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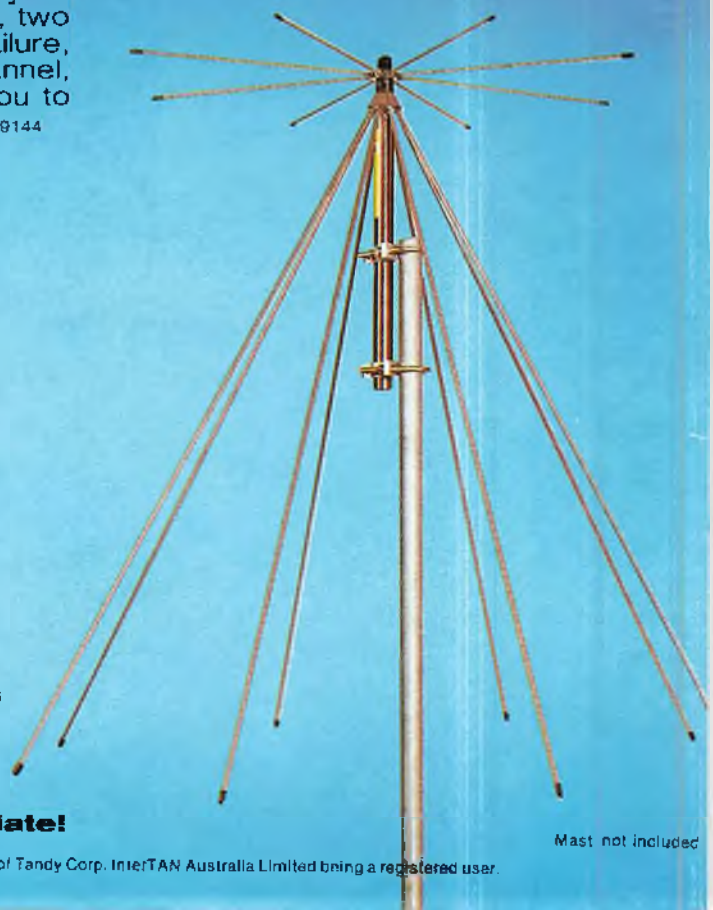

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CONTENTS

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ON CHANNEL

WHAT A RIP OFF

In his Queensland Scene column of a couple of issues back Furious Fewster warned of a current scam, which although small, still earns quite a few dollars for its proponents.

The rip off is based on an overseas' DX operator asking an Australian contact for a nice new banknote for his collection. The o/s operator tells the Australian station that his main hobby is collecting foreign currency — in very small denominations of course. In return, the o/s operator will send the Aussie a small denomination banknote from his own country — sounds fair enough doesn't it...

The rip off is of course in the value of the Aussie currency against that of the o/s operator.

The smallest Oz banknote is now $5 and, if he's lucky, the local operator (or more properly termed 'mug') will receive, say, a 1000 Pesolira banknote from the o/s station — sounds good, but, the problem is that the $A5 is worth one helluva lot more than the o/s banknote and the o/s operator can collect a worthwhile profit on the exchange rate.

One o/s station currently going for it is Franco, signing as the 1-AT-240 out of Italy, who is very active and while we were listening managed to try his luck with half a dozen Oz operators.

Our advice is to tell anyone who asks for some Oz currency to 'sorf' and try their luck elsewhere — mind you, if an American station wants to exchange a U.S five dollar note for an Oz one — go for it as the U.S exchange rate will give you 'a nice little earner'.

SORRY — AGAIN !!

We can't win. Once again the Wordmaze fouled out, but, this time it wasn't really our fault. The maze is computer generated and on this occasion it was used on a different computer to the usual one and, invoking Murphy's Law, it had a glitch. The computer indicated that all words were in, however, as we all now know that wasn't quite right, anyway, we're back on the old computer this month. We've scrubbed last issue's contest and added a Dick Smith 27MHz rig to this issue's giveaway to go with the Mobile One antennas and RF Industries spectrum charts from the May/June issue. Again, our apologies and the offending computer has received a swift kick in the slats.

CONTRIBUTOR CHANGE

There is a minor shift around of contributors in this issue with Greg Towells moving from the UHF column to take on a new HF segment and David Flynn taking on the UHF area plus of course his usual number of general feature articles — all just part of the service folks.

NEXT MONTH

We have some interesting reviews lined up for the next issue including, we hope, the new Commex AM/SSB rig, a new AM/SSB from Hatadi, a couple of new scanners and also a couple of handheld UHF sets.

This should make up for the lack of an AM/SSB review in this issue — there was simply nothing new available as we went to press.

ARGENT FOR SCANNERS

The biggest range at the best prices — for hobbyists, emergency groups, security and commercial use.

Saiko

New SC-8000 mobile scanner
- ☐ 20-30MHz, VHF mid/high bands airband and UHF
- ☐ 50 channels
- ☐ Built-in mobile noise reduction circuitry

See the review in next issue, then see us for the best price.

Cobra

SR-15 — the ultra-compact 100 channel handheld, now with full VHF mid-band.

ICOM

IC-R7000 super scanner, a commercial-grade receiver from 25-2000MHz, 99 memories, all-mode and packed with features — come and see!

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MOBILE ONE MAGNETIC MOUNT

MAG12C — Mobile Magnetic Mount

The Mag12c Magnetic Mount Assembly has been manufactured in Australia to meet the varying needs of the Mobile User, who requires an easily removable antenna mount for portable applications.

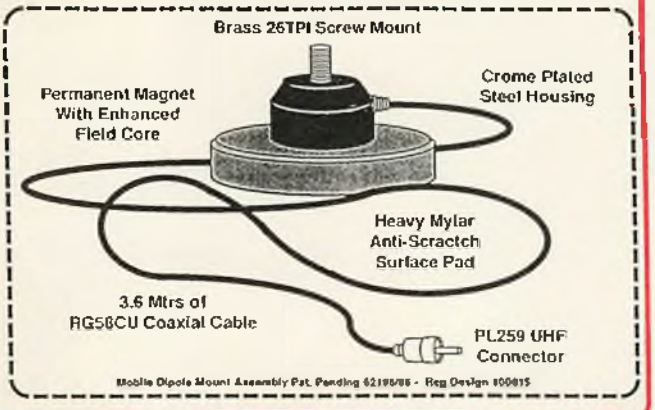
For some time, it has been noted that a need exisedt for a good Magnetic Base Mount that grips the car at up to speeds of 100 kph+ with a 60" (1.5mtr) whip.

Most Australian standard 5/16" X 26 TPI female screw thread whips (to a maximum of 200 grams) can be used with the MAG12C.

All terminations are encapsulated in the Glass Impregnated Nylon moulding of the 'Mobile Dipole Mount' base assembly, (Patent Pending), giving maximum mechanical strength and total weather protection for all electrical connections.

Another feature of this unique mount is the anti-scratch protection pad, made from mylar fibres. It is tough and long lasting, yet will not scratch or damage the paintwork of your vehicle.

