHz limit. Frequency measurements were taken at room temperature with a power supply voltage set a 13.2 V.

Final readings showed channel 1 to be 27.60127, channel 20, 27.79129 and channel 40, 27.99130.

The RF power was measured at 3.7 watts, not exactly four watts but from our transmission reports there was no detectable loss in output or quality.

The audio quality of the AF (audio frequency) amplifier was fair, in comparison to most rigs tested — don't expect hi-fi results as the bandwidth is a lot less than a stereo amplifier. Top frequency roll off was 3KHz at the 3dB points, the most you can expect from a good design is 3k5 Hz (3500Hz).

Conclusion

The Cobra was used as a mobile unit and then installed for homebase operation. In both cases it was effective in performance. We noticed no overloading or distortion of the received signal so the rig is free from excessive adjacent channel interference.

All in all its the kind of rig newcomers would benefit from because of its simple layout and ease of operation.

Mura (UK) Ltd.,
High Road,
Willesden,
London NW10.

Portable TVs & Radios

In the same vein of the personal stereo boom and mobile entertainment, there seems to be a revival of portable television sales.

Estimates for the first three quarters of 1981 gave a total delivery of 940,000, as against 985,000 sets for the same period of 1980. Whilst consumer interest in monochrome sets has tailed-off to a small extent, the small screen colour models have taken up the slack, indicating a steady growth.

Sales figures for colour sets showed a healthy increase from 1978 when only the 175,000 mark was reached. This figure soon jumped to 380,000 in 1979 and reached 484,500 in 1980, 1981 continued this expansion with 450,000 delivered in the first nine months, reflecting a 40 percent increase over the same period in 1980.

The annual figures for 1982 are not yet available but the feedback from various trade sources expect this trend to continue.

Although an element of uncertainty is attached to the quantity of radio sales, much the same story is generated throughout the sales and marketing industry. Lately this has been enhanced considerably by select members of society pounding around with portable stereo combinations, small radios pressed against one ear and also personnel stereos with their radio conversion cassette.

An estimated 90 percent of the population instinctively tune in at sometime during the day to their desired programme. This public awareness is linked with the idle hours of unemployment, thus more attention is devoted to the coverage of national and international news and varied subject matter. However, the major interest lies in the popular music category which is riding high on the entertainment list.

Sport proceedings in the early summer months is noted for a marathon of cup final fixtures including rugby, snooker, volleyball, table tennis, hockey, tennis and of course this year highlighting the World Cup.

For many of these enthusiasts it is essential for them to have the latest up-to-the-minute progress reports on their favourite players and teams.

One way is to watch play on a portable TV or listen on radio, thereby extending your freedom, from the living room armchair, into the office, shop, picnic outing etc.

To cope with this demand, the poor defenceless television has been the centre of family feuds deciding what to watch. Fortunately, the increased usage of the television, coupled with sets becoming smaller and cheaper has reshaped traditional viewing habits to be spread among two or even more sets in a single household.

PORTABLE TVs

Looking first at portable TVs, we found performance was comparable with the larger 26 inch sets. However, there was always slight problems with reception and tuning using the standard loop or telescopic antennae. To overcome this problem we plugged a 75ohm portable antenna into the antenna socket.

This proved to be a worthwhile investment as the reception and picture quality improved immensely.

The *CB World* staff adapted to watching several of these liliputian sets (not all at the same time) in the office and at home. Reported performance was impressive once the 75ohm antenna was connected.

The sets we have reviewed can be run from an external d.c. source usually a 12 V car battery or from the 240 V domestic mains supply.

The majority of sets are fairly straightforward with basic features. Manual tuning is accomplished by rotating the tuning dial to the desired station, this is no more than a potentiometer controlling the voltage to a varicap diode. This method has survived generations of sets and because of its simple and effective operation designers still use it.

The dial will be marked from 21-68 corresponding to the UHF channels and thus usable almost anywhere without the need to reset or tune any preset controls.

Continual adjustment of frame and line sync is now relieved by better quality and manufacture of integrated circuits.

Reliability

With automatic assembly of printed circuits, accompanied with computerised testing and fault diagnosis, the reliability of modern television has increased dramatically.

While rotary tuning is popular with the basic sets, up-market portables like the National Panasonic TC-800G incorporate pre-selected channel push buttons, so there are no moving parts to wear out, thus increasing the reliability of a set.

As a complete electronic tuning circuit is employed, sets of this nature require no external fine tuning controls.

National Panasonic

The first set to gain our attention was the TC-800G colour TV and video monitor from National Panasonic.

If you're looking for a second set for the home, then the TC-800G must be considered.

This versatile and compact unit can be connected to a home video system via the audio/video IN/OUT sockets for recording or play back. The TC-800G is light enough to be manoeuvred when used as a camera monitor for setting angles or arranging other shooting conditions.

Other features include auto search with auto/random memory, used for automatic scanning selection or to input any desired station into memory. Up to twelve pre-selected channels can be allocated, dual standard reception and an 8 inch 70° in line CRT (cathode ray tube) make the TC-800G an attractive buy.

Hitachi

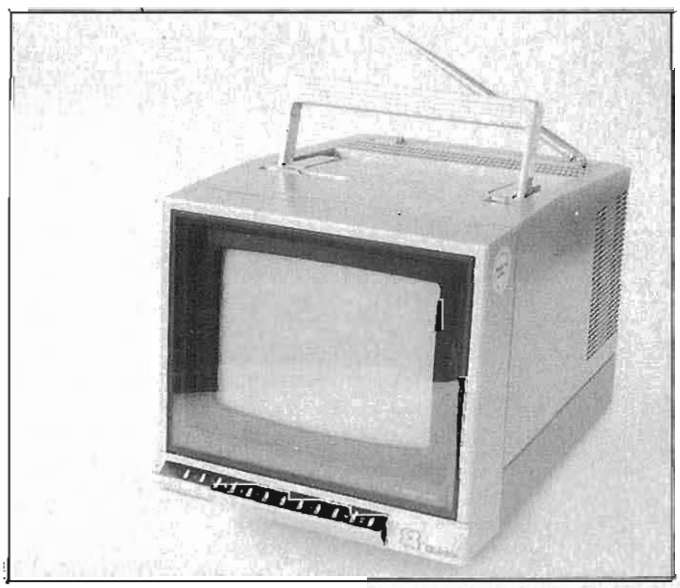
The Hitachi K-2300 is a 4½ inch mains/battery set with LCD clock. At first sight the K-2300 boasts a complicated collection of buttons and dials. Don't worry, most of these buttons are to set the clock display.

The remaining controls are: volume ON/OFF, line button (tuning indicator) band selector (UHF, VHF) and tuning dial which is located on the right hand side. Horizontal hold, vertical hold, contrast, brightness controls are on the left hand side of the set.

The leaflet supplied, gave clear instructions on setting the clock and using the automatic turn on and 'sleep' facilities. All in all a well presented lightweight set.

The Hitachi F-41B is a straightforward UHF black and white 14 inch portable. It uses the same tuning line technique as the k-2300. The brightness, contrast, horizontal and vertical hold are located at the rear of the set.

The National Panasonic TC-800G



Fidelity

Good all round results were obtained from the Fidelity 14 inch colour CTV 14S. The CTV 14S is based on the ZX 2000 chassis launched last year by Fidelity. With its remote control facility it enables sequential stepping through six preset channels, volume level and turn OFF push buttons are also included on the infra-red controller. The remote controller was used across an average living room area with reliable results.

Other controls consist of a push button step through channel selector, volume, brightness, contrast, and colour and push button ON/OFF. There are no external controls for vertical and horizontal hold as automatic circuits are employed to compensate for sync problems.

Binatone

The Visionstar is a basic, lightweight and compact 12 inch monochrome television. Controls for volume, brightness, contrast and tuning plus telescopic antenna, earphone socket and external UHF antenna socket are provided.

With all combinations combining to make combinations of . . . it wasn't long to wait before televisions appeared with the radio/cassette options.

The facia of the Combi is adorned with petite knobs and switches leaving just enough room for a 9 inch picture tube.

Features include a radio-cassette recorder with push button operation for stop/eject, pause, forward, rewind and pause. Built-in electret microphone, tone control, audio level meter, microphone mixing control, loop antenna with external UHF socket. Amongst all this, the volume, brightness and contrast and tuning dial are within easy reach.

Hanimex

The Hanimex HTV 531-1 is a lower priced successor of the 531-2 inch monochrome portable — strange as it may seem. The 531-1 is a slim well presented set, featuring a three band tuner for medium, long and VHF reception plus an autostop cassette deck with integral electret microphone.

Nickel cadium batteries (not supplied) can be used to power the HTV 531-1 and with the built-in charger, can be charged when the unit is being run off the mains. Among the range of controls are volume, a local/DX switch and tone controls.

RADIOS

Ingersoll Radio Receiver

The Ingersoll XK700 is a seven band receiver with switchable FM/MW/LW and four SW bands. As you can see from the photograph, the set is finished in matt black and styled to a professional receiver, indeed the reception quality on the short wave bands were received with surprising clarity.

The general features are large volume and tuning controls, telescopic antenna with FM and SW antenna sockets. A constant battery powered LCD clock display provides auto turn on facility.

Fidelity

The Fidelity battery saver radio is a mains/battery portable radio. The battery saver uses a clever electronic circuit technique to recharge an **ordinary PP9** battery (yes, an ordinary dry cell PP9 battery) when the set is being used from the mains supply. If you are interested in this electronic marvel, *C.B. World* will be publishing full details shortly.

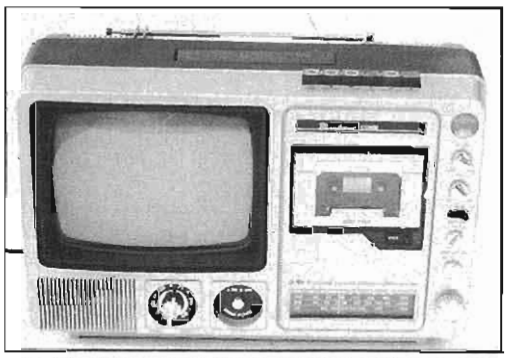
The radio has LW, MW and FM wavebands with push button selection, rotary tuning and a slider volume control. A red LED indicator shows when the battery is being charged. A socket is provided for earphone facility.

Hanimex

In their range of radios, Hanimex offer two compact and attractive personal stereo radios.

The HSR 2020 receives FM reception whilst the HSR 1030 receives AM or FM broadcasts.

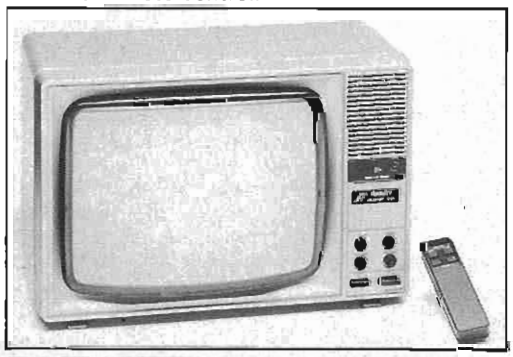
Both incorporate tone controls and lightweight headphones.●



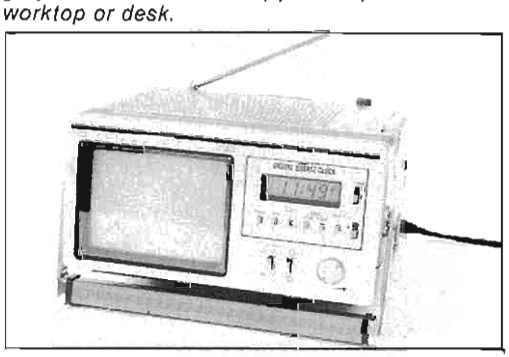
The Binatone Combi brings more entertainment to your finger tips.

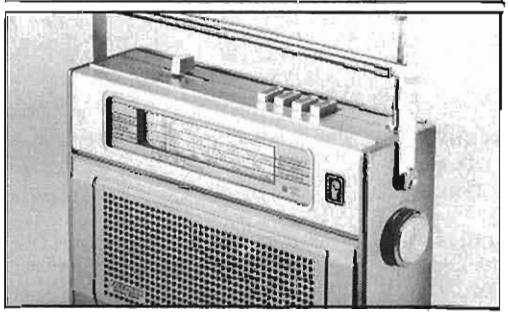
The HVT 531-1 5 inch portable TV from Hanimex can be powered by rechargeable Ni Cad cells.

The CTV 14S colour portable with the hand held infra-red remote control.



Hitachi K-2300, the cabinet is finished in a silver grey colour and will occupy little space on a worktop or desk.





Fidelity claim the Saver portable radio will extend the life of an ordinary battery up to four times.

The Ingersoll 7 band receiver will provide hours of interesting listening on the SW bands.

Small is beautiful for the Hanimex 2020 which receives both AM & FM broadcasts.

Company names and address:

Binatone International
Binatone House,
Beresford Avenue,
Wembley Middx. 01-903 5211

Fidelity Radio Ltd.,
Victoria Road,
London NW 10 01-965 8771

Hanimex (UK) Ltd.,
Hanimex House,
Dorcan, Swindon (0793) 26211

Hitachi (UK) Ltd.,
Hitachi House,
Station Road,
Hayes Middx. 01-848 8787

Ingersoll Electronics Ltd.,
202 New North Road,
London N1 01-359 0161

National Panasonic (UK) Ltd.,
300 Bath Road,
Slough, Berks. (0753) 34522

Two-way radio vs the hooligans

Very few people need educating about the devastating effects a minority of soccer fans cause week in and week out.

On numerous occasions excited supporters echoing familiar shouts and chants during their regular Saturday entertainment have turned an innocent day into an ugly scene of uncontrollable violence.

For far too long justice has been too lenient on these bully-boys, vandals and terrorists. The days 'work' put in by these perpetrators involves wrecking the football ground, shopping centres, cafés, buses, trains and railway stations — also putting public safety and properties within close proximity of the ground at risk.

With minds like petroleum ready to explode, the act of these mindless attacks seriously injure or take the lives of innocent bystanders.

No doubt the Football League Committee, Club Managers and Directors are constantly trying various methods in an attempt to reduce this senseless destruction.

The introduction of security cameras, barriers separating opposing fans, fences to prevent missile (darts, sharpened coins, bottles, stink bombs etc.) throwing and invasion of the pitch by the supporters have obviously helped matters but strong evidence of the hooligans' actions are still felt.

One demolished goal mouth as these hooligans confirm, muscles multiplied by brains is a constant.

Gate attendances have slumped to an all time low, which has placed an unhappy state of affairs for clubs — especially those in the third and fourth divisions.

Crowd Control

Apart from the police and emergency services using two-way radios, *CB World* discovered that a surprising number of football clubs in and around the first and second divisions are void of exploiting the benefits of two-way radio.

To blame this lack of involvement on the recession is not concrete enough as the opportunity for action existed well before the economic crisis developed.

Now as the financial problems for many of the top clubs deepen, the investment of using two-way radio for crowd control remains low on the list of priorities.

Many clubs question the effective use of these radios but it appears very few have taken a positive attitude by using hired sets

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Telephone: 021-772 1994/6

RCB UK
2 Roneo Corner, Hornchurch Road,
HORNCHURCH, Essex
Telephone: 49 57942

Top left. Kevin Keegan moving swiftly into action against Switzerland in Basle.

Centre sequence. Foul Ref! outburst from the crowd as Rossi of Italy is fouled by a determined Hungarian. This kind of action will always inject a high 'spirited' reaction from the crowd.

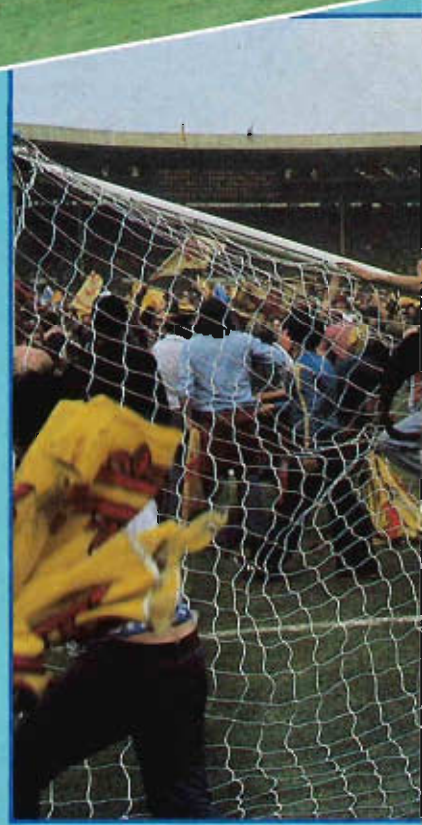
Top right. Violent reactions from the terraces at Tottenham; the police cannot cover every square inch of the ground, therefore it would be an advantage if club officials were strategically placed around the terraces, using two-way radios to action help from the police before angry conflicts develop into ugly scenes.