THE MAG 12C MAGNETIC ANTENNA MOUNT



Mobile Dipole Mount Assembly Pat. Pending 62195/86 - Reg Design 800815

MOBILE ONE SUPERHELICAL

BECAUSE OF VARIOUS MOUNTING APPLICATIONS, ALL ANTENNAS SHOULD BE CHECKED FOR CORRECT VSWR

26.5 ~ 29 MHz — DX125SH, DX140SH, DX160SH

DX160SH

FEATURES

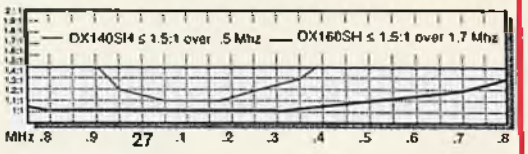
These special Whips incorporate the latest Computer Technology in continuous helical loading and are wound on a flexible tapered fibreglass former specifically designed to withstand the rugged and harsh Australian environment.

Models **DX125SH** and **DX140SH** have been wound with the exclusive "Mobile One Spaced Triaxial Spirold" winding that produces a continuous field pattern specially tailored for these low profile antennas.

Model **DX160SH** has been wound with a constant turn winding which exhibits a similar radiation pattern as a full sized quarter wave whip, yet it is only 60" (1.53mtr) high!

All Superhelical antennas are coated with tough wearing polyolephin heatshrink tubing for total weather protection.

VSWR



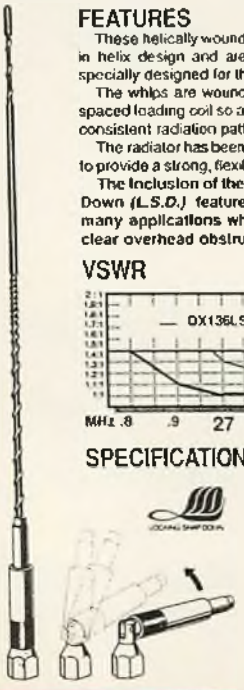
SPECIFICATIONS

TYPE	MONO-POLE HELICAL WHIP
ORDERCODE	DX125SH, DX140SH, DX160SH
LENGTH	25" (.9m), 40" (1m), 60" (1.53cm)
TUNING	CUT TO TUNE
FREQUENCY	26.5 ~ 29 MHz
IMPEDANCE	50 OHMS
MAX.POWER	50 WATTS
TERMINATION	5/16" x 26 TPI - Female
PATTERN	OMNI DIRECTIONAL VERTICAL
APPLICATION	ROOF or GUTTER MOUNT
VSWR	≤ 1.5:1 over 1.7MHz for 60" refer to above graph

MOBILE ONE MOBILE ANTENNA

BECAUSE OF VARIOUS MOUNTING APPLICATIONS, ALL ANTENNAS SHOULD BE CHECKED FOR CORRECT VSWR

26.5 ~ 29 MHz — DX136LSD, DX160LSD



FEATURES

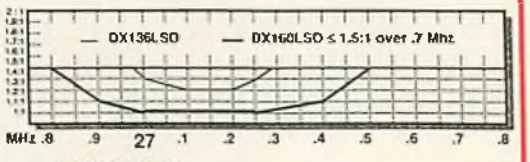
These helically wound whips incorporate the latest computer technology in helix design and are wound on a flexible tapered fibreglass former specially designed for the most rugged and demanding environment.

The whips are wound with bright copper wire that spirals to an evenly spaced loading coil so as to maximise signal and produce a balanced and consistent radiation pattern.

The radiator has been coated with rugged Polyolephin Heatshrink tubing to provide a strong, flexible and totally weather-resistant protective sheath.

The inclusion of the exclusive Mobile One designed Locking Snap Down *(L.S.D.)* feature makes this versatile product suitable for the many applications where the antenna needs to be folded down to clear overhead obstructions.

VSWR



SPECIFICATIONS

TYPE	MONO-POLE HELICAL WHIP
ORDERCODE	DX136LSD, DX160LSD
LENGTH	36" (93cm), 60" (1.53m)
TUNING	CUT-TO-TUNE
FREQUENCY	26.5 ~ 29 MHz
IMPEDANCE	50 OHMS
MAX.POWER	50 WATTS
TERMINATION	5/16" x 26 TPI - Female
PATTERN	OMNI-DIRECTIONAL VERTICAL
APPLICATION	ROOF,GUTTER OR COWL MOUNT
VSWR	≤ 1.5:1 over .7MHz for 60" Refer to above chart.

MOBILE ONE BOOT MOUNTS

POLISHED STAINLESS STEEL OR BLACK

FEATURES

The Mobile One Stainless Steel Boot Mount is an Australian made antenna mounting system, designed as a substitute for front or rear guard mounting and will fit the bonnet or boot of most vehicles.

The unique feature of the Mount is that it can be installed without drilling any holes.

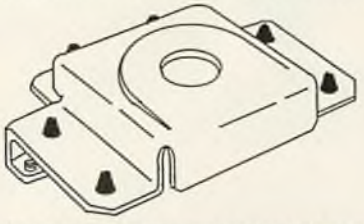
The following Base and Lead Assemblies can be used with the Boot Mount:

A12C	•Light Duty Roof Mount Base, 12 Foot of RG58 Coaxial Cable & PL259
A3.6	•Light Duty Roof Mount Base and 3.6 mtrs RG58c/u (Mil Spec)
UL3.6	•UHF Coax Roof Mount Base and 3.6 mtrs RG58c/u (Mil Spec)
DM12CK	•Encapsulated Dipole Mount, 3.6 mtrs RG58c/u Coax & Mounting Kit.
SOC	•SO239 Coaxial Mount. For Whips with a PL259 Termination.

INSTALLATION

1. INSTALL APPROPRIATE BASE ASSEMBLY ON TO MOUNT.
2. OPEN THE BOOT OR BONNET AND LOCATE DESIRED POSITION.
3. SLIDE THE BOOT MOUNT OVER THE LIP OF THE BOOT OR BONNET.
4. SECURE THE STAINLESS STEEL SCREWS WITH THE ALLEN KEY PROVIDED.
5. RUN COAXIAL CABLE INSIDE TO THE TRANSMITTER AND VSWR ANTENNA.

AVAILABLE IN POLISHED STAINLESS STEEL OR BLACK POWDER COAT.



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NEWCOMERS START HERE

Welcome to CB Action magazine — the only regular CB publication in Australia and also the oldest, having been first published in 1977.

CB is a form of radio communication which is popular around the world, however, unlike amateur radio, it is not necesary to pass an examination to go on air.

All that is needed is a licence and the equipment.

CB Action, though, is a little more than just CB. While CB is the backbone of the magazine, it also has reports and reviews on scanners, antennas, shortwave radios and other areas of general interest to radio communicators and listeners.

In the course of reading the magazine (and on air) it is probable that newcomers will encounter words which mean nothing to them.

This short introduction is to help these readers understand CB terminology and its application.

It should be stated right now that ***there is no special CB language.***

Many newcomers believe that they require a lecture on the basics of CB language before they can operate on air.

This is simply incorrect.

While some stations use esoteric CB jargon, all Australian CBers understand English and this is all you need to go on air.

A half hour spent listening before going on air for the first time will be time well spent as you will hear how to initiate a contact and how pass the conversation back to the other station and, really, that's about all there is to it.

Even so, while it is not essential that you know and understand some of the various abbreviations used and/or the amateur 'Q' code, it can be helpful to you.

That is what this introduction is all about.

One of the first things you will hear is a ***QSO.***

A QSO is simply a contact with another station.

It derives from the amateur radio operator's 'Q' code — a form of abbreviation used by amateurs when sending ***CW*** *(continuous wave transmission) which is simply another way of saying morse code.*

Morse code is not used in CB, however, a number of 'Q' code abbreviations are . . .

A ***QSL*** *is a card sent from one station to another confirming that these stations have been in radio contact. It is not sent after every contact, but, is uaully exchanged after a* ***DX*** *contact.*

DX means long distance, usually overseas but often just interstate. If the station to which you are talking asks whether you QSL the operator is asking whether you will send him a QSL card to confirm the contact.

A ***QTH*** *is the 'Q' code for location so, if you're asked "what's your QTH?", the station is asking where your station is located. It's just as easy to ask in plain English, but, it adds a bit of glamour if you say QTH instead.*

You'll hear many stations talking about ***SWR*** *(usually pronounces swer — which is incorrect — it is SWR spoken as letters) and this stands for* ***S****tanding* ***W****ave* ***R****atio. This is essentially a measure of the antenna's effectiveness and is read off an* ***SWR meter.*** *You will learn what SWR is from this magazine or from a CB store.*

When you hear a station calling ***CQ CQ*** *it means that he is looking for a contact with another station. CQ means 'seek you' while* ***CQDX CQDX*** *is different (seek you long distance) in that the station only wants a long distance contact — not a local one.*

AM *stands for amplitude modulation while* ***SSB*** *stands for single sideband. If you have an AM only rig it's nice for everyone if you stay on the lower channels and, conversely, if you are using SSB you should restrict your activity to the upper channels.*

QSB *means that the signal has a tendency to fade — that is, it goes from strong to weak and back to strong again, sometimes over a period of seconds and other times over a period of minutes.*

It is not a fault of the station, but, of atmospheric conditions. If a station says there is QSB on your signal it means that your signal is fading and when this occurs it is best to keep your ***OVER*** *short or you are likely to lose the other station while you're talking.*

SKIP *is essentially the same as DX — if the skip 'is running' it means that there are interstate and/or overseas stations being heard.*

BEAM, YAGI and ARRAY *all mean much the same. They mean that the station is using an antenna system which effectively (and legally) increases the restricted power output of the CB rig and can be pointed at the other station for improved communication.*

A ***ROTATOR*** *is used to turn a beam, Yagi or array. Incidentally, YAGI is spelt with a capital Y as Yagi is the name of the inventor of the beam.*

LINEAR, BOOTS, AFTER-BURNER, LITTLE HELPER, etc *mean that the station is using illegal equipment to increase the power output and will eventually receive a call from* ***DoTaC.***

DoTaC is used in this magazine as an abbreviation for the Department of Transport and Communications — the authority charged with the regulations of CB radio.

A ***POWER MIKE*** *is an after-market accessory which can also improve your station's 'talk power'. Whether or not they are legal is open to question, but, they probably aren't.*

QRM *is when another station is making it difficult to hear due to being too close to your own station, having a rig in poor condition, running illegal power, etc.*

QRN, *however, is noise made by atmospheric conditions or, more likely, static caused by poorly installed electrical power lines out in the street.*

A ***SWL*** *is a* ***S****hort* ***W****ave* ***L****istener but an* ***XYL*** *is usually the wife — an ex-young lady.* ***YL*** *is of course young lady and a* ***DOUBLE BUBBLE*** *is a police vehicle.*

GOOD BUDDY *is a somewhat derogatory term applied to operators who still use American style CB jargon such as, "what's your 10-20?" or "that's a big 10-4".*

This 10 code originated in America, but, is now rarely used as it indicates that the operator has what can be best termed a 'juvenile brain'.

A ***BREAKER*** *is an operator who wants to get into an existing conversation and there's nothing wrong with* ***BREAKING*** *providing that you only call in the pause between overs.*

If you break between overs one of the stations will probably say ***ACKNOWLEDGE THE BREAKER*** *which means that you have been heard and will be invited to join in when the stations are ready — in other words standby and don't keep shouting.*

An ***ALLIGATOR*** *is another derogatory name which is applied to an operator who talks too much but doesn't listen — in short, all mouth and no ears.*

SANDBAGGING *means to listen to a conversation but not join in yourself.*

A ***DUMMY LOAD*** *is a device which should be used when testing or tuning your rig. It can be purchased from any CB store and should be a must in your list of station equipment.*

UHF *stands for* ***U****ltra* ***H****igh* ***F****requency and is the 477 MHz CB service.*

LONGPATH *means that you are pointing away from a station you are speaking with rather than* ***SHORTPATH*** *which of course means the opposite.*

Different atmospheric conditions mean that at certain times you can communicate with (usually overseas) stations by sending your signal right around the world rather than by the most direct path.

An operator who works out of the legal channel frequencies or runs illegal equipment is referred to as a ***PIRATE.***

An ***ATU*** *stands for an* ***A****ntenna* ***T****uning* ***U****nit which is used to tune your antenna to a good match with your rig if the SWR is a little too high.*

It won't cure any major SWR problems, but, it can adjust a slightly high SWR reading to a 1:1 match with the transceiver.

If you receive a visit from the ***RIs*** *you're probably in trouble for causing* ***TVI*** *— Tele-****V****ision* ***I****nterference — or — **BCI** — **B****road-****C****ast* ***I****nterference. RIs stand for* ***R****adio* ***I****nspector — the gentlemen from DoTaC who call around if there are any complaints about your station.*

RIs are also often called ***RED INDIANS.***

COAX *stands for coaxial cable, the link between your rig and the antenna while a* ***WHIP*** *is not something wielded by a leather-clad lady but is rather a generic term for mobile antennae.*

A ***REPEATER*** *relays a UHF CB signal from one point to another so giving much greater range of communication and a repeater list is published in every second issue of this magazine.*

After all of the above we reiterate — it is not necessary to learn CB jargon to go on air. Sure it helps, but, it will all come in time — for now though just use commonsense English and if you don't understand something don't be afraid to ask — remember everyone you hear also had a first time on air.

We hope you enjoy CB and CB Action.