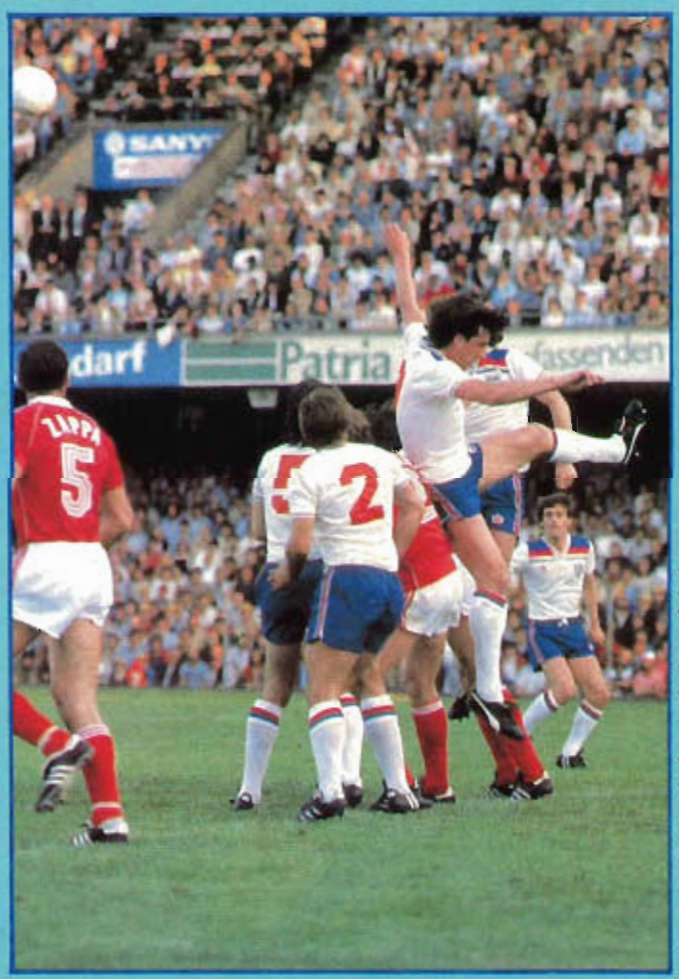
Far left. Even the exuberant shouts of an excited crowd wouldn't give you a splitting headache like this. Unfortunately, these extreme injuries are incurred far too often. The effective use of two-way radios would bring the emergency services to immediate assistance.

Bottom left. Police try in vain to separate fans fighting before the Millwall v Ipswich match.

Centre right. Remember this nostalgic event? England v Scotland, here Scottish fans in full force invade the pitch. The benefits of two-way radio communication for crowd control, should not be ignored!

Bottom right. This is what it's all about . . . Paul Mariner putting his best foot forward against Switzerland.





Photographs by kind permission of Colourspot.

Come in number one

They're here! Midland mobile rigs . . . America's finest and now Britain's too. The Midland "Precision Series" sets a new standard for C.B. Few competitors will be able to take up the challenge, because few have a background that goes back 20 years. Few are prepared to regard C.B. as a force that's here to stay. Too many are in for the quick killing, so they don't offer the kind of after-sales service that you need when you're buying sophisticated communications equipment.

Midland became the Big Name in the States by being synonymous with quality – in product and service. You can appreciate something of that quality just by handling a Midland rig. Ask your C.B. specialist to show you the Midland "Precision Series", or send the coupon to us and we'll get more literature to you.

Pictured is the Midland 4001. Features include: C.B./P.A. switch, numbered channel selector as well as green digital display, Squelch control, On/Off volume control, TX L.E.D., R.F. Gain, Low Pass/Filter switch, Mike Gain, LO/DX switch, Channel Normal/DIM switch, A.W.I. indicator, S/R.F. meter, mounting bracket and microphone included.

Drive America's top rig

MIDLAND

MIDLAND precision series

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Please send me details of the Midland "Precision Series".

Name _____

Address _____

_____

for a trial period.

What role can two-way radio communication play in dealing with crowd control? The police with their communication network do a fine job in general situations but they cannot patrol every inch of the ground, and even security cameras can miss certain details. All too often it is the accidental push that is the catalyst for angry conflicts. It is therefore an advantage for Club Officials to be strategically placed around the terraces, using two-way radio to action help from the police.

If two-way radio was also made available to the camera operator monitoring the close-circuit televisions, he could patch in the communications channel to plain clothes policemen or the club's security staff to stop incidents escalating.

If the cost of employing two-way radio is considered an expensive project, then the possibility of using c.b. with a selective calling option is an alternative.

Whatever means a club eventually adopts, it must contain these thugs from inflicting physical injury on society. Efforts should not be relinquished as this would endanger the survival of soccer.

United Force

If clubs were to incorporate two-way radios for crowd control, it would strongly enhance the duties performed by the emergency services ground policemen and mounted policemen who are often called in to handle football crowds.

Strathclyde mounted police force have recently been equipped with Motorola MT-700 two-way radios. These officers plus others in Panda cars and others on duty, are well served by an impressive computerised command and control system, which is a technological step forward for police operations today.

When the full time whistle blows and the crowd disperses, trouble is no longer confined to the stadium. The local residents and shop keepers await the outcome of destruction, while a schizophrenic mob run riot threatening their livelihood.

Despite the declining gate attendances the local constabulary are not simulating crowd effects, just enforcing the law.

With the aid of mounted police, a greater control can be exercised on rampaging crowds by manoeuvring into trouble spots faster than foot patrols or where it is cumbersome for patrol cars to gain access.

When an incident is reported, the controller supplies the computer with the information via a VDU. The computer then informs the controller of the resources at his disposal — he then directs officers to the incident by radio. At the same time he updates the computer on the action taken.

Divisional and satellite controllers can pass details of incidents to the appropriate divisional controller by instantaneous computer link. When the results of police action are known, the controller enters the data on his VDU screen and updates the computer records again.

The computer's software runs a Management Information System, which provides a wide range of computer printouts to cater for the needs of officers in managerial and supervisory ranks. The printouts contain data that has been fed into the computer by controllers, information that has been given to the computer direct from vehicles using VHF equipment and data transmitted to headquarters by teleprinter from divisional offices.

Crime data based on reported crime is collected during each 24-hour period via the teleprinter network, enabling the computer to analyse details of crime throughout the force area.

The British police force have nearly twenty years of experience using two-way radios. They themselves are examples of how mobile radio communication can be used to effectively deploy manpower to safeguard our society. ●

Here is the World Cup group table and pictures for you to record results and team placings throughout the tournament.

GROUP ONE
ITALY POLAND PERU CAMEROON

14 June Italy v Poland (Vigo).....
15 June Peru v Cameroon (Coruna).....
18 June Italy v Peru (Vigo).....
19 June Poland v Cameroon (Coruna).....
22 June Peru v Poland (Coruna).....
23 June Italy v Cameroon (Vigo).....

GROUP TWO
WEST GERMANY CHILE ALGERIA AUSTRIA

16 June W. Germany v Algeria (Gijon).....
17 June Chile v Austria (Oviedo).....
20 June W. Germany v Chile (Gijon).....
21 June Algeria v Austria (Oviedo).....
24 June Algeria v Chile (Oviedo).....
25 June W. Germany v Austria (Gijon).....

GROUP THREE
ARGENTINA HUNGARY EL SALVADOR BELGIUM

13 June Argentina v Belgium (Barcelona)....
15 June Hungary v El Salvador (Elche).....
18 June Argentina v Hungary (Alicante).....
19 June Belgium v El Salvador (Elche).....
22 June Belgium v Hungary (Elche).....
23 June Argentina v El Salvador (Alicante)...

GROUP FOUR
ENGLAND FRANCE CZECHOSLOVAKIA KUWAIT

16 June England v France (Bilbao).....
17 June Czech. v Kuwait (Valladolid).....
20 June England v Czech. (Bilbao).....
21 June France v Kuwait (Valladolid).....
24 June France v Czech. (Valladolid).....
25 June England v Kuwait (Bilbao).....

GROUP FIVE
SPAIN YUGOSLAVIA HONDURAS N. IRELAND

16 June Spain v Honduras (Valencia).....
17 June Yugoslavia v N. Ireland (Zaragoza)...
20 June Spain v Yugoslavia (Valencia).....
21 June Honduras v N. Ireland (Zaragoza)....
24 June Honduras v Yugoslavia (Zaragoza)..
25 June Spain v N. Ireland (Valencia).....

GROUP SIX
BRAZIL NEW ZEALAND RUSSIA SCOTLAND

14 June Brazil v Russia (Seville).....
15 June Scotland v N. Zealand (Malaga).....
18 June Brazil v Scotland (Seville).....
19 June Russia v N. Zealand (Malaga).....
22 June Russia v Scotland (Malaga).....
23 June Brazil v N. Zealand (Seville).....

SECOND ROUND
28th, 29th June and 1st, 2nd, 4th, 5th July — Barcelona and Madrid

GROUP A
Winners Group 1.....
Runners Up Group 6.....
Winners Group 3.....

GROUP B
Winners Group 2.....
Runners Up Group 5.....
Winners Group 4.....

GROUP C
Runners Up Group 1.....
Winners Group 6.....
Runners Up Group 3.....

GROUP D
Runners Up Group 2.....
Winners Group 5.....
Runners Up Group 4.....

SEMI-FINALS 8th July — Barcelona and Seville

1. Group A Winners v. Group C Winners ..... v. .....
2. Group B Winners v. Group D Winners ..... v. .....

THIRD PLACE PLAY OFF — 10th July — Alicante

FINAL — 11th July — Madrid

FINAL TEAMS

1.....	1.....
2.....	2.....
3.....	3.....
4.....	4.....
5.....	5.....
6.....	6.....
7.....	7.....
8.....	8.....
9.....	9.....
10.....	10.....
11.....	11.....
12.....	12.....

national register HANDLES

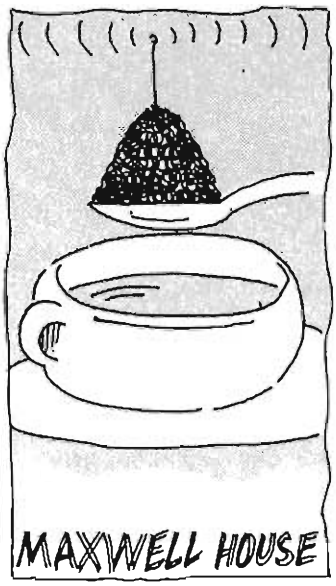
CB World wants to apologise to those c.b ers who have sent in their handles and have not seen them published. We have been inundated with handles from John O'Groats to Lands End and we have enough handles to fill a telephone directory. Please be patient and bear with us, your handle will appear eventually. This service is free by the way and we would ask you to continue sending them in to us. Would you please indicate whether you are on a.m. or legal f.m.

On these pages you will find a selection of illustrations depicting handles as seen by *CB World*. If you would like us to interpret your handle, please write to us enclosing £2 and we will send you a black and white print. Send your remittance to: The Editor (payable to IPC Business Press Ltd.), CB World, Room 802,

Please understand that we cannot deal with individual needs and requirements, you would have to accept our interpretation of your handle. We cannot refund your £2 should you dislike the print. Your guide would be the examples shown on these pages.

Microchip	West Croydon
Midget Gem	Shotton Colliery
Mighty Weed	Penistone
Minnie Mouse	Southminster
Mistletoe	Saundersfoot
Moby Dick	Cranbrook
Monkey Nutz	Halesdon
Monacco Mole	Kings Lynn
Moonbeam	Plymouth
Moriarty	Pinner
Motorman	Penistone

Mouth Organ	Saundersfoot
Mr. Magoo	Chapel End
Mr. Nobody	Halesdon
Munchin	Streatham
Mystery Man	Manor Park
Neptune	Saundersfoot
Newsboy	Saundersfoot
Night Owl	Glasgow
Night Rider	Lanark
Nightingale	Barnsley
Nightowl	Leicester
Noggoin the Nog	Plymouth
Nutty Rebel	Broxbourne
Odd Job II	Barnsley
Oddjob	Penistone
Oil Slick	Kidsgrove
Orange Fruitie	Halesdon
Paddington Bear	Plymouth
Paradise	Halesdon
Paranoid	Marlbrook
Pedal Pusher	Bristol
Pegasus	Chelmsford
Penguin	Skelmersdale
Penny Black	Montrose
Peppermint Baby	Tunbridge Wells
Pest	South Ockenden
Pheasant Plucker	Saundersfoot
Picture Man	South Ockenden
Pig Tails	Cranbrook
Pink Elephant	Chapel End
Pink Floyd	Milton Keynes

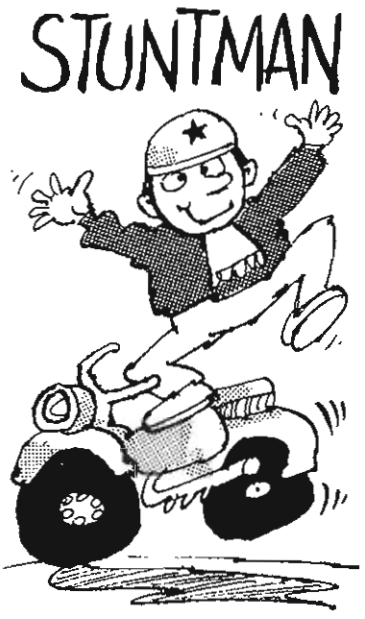


Pink Panther	Chapel End
Pinky	Stilton
Pint Size	Rogiet
Pisces	Rogiet
Pisces	Welshpool
Pixie	Penistone
Plattie	Halesdon
Pluto	Ely
Ploo	Maltby
Pony Express	Saundersfoot
Pool King	Coalville
Popeye	Penistone
Postman Pat	Bristol
President	Bristol
President	Saundersfoot
Professor	Boston

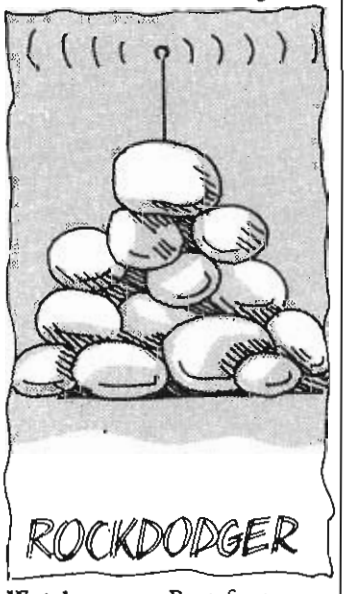
Psychedelic Necromancer	Barry
Pyrhana	Welshpool
Queen Bee	Trewern
R. Q.	Thanet
Ranrod	Penistone
Ratcatcher	Saundersfoot
Rd Star	Chelmsford
Red Ball	Halesdon
RedBeard	Maltby
Red Fox	Clacton
Red Pirate	Farncombe
Red Robbo	Saundersfoot
Red Setter	Sutton
Renegade	Dagenham
Rigamortis	Halesdon
Rio Rita	Halesdon
Road Runner	Congleton
Rocket Man	Blaenavon
Roman	Peniston
Rubber Duck	Chalfont St. Peter
Rubik Cube	Halesdon
Rude Girl	Carshalton

"Dear Ms. Hobbs,
I'd just like to thank you and your pavement artist for my cartoon handle card which I was really very pleased with and which I thought to be rather amusing. I'm sure that if I show it to my c.b. friends you will have plenty more orders.
Yours sincerely,
Debi Garrett,
Carshalton."