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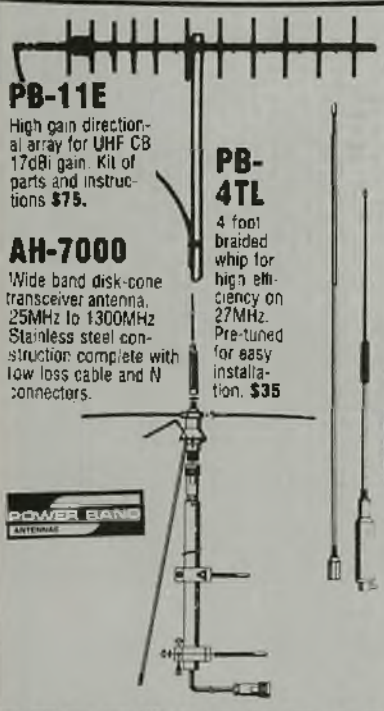

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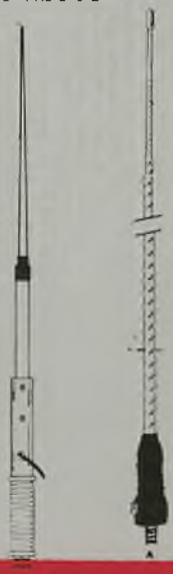

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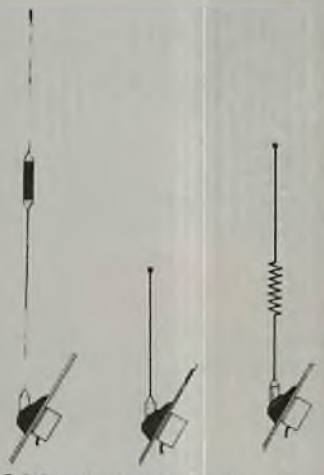

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THIS SHOULD SOLVE A FEW PROBLEMS

G.I. ANTENNA FROM ZCG

Ground inidependent antennas aren't new, they've been available for marine usage since Adam was a boy, however, this new one from ZCG will solve a lot of SWR problems for owners of vehicles with a fibreglass roof or canopy — and it works well.

Antennas are just antennas, well the mobile type are anyway — more or less that is...

There're are short ones, long ones, base loaded ones and a heap of other varieties, but, this one is a bit different.

Way back when CB was in its infancy in Australia there was a multitude of antennas and we carried out regular reviews and tests, however, these days there really isn't such a thing as a 'bad' antenna just some which are a bit better than others.

One landed on my desk recently which looks pretty much the same as any other, but, Peter Greenham of JUST Communications told me it was different and that we should check it out.

This one is from ZCG which is located at Lindenow and is well known for producing good quality CB antennas plus VHF and others. This particular one was well constructed and nicely packaged — and, on reading the instruction, I discovered that it was certainly different.

A Ground Independent Antenna in fact. Mount it vertically or horizontally, it will still work properly with better than 1.5:1 across 250kHz (or approximately 20 channels) — well that's what the blurb said.

MARINE FREQUENCIES

Now 27 MHz GI antennas are not unknown, but, they are used on the marine frequencies and have a typically narrow bandwidth suitable only to marine use as this service only has a small number of channels (10 to be precise).

The reason most marine antennas are ground independent is that it's somewhat difficult to find a groundplane on a fibreglass boat.

So how does it perform?

I first mounted the antenna on an insulated ski bar on the roof of a utility's fibreglass canopy and hooked it up. The antenna was about 100cm above the canopy and I figured this was a reasonable test for it as there certainly wasn't going to be any groundplane effect available.

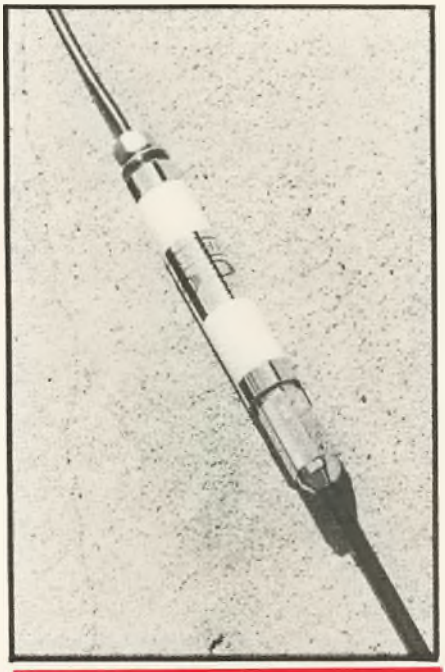
The configuration of the antenna is a base coil with coaxial tail and plug assembly with a whip on top. The overall length of 110mm is just right for a car, truck or boat, however, you need to be aware that the whip screws onto the base assembly using a different thread pattern to the almost universal 5/16th now used.

An enquiry to JUST Communications provided the answer that this was done on purpose as the base will not work or tune on a normal non-GI CB antenna. So, in order to avoid confusion a different thread is used — not a bad idea.

Powering the rig on channel eight gave it a 1:1 SWR reading with the latter climbing slowly as you moved channel up or down.

By the time you reached channel 18 or down to ch one the SWR was climbing fairly rapidly and loading was not good either further down or further up, but, it loaded up perfectly down in the essentially AM channels which, after all, is where most of the action is...

The base is what does the trick and it cannot be used with a normal mobile antenna.



PERFORMING WELL

It was a little difficult to carry out accurate radiation pattern tests, but, reports from other stations indicated that it was performing well and from one to channel 20 it worked just as well as any other three or four foot antenna.

Over the weekend I tested it on a fibreglass cabin cruiser and the antenna was resonant on channel 12 with about 10 usable channels on either side.

It's not easy to compare its performance with anything else as there isn't (at least to my knowledge) anything to compare it with. There are several marine antennas which work on CB frequencies and when compared with one of these it worked somewhat better, but, it really wasn't a fair test.

The antenna is typically ZCG, well constructed, sealed against moisture and with the typical ZCG solid braid — there's even a choice of colors, white for marine use and black for land usage.

It is, as JUST Comms said, somewhat different.

It will be interesting to see how it fits into the market, but, it should have a good future as it will save a lot of frustration with installers on boats, trucks and other applications where a groundplane does not exist.

Come to think of it, it will answer the problem of high SWR suffered by the coach driver who had a letter in CBA a couple of issues back.

They should be filtering onto the market over the next few months and are expected to sell at around $69.

SCANNER

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THE ALL SINGING and DANCING

IC-R7000 SCANNER

REVIEW BY K. REYONDS

Icom's IC-R7000 is undoubtedly the High Performance, All Singing and Dancing scanning receiver of the 21st Century — but at a down-to-earth 1980's price tag of around $2000, only fanatics and the wealthy can afford the 'trip'.

It is difficult to write about the R7000 in anything but superlatives because, as a homogenous communictions receiving system, it is so complete in every respect that it really requires 'hands-on' experience to appreciate the full range of features and its ability to handle almost every given receiver situation.

For example, the R7000 can tune the UHF Citizens' Band in steps ranging from 100 Hertz, 1Khz, 5kHz, 10kHz, 12.5kHz to normal channel steps of 15kHz, with such accuracy and sensitivity that many of the dedicated UHF CB rigs pale beside its brilliance.

The sensitivity for narrow band FM — UHF CB — was 0.15 of a microvolt, while most rigs are doing well to make 0.2 microvolts. If you are not into microvolts, it is sufficient to say that 0.2 of a microvolt sensitivity for 12dB SINAD is excellent.

The R7000 is not your 'pocket' receiver, so to speak, measuring 303mm wide by 127mm high and 319mm deep and weighing in at a neat 8.0 kilos without options. It operates from mains voltage, however an optional low voltage DC kit is available for more portable applications.

HUGE FREQUENCY COVERAGE

The frequency coverage is huge, beginning at 25MHz and ending at around 2000MHz. The reception modes available for the whole frequency range are: (AM) Amplitude Modulation, (FMn) Narrow band Frequency Modulation, (FMw) Wide Band Frequency Modulation and (USB/LSB) Upper and Lower Sideband. The pass band widths of wide FM and narrow FM are also adjustable.

A quick 'whip-around' the front operating panel will summarise the main features.

Beginning at the top lefthand corner we have the SCAN SPEED control that varies continuously the channel scanning speed while the adjacent DELAY control offers four positions — no delay, five seconds, 15 seconds and infinity — usually named HOLD.

Two press-buttons below offer functions not usually seen on CB equipment or your average scanning receiver . . . VSC — Voice Scan Control, when activated, will seek out only occupied frequencies carrying voice or other audio modulation, i.e., if the signal is only a 'blank' carrier wave the VSC will briefly check for audio information on the signal and, if none is present, it will instruct the receiver electronics to ignore this frequency and continue to search.

The METER switch converts the large well calibrated 'S' meter into a FREQUENCY ERROR meter which indicates how far a signal is actually 'off-frequency' relative to the R7000's internal, highly accurate frequency standard.

When the signal frequency is correct the meter needle is positioned vertical in the centre of the metre scale. However, if a variation in frequency is detected, the needle swings either to the left for negative frequency variation or to the right of centre for positive variations.

The large display dial indicates frequency, operating mode, memory channel number (out of 99 memories), and various other information relating to the type of scan operation in progress.

On the upper righthand side of the console is a digital keypad for direct entry of frequencies and mode selection. Combined with this keypad is a small red window labelled REMOTE — you guessed it — this is the sensor for the television-type remote control option which allows operation of most functions from the luxury of your armchair — quite a domestic touch.

A cluster of pressbuttons to the centre, left of the main panel, controls most of the memory and scanning functions with the leftmost switch being the mains power on/off switch.

Slightly to the right of centre is the large, smooth operating, analogue dial which allows the operator direct digital tuning but with the all important — "I'm in control of this thing" — feel to the tuning — a kind of human satisfaction not achieveable with exclusive keypad operation.

To the left of the main tuning a further four buttons control — in descending order — the dial light dimmer, noise blanker which we found a bit disappointing, a 20dB attenuator or RF gain control and — at the bottom — the button to activate the REMOTE CONTROL function.

On the righthand side are buttons for (1GHz one giga-hertz) which, when pressed, sets the dial display frequency to all frequencies above 1000 mega-hertz.

M-SET allows transfer of the displayed frequency to a memory channel. SPEECH — now wait for it — initiates the enunciation of the displayed frequency when the optional voice synthesiser is fitted to the R7000.

In other words, the R7000 can actually tell you audibly the displayed frequency — more than just a gimmick, a valuable aid for poorly sighted operators and great for 'that frequency' you just didn't quite catch as the scanner "took-off" before you could read the display.

LOCK of course disables the main dial and memory selection control to avoid accidents.

The lower righthand main panel holds a MEMORY rotary channel switch, MEMORY WRITE and CLEAR Buttons and the tuning step control to select the size of frequency steps for MAIN DIAL tuning.

On the far lower left two phone sockets provide headphone monitoring and a tape recorder constant level output which allows the operator to record the recovered audio at a stable level, regardless of the setting of the AF gain control.

Last, but not least, is an excellent action, squelch control which permits accurate threshold settings on most operating modes.

The rear panel also holds some interesting features which include a switch to select upper or lower sideband (normally, according to International convention, upper sideband is used on all frequencies above 7MHz-(27MHz, CB being an anomally where lower sideband is favored), a remote control jack for recording, which is associated with the squelch control — a tape recorder is activated when the squelch threshold is broken.

The FM1 and FM2 switch adjusts the pass — bandwidth in the Frequency Modulation Wide or Narrow mode changing the width from 6kHz to 15kHz and 15kHz to 150kHz respectively. A second REMOTE jack provides for connection of the R7000 to a personal computer with the use of the Icom IC-V interface system or the optional CT-17 interface allows interconnection with an RS-232 serial port.

A 10.7MHz IF (Intermediate Frequency) output is also provided giving second IF signals superimposed on a nine volt DC level.

OPERATION

There is very little to say except . . . The IC-R7000 receiver is the best, smoothest all-good-good everything scanner we have ever used.

After years of testing rigs and scanners for 'CB Action' and 'Amateur Radio Action' we become a bit blase and difficult to impress, however the IC-R7000 is impressive in every respect.

CONSTRUCTION

The metalwork is little short of excellent with good, strong mechanical engineering and tight fitting panels. All controls feel 'right' and are positive in their action. Internally the same quality applies with plated-metal compartments and rigidly mounted circuitboards that we would not expect to give trouble. As with most ICOM amateur equipment the R7000 is provided with a substantial carry handle and a chromed-wire 'fold-up' stand to raise the console angle above the operating desk. The antenna connector is 'N' type and nominal impedance across the entire frequency range is 50 ohms.

SUMMARY

At first sight alone you know that this is the scanner you've been waiting to try . . . it just looks and feels right. Its performance justifies your first impressions with brilliant, crisp, clean audio — in the FM broadcast band which, incidentally, is not supposed to be included in the Autralian model, but is included anyway — we connected the RECORD output to the Hi-Fi system and were impressed with the excellent quality reproduction.

Receive sensitivity is excellent right up to in excess of 1GHz whereafter the performance deteriorated a little up to 2GHz.

Constructionally the R7000 is very good and rugged with sensible layout of controls that are easy to use.

The only disappointing feature was the noise blanker which didn't seem to be up to the rest of the features, however, since most of our listening was FM the noise blanker is seldom pressed into service.

If you have got a 'couple of grand hanging about' and you are into scanning receivers, an R7000 might be just the unit for you.

The operating manual is comprehensive and takes the user, through step-by-step instructions regarding every operating feature. Also, in ICOM's usual tradition, a complete schematic diagram of the receiver is supplied on a separate sheet detailing all component values and their part numbers.

However, if any service is required, it would be wise to return your R7000 to ICOM and not take the risk with any other repair agency — the electronic complexity of this rig is beyond the averge person's comprehension and quite a few advanced technicians too.