Rupert	Penistone
Saint	Gillingham
Saliage I	Streatham



Sand Man	Boston
Sandpiper	Emsworth
Sausage Roll	
Lady	Farncombe
Scallywag	Shrewsbury
Scooby Doo	Nottingham
Scorpio Two	East Grinstead
Screwdriver	Wheatly Hill
Sea Bird	Porchester
Sea Fox	Cranbrook
Sentinel	Botley
Shady Lady	Kidderminster
Sharpshooter	New Brighton
Shortcake	Boston
Silver Bird	Saundersfoot
Silver Fish	Saundersfoot
Silver Haze	Chelmsford
Silver Lady	Saundersfoot
Silver Streak	Penistone
Silver Surfer	Manchester
Sister disco	Saundersfoot
Skallywag	Shrewsbury
Skyliner	Penistone
Skywave	Thames Ditton
Small Ad	Chelmsford
Smurf Man	Farncombe
Smurf	Wheatly Hill
Snow Queen	Ebbw Vale
Snowball	Saundersfoot
Songbird	Roystone
Soul Shaker	Penistone
Space Monkey	Brighton
Spannerman	Saundersfoot
Sparrow Hawk	Saundersfoot
Spiderman	Chilworth
Spirit	Great Yarmouth
Square Deal	Taverham
Stage Manager	Chelmsford
Star Trek	Newtown
Starchild	Chelmsford
Starfighter	Chalfont St. Giles
Stonemason	Penistone
Stray Kat	Penistone
Stricker	Saundersfoot
Sugarman	Cosley
Super Nut	Grimsby
Superblue	Penistone
Swordfish	Penistone
Tallhund	Tamworth
Tandori Chicken	Chelmsford
Tartan Bandit	Penistone
Technical Kid	Penistone
Telekon	Blaenavon
Tenpole	Thanet
Thumberling	Congleton
Thunder Thighs	Barry
Tiger Lily	Carlisle
Tigeress	Oval
Tinkerbell	Penistone
Tiny Tots	Thanet
Tiptop	Colchester
Toby Jug	Saundersfoot
Tomboy	Boston
Topsey Turvey	Hayes
Touché Turtle	Cranbrook
Toy Soldier	Penistone
Toyah	Thanet
Trebor	Wigtownshire
Tristar	Brighton
Trouble	South Ockenden
Tudor King	Halesdon
Tumbleweed	Penistone
Tweety Pie	Saundersfoot
Twinstick	Wallasey
Two Stroke	Halesdon
Uncle Sam	Penistone
Van Eater	Rogiet
Videostar	Glasgow
Vixen	Belford
Vulcan	Worthing



Watchman	Pontefract
Welsh Wizard	Penistone
Wheel Bearing	Abingdon
Wheelie	Boston
Whip Lash	Harlow
Whirligig	Hayes
Whirlwind	Halesdon
White Cane	Boston
White Owl	Plymouth
WhiteRabbit	Saundersfoot
White Swan	Saundersfoot
Wicked Wendy	Sutton Coalfield
Wild Fire	Sompting
Winchman	Cobholm
Wizard Lady	Wallasey
Wolfman	Norwood
Wonder Woman Wood	Barnsley
Butcher	Saundersfoot
Woodentop	Portsmouth
Worzel	Caldicott

More next month


Traffic Signals
No.15
"SUMP-PLUG" HAS JUST BOUGHT HIMSELF A SOFT-TOP...
I WISH THIS RAIN WOULD STOP, "BIRD-BRAIN," SO I CAN OPEN THE TOP!
THAT'S FUNNY, OL' SUMP, IT'S STOPPED RAINING HERE A WHILE.
GREAT!
SCRAPE
FUMBLE
YOU'RE RIGHT, BIRD-BRAIN, I'M OPENING UP NOW!
Andrew Owen
....OR TRYING TO! BOY, THIS WIND IS STRONG, TOO, I MUST BE CAREFUL NOT TO CRASH!
I'M STILL HERE, BIRD-BRAIN
IS THE ROOF UP YET?
DIFFICULT, THIS!
YOU THERE SUMP?
BE CAREFUL NOT TO CRASH, SUMPY, OL' FRUIT, COPY?
NO, NOT YET, MATE, I'M STRUGGLING!
FLAP
GUST
YOU O.K. SUMP?
OOF!
I THINK I'M O.K., BIRDIE
STREACH
SUMPY, YOUR SIGNAL IS MUCH STRONGER NOW! WHERE ARE YOU?
IS SUMP SOFT ON TOP? WILL BIRD-BRAIN GET WIND OF IT? ARE OUR VERBALS BLOWING A GALE? JUST HOW FAR WILL A MIKE-LEAD STRETCH? ALL THESE QUESTIONS, AND MORE WILL BE ISSUE IN NEXT ANSWERED MONTHS, OR SOMETHING!!!!!!!
TO BE CONTINUED.....

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THE GAME WITH 60 CARTRIDGES
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The Atari is supplied with a free mains adaptor, a pair of paddles, a pair of joysticks and a combat cartridge and is the most popular television game on the market and has a range of over 40 different cartridges. In addition to the standard Atari range we also now stock the new Activision cartridges which are currently on special offer reduced from £18.95 to **£16.95 inc. VAT**

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ATARI OWNERS CLUB — Why not join our *FREE* Silica Atari Owners Club and receive our bi-monthly newsletter with special offers and details of the latest new cartridge releases. Telephone us with your name and address and we will add your name to our computer mailing list.

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R.R.P. £229.95 (inc. VAT)

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All 19 current cartridges + the six new ones above now retail at £19.95 — Silica special offer price **£17.95 inc VAT**

The Mattel Intellivision is the most advanced T.V. game in the world with a range of over 25 different cartridges all at our special offer price of £17.95. This game uses a 16-bit microprocessor giving 16 colours and three-part harmony sound. The picture quality is incredible with 3D effects and realistic animation. An add on keyboard will be available in the Spring 1982 to convert the Mattel into a full home computer with 16K RAM which will be fully expandable and programmable in Microsoft Basic. Other accessories will be added later in the year. The normal price of the Intellivision + free soccer cartridge is £229.95 but our special offer price is £179.95 inc. VAT saving you £50.00.

MATTEL OWNERS CLUB —Why not join our Mattel Owners Club and receive our regular newsletters containing details of all the latest cartridge releases. Telephone us with your name and addresses and we will add your name to our computer mailing list.

FREE 16 PAGE CARTRIDGE CATALOGUE — If you are interested in owning a Mattel, we now have available a 16 page catalogue describing the latest six cartridges to be released, as well as a new Mattel colour leaflet with brief descriptions of all 25 cartridges. Telephone us for further details.

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We specialise in the whole range of T.V. games and sell cartridges for the following games. *ATARI ★ MATTEL ★ ACETRONIC ★ PHILIPS ★ DATABASE ★ ROWTRON ★ INTERTON ★ TELENG*
Let us know if you own any of these games and we will let you have details of the range of cartridges available.
Attention INTERTON & ACETRONIC owners we have over 75 assorted used cartridges in stock all with 1 year guarantee — *SPECIAL OFFER* £8.95 each

We also have a number of secondhand games and cartridges.

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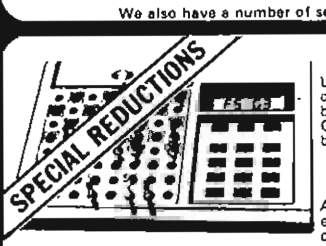
These invaders are a breed of creature hitherto unknown to man. They cannot be killed by traditional methods — they must be buried. The battle is conducted in a maze where squads of aliens chase home troops. The only way of eliminating them is by digging holes and burying them.

R.R.P. £26.95 **NOW £18.95** inc. VAT



ELECTRONIC CHESS

Liquid crystal battery chess computer with 100-200 hrs battery life and two levels of play. Comes with separate chess board and pieces.

NOW £6 OFF
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GRADUATE CHESS

A de luxe version of the electronic chess set with integral chess board. The ideal portable chess set — see illustration

NOW **£29.95** INC VAT

FIDELITY MINI-SENSORY CHESS COMPUTER

The very first chess computer of its price to offer a portable computer with integral sensory board. Battery (6-8 hrs) or mains operated. This is a modular game and additional plug-in modules are planned for 1982 for advanced chess, popular openings, greatest master games, draughts and reversi.

MINI-SENSORY COMPUTER WITH STANDARD CHESS MODULE WAS £54.50 *NOW* **£49.95** INC VAT

Silica Shop are one of the country's leading specialists in Chess Computers and now stock a range of more than 20 Chess Computers, including Challenger 7/10/voice, Sensory 8 and Sensory Voice, Diplomat, System 3, Morphy, Great Game Machine, Voice Champion, and the new Scisys Mark V.

PAC MAN 2

Pac Man 2 is based on the latest pub game. It is a two-colour game of strategy, tactical pursuit and destruction pitting Pac Man against the large Ghosts. The object of the game is for Pac Man to attain as high a score as possible by capturing and destroying Ghosts. Bugs and Energizers without being himself destroyed by the Ghosts. Pac Man 2 incorporates the most modern and complex status displays ever produced and is now on release for the first in the UK offering an ideal present.

R.R.P. £34.95 **NOW £24.95** inc. VAT

SPACE INVADERS

Based on one of the most popular arcade games, Space Invader™ packs in lots of action with multi-shaped, brilliant LED vessels, including attack ships, bombs, defenders, missile rockets and a beam force cannon, plus exciting electronic sound effects. The attack ships attempt to bomb the ground defenders as they are moving. You manoeuvre the missile rockets — avoiding alien bombs — and destroy the invader force as quickly as you can. Progressive degree of difficulty. Includes automatic digital scoring. For ages 6 to adult.

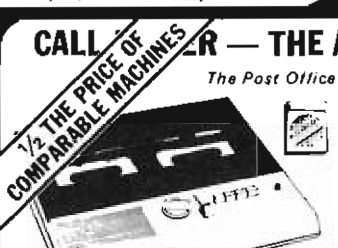
R.R.P. £24.95 **NOW £16.95** inc. VAT

COLOUR CARTRIDGE T.V. GAME

Semi Programmable T.V. game
• 4 cartridges
• mains transformer
NOW £43.50 OFF
RRP £73
SALE PRICE **£29.50** inc VAT

BACKGAMMON COMPUTER

Silica stock a wide range of Backgammon computers from £28.95 upwards. Special offers now available on Gammonmaster.
Was £99.95
NOW **£48.95** inc VAT



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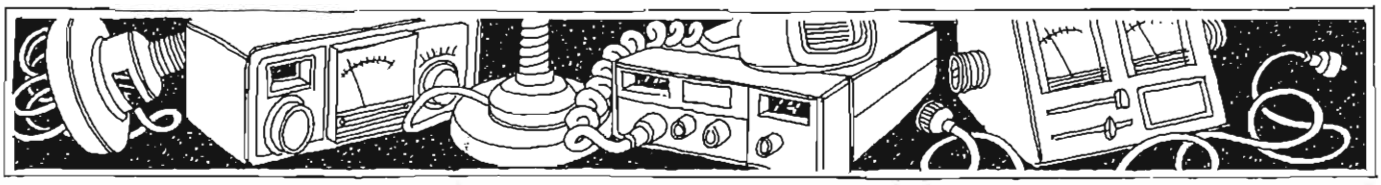

THIS & THAT

C.B. Repairs

Hightown Electronics offer a comprehensive after sales repair service for c.b. F.M. transceivers and accessories.

Warranty work is also undertaken with spares being issued to Hightown by the importer, distributor or drawn from their own stock.

Hightown can also provide a computerised analysis of repairs giving incidents of particular faults, average actual costs for each type of repair, usage of spares and suggestions for possible improvement.

For the trade there is a weekly collection and delivery service operational in the Midlands. This charged at cost rate.

Hightown Electronics,
Cannock Road,
Hightown,
Hednesford,
Staffordshire.
Tel: 05438 71818

Binatone c.b.'s head for the top

Binatone Long Ranger 12-channel sets are providing vital communications links for the current Army Mt McKinley Expedition to Alaska — a British assault in winter on what is regarded as the 'coldest climb on earth'. Three sets will be used by the five-member Army team to maintain essential contact between the climbers on the world's highest mountain in terms of the vertical distance from base to summit; they will also provide a constant link with the Warden of the National Park in which Mt McKinley is situated and with the broadcasting media in the UK that are following the expedition's progress.

Binatone International Ltd.,
Binatone House,
Beresford Avenue,
Wembley,
Middlesex.

Professional quality c.b. power meter

V-Tronix have developed an Automatic Performance Monitor specifically to cater for the needs of the c.b.er.

This instrument is designed for permanent installation and will continuously monitor the performance of the rig and the antenna system.

An operator cannot only measure exactly how much power is being developed by the transmitter and rejected by the antenna, but also how much is available for radiation by the antenna.

The monitor is easy to fit and easy to use. Everytime the transmitter is keyed up the monitor automatically switches on and commences its measurement sequence. It gives early warning of low batteries, damp co-ax and damaged antennae.

The APM is available now from all good c.b. centres, but in the case of any difficulty then contact Peter Verralls at

V-Tronix, Unit 10D, Dawkins Road, Hamworthy, Poole, Dorset. BH15 4JP.
Tel: Poole (0202) 682844

No reply using Buzby? — use c.b.

Quote from the sales brochure produced by Borro Boats — a company involved with the hire and charter of boats:

"We do not have an Ansafone and usually have our telephone manned.

If there should be no reply, please try later, but do give a good, long ring before hanging up.

If you will be needing buoyancy jackets, we will require to know the weight of each person in your party as we carry a large range of sizes.

C.b.ers can call us on Channel 24 (27 MHz. F.M.), our normal calling and working frequency."

Borro Boats, Airlie,
Pulpit Hill, Oban,
Argyll PA34 4LY.
Tel: 0631 63292

Noiseless Processor

Microchip Electronics of Warsash, Hampshire have just completed a Noise Cancelling — Speech Processor for the c.b. market. This product is claimed to allow users to greatly improve their modulation quality.

The product is supplied with simple fitting instructions.

Microchip has evaluated the enormous market for the improvement of rigs and their development team is working on numerous future 'goodies'.

Microchip Electronics Ltd.,
Microchip House,
22-24 Shore Road,
Warsash,
Hampshire SO3 6FS.
Tel: Locksheath 82488

CB Boon for Scouts

Scouts found c.b. a real boon during a night exercise in Chorleywood, Hertfordshire.

Bases in the large rural exercise area were linked by c.b. to the main control "Trojan Horse" back at camp.

Each time a team left a base it was reported back to control and search parties could be dispatched immediately if the team failed to turn up at the next post.

Local breakers obliged by leaving a channel open for the scouts.

For the 160 boys and their leaders it meant the difference between zipping up the tents for a well-earned rest at 1.30am instead of 4.30am — the time it usually takes to locate lost teams after the exercise.

The introduction of c.b. on this particular exercise, however was almost ironical.

It was the annual competition to commemorate South Pole explorer Sir Ernest Shackleton and a member of his last two expeditions, Dr Leonard Hussey, who were marooned in the ice for over 18 months — because they had no radio contact.

CB Perambulating

Life has been made a little more comfortable for the Green family of 30 Boswell Road, Bilston, West Midlands, since husband Trevor, and father of three, rigged up a c.b. radio to their six month old daughter's pram. Not having a car did not stop him getting mobile.

Shoppers admire his ingenuity and when he is out with his family, "They just can't believe their eyes", says Trevor, callsign — Telstar. The design for the pram conversion of this enthusiastic good buddy was a joint idea between himself and his wife, 32 year old Eve.

"After all, 38 year old Trevor told *CB World*, "You see cars, lorries, and motorcycles rigged up so we thought why not our six month old baby Kama's pram, (Handle — Mascot). We attract a few curious looks from passers by thinking to themselves they are round the bend, but when they realise what it is they admire us," he said.

Trevor is disabled from a serious injury he received two years ago and suffers a lot of pain at times, "But being able to have a talk it helps me to forget about it," he said.

The set is rigged to the pram handle and an aerial is on the rear of the body with a battery underneath.

Eve, his wife (Handle — Girl Happy) is also as enthusiastic as her husband. Their other two children have also been allotted handles, Natasha — Foggorty Bow, who is two and a half, and eighteen month old Shane — Laughing Rufus.