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INTERFERENCE
WHAT QRN IS THAT

At some time or other every radio operator, by they CBer or amateur, suffers from the effects of electrical interference in some form or another. On occasions this noise level (QRN in Ham code) is so high that it makes communication almost impossible. The object of this article is to examine some of the sources of this annoyance, where it comes from and what steps can be taken to ease the problem.

Even Marconi probably had a few unprintable words to say, back in the early days of "Spark Transmitters", when an electrical storm passed by, magnetising his 'Coherer" (an early type of detector) with a powerful burst of electrical energy. Of course, that type of interference was most likely the only kind that gave him a pain in the proverbial and I daresay that he wouldn't have quite envisaged the plight of radio operators in 1988.

Electrical storms are still with us, there's no mistake about that, however they are of little concern when compared with the multitude of other interfering sources surrounding the present day operator.

TYPES OF INTERFERENCE

ATMOSPHERIC NOISE

Electrical or thunder storms are the primary contributor to atmospheric noise levels and this particular source of annoyance depends on a number of factors including the frequency in use, time of day, weather, season of the year and the stations geographical location. Let's look at the above mentioned points a bit more closely.

Frequency

Atmospheric noise is particularly disturbing at frequencies below 5MHz and in the 80 metre novice band (3.5MHz) it is frequently so severe that the segment is completely unusable with noise levels in the vicinity 40 to 50dB above the random ambient background level. As frequency increases above 4MHz the level of interference quickly diminishes and by the time we approach 10MHz only nearby electrical storms have any significant nuisance value.

Incidentally, it is a good idea to disconnect your antenna and go QRT when the storm is kicking around your own backyard.

By the time 10 or 11 metres is reached, most atmospheric noise has well and truly been masked by man made interference and no longer need be considered as a problem. A close by strike may be indicated by audible crash through the speaker, however, the low frequency part of the spectrum could well have been "knocked out" for some hours before hand.

Time, weather, season and geographical location

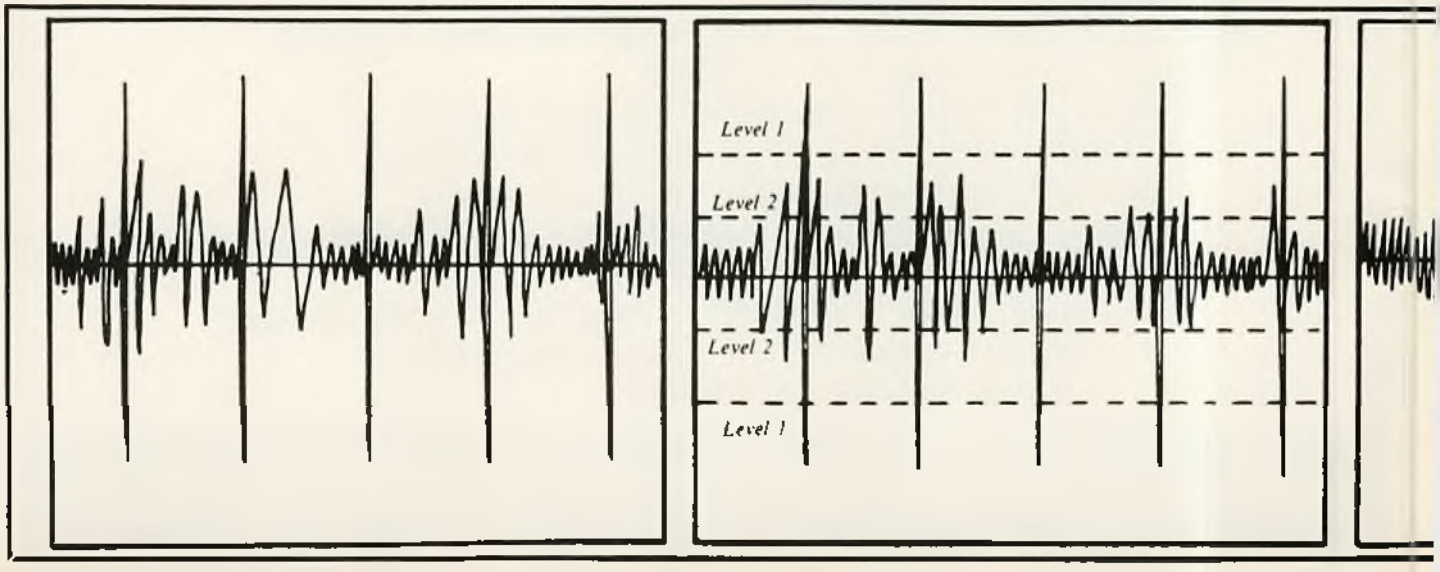
These four factors go hand in hand mainly because certain areas suffer from frequent storms at particular times of the year and day and in some cases it is almost possible to set your clock by them. For example, in the tropics many areas experience regular afternoon storms which repeat the performance almost every day in the applicable season. There are no hard fast ways of predicting these events, however as a rule of thumb, atmospherics usually cause much greater headaches as the latitude on the earth's surface decreases.

In countries such as India, Equatorial, Africa and East Indies where an annual wet season is experienced atmospheric noise is of great concern.

Fig. 1
Showing the noise spikes rising above the level of the voice modulation. They will be heard as "popping" noises.

Fig. 2
At level 1 the noise limiter will clip the noise spikes. At level 2 it will be clipping both spikes and modulation peaks, and distorting the audio.

Fig. 3
The blank spaces between the dotted lines represent the brief time when the noise blanker has turned off the receiver. We won't hear these "holes" in the audio, for they take place too fast.



GALACTIC NOISE

Galactic noise is of little consideration to most radio operators but as a point of interest it may have some merit to have a glimpse in passing.

This type of noise consists of a myriad of discrete sources of radiation originating outside the earth and its atmosphere with the main single contributor being the sun. Millions of other sources of this radiation exist within our own galaxy with further millions of discrete and very remote points far beyond.

The main concentration of this type of noise is heard across a wide part of the frequency spectrum from 15MHz to 100,000MHz with the limiting factors being ionospheric absorption at the low end and atmospheric absorption at the high end of the range.

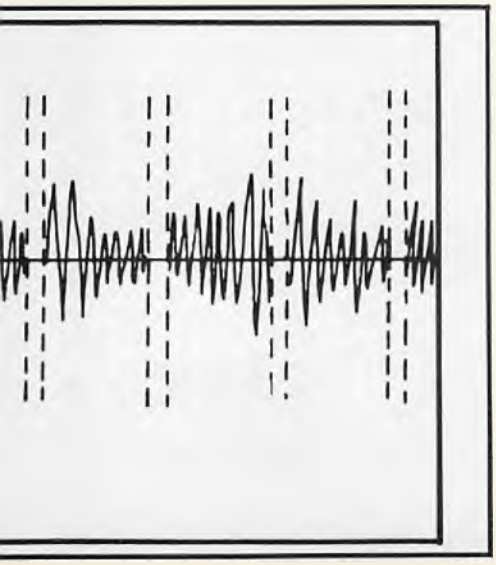
Some very high gain antenna systems used for terrestial communications are affected by galactic noise to a very small extent and on occasions the sun rising or setting through the path of the antenna beamwidth creates a little hair pulling by the operating staff.

Noise from galactic sources are measured with reference to degrees Kelvin and suddenly we are right into radio astronomy which is certainly not the intention of this article.

MAN MADE NOISE

Those operators living in urban or suburban areas will be the most severely afflicted by this major cause of operator distress. Man made noise is caused by a variety of sources including electric motors, neon signs, car ignition systems, power transmission lines and a large range of medical and industrial appliances.

These types of noise emissions are most commonly a major source of irritation to radio operators, hence almost all commercial and government receiving stations are located in rural areas as far away as possible from noisy urban locations.



As a general rule, interference from man made sources decreases with an increase in frequency and their effects are much less noticeable in the spectrum above 100MHz.

Let's take a closer look at some of the more troublesome noise sources which tend to crop up with greatest regularity.

Electric motors operating in close proximity to a receiver are a common cause of high level interference which are more or less outside the control of the radio operator. A neighbour, for example, using an electric drill or perhaps a vacuum cleaner can wipe you right off the band for as long as he or she persists.

Some may have noticed that not all electric motors create this problem and in general low powered units such as those used in an electric fan operate differently from the high powered versions employed in electric drills.

The heavy duty unit is invariably the noisy one. This is because the very large current required for high power output for an electric motor is supplied to the armature through pairs of contacts usually referred to as "brushes" and "commutator". Because of the rotation of the commutator with reference to the brushes, the contacts make and break at a high speed. As they do so, an intense spark occurs with resultant radio field emission and interference is thus created.

At this point it is necessary to differentiate between "Spark" and "Arc". An insulation breakdown in the form of a spark does not completely ionise the medium through which it travels and in this way, for more complex reasons, a strong RF field is created which radiates from the point of sparking as the circuit makes and breaks. Because of this effect a spark, in the true sense, is usually a very intermittent affair and this "on and off" effect creates large volumes of "hash".

On the other hand, an arc occurs when conditions are such that once the insulator has been broken down by a voltage, continuous current is permitted to flow through the heavily ionised matter and the current path is essentially a low resistance circuit. Only interruptions to this flow are detected as interference.

It is commonly accepted that an arc welder is a severe source of RF interference, however this is entirely incorrect as the arc itself causes very little problem at all. In some welders (the pilot arc variety) an internal device does cause some concern. But not the continuous arc.

By far and away the biggest trouble maker in this area is the "leakage" type situation where intermittent sparking occurs at a fairly fast rate, and power transmission lines certainly cause plenty in this regard.

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INTERFERENCE

Continued

The type of "sparking" which causes electrical interference frequently occurs across high voltage insulators on poles which carry AC power transmission lines. This is mostly caused by a build up of dust and other material which, when the insulator becomes moist due to condensation of water vapour or rain and the impurities residing there, allow the moisture to become a partial conductor. As the insulation resistance is reduced by this effect, the high voltage leaks to earth or to the neutral side of the transmission line as a spark.

The process is quite intermittent due to the fact that sparking produces heat which tends to dry the insulator along the path of travel and conductivity is thus reduced at that point.

The spark extinguishes and usually restarts over an adjacent path.

Another reason for intermittent sparking in this situation is because the transmission lines are carrying alternating current and as the voltage rises and decreases through zero and back to zero again, the voltage is only sufficiently high during certain parts of the cycle to enable insulation breakdown to occur. These "power leaks" as they are often called frequently disappear for a few days after heavy rain as the large quantity of water flowing across the insulator washes them clean temporarily.

In many older style houses, the ancient electrical wiring can be responsible for many interference problems. In a large majority of cases where the cause is so localised, the problem is never discovered by the operator as he usually tends to ignore the possibility of his own house wiring.

Should this type of source be suspected, the simplest diagnostic way to approach the problem is to use a portable receiver to detect the noise at the power distribution box and then turn the main isolating switch off and on several times noting whether or not the interference disappears in sympathy.

If the source is found to be local, then it may be still isolated further by removing each fuse individually until the offending circuit is opened.

Incidentally, any operator experiencing "power leak" type interference is well within his or her rights to lodge a complaint with the related authority from which some form of remedial action should be taken on the complainant's behalf. A change for the books isn't it?

The most frustrating feature of power leaks is that they usually appear to radiate their noise field almost continuously and in most cases, even a good noise reducing system incorporated in a receiver, is unable to cope adequately.

NOISE BLANKERS AND LIMITERS

Blankers and limiters are two entirely different kinds of circuits and the way in which each functions are worlds apart.

Noise limiters, as the name implies, have only a level limiting effect and as a consequence are only able to reduce noise to a predetermined amplitude dictated by the maximum amount of signal permitted to pass through a given circuit.

The most common type of limiter employs two or more diodes which require a small forward voltage across the junction before they are able to conduct. Germanium diodes require something in the vicinity of 0.3 volts to "turn on".

Blankers and limiters are two entirely different kinds of circuits and the way in which each functions are worlds apart.

If these diodes are connected across the line carrying the radio signal which is combined with the noise, they tend to short out any voltage which exceeds their conduction breakdown level. As noise voltages are mostly of a much higher amplitude than the wanted signal, the peaks are "clipped" off the waveform, thus reducing the effect of interference to a considerable extent.

This method is very simple and effective for certain types of noise, such as car ignition interference, however when applied to more complex noise wave shapes, the results are frequently unnoticeable.

Bring on the noise blanker!

In this type of circuit noise peaks are detected and then amplified to a greatly increased level where, by devious means, they are turned into a useful "correction" signal.

Because electronic circuits operate at an extremely high speed, the amplified noise pulses are fed back to the gain controlling elements of the receiver in such a way that they are used to actually turn the set off for the duration of the pulse — almost before the noise can get started.

Because noise pulses are usually of very short duration in themselves, there is very little effect on the wanted signal and as a result, the only really noticeable feature is that the annoyance has all but disappeared.

Although this explanation is relatively simple noise blanker circuits are, in the main, quite complex pieces of electronics. A kind of sophisticated AGC system with extra refinements.

Most electrical interference is vertically polarised and can frequently be attenuated to a considerable degree by using horizontally polarised antenna systems.

One final distressing point about power leaks is that they may not be anywhere near as close as one might suspect. The noise created by them is sometimes transmitted for great distances along the power lines and the irritation created in one suburb may have its source in another.

Now there's an encouraging thought to consider for the rest of your operating life.

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HF LINK

Welcome once again to HF link. This month I have news on plans for print handicapped broadcasting radio stations and some information on the Wireless Institute of Australia's weekly amateur radio broadcast.

Remember that all times are in UTC (same as GMT) unless otherwise indicated and all frequencies are in kHz. International broadcast stations are in AM and utility stations are in SSB unless stated otherwise.

Corrections and Omissions

Well, some little gremlins got into my March-April column concerning the broadcasts by Radio Australia over ABC domestic transmitters.