Said Eve, "The baby quite likes the idea too — she grabs the mike and gurgles down it. I think it's fantastic and will catch on with other breakers especially those who are at present housebound," she said.

Competition Dodge

In a recent issue of 'Dodge Drivers Express' — the newspaper for the Dodge Drivers Club — the editor, Mike Walton, offered an LCL c.b. radio for the reader who could suggest the most suitable handle to a given list of famous and infamous people. He was so inundated with suggestions he asked GBH of *CB World* to help him choose the winning entry.

Leaving out the rude ones an eventual winner was found and in a rare mad moment of blind generosity GBH offered to the three runners up a free twelve month subscription to *CB World*.

GBH hopes to convert them to fully paid subscribers after twelve months in the belief that once they start reading *CB World* they become hooked for life — this man's no fool!

Anyway, Mike said we could print the results for the competition and here they are. The winning entry is in bold type.

Name	**G. Dunn** (Coventry)	N. Weston (Haverdlord)	M. Starkey (Gainsboro')	F. Dady (Sowerby)
MARGARET THATCHER	**Story Teller**	Cabinet Maker	Blue Maiden	Iron Lady
JOHN McENROE	**Court Jester**	Volatile Volleyer	Racquet Basher	Top Racquet
MICHAEL FOOT	**Ankle Snapper**	Left Boot	Cosy Toes	Saville Row
EDITOR OF DODGE D. EXP.	**Head Liner**	Artful Dodger	Big Ed.	Dodge Bureau
LARRY GRAYSON	**Gaiety Star**	Camping Exhibition	Larry lamb	Slack Alice
RONALD REAGAN	**Chief White Eagle**	Washington Post	Yankee One	Cowboy President
KEVIN KEEGAN	**Teo Tapper**	Super Saint	Top Score	Magic Feet
SHIRLEY WILLIAMS	**Party Cracker**	SDP Lady	Party Queen	Party Switch ●

SWR meters

Looking around the shelves of your local c.b. emporium you will no doubt have come face to face with the large number of SWR meters on display.

These will appear in various shapes and sizes which really doesn't help matters when you only need one. However a careful choice should be made for the simple reason, some meters will be good value for money while others — well the less said the better.

When the impedance of a transceiver and antenna are properly matched, the power loss between the two will be at its lowest. The quality of this match is expressed by the voltage standing wave ratio, abbreviated to SWR.

Every c.b. antenna has standing waves or surges of current which flow from the transmitter to the antenna. In a well ser up c.b. system each wave flowing to the antenna is absorbed bur should a fault arise from a broken element, poor interconnection etc. these waves will be reflected back to the transmitter, reducing its efficiency.

If the amount of forward wave is compared with the reflected flow, it gives the user a good indication of how efficiently the antenna is performing. Therefore, it can be seen, when the antenna is matched perfectly or as close to 1:1 it accepts a percentage of the available power generated by the transmitter. In practice a standing wave ratio of 1:1 is rarely achieved, readings of 1.3:1 or 1.5:1 are adequate.

An SWR meter is necessary when installing mobile antennae to various types of cars and truck bodies.

Manufacturers often include some means of adjustment to electrically match the antenna. This is achieved by changing the length of the antenna rod relative to the base loaded coil. When the length is correct the meter needle will drop to the lowest reading.

All SWR meters operate on the same principle, although there are slight design and layout differences. However, at the end of the day you would like to know your money has been well spent on a reliable meter and not one that is inaccurate or operates intermittently.

A closer examination of the inside of these meters reveals a handful of components, most of the space is taken up with the hardware items such as switches, meters and potentiometers which usually cost considerably more than the electronic components.

SWR meters like the Harrier SWR1 and the SMC S3-30L mount the resistors, capacitors and diodes on a single PCB, measuring approximately 65mm × 50mm. This is supported by one of two ways: soldering the board directly on the SO-239 sockets as in the case of the Harrier SWR1 or on the meter connections, with additional support from earth tags either side of the board as in the S3-30L. Inter-wiring connections are made from the front panel switches and potentiometers to the PCB.

SWR meters of this size, aspect and quality employ similar construction techniques.

The larger combined power and SWR meters are once again very similar except that heavy gauge wire rods are used to electrically connect the SO-239 sockets because of the large power currents.

During the last few months we have received a selection of SWR meters from various sources within the industry. Since then we have used these meters in the *C.B. World* laboratory, comparing their performance. We have grouped together the range of meters which proved to be accurate after repeated settings and alignment procedures were carried out.●

OSCAR ONE

£85 Delivery Free

STOP—BUYING A CB? READ THIS

The April edition of the independent Radio and Electronics World carried a highly technical review (abridged below) of twelve CB transceivers. They examined them under the guidelines of the Home Office procedures for expensive VHF radio telephones. They gave their ideas of minimum standards† to be expected for CB receivers (at this level half the radios would be rejected on one or more parameters).

The SMC OSCAR exhibited 5 times the minimum acceptable sensitivity (pulls in weak copies), 250 times the minimum acceptable selectivity (reduces bleed over from the next channel), 100 times the minimum acceptable intermodulation level (reduces stomping on by stations either side of the copy).

The SMC OSCAR came first in all three tests which is something any radio engineer will tell you is rather good — he will probably tell you about the capture ratio (hear clearly **one** station on a channel), the A.M. rejection (for less ignition interference) and many other things — but find out for yourself . . .

THE COMMUNICATORS CHALLENGE

Come to any of our six shops (listed below) and check out an OSCAR. If you are dissatisfied with your existing legal CB bring it with you and you can compare them side by side — we don't think you will be wasting your time!

Doesn't your performance on the air deserve an OSCAR!

The R&EW 12-Rig CB Review

The most important receiver parameters measured were sensitivity, adjacent channel selectivity, intermodulation and squelch adjustment range. It is rather unfortunate that the Home Office have decided to put no specifications at all on the receiver section, and some manufacturers have used this to their advantage in producing equipment which is far from satisfactory but nevertheless being the CB27/81 label.

Due to the lack of a Home Office standard for 27 MHz receivers, the standard normally used for private mobile radios (MPT1301) was used.

Equipment Type	Sensitivity 12dB SINAD	Selectivity dB	Intermod dB	Squelch Range μV
Amstrad CB901	0.13μV	60	60	0.07/23
Binatone 66	0.20μV	48	35	0.14/7.1
Cobra 210 XFM	0.28μV	65	44	0.22/31
Cybernet 2000	0.12μV	67	51	0.08/10
DNT M40 FM	0.12μV	43	23	N/A
Fidelity 1000 FM	0.12μV	45	31	0.40/1200
Havard 410T	0.45μV	0	30	N/A
Havard 420M	0.14μV	68	55	0.08/6.4
Sirtel Searcher	0.35μV	52	50	N/A
Uniden 200	0.12μV	70	63	0.28/1000
OSCAR (SMC)	0.09μV	74	70	0.06/160
Shogun	0.11μV	70	60	0.05/600
†R&EW Minimum	0.20μV	50	50	

OSCAR ACCESSORIES

RU-12-04-06	4/6 Amp regulated 12V PSU	£15.00
AC DC 083 GEA	Power Cord c/w Fuse	£2.50
SMC 251	Cigar Lighter Adaptor	£0.45
T3-170L	SWR, Relative Power Twin Meter	£13.40
S3-30L	SWR, Mini Type	£7.30
100LP30	Low pass filter	£5.00
150CX3W	Coax Switch 1 in 2 out	£6.15
100TO27	Antenna Tuner Unit	£6.50
PL36PL	Jumper 3' RG58, PL259's	£1.58
UR76	Superior RG58	per metre £0.25
UR67	Superior RG8	per metre £0.60
PL259	UHF Plug Fits RG8/U	£0.65
UG176	Reducer Fits PL259 to RG58/U	£0.15
SMC 478-267	Din Plug 5 pin 180°	£0.35
SMC 586	Microphone Clip Magnetic	£0.60
SMC 585	Microphone Clip Adhesive	£0.30
FSP1	Extension Speaker	£9.96
SMCP8	3.5 mm Mono Jack Plug	£0.15

OSCAR ANTENNAS

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MOBILE ANTENNAS	(Base loaded). (All elements have PL259M internal terminators)	
OSCAR 11CM:	Antenna as 11CE but c/w magnetic base and 4m cable, etc	£16.50
OSCAR 11E:	Element 1.3 metres (locking collar)	£6.50
OSCAR 11SE:	Element 1.2 metre 2 section (small locking collar, fold over base)	£7.65
OSCAR 11ME:	Element 1.5 metre 2 section ('pull up' folder over base)	£12.25
OSCAR 11SE:	Element 1.5 metre 2 section ('OSCAR' coil, locking collar fold over base)	£12.25
OSCAR-GCCA:	Gutter clip (deluxe cast type) c/w cable assembly, ISO239M, 4m RG58, PL259)	£8.80
OSCAR-TMCAS:	Trunk mount base c/w special cable assembly, (SO239MS, 6m RG58, PL259)	£7.65
OSCAR-SOWM:	Wing mount base, SO239M upper, SO239 lower, adjustable angle	£3.35
OSCAR-SOMM:	Magnetic base c/w 4m RG58 and PL259	£8.45
MX913/M:	Dust cover for SO239M sockets	£0.46
YCGA:	Adhesive cable grips for RG58 4pcs	£0.46

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257 Otley Road
Leeds 16, Yorkshire
Leeds (0632) 782326
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Chesterfield (0246) 453340
9-5 Tuesday-Saturday

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Southampton (0703) 861404
9-6 Tuesday-Saturday

BRING IT BACK

Angry Breaker

Reference to the letter by Ian Kelly of Reading, published in your November edition.

As a breaker of some 16 months and a keen amateur radio enthusiast, I was both surprised and slightly angered at some of the statements made in the letter.

It must firstly be emphasised that A.M. supporters and campaigners haven't just arrived on the scene to put a spanner in the works regarding legal F.M.

Supporters and operators of A.M. have been around for several years in the U.K. Indeed, if it were not for illegal A.M. operators putting pressure on the Government for the legalisation of c.b. on 27MHz my guess is that we wouldn't have c.b. today.

Now after legalisation, A.M. operators, the very people who have fought for legal c.b. on 27 MHz A.M. for so long, are deserted and looked upon as being 2nd class law breakers by many, including many legal F.M. operators.

Perhaps they should remember where they would be without these law breakers.

The idea that A.M. campaigners are lucky to have legal c.b. on F.M. (2WERP) on the justification that other European countries have been given similar or inferior systems is nothing more than ludicrous.

It should be pointed out that it is in these European countries where extreme abuse of the airwaves occurs.

This is without doubt a reflection of the great inadequacy of the system, which leads people to seek alternative frequencies and transmitters to those proposed by the authorities.

Perhaps if the system were to be more comprehensive this would not happen in such abundancy.

However, it does happen, and it is likely that unless the present c.b. system is modified to include A.M. and possibly SSB, we might find that the U.K. will become a mass of illegal radio stations.

It is highly questionable as to whether 27 MHz F.M. citizen's band will provide an equally efficient service as the outlawed 27 MHz A.M. system.

Unlike 27 MHz A.M., channels designed for the legal c.b. system are the busiest SSB c.b. frequencies throughout the world.

As a result, chronic interference is experienced, particularly in the day, sometimes to the extent where it is not possible to get a copy.

The Government might take steps to reduce the number of illegal U.K. SSB stations in an attempt to solve this problem.

However, the task of removing interference, caused by European stations in particular, is one which even Busby might find difficult! In this way the frequency allocation, rather than the transmission power, is crucial in determining the efficiency of legal citizen's band on F.M.

Now we have had several months experience of c.b. on legal F.M. it is evident that F.M. is not so very different to its counterpart A.M. regarding TVI, as both can cause chronic interference.

Indeed, far from eliminating the problems of TVI by use of F.M., F.M. is now simply another source of it.

Regarding c.b.ers DXing on 27 MHz SSB, it is arguable whether sunspot activity, which enables 'skip talking' to take place, will decline and result in the loss of 'skip'!

Only time will tell whether future SSB international contacts will be possible on 27 MHz. Therefore, we should not forget the 'sidebanders' who have made a stand with the rest of us in support of a c.b. network in the U.K., which has now come about to the exclusion of this section of the c.b. fraternity.

Well, there is one point about which I must agree with Mr Kelly. *CB World* is certainly the best c.b. magazine on the market.

73's, from one angry teenager to another.

Taxi-Cab (16)
Coventry

Interested in A.M.

I am a dedicated *CB World* reader and would like to say how great your magazine is. It brings to life all the possibilities of c.b. radio; as well as showing its advantages, it also brings out its disadvantages, when used illegally in Britain, and legally in other countries.

I would also like to thank you for your features on A.M. rigs and D.X.ing, as I have just started to gain confidence when D.X.ing, helped by all your printed information.

I have also enclosed for print in the National Register of Handles a few of my family and friends' handles, which I would be most grateful if you would put into print.

Thanks again, and keep up the good work.

Squeeze Box
Ashbourne

New Owner Wanted

On the night of Thursday 18th February my Colt 1200 DX Serial No. 107 00221 was stolen from my Marina Van parked outside my house. Also stolen was a Merit SWR/PWR meter, hy-gain antenna matcher and Hitachi speaker as well as some tools.

I would be grateful if you would publish details of the rig in your magazine.

M.W. Bruff
Plymouth

Enjoyment To Come

I am at present not on channel, but thanks to your mag, I can keep informed on the c.b. situations and developments. I'd like to get an A.M./F.M./SSB rig, but before I do, I want to straighten some points out:

1) I read a book that suggests when SWRing in an A.M./F.M. rig, it should be on A.M. For the rig which I intend to buy which mode of transmission should the set be on, and do the others instantly SWR with the one it's on, or do you have it on, or do you have to do them separately.

2) The reason why I'm worried about getting a straight forty F.M. rig, is that I don't think that there would be anyone to copy me. All the A.M. breakers I know, are staying A.M., so would I be correct in saying that the only F.M. copies that I would get would be people who are using the F.M. specification sets?

Thanks to Mastermind for letting me use his rig when I was at the point of giving up all hope of getting a rig.

Double Zero

ED. To answer your questions: 1) The book is correct and the SWR should be adjusted with the rig set to the A.M. position. 2) Yes you would only get F.M. copies from breakers using legal specification F.M. sets. The legal F.M. is not the same as that found on the illegal A.M./F.M./SSB sets. Activity on the legal 40 channels is increasing by the day and already it is difficult to find a spare channel at peak breaking times particularly in the large cities and towns. You will have no difficulty in getting a copy.

Link Up

Reference the article in *CB World*, January edition, 'Any Breakers on 09?'. I am a member of the British Red Cross Society Suffolk Branch VAD. The organisation of T.H.A.M.E.S. could be a service suitable to VA detachment's activities.

I would be grateful if you could let me have further details — I am interested in the Mildenhall, Lakenheath and Brandon areas of Suffolk.

I would also be interested in any other organisation or Club that is currently involved in this type of service in this area.

Finally on this subject, I would like to be registered as a First Aider. I have held a current Advanced First Aid certificate since 1975 and I am also a BRCS Instructor.

Now to other matters. I am new to c.b., I've just acquired an Amstrad CB900 and am very happy with it, receiving signals at 15 miles, very clearly.

I see a lot of potential in c.b. and once the novelty goes there will be a very practical value in having c.b.

I am not a regular subscriber to any one c.b. magazine, buying copies of whatever the newsagent has (shame you may say). I have just bought *CB World* for the first time and am very impressed with the articles and will look for the next issue. (I can flatter as well).

It seems to me that every

Continued on page 42

BRING IT BACK

magazine is running a Club/ National Handles register. I would have thought that there would have been a single register set up, and in fact was surprised that the licence application form was so simple and required no other details than name and address — no licence number or letter being issued.

With that I'll close, with best wishes to you and all the staff at *CB World*.

GEMINI
Suffolk

ED. Details as requested have been forwarded to GEMINI.

Polluted Airwaves

I live in Wally City (yes, it's the new name for Doughnut City) and I, amongst many other breakers, am finding it difficult to get a word in edge-ways.

There was the wally who seems to get some sort of kick out of showing off his roger bleep or call tone, the wally whom I've heard saying the same old 'No . . . No . . . Why . . . Why . . . Well . . . I dunno do I" etc. day after day since before legal F.M. and the totally unnecessary "F"ins and blindins was just unbelievable!

I nearly forgot to mention the playing of music which sometimes goes on for several minutes at a time. Contrary to what you might think the worst culprits are not kids, but adults who should know better.

I felt so strongly about it this time that I turned on my cassette recorder and recorded a full C90 which I enclose as a souvenir of Wally City. I guess this sort of thing isn't new to you but in travelling the length and breadth of England I've never heard it as bad as tonight's episode.

I can turn a deaf ear to the odd swear word now and again but it gets extremely embarassing when I'm carrying passengers, especially when they are parents of Scouts for whom I am the Group Scout Leader! It's got to the point where I dare not turn my rig on when I'm carrying passengers.

We all know this sort of behaviour is illegal, annoying and embarassing so I would like to suggest we launch an "Anti-Wally Campaign". Here are some suggestions for inclusion in such a campaign which *CB World* (and the other mass) might consider:

a. Publish an article on 27MHz direction finders with a simple construction project thereby encouraging sensible breakers to do some policing of the airwaves. (Sorry, I don't have the expertise to be able to offer a design).
b. Publish an article "How to beat the Wallies", giving tips and suggested action on finding a wally.
c. Make spectacles of those that are caught wallying.
d. Encourage the Home Office to enforce the law and the conditions stated on the licence especially paragraphs 6 and 8. (After all, with all those £10 licence fees we should expect some assistance from them).

I don't suppose for one moment that wallying can be stamped out completely because there are so many idiots around, but we really can't sit back and take it at the current level.

10-10 Enterprise
Bassingstoke Air Scout Group

ED. We listened to the tape from beginning to end and it is typical of what serious c.b.'ers don't want to hear.

You have given us a little food for thought. Any readers with other ideas for the extermination of Wallies please let me know.

C.B. Patrols — Expansion

The idea of patrols used in community service is most worthy of the fullest development in all areas. It is not a question of anything less than showing a well developed community conscience.

Each police station has one officer who specialises in crime prevention duties and where a large police areas has the facilities a crime prevention panel exists.

Such officers and panels will welcome genuine offers of support for their activities and, in return, will give much useful information to enable those interested to be of practical use.

Mrs W.M. Othen (Blenheim) after serving some 25 years as special constable, has now given a further five years as a member of the local crime prevention panel.

Her main duties are with the elderly and infirm members of the community.

This section is an increasingly difficult one to cover effectively. On the other hand Mr A.H. Othen (Nightrider) is involved in emergency communications and has over 40 years experience.

Naturally this letter aims at national promotion of the crime prevention work but specifically also is a request through your pages to enlist further local support from c.b.ers in the following 20's: Addlestone, Otthershaw, Byfleet, Woodham and New Haw areas of Surrey.

We shall be most pleased to hear of any breakers who would be willing to undertake serious (voluntary) local community work.

Nothing this or similar groups would do will interfere with the efforts of local REACT groups. Rather, on the other hand, it will supplement their efforts and provide a further link through working in more specialised spheres.

After all, c.b. is a community service radio link, so let's use it to the fullest advantage.

A.H. Othen/W.M. Othen
Group Controllers

CB on two wheels

I read with great interest in your April issue how to fit a c.b. rig onto a motorcycle.

I own a 250cc Honda Super Dream fitted with a full touring fairing. Instead of fitting the c.b. onto the fairing I decided to fit a tank bag over the petrol tank. The c.b. set fits into the bag yet can be easily removed when the bike is unattended.

For the antenna I made up a special bracket which is mounted onto the rear carrier. To ensure a good earth contact the paint was scratched away from the area where the bracket clamped onto the carrier.

The antenna used is either a DV 27S or DV 27N and I have managed to get an SWR reading of 1 to 1:3 on all channels. The rig is a TRISTAR 747.

I have a boom microphone and little earphones fitted to the helmet.

I do not have to press any buttons to enable me to modulate because a self activated switch has been fitted to the microphone circuit.

The rig has been completely water-proofed with an acrylic spray so if it gets wet moisture just runs off without finding its way into the rig.

The tank bag is easily removed from its fitting on the tank so I can take it with me when leaving the bike.

There are no problems with engine electrical interference. The two connections used for the main supply cable were in the headlight unit.

If you are ever in the Blackburn area give a shout for Yogi Bear.

Yogi Bear,
Blackburn.

REACT wants you

Could you please publish the following for the benefit of your West Yorkshire readers?

REACT teams are now monitoring in W. Yorks. However if there is no monitor then why not offer your services by joining a team or forming one of your own. All you require is a minimum of 5 licence holders, a bit of free time and your conscience.

For further details please contact me at the address below.

Richard L. Harvey,
35 Oakes Ave.,
Brook Holes,
Huddersfield
HO7 7AT
W. Yorks.

Points of View

I am writing to you and a few other people whom I heard and/or met at the *CB World* seminar to affirm to you the existence of this organisation and to seek and offer co-operation. If you might express interest then we can explore what forms mutual help might take.

May I say first how strongly I hope that a central trade organisation will in fact emerge, to present an interface effectively with:

(i) the general public;
(ii) The Government;
(iii)the central users organisation.

The present fragmented nature of the trade and industry may have served quite well up to the present, but puts both at a disadvantage in terms of the aspiration, which I hope you share with the users, towards making c.b. into an everyday tool fully accepted as such by the general public and owned and used by *all* sorts of people in all social classes.

Whatever disagreements were expressed with *C.B. World's* views in detail, I am sure you do not fundamentally dispute the general thesis that the opportunity presented by the legalisation to sell c.b. to the rest of the British people — that large majority not yet aware that they want it! — has as yet hardly begun to be grasped.

The sort of campaign needed for this purpose has to be on a scale that firms working independently cannot possibly contemplate and along with *C.B. World* I am convinced that you need a co-ordinated effort: you need to sell c.b. collectively rather as the Butter Information Council sells butter.

As regards Government, there is no doubt at all that Ministers prefer to correspond with a body which they perceive as representative, rather than with a large number of individuals. Natcolcibar had achieved this status in the run-up to legalisation and the Home Office will continue to consult us before making any changes (though I say this without undue optimism as to their actually following any recommendations that we make . . .).

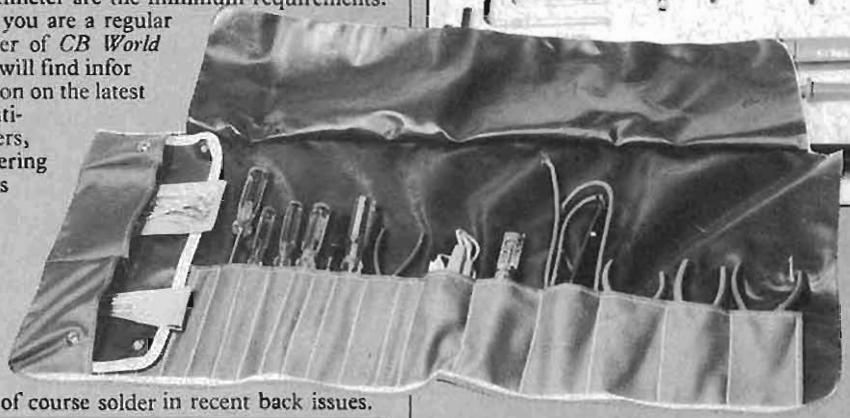
Ian Leslie,
Chairman Natcolcibar.●

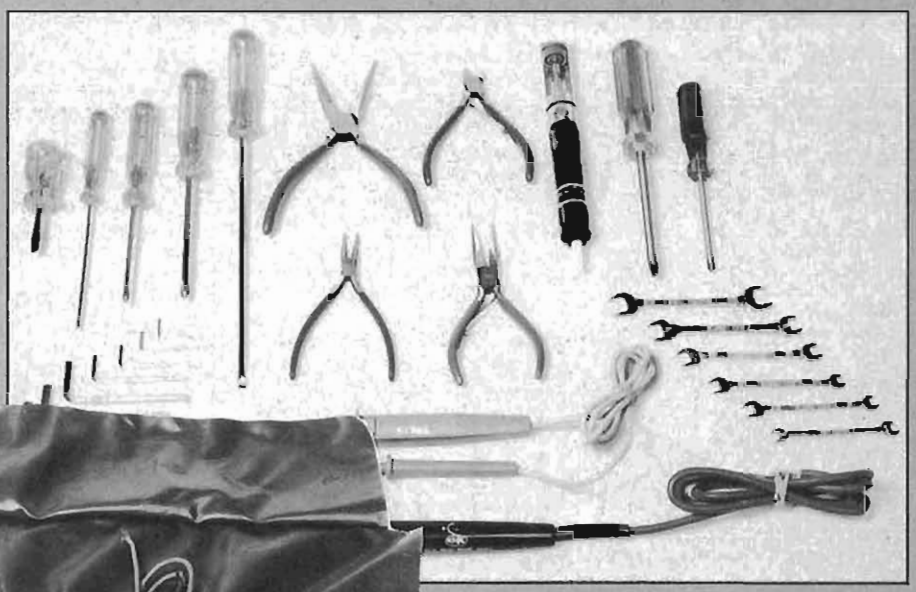
On the bench

From our reader surveys, there seems to be an overwhelming demand for constructional projects. Readers will be pleased to know, it took few replies to persuade the *CB World* office as we're all keen electronic DIY enthusiasts.

Before any project or kit building is undertaken, we strongly recommend you have at your finger-tips a selection of tools which are essential to complete what you have started. Screwdrivers, small sidecutters, heavy duty long-nose pliers, soldering iron, solder and a multimeter are the minimum requirements.

If you are a regular reader of *CB World* you will find information on the latest Multimeters, soldering irons and of course solder in recent back issues.





Tool Kit

While looking through various catalogues we noticed O.K. Machine and Tool offered a comprehensive range of tools from their Electroware Catalogue.

The 'Electroware' products carry a full guarantee on all tools especially selected for the hobbyist involved in building electronic equipment.

After a phone call to O.K. Machine and Tool, they kindly sent *CB World* a tool wallet complete with a range of selected tools for evaluation.

The pliers and cutters in the kit were all hand finished box jointed with high frequency hardened edges. The box joint is where the moving parts are hindged together. In this construction one side of the pliers passes through the other, forming a rigid interlocking mechanism.

The following tools was included in the wallet: 1 pair diagonal (side) cutter with hardened steel jaws suitable for wires up to 1.6mm soft wire and 0.88mm hard wire. Length 110mm, weight 60gms.
1 pair snipe nose pliers with serrated jaws. Length 110mm, weight 45gms.
1 pair long snipe nose pliers with serrated jaws, wire cutter and stripper for 0.6mm wire. Length 160mm, weight 140gms.
1 pair 120mm short round nose pliers
2 × Pozidrive Screwdrivers
2 × Cross slot screwdrivers
1 × flat blade stubby screwdriver
2 × ordinary flat blade screwdrivers
1 × desoldering pump
1 × soldering iron (24V operation only)
7 × metric allen keys (hex. wrench)
6 × metric open end spanners
1 × steinel multicheck. Capable of testing voltages in the range of 4.5v up to 380v a.c. or d.c. with polarity indication. This tester also permits continuity testing in the range of 0-20k ohms.

We were impressed with the 'Electroware' range of tools and found no flaws in their construction to doubt their reliability.

All the tools described can be purchased separately, so you can use the extra space in the tool wallet to extend the range.

Be Prepared

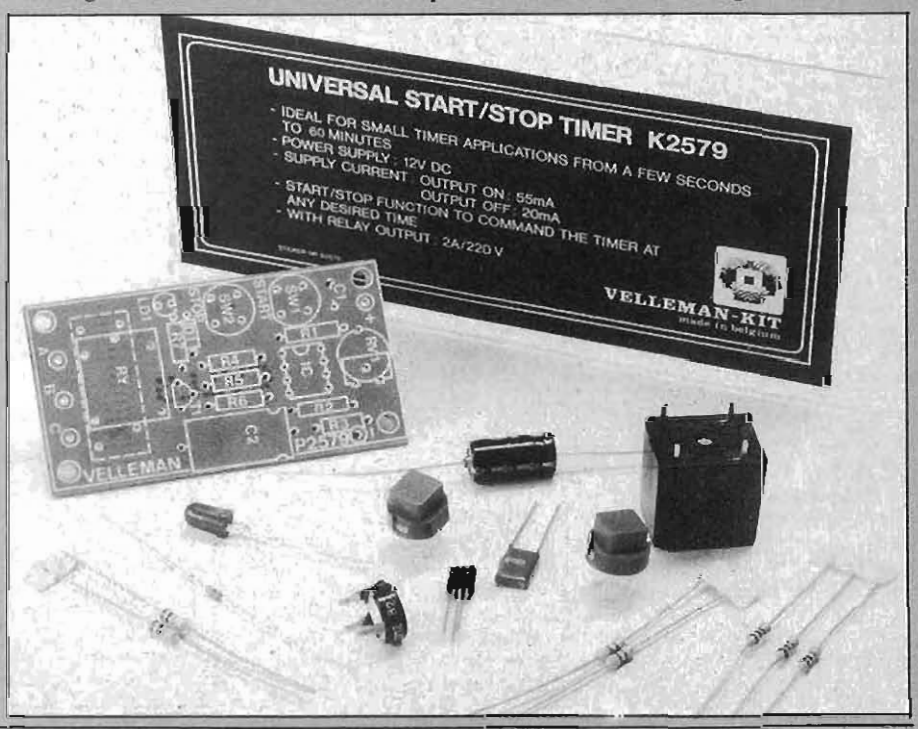
Next month in 'On the Bench' we will be putting these tools to good use. You can expect to find full detials of how to build an electronic timer for your home base, featuring automatic turn on and sleep facility. Also an FM oscillator for transmitting any audio signal over a short distance for reception by an FM receiver — interested then tools at the ready for next month.

For those readers who wish to "jump the gun" the kits that we will be showing you how to build were obtained from Velleman U.K. and we suggest that you write to them and obtain a copy of their kit journal.

The actual kit numbers are as follows:
Universal stop/start timer .....Kit no. K2579
FM oscillator .....Kit no. K1771

Tool kit supplier:
O.K. Machine & Tool Ltd.,
Dutton Lane,
Eastleigh SO5 4AA.

Kit supplier;
Velleman U.K.,
P.O. Box 30.
St. Leonards on Sea,
East Sussex. TN37 7NL.●



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CBW6

Grandstand Base Station

During the last three months we have had a Grandstand Base Station sitting next to a Yaesu 7700 communications receiver in our laboratory. Whenever we have visitors in our lab. we hear gasps of delight as they gaze at the sheer size, array of knobs and controls and professional look of the Grandstand.

This was the first base station supplied to *C.B. World* for evaluation and has been used on many occasions as the standard legal specifications set against which other rigs have been compared for range and operational performance. At an average retail price of £220.00 it might appear to be an expensive way of buying 40 legal channels but any purchasers will be investing in a quality product.

Controls

Initial impressions will mislead with 23 different items mounted at the front. However, the comprehensive handbook supplied with the Grandstand soon reveals all. It took us just 10 minutes to learn how to successfully operate all functions.

On/off Auto Switch

To switch on power move the switch to the ON position. The AUTO position allows the digital clock to switch on the base station automatically at a pre-set time.

Volume/tone

Both TONE and VOLUME controls are provided.

Squelch

This control is used to cut off or eliminate receiver background noise in the absence of incoming signals. For maximum receiver sensitivity, it is desired that the control be adjusted only to the point where the receiver background noise or ambient background noise is eliminated.

RF Gain

This control effects the strength of the incoming signal.

SWR

The Grandstand has an in-built SWR meter. The switch 5 is depressed and with the mike switch depressed, the meter is adjusted to the SET position using control knob 5. The switch is then released and again, with the mike switch depressed, the SWR reading is taken. The lower the SWR reading the better the power output from the transmitter. The output can be read on the power meter to the left of the SWR meter.

Channel Selector Switch

This switch selects the desired channel for transmission and reception. The channel selected is indicated on the LED display above the channel selector.

Clarifier

This control fine tunes the reception of the selected channel.

Hi-Lo Switch

This control allows an attenuation of —10dB of transmitted power as required under the terms of the U.K. c.b. licence.

Noise Blanking

This switch reduced interference from electrical equipment such as domestic appliances which may not be adequately suppressed. To activate this control depress the switch NB.

PA/CB Switch

To use the Grandstand base station for c.b. depress the CB switch. To use the base station as a public address system depress the PA switch.

Digital Clock Setting Switches

Facilities are available for re-setting the digital clock and automatic switch off after 59 minutes of use (sleep control).

General

Channels: 40
Frequency range: 27.60125 MHz to 27.99125 MHz
Frequency control: PLL Synthesized
Antenna impedance: 50 ohm
Power supply: 240 volts 50 Hz —
Accessories: Detachable dynamic microphone
Dimensions:

Width:	440mm
Depth:	235mm
Height:	140mm

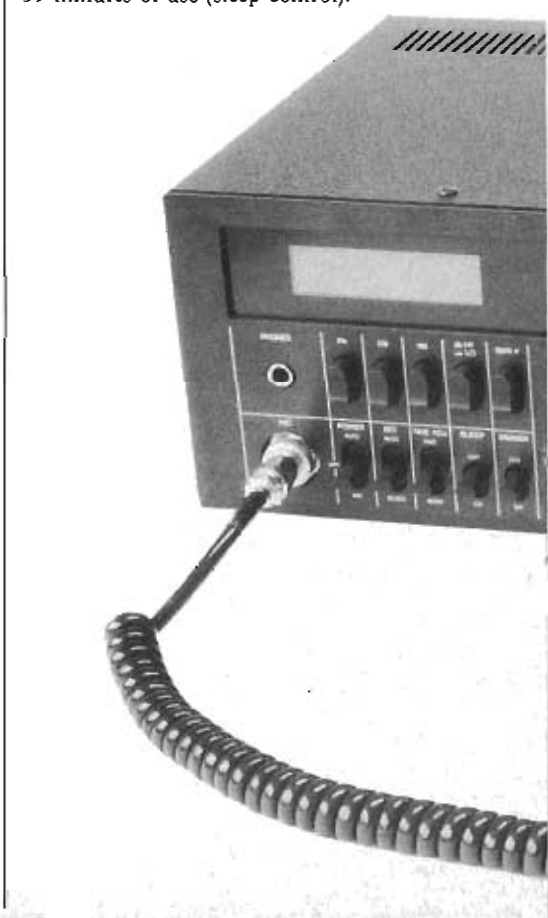
Transmitter

Output power: Max. 4 watts
Modulation: FM
Modulation percentage: Max.
Frequency tolerance: 0.002%

Receiver

Sensitivity at 12dB SINAD: 0.2 uV
Squelch threshold: Less than 0.1 uV
Squelch deepset set: ± 6dB
"S" meter S-9: 50 uV
Maximum AF output power: 2 watts
Selectivity (2 signal): —50dB at ± 10 KHz
Speaker impedance: 8 ohm

channel	Frequency (MHz)	channel	Frequency (MHz)
1	27.60125	21	27.80125
2	27.61125	22	27.81125
3	27.62125	23	27.82125
4	27.63125	24	27.83125
5	27.64125	25	27.84125
6	27.65125	26	27.85125
7	27.66125	27	27.86125
8	27.67125	28	27.87125
9	27.68125	29	27.88125
10	27.69125	30	27.89125
11	27.70125	31	27.90125
12	27.71125	32	27.91125
13	27.72125	33	27.92125
14	27.73125	34	27.93125
15	27.74125	35	27.94125
16	27.75125	36	27.95125
17	27.76125	37	27.96125
18	27.77125	38	27.97125
19	27.78125	39	27.98125
20	27.79125	40	27.99125



Dimmer
The clock display can be dimmed by operating the dimmer switch.

Phones
A headphone socket is provided for personal listening.

Rear Panel

External Speaker
The external speaker jack enables an extra loudspeaker to be used. The external speaker should have 8 ohm impedance and be rated to handle at least 2 watts. The connector to be used for this external speaker should be a DIN type 2 pin plug, and which will work as follows:—

a) For both built-in and external speakers.
b) For external speaker only.

Note: On early models the external speaker facility was not connected. This has been rectified on the later models.

Antenna Connector
ANT 50 OHM. This female connector permits connection of the co-axial cable male connector (PL-259) to the transceiver.

Inspection

The Grandstand main case is of all metal construction with more than adequate ventilation slots at the top. It is finished in a satin matt black with a gloss black fascia.

The three core mains cable is adequate to withstand the rigours of many years being plugged in and unplugged from the home power socket.

With the cover removed it is obvious that a considerable amount of time was taken to "get it right the first time". All components are well laid out and thought has obviously been given to ensure adequate cooling during prolonged periods of use.

The results obtained in our laboratory using some of the latest test equipment available were well within the tolerances laid down in MPT 1320 and also the specifications supplied by Adam Imports. No problems were experienced with bleed over between channels and tests over a range of temperatures showed no major variance in performance or stability of the electrical components.

It was possible to hold a copy over a distance of 46 miles at 9.30 a.m. one morning and various quality of copy reports were reassuring.

There were a minimum number of cable connections to the PCB and overall we could see no reason why the set should not give many years of reliable service.

The comprehensive 11 page handbook supplied with the set includes, for the expert, an easily read wiring diagram.

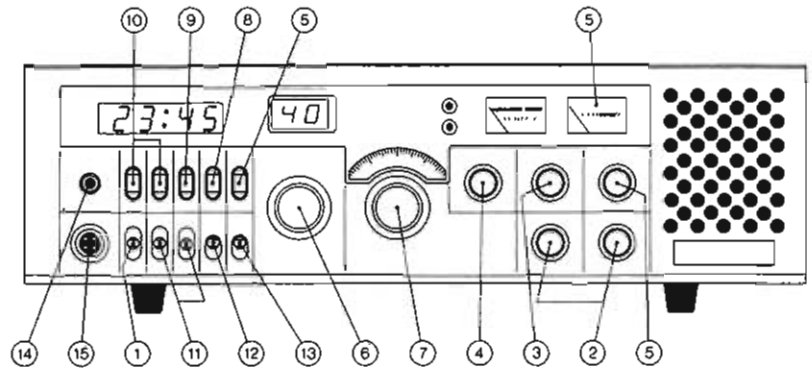


Figure 1. Front Panel

1. *Power on/off switch*
2. *Volume (RH) and tone (LH)*
3. *Squelch*
4. *RF gain*
5. *SWR control knob, meter and switch*
6. *Channel selector*
7. *Clarifier control*
8. *Hi/Lo switch*
9. *Noise limiter switch*
10. *PA switch*
11. *Clock set and time adjustment controls*
12. *Sleep control*
13. *LED dimmer control*
14. *Headphone socket*
15. *Microphone socket*

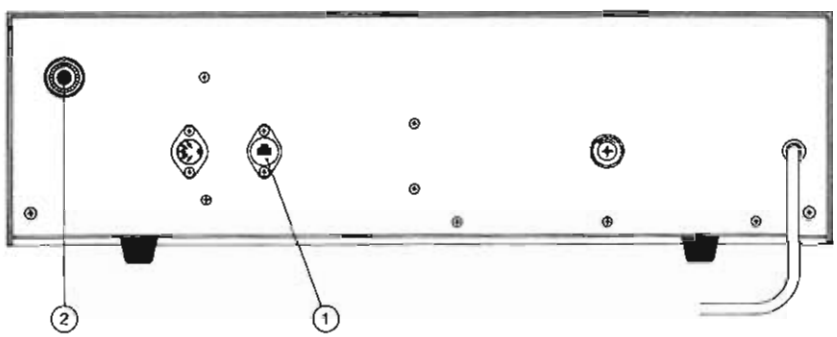


Figure 2. Rear Panel
1. *External speaker socket*
2. *Antenna socket*

When connecting an antenna to the Grandstand it is important to use a 50 ohm co-axial cable. Many home base antennae are pre-tuned at the factory and designed for 50 ohm cable. The recommended co-axial type cable is RG-58/U if the length required is less than 10 metres or, for over 10 metres RG-8/U is recommended. The co-axial cable must be terminated in a PL 259 type connector at the set.

Conclusion

The performance was impressive and any breaker who wants a good quality home base should seriously consider the Grandstand.

It is unfortunate that the exterior would tend to stand out when placed next to the T.V. or Hi Fi system in the lounge. We have been assured that the mark two versions will have a casing which is more "attractive to the eye".

The set has already been copied by a proposed competitor and this can only be considered as a compliment.

We used the Grandstand as the standard base set in our laboratory and it stood up well to many many hours of continous use.

When used with a SADELTA speech processor microphone we received nothing but praise from other breakers.

The Grandstand home base can be considered as an investment by the serious c.b. enthusiast and this is one reason why many T.H.A.M.E.S. monitors have invested over £200.00 in a rig.

Adam Imports,
Rippon Way,
Harrogate. HG1 2AU.
North Yorkshire.
Telephone 0423 501151.

CLUB CORNER

Aldridge Radio Communications (C.B.) Club
(Aldridge)

A fairly new West Midlands club is the Aldridge Radio Communications (C.B.) Club — ARC (C.B.) for short.

Meetings are held every Sunday at 7.30 p.m., in the Paddock Club, Paddock Lane, Aldridge, and members have at their disposal a stage, dance floor, kitchen, video equipment and a private bar.

Membership is restricted to interested and responsible potential or active c.b. users aged 18 years and over, although families are catered for.

The club is run by a Board of seven members who were initially responsible for its start and any vacancies that occur on the Board are filled by any person voted onto the Board by the remaining Board members. This method of club administration ensures that the right person joins the Board and that he or she will involve him or herself with the running of the club and not as happens with an elected committee on many occasions — two or three people run the show and the rest sit and watch.

Timbo, Club Secretary, likes to think that the club caters for the more mature and seasoned breakers as well as offering something for those who are new to c.b. He feels that a lot of good clubs have been ruined by too many younger c.b.ers attending meetings, making a mockery of votes and tending to put off the older breakers to the point where they no longer wish to attend meetings. The ARC (C.B.) Club has taken care of this possibility by restricting under 18's to attending with parents only and encouraging and supporting a Junior Radio Club which meets every Wednesday at the Manor Farm School, Rushall, Walsall at 7.30 p.m. This club is supervised by adults who are also members of the ARC (C.B.) Club.

The facilities on offer to the club present potential for a wide range of activities but the club suffers from a shortage of members and the Board are at present running a recruiting campaign with posters and vouchers offering free admission to one meeting.

Timbo says, "I would like to invite all serious breakeres, whether already a c.b. club member or not, to visit us at 139, Red House Lane, Aldridge, Walsall, West Midlands and see whether you like us or not. If you are a club member and you are looking for a local club to organise a mass visit to, then put us down in your diary." The club's telephone number is Aldridge 58663, if anyone who is thinking of going along to a meeting would prefer to ring first.

Wally International Charity Club
(Gloucester)

A Gloucester group of c.b. enthusiasts are helping disabled people in the Forest of Dean area in a very constructive way. Members of the Wally International Charity C.B. Radio Club, gave a talk and demonstrated c.b. in action.

One problem for disabled drivers is that when a breakdown occurs they cannot summon assistance. One member recalled an evening when she was stuck for three hours before someone came to her assistance. C.b. radio can be of practical help in situations like this and it is in this area that the Wally C.B. Club are trying to help.

They have raised money to purchase and to fit three disabled club members with c.b. radio and are now trying to attract sponsorship and raise funds to carry on with this work.

Mr. Don Coggswell of the Disabled Club was full of praise for all the help his members had received from the club.

The picture shows Jackie Bowkett, a member of the Disabled Club using her new c.b. radio which was presented by members of the Wally Club who surround her car.

Goole Citizens Band Association
(Goole)

Silver Charm wrote to us on behalf of the G.C.B.A. which was formed in June of 1981.

Meetings are held every Tuesday at the Steam Packet, Cheviot Avenue, Goole, beginning at 8.00 p.m. The club is fairly small with a membership of eighty and members are middle-of-the-road with regard to the A.M./F.M. situation.

The club helped sponsor last year's Mini Olympics for the Disabled in conjunction with *C.B. World* and 43 members raised £950.00 by pulling/pushing an articulated wagon for six miles!

The Transworld Club
(X-Ray Group)

Jim Martin (70 X-Ray 01) has now taken over as U.K. co-ordinator of this club from Sid who retired last September.

According to Jim, many existing X-Ray members, not having heard much about the group recently, believed that it had finished. This, however, is incorrect, as Jim is busy getting the group back to where it was about 1½ years ago.

A new up-to-date membership poster is now available, at the reduced price of 50 pence inclusive of postage. QSL cards, rubber stamps, use of P.O. Box etc. are also still available.

Jim would like to hear from as many existing members as possible, and also says that new members are always welcome.

You can contact Jim by writing to the Transworld Club at the following address:

P.O. Box No. 8, St. Ives, Cambs. PE17 4JF.

Jackie Bowkett, a member of the Disabled Club, tries out her new c.b. radio. (See Wally International Charity Club).

FREE ZX81 SOFTWARE!

The June issue of Your Computer contains a FREE software offer of special interest to ZX 81 owners.

This takes the form of a flexi-disc bearing a program for a well-known board game.

An article tells you how to transfer the software from the disc to your ZX 81, thus avoiding the laborious process of keying in program listings.

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LONDON SE22. TEL: 01-299 2955

From Breaker to Ham NO10

Last month we covered the groundwork of understanding basic electrical theory and the effect of resistance in an electrical circuit.

Obviously many of the electronic circuits we encounter in domestic and industrial equipment do not simply comprise of resistive networks.

Apart from inductors and semiconductors devices (these will be discussed later in the course) another component which is used almost as frequently as the resistor is the capacitor.

Capacitance

The unit of capacitance is measured in Farads — named after Michael Faraday a professor of chemistry who acquired deserved fame for his brilliant experiments in connection with electricity.

One Farad of capacitance is equal to one coulomb (the quantity of charge equivalent to 6.28×10^{18} electrons) entering the capacitor at a potential of one volt. Very few applications require this much capacitance, so for practical purposes most capacitors are made in values ranging from picofarads (0.000000000001 or 1×10^{-12} farads) to microfarads (0.000001 or 1×10^{-6} farads). The picofarad is abbreviated pF and the microfarad μF.

Construction

In its simplest form, the construction of fixed capacitors consists of two conductive parallel plates, separated by a non-conductive material known as the dielectric.

For certain electronic applications the inherent characteristics of a capacitor need to be reliable under the following conditions: fast rise time pulses, high or low frequency operation, noise spikes and high a.c. voltages. For this reason, many different materials are used as a dielectric — the most common being air, mica, ceramic and kraft paper. Therefore, from **Fig.1** the capacitance is governed by the area of ONE plate, spacing between the plates and also the dielectric constant of the material separating the plates.

The dielectric constant or permittivity ($\mathcal{E}$) is expressed as a relative to that of free space (air). Air has permittivity of ONE, mica FIVE — SEVEN, ceramic TEN and kraft paper TWO.

By using air as the dielectric, the capacitance can be mathematically expressed by the formula:

$$C \propto \frac{\mathcal{E} A}{d}$$

Where A is the area of the plates, d is the distance between plates and $\mathcal{E}$ is the permittivity. It can therefore be seen from its construction, the larger the plates and/or the smaller their separation, the capacitor will maintain a greater charge for a given voltage across its plates. However, if the voltage between the plates is too high the capacitor will break down. For easy reference the working voltage is either written or colour coded on the body of the capacitor.

The behaviour of a capacitor is such that it blocks direct current but passes alternating current because of the charging and discharging action between the plates as the alternating cycle changes its polarity.

Capacitors tend to hold their charge for hours, even days. In small electronic units where low values are used this charge is insignificant, however this is very much the opposite wherever high-value, high-voltage capacitors are used. Service or maintenance engineers must take the precaution, before starting repairs by discharging such capacitors when the equipment is switched off.

Silvered mica capacitors are available in values ranging from 2.2 pF (2p2) — 0.01uF (10n) and are best suited for high frequency applications as in tuned circuits and filters. In this type the capacitor plates are stacked and interleaved with layers of mica. These are clamped together and impregnated with a cement coating. The silvered mica is made by spraying a very thin layer of silver onto the mica dielectric.

Ceramic capacitors are made by spraying silver 'plates' on both sides of a ceramic disc or tube. The ceramic that is used have a high permittivity so a high capacitance value is obtained in a small volume. Monolithic ceramics are normally 100 V d.c. working and start from 10pF up to 0.1uF or can be written as 100nF. Metallised ceramic plate capacitors have a lower voltage rating of 63V, their values are from 2p2-220pF or higher. Ceramics are best suited in by-pass, coupling and filtering applications.

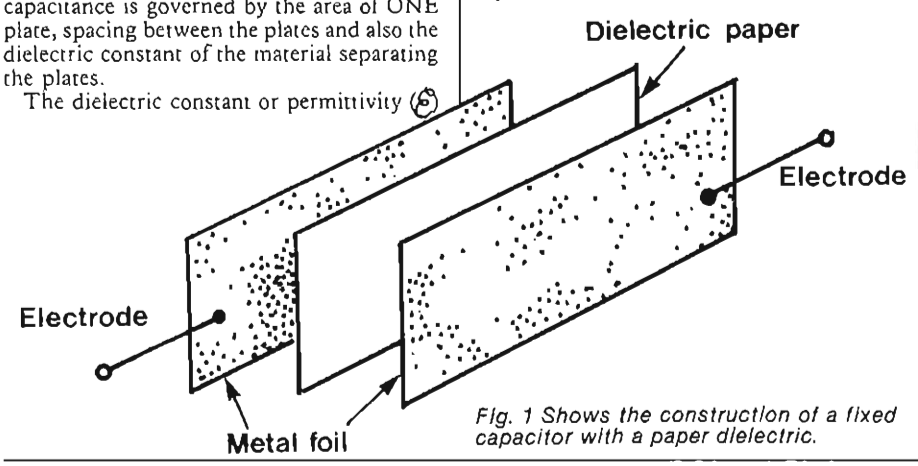


Fig. 1 Shows the construction of a fixed capacitor with a paper dielectric.

Paper capacitors consist of layers of kraft paper and thin foil, wound together to form a tube, the dimensions of which determine the capacitance. High capacitance/high voltage ratings are obtainable but are physically larger. Values of 2uF at 600V d.c. working or greater are not uncommon. They are frequently used in power-factor correction and suppression circuits also where a high capacity/high voltage, non-polarised capacitor is required.

Electrolytic capacitors are made with aluminium plates or tantalum foil. The dielectric is a thin oxide film which is formed by electrolytic action on one of the plates, when a d.c. polorizing voltage is applied to the capacitor. Values of 1uF-4700uF with typical working voltages ranging from 10V-450V are available. Electrolytics are widely used as reservoir and smoothing capacitors in power supplies.

Capacitors with an air dielectric are commonly used for adjustment of tuned circuits in radio equipment. These variable capacitors have a number of moving vanes which are ganged together on a spindle so their rotation interleave with another fixed set of vanes, thus varying the capacitance over a certain range.

Series and Parallel

When capacitors are connected in parallel **Fig. 2** the total capacitance C (total)) will be

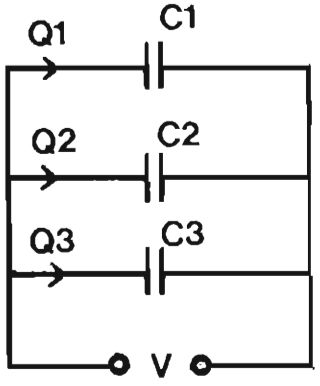


Fig. 2 When capacitors are connected in parallel, the total charge of the network is the sum of the separate charges (Q).

the sum of the individual capacitors.

C (total) = C1 + C2 + C3 . . . etc

If a number of capacitors are now connected in series **Fig. 3** the total capacitance will always be less than the lowest value;

$$\frac{1}{C(\text{total})} = \frac{1}{C1} + \frac{1}{C2} + \frac{1}{C3} \ldots \text{etc}$$

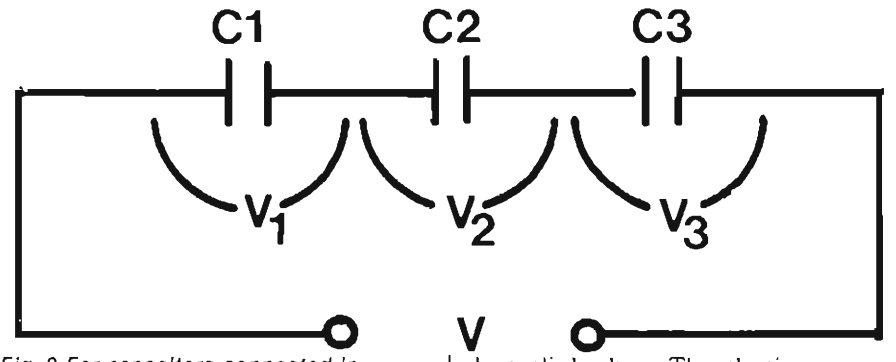


Fig. 3 For capacitors connected in series, the total charge as developed by electrostatic induction is the charge on each capacitor. Since they are connected in series, the sum of the potential difference (p.d.) across each capacitor is equal to the applied p.d.

You will notice from these relationships, they are opposite to the resistance formulae.

Coulombs

The charge entering a capacitor is measured in coulombs (Q) it is the product of the voltage across the capacitor and its capacitance:

$$Q = CV$$

therefore $C = \frac{Q}{V}$ and $V = \frac{Q}{C}$

The energy stored in a capacitor can be calculated from the form formula:

$$E = \tfrac{1}{2} CV^2$$

Where E = energy in Joules, C = capacitance and V = volts.

Time Constant

The time taken for a capacitor to charge to 63% of the voltage across it, is known as the time constant:

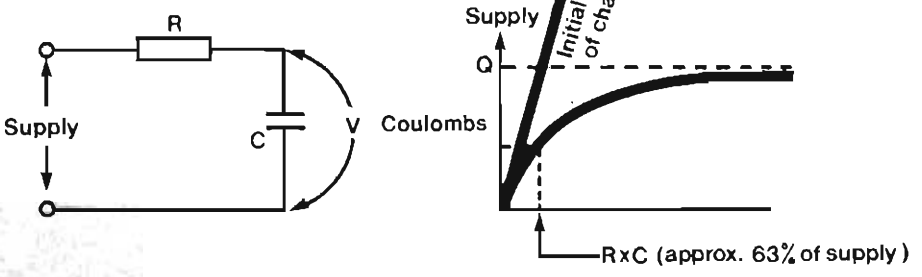
$$T = RC$$

The formula refers to the capacitor (C) in farads, R is the resistance in ohms and T is time in seconds milliseconds (mS) or microseconds (uS).

The combination of resistance and capacitance as shown in **Fig. 4** induces a delay before reaching a steady state. This is because the capacitor will not charge immediately a supply voltage is applied to the circuit. As the charge builds up exponentially the voltage across the resistor will fall, along with the charging current flowing through the resistor, in accordance with Ohm's Law.

In practice, the product of RC is the time taken for the capacitor to reach ⅔ or 63% of the applied voltage. Thus the time constant of an RC network determines the speed at which the circuit responds to signals applied to it.

Fig. 4 From the RC network, the characteristics of a capacitor does not allow it to charge instantly, as shown by the curve. It takes approximately 4CR seconds for the voltage to reach 2% of the final voltage.



Alternating Current

The current that is fed to our domestic 13A power sockets is an alternating supply. **Fig.5** represents a complete cycle of an alternating wave form, otherwise known as a Sinusoidal (sine) wave.

Since the sine wave is constantly changing in magnitude, it is necessary to define the conditions under which voltage, current or power is measured.

The amplitude of a sine wave rises from zero to a maximum peak value, then decreases similarly to a maximum negative value before rising back to zero. The number of complete cycles occurring in one second is termed the frequency of the supply and is measured in hertz (1Hz = 1 cycle per second).

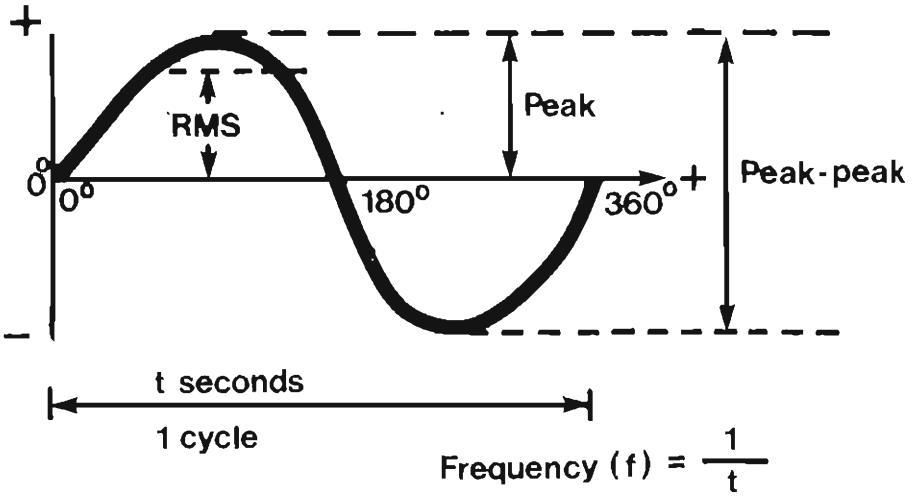


Fig. 5 Represents one complete cycle of an alternating waveform. This cycle is repeated 50 times in the space of one second (50Hz) and is the frequency of the main supply.

In practice it is precise to specify an a.c. voltage, not as peak or peak-peak but as the root-mean-square (RMS) value. The RMS value is used to calculate your electricity bill in Kw/h (Killowatts-per-hour) and so is an important quantity for power calculations. This is approximately 0.707 of the peak voltage and is the equivalent to the amplitude of a direct current which, flowing for the same time in the same circuit with the same resistance would generate the same amount of heat.

From the peak value the RMS value may be found or vice-versa. For a sine wave, the RMS value is 0.707 ($V/\sqrt{2}$) multiplied by the peak value. The peak value can therefore be calculated from the RMS value by the constant 2 or 1.414. For example the mains supply has a RMS voltage of 240V, the peak value is equal to $1.414 \times 240 = 339$V.

The final relationship that exists for an a.c. waveform is the average value. The average value for a 240V mains supply would be $0.636 \times$ peak volts or $0.9 \times$ RMS voltage, this equals 216V average. The average value is particularly useful when an a.c. current is rectified and measured by a moving coil meter, the deflection is proportional to the average value. More next month. ●

Circuit symbols

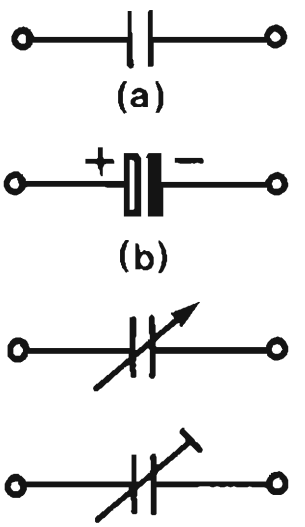


Fig. 6 (a) non-electrolytic fixed capacitor (b) electrolytic capacitor (c) variable capacitor (d) pre-set capacitor.

International BRING IT BACK

San Salvador on channel

With reference to a letter in your October number signed by "Wells Fargo, Eastleigh" under "Bring it Back". It may interest you to know that channel 9 is automatically the emergency channel in Central America as it is in the U.S.A, Puerto Rico etc. and is constantly monitored by police and highway patrols for distress signals.

Whilst writing to you may I say how puzzzled I am at no mention of DXers in your magazine. We in El Salvador, which is on the Pacific coast and south of Mexico, daily have QSOs with c.b.ers in the U.S.A., Puerto Rico, etc. as well as South Brazil. We are located at 1,800 feet up (which helps) and we find that "skip" conditions are almost daily but varying in times of the day.

Our maximum QSO distance so far is between 1,500 and 2,000 miles — not bad for 5 watts!!!

Wishing all G.B. c.b. DXers well.

HUB 3486
San Salvador

Request from The Netherlands

Reading the January edition of the magazine prompted me into writing this letter in the hope that you can assist me in contacting the breakers with whom I exchanged comments in the early hours of a May morning in 1981.

My handle was Gypsy One, and at the time I was mobile in a white van when I broke into their QSO.

If possible I would like to contact the breakers, Lady Di, Silver Fly and Big Orange. Due to unforseen circumstances I missed meeting Big Orange and would therefore like to make good that which at the time did not work out.

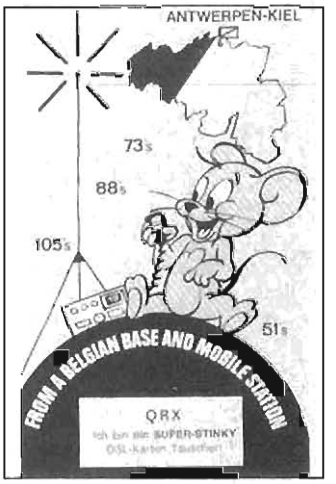
Would it be possible for you to let me know which frequencies/channels have now been legalised in the U.K.?

I would like to express my thanks in advance, and also say that I enjoyed reading your magazine, and would like to enquire as to the possibility of subscribing to your magazine in Holland.

P.J.B. Saul
6372 DL Schaesberg,
Netherlands

ED. Anyone not residing in the U.K. who wishes to take out a subscription to **CB World** should write to Tony Bentley, I.P.C. Business Press Ltd., Oakfield House, Perrymount Road, Haywards Heath, Sussex, enclosing a cheque for the sum of £12.00.

The Government has legalised 27 MHz F.M. and 934 MHz F.M. equipment.



One of the many hundreds of QSL cards sent to the CB World office.

Junior BRING IT BACK

13 Year Old Starter

I am writing to you that around my area where I live are practically hundreds of c.b.ers.

I have not written to tell you this but to ask if you could give me some ideas on how to start a c.b. club.

I have a friend (Cry Baby) who is willing to help me. I am 13 years old and so is my good buddy Cry Baby.

Super Glue
Cleobury Mortimer

ED. Any experienced breakers in the Cleobury Mortimer 20 want to help Super Glue start a junior club?

Listed Rigs

I am very interested in c.b. and having read your magazine I am even more interested.

I have had a few goes on my mate's rig and I am looking forward to getting my own rig.

I was wondering if you could send me a list of 40 channel rigs.

I would be very grateful if you could.

The Kennilworth Kid (13)
Southampton

ED. We publish a list in the back of the magazine. This is up-dated every month.

Multi Copy Breaker

May I first congratulate you on a great mag — undoubtedly the best around.

I have been into c.b. now for four months and I have already realized the advantages of c.b. radio.

I am only 14 years old but up to date I have had approximately 250 copies with breakers on A.M. and F.M., and running into 100 on SSB. I have joined one National c.b. club, and I am about to join one around my home twenty.

I operate a Super Star 9S/120 A.M., Major 3000/40 F.M. plus a WKS 1001 120 A.M./SSB.

My first rig that came into good use was the Super Star 9S on the M69. The Wrapper broke down with a seized up radiator and I put out a 10-33.

A motor mechanic answered and he told us what to do — he even offered to tow us back to our home twenty which was about 11 miles away.

It was 11.30 p.m. on December 25th and the temperature was well below zero. Snow was on the ground.

Thankfully we eventually made it off the motorway but the car stalled about 1¼ miles from home. Everybody got out and pushed it the rest of the way.

We have found that c.b. is a great thing and I am very pleased that the U.K. Government has pulled its socks up and given us a legal c.b. facility.

Starcom was the A.M. breaker who helped us out so I say a very big thank you to him.

General Grabber
Oadby

P.S. If any breakers ever pass around the Oadby twenty in Leicester put a shout out for General Grabber, KTS (my dad), Katie (my mum) or The General (my brother) on 14 or 19 F.M., or 20 A.M. We will be happy to modulate with you for sure.

CB World eyeballs
SMALL AD SECTION

LINAGE RATES: 20p per word (min. £5.00)
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CB WORLD Classified, Room H210,
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.
Telephone: 01-661 3031/3106

HARVARD AND DIXON'S 40ch Handheld owners, getting bleed-over? Cheap, simple cure gives real performance. Complete instructions £1 plus SAE. Flind, 40 Normandy Drive, Taunton, Somerset.

ONE OF THE LONGEST established and most respected DX Groups, The Transworld Club (X-Ray), is now under new control. New members welcome. QSL cards, rubber stamps, use of P.O. Box available. Transworld Club (Jim), P.O. Box No. 8, St. Ives, Cambs. PE17 4JF.

PERSONALISED HANDLE CARDS 1000 £7.90. QSL's 1000 £12.50. Log books available (s.a.e. samples). Printworks, 89 Derwent Street, Blackhill, Consett DH8 8LT.

MOTORCYCLISTS: Headsets, Intercoms, Weatherproof Radio Basis, 6-12Q. Inverters, Antennas — all the gear for the Two-wheel CB'er. SAE for details. Totton CB Centre, 18 Station Road, Southampton. Tel: 0703-865088.

CBs £39.95. Best quality lowest prices. SWRs £6.95, Twigs £4.95, Power Paks £11.00, Ground Planes £6.95. Money back guarantee. Calex 10, New Chester Road, New Ferry, Wirral 051-645 5706. SAE for list. Cash with order, P&P £3.00.

Rigs-what's available

Manufacturer and model name	Base/Mobile/H-Held B M HH	RF gain control	Mic gain control	DX/local switch	Ch 9 feature	CB/PA switch	Tone control	Hi/Lo power switch	Transmit indicator	Receive indicator	PRICE inc VAT	Other facilities
Academy Electronics, KCL Buildings, 1st Way, Wembley, Middx HA0 0UG. 01-900 0341												
Academy & Compass												
501	M							Yes			£69.95	
502	M	Yes				Yes		Yes			£79.95	LED dimmer.
ADS Ltd, Blackpool, Lancs.												
Lake												
Manxman 850	M							Yes			£88	
Manxman 950	M	Yes			Yes	Yes		Yes			£95	
Commtron,												
CB40F	M				Yes			Yes	Yes		£70	
Air Bear (UK) Ltd, Wortley, Sheffield.												
Bear												
RHB35	H/H							Yes	Yes		£44	
Alba (Electronics) Ltd, Bull Lane, London N18 1SD. 01-803 4451												
Alba												
CBM1	M	Yes			Yes			Yes			£74	Roger bleep
CBH1	HH										£23	Two chennel
CBH2	HH				Yes						£65	40 channel. LED display
Amstrad Consumer Electronics Ltd, 1 Garman Street, London N17 0UF. 01-801 4431												
Amstrad												
CB900	M	Yes					Yes	Yes			£75	
CB901	M	Yes			Yes	Yes	Yes	Yes			£95	Roger bleep
Autumn Products Ltd, PO Box 30, Letchworth, Herts SG6 3DQ												
Ranger												
Ranger	M							Yes	Yes		£80	
Athole Music Ltd, 52 Saltoun Street, Glasgow. 041-334 2215												
Senior Skyline												
SM2010	B	Yes			Yes		Yes	Yes			£99	AC/DC operation Headphones socket.
SM2008	M						Yes	Yes			£69.95	
Bee Ware Ltd, Ripon Road, Harrogate, N. Yorks HG1 2AU. (0423) 401151												
Grandstand												
Buzzing Bee	M	Yes						Yes			£74.69	Noise blanker
Hawk	M	Yes						Yes	Yes	Yes	£86.19	
Bluebird	M				Yes			Yes			£103.44	
Gemini	M	Yes				Yes		Yes	Yes		£141.39	Noise blanker
Base	B	Yes				Yes	Yes	Yes			£287.44	LED clock timer, SWR meter. Headphones socket
Interceptor	HH										£26.69	Two channel
Communicator	HH										£68.95	40 channel. LED channel indicator. Signal/power meter.
Binatone International Ltd Binatone House, Beresford Avenue, Wembley, Middx HA0 1YX. 01-903 5211												
Binatone												
Speedway	M							Yes			£79.95	
Route 66	M							Yes	Yes	Yes	£89.95	
5-Star	M	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	£99.95	Dimmer switch
Breaker Phone	M		Yes			Yes	Yes	Yes			£109.95	Spkr select switch
Long Ranger 6	HH								Yes	Yes	£59.95	6 channel
Long Ranger 12	HH								Yes	Yes	£69.95	12 channel
GT868	M	Yes					Yes	Yes				
HB940	M	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	£89.95	Panel dimmer
Britannia Trading, Northern Road, Sudbury, Suffolk.												
Great												
GT-8588	M					Yes		Yes			£65	
Chelsea C.B. Centre, 73-77 Brittania Road, London.												
Interceptor												
TC400	M		Yes					Yes	Yes	Yes	£80	
One Hander	M	Yes	Yes				Yes	Yes	Yes	Yes	£95	
HB600	M	Yes	Yes				Yes		Yes	Yes	£100	
	Base	Yes	Yes			Yes	Yes	Yes	Yes	Yes	£180-£200	
Dixons Photographic Ltd, Dept DS33, Camera House, Cartwright Road, Stevenage, Herts. 01-581 2268												
Harrier												
CBX	M	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	£99.99	
CB	M	Yes	Yes					Yes	Yes	Yes	£69.99	
CB HQ	B	Yes			Yes		Yes	Yes	Yes	Yes	£129.99	
WT1	HH								Yes	Yes	£25	
WT2	HH								Yes	Yes	£64.99	40 channel, LED channel indicator
Domico Electronics Ltd, Domicrest House, 31/37 Hoxton Street, London N1 6NJ. 01-729 4600												
Domico												
M					Yes		Yes			£80		
Fidelity Radio Ltd, Victoria Road, London NW10												
Fidelity												
CB 100M	M							Yes	Yes		£70	
CB 2000M	M	Yes			Yes			Yes	Yes		£90	
3000 FM	B	Yes			Yes	Yes	Yes	Yes	Yes			
Goodmans Loudspeakers Ltd, Downley Road, Havant, Hants PO9 2NL. (0705) 486344												
Cybernet												
Beta 1000	M							Yes			£72	
Beta 2000	M			Yes		Yes	Yes	Yes	Yes	Yes	£80	
Beta 3000	M	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	£95	LED dimmer control
Hallfords Motor Accessory Shops												
Barracuda												
GT 868	M	Yes						Yes	Yes		£70	
H8 940	M	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	£85	
Ham International, 25 Buckland Road, Leicester.												
Explorer	M					Yes	Yes	Yes	Yes		£75	
Mariner	M	Yes	Yes			Yes	Yes	Yes	Yes	Yes	£110	
Hercules	Base	Yes	Yes			Yes	Yes	Yes	Yes	Yes	£170	
Harris Overseas Ltd., Havard House, 14 Thames Road, Barking, Essex G11 0HX. 01-594 5533												
Harvard												
400M	M	Yes			Yes			Yes	Yes	Yes	£80	Roger bleep
402MPA	M	Yes			Yes	Yes		Yes	Yes	Yes	£80	

Manufacturer and model name	Base/Mobile/H-Held B M HH	RF gain control	Mic gain control	DX/local switch	Ch 9 feature	CB/PA switch	Tone control	Hi/Lo power switch	Transmit indicator	Receive indicator	PRICE inc VAT	Other facilities
420	M	Yes			Yes	Yes	Yes	Yes	Yes	Yes	£100	Made by Cybernet
410T	HH	Yes			Yes			Yes	Yes	Yes	£80	40 channels
0-2-0	HH								Yes		£20	2 channels
10-4 Convoy	H/H								Yes		£19.95	
H6	H/H								Yes		£29.95	
H407	Base	Yes	Yes		Yes	Yes		Yes	Yes	Yes	£125.00	
H403 Good Buddy	M	Yes			Yes	Yes		Yes	Yes	Yes	£49.95	
Johnson, Star Warehouse Camden Goods Depot, Chalk Farm Road, London NW1 01-485 3918												
Johnson	M					Yes		Yes			£50	
John Woolfe Racing Ltd, Woolfe House, Norse Road, Bedford, Beds NK41 0LF. (0234) 41441												
JWR												
M2	M					Yes		Yes	Yes		£65	Dual polarity
M1	M			Yes		Yes		Yes			£86	Available early 1982
M3	M	Yes						Yes	Yes	Yes		Dual polarity
Diplomat 40	B	Yes			Yes		Yes	Yes	Yes	Yes		AC operation. Integral SWR meter. Headphone socket. Selcall facility. Late 81.
Kaiser Electronics, Neurottstrasse 21-25, Waldorf, Baden, West Germany.												
Kaiser												
UK40	H/H					Yes		Yes	Yes	Yes		
CBX40	HH							Yes	Yes			
LCL Imports, Units 1/4, Enterprise Trading Estate, Pedmore Road, Brierley Hill, West Midlands.												
LCL												
2740	M						Yes	Yes			£79.95	
Lowe Electronics, Matlock, Derbyshire												
Lowe												
TX40	M	Yes						Yes	Yes	Yes	£70	
Marginplan Ltd, Hope Road, Leeds												
Sapphire (0532) 456464												
2000X	M	Yes				Yes		Yes	Yes	Yes		
X4000	M	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes		
Harry Moss Ltd, 424 Kingston Road, London SW20 01-540 8277												
Audioline												
340	M						Yes	Yes			£99.95	
341	M	Yes	Yes			Yes	Yes	Yes	Yes	Yes	£124.95	
Major, Unit 2, Station Yard Wilbraham Road, Fulbourn, Cambridge. (0223) 881055	(FOR REFERENCE ONLY, REFER TO *CB WORLD* OFFICE FOR LATEST INFORMATION)											
Major												
2000	M							Yes	Yes		£69	
3000	M	Yes				Yes	Yes	Yes	Yes		£80	
5000	M	Yes	Yes		Yes	Yes	Yes	Yes			£89	
4000	B				Yes		Yes	Yes	Yes	Yes	£120	
Mura (UK) Ltd, High Road, Willesden, London NW10												
Cobra												
21X FM	M					Yes		Yes	Yes		£79.00	
Murphy Electronics Ltd, Engineer's Way, Wembley, Middx. 01-903 8081												
Murphy												
CBH1500	B	Yes						Yes				
Merrow Beach Ltd, 35 Bell Lane, Blackwater, Surrey, GU17 0NN. (0252) 871841												
Magatracker												
C81100	M		Yes			Yes		Yes	Yes		£89.95	
Plustronics Ltd, Hempstalls Lane, Newcastle, Staffs ST5 0SW (0782) 615131												
Midland												
2001	M					Yes		Yes	Yes		£69.95	
3001	M	Yes		Yes		Yes	Yes	Yes			£79.95	
4001	M	Yes	Yes	Yes		Yes	Yes	Yes	Yes		£89.95	LED dimmer
79-200	B							Yes			£149.95	LED dimmer. AC and DC power leads.
77-810												
Ready Rescue	HH				Yes				Yes		£72.95	Ch9 and 14 highlighted. 40 channel. Ext power lead. Magnetic base for ext antenna.
75-720	HH								Yes		£59.95	Three channel. Ext power socket.
Radiomobile Ltd, Goodwood Works, N. Circular Road, London NW2 7JS. 01-452 3333												
Radiomobile												
C8201	M							Yes			£103.50	
CB202	M	Yes			Yes	Yes	Yes	Yes	Yes	Yes	£138	
CB203	B							Yes			£149.50	February 1982
CB204	B							Yes			£230	February 1982
Radiotechnic Ltd, Grove View, Bel Royal, St Lawrence, Jersey CI. (0534) 78831												
DNT (W. Germany)												
M40FM	M			Yes				Yes	Yes		£95.43	Positive or negative earth.
B40FM	B			Yes				Yes	Yes		£95.52	Mains operation
HF12/3FM	HH										£41.35	Three channel
HF13/40FM	HH										£70.82	Ext battery. Ext antenna. Ext charger. 40 channel.
Romford CB, 2 Roneo Corner, Hornchurch Road, Essex (49) 57942												
Maxcom												
Apollo 16E	M							Yes	Yes			
Rotel Hi-Fi Ltd, 2 Enics Road, Stacey Bushes, Milton Keynes, Bucks. (0908) 317707												
Rotel												
RVC220	M							Yes			£70	
RVC230	M	Yes				Yes	Yes	Yes			£80	All three sets have floating earth and diode protection
RVC240	M	Yes	Yes		Yes	Yes		Yes			£90	
Shadow Communications Ltd, Lumen Road, Royston, Herts. (0763) 46631												
Shadow												
Alpha 1000	M							Yes	Yes			All mobile sets have floating earth and reverse polarity protection. LED dimmer. Mains operation. Integral SWR meter. Headphone socket.
Aloha 2000	M	Yes				Yes	Yes	Yes	Yes		£79.86 £79.95	

Rigs - what's available

Manufacturer and model name	Base/Mobile/H-Held B M HH	RF gain control	Mic gain control	DX/local switch	Ch 9 feature	CB/PA switch	Tone control	Hi/Lo power switch	Transmit indicator	Receive indicator	PRICE inc VAT	Other facilities
Alpha 3000 Alpha 4000	M B	Yes Yes	Yes Yes		Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	 Yes	£89.99 £140	
Shellpost Ltd. 185 The Rock, Bury, Greater Manchester 061 797 7146 Colt Colt 295	M							Yes	Yes	Yes	£85.40	
Sirtel (UK) Ltd, 24 Alfric Square, off Maxwell Road, Woodston Industrial Estate, Peterborough PE2 0JP. (0733) 236010 Sirtel Searcher FM	M					Yes		Yes	Yes		£79.95	
S&M Ltd. Haver Hill, Suffolk S&M Anglia	M	Yes				Yes		Yes	Yes	Yes	£68	
SMC Ltd, SM House, Osborne Road, Totton, Southampton, Hants SO4 4DN (0703) 867333/861404 SMC Oscar One	M				Yes			Yes			£85	
Steepletone Products Ltd, Part End Works, Croughton, Brackley, Northants NN13 5RO (0869) 810081 Steepletone SCB1FM	M							Yes	Yes	Yes	£79.95	Automatic frequency selection. Slider volume and squelch controls.
Sukin (UK) Ltd, 73 Grosvenor Street, London W1 01-629 8368 York JC8861 JC8863	M M	 Yes	 Yes		 Yes	 Yes	Yes Yes	Yes Yes			£69 £94	LED dimmer
Sunrise Products Japan Ltd., Colliers Farm, Frieth, Henley on Thames Sunrise Shogun	M	Yes				Yes		Yes	Yes	Yes	£99	Delta tune and Selcall
Tandy Corporation, Tameway Tower, Bridge Street, Walsall, W. Mids. WS1 1LA. (0922) 648181 Realistic TRC2000 TRC2001	M M	Yes	Yes			Yes Yes		Yes Yes	Yes Yes			Positive or negative earth Positive or negative earth
TRC2002 TRC1001 TRC 1004	M HH HH					Yes	Yes	Yes Yes Yes	Yes			40 Ch. RF/battery meter. Ext. battery, antenna, speaker, microphone, charger.
North Herts CB, 8 Melbourne Street, Letchworth, Herts REFTEC 934	M								Yes	Yes	£200	934 MHz rig
Transcom International Ltd, 1 Market Street, Bracknell, Berks RG12 1JG. (0344) 55308 Transcom GBX2000 GBX4000	M M	 Yes			 Yes	 Yes	 Yes	Yes Yes			£69.96 £89.96	 Roger beep
Voxson Audio Ltd, Nuffield Way, Abingdon, Oxon OX14 1RY. (0235) 26340 Tenvox Tenvox CB	M				Yes			Yes	Yes	Yes	£97	Available early 1982. Plus VAT. Separate speaker supplied.
Designed and built in Britain. Touch buttons for up or down channel selection or continuous scan. Slider volume and squelch. Microphone socket on righthand side. Polarised screen on LED display.												
Warman-Freed Ltd, 82 Golders Green Road, London NW11 Microlink CB401	M	Yes				Yes		Yes	Yes	Yes	£115	
Wallace Telecommunications Ltd, Greencoat House, Francis Street, London SW1 1DH. 01-828 2673 Uniden Uniace 100 Uniace 200	M M	 Yes	 Yes		 	 Yes Yes	 Yes	Yes Yes	Yes Yes	 Yes	£99.95 £119.95	 LED dimmer
Zycomm Electrics, Ripley Derby. Eurocomm Euro 40	M				Yes	Yes		Yes	Yes	Yes	£69	


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