3AR is on 621 and not 631, 4QG is on 792 and not 729, 7ZL on 603 takes the relay and not 7ZR.

I apologise for any problems this incorrect information may have caused.

Broadcasts from the WIA

The NSW branch of the Wireless Institute of Australia (WIA) has a weekly news broadcast on matters affecting amateur radio operators. The broadcast is carried on HF, VHF and UHF and can be heard every Sunday commencing at 1045 (local time) with a historical and technical tape from the branch with the news broadcast starting at 1100 (local time).

The whole thing is repeated again at 1915 (local time) that night.

On HF the broadcasts are carried on — 1845 (AM), 3595 (AM), 3585 (from Newcastle in morning only), 7146 (in AM in morning only) and 28320 (SSB). On VHF they use 52.12 MHz (USB), 52.525 MHz (FM), 147.000 MHz (FM),144.120 MHz (USB) and on UHF 438.525 MHz (FM).

Many regional 2 metre and 70 centimetre amateur repeaters around NSW relay the WIA broadcasts.

Also, other state branches of the WIA carry their own broadcasts at various times on different frequencies. I don't have a list of them but if someone could supply me with details I can print it in a future issue.

The news broadcast often contains some useful information, not only for the amateur radio operator, but also for DXers.

Broadcasts above 1605

Situated just outside the broadcast band lies a handful of stations which cater for handicapped people who are unable to read newspapers or watch TV.

Radio for the Print Handicapped (RPH) stations have been recognised by the Government for the valuable service they provide to the print handicapped people of our community. These stations have been licensed under the Radio Communications Act, but, with changes made last year they will become Public Radio (special interest) stations under the Broadcast Act.

There are at present five RPH stations operating in Australia, 1PPP, 4RPH and 7RPH on 1620, with 3RPH and 2RPH on 1629.

After many years of debate and planning DoTaC has come up with what I think is a very good plan to relocate these stations inside the AM broadcast band at very little cost to the Government. At present it would be very difficult to transfer these stations to inside the crowed AM band as there are no vacant frequencies available, so the only place left for them would be on FM.

But this would cost the Government extra money in building the necessary transmitter facilities as most funds come from the Government.

The solution that DoTaC has come up with is to make use of the facilities of Commercial AM stations that exchange their AM licenses for an FM one.

The move by the RPH stations is expected to start this year.

At the same time as this is taking place plans have also been released for the establishment of other RPH stations in other capital cities of Australia and during 1989 RPH station are to be licensed in both Perth and Adelaide.

If you wish to QSL these stations then I suggest you do it now before they leave the present frequency location and move inside the AM band.

1PPP Canberra and 7RPH Hobart will move to FM channel allocations.

The address for the stations are as follows — 1PPP-Print Handicapped Radio of ACT Inc. P.O.Box 346, Belconnen, ACT 2616, the station issues a letter of - verification and the station operates during the following times, 2030-0200 and 0730-1300 with extended transmission to 1400 on weekends.

4RPH — Queensland Radio for the Print Handicapped, Level 8, North Point Building, 231 North Quay, Brisbane, Qld 4000, verification is via a letter, the station operates 24 hours per day.

7RPH — Broadcasting Service for the Print Handicapped, 73 Montagu St, Newtown, Tasmania 7008 and verification is via a letter. Transmission times are 0400-1300.

3RPH — Radio for the Print Handicapped (Victoria) Co-op Ltd, 454 Glenferrie Road, Kooyong, Victoria 3144. The station issues a QSL card for correct verification and the station operates 24 hours per day.

2RPH — Radio for the Print Handicapped (NSW) Co-op Ltd, 186 Blues Point Road, North Sydney, NSW. Transmission times are from 2000-1300 daily.

Broadcasts from West Germany

William Nixon from Brisbane has sent me the following schedule from Deutsche Welle effective until September.

Programmes in German beamed to Australia and New Zealand are as follows — 0600-0800 on 9690, 9735, 11795, 15105, 17845, 21560, 11810.

0700-0800 on 21640 (T), 0800-1000 on 9690, 9735, 11795, 15105, 17845, 21560 and 21640 (T), 1000-1200 on 17845, 21560, 21640 (T), 21680, 1100-1200 on 25740, 1200-1400 on 17845, 21560 and 21640 (T).

2000-2200 on 9640 (T) and 2200-2400 on 11785 (T).

Programs in English to Australia and New Zealand are as follows;

0900-0950 on 6160 (via Antigua), 11945 (T), 17780, 17875 (T), 21650, 21680 also 2100-2150 on 9670 (T), 9765, 11785 (T)and 15435.

A (T) after the frequency indicates that it is a test transmission from their relay site at Trincomalee in Sri Lanka.

Red Cross broadcasts to Australia

Until the end of August the Red Cross Broadcasting service will be broadcasting to Australia on the following dates and times;

0740-0757, in English on 9560, 13685, 17670 and 21695 on 26/6, 29/6, 31/7, 3/8, 28/8 and 31/8.

Transmissions are aimed to South and South East Asia and will be broadcast via facilities of Radio Beijing at 1310-1327 on 11695 in English on the same dates as above.

New publications from Radio Nederlands

Two new publications have been produced by Radio Nederlands to assist shortwave DXers.

'The Solar Guide' is a 12-page booklet which explains the information broadcast by WWV at 18 minutes past the hour during their Geophysical alert.

The information in these broadcasts contain useful material for listeners who wish to determine propagation conditions. Topics such as electromagnetic radiation and geomagnetic activity are explained in a simple and easy to understand format.

The other publication, 'INFODUTCH, edition number 5', is an 18-page booklet designed for people who use their computer in the radio hobby.

INFODUTCH stands for 'Information of Direct Use To Computer Hobbyists' and updates edition number 4 which is now out of date. The booklet covers commercial software which allows computers to interface with the current generation of communications receivers as well as radio related electronic bulletin boards .

Jonathan Marks, the editor and well known presenter of Media Network over Radio Nederlands, also shows examples of what you would expect to receive when logged on to electronic bulletin boards.

A list of books for further reading is also given with a brief outline of what each book covers .

That's all for now.

If you have any questions about what I've put in the column or want to know more about the hobby drop me a letter with a S.A.E.and I'll do my best to answer any questions you may have.

I would also be interested in hearing from you if you have any notes for the column.

My address is P.O. Box C-111, Clarence Street, Sydney, New South Wales 2000.

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ODDS & SODS

— NEWS AROUND THE TRADE —

NEW RIGS FROM HATADI! (Pearce-Simpson)

Late news from HATADI is that a new base station module is due from Pearce-Simpson within the next few weeks.

Utilising the Lion Mk 2, the base station module is a multi-feature unit with built-in speaker, clock and headphone socket which will make the AM rig into an attractive base station unit.

Also on the way is the Lynx Mk 2, a compact AM rig with up/down channel control and a number of other worthwhile features. Additional to the news on the Lion and Lynx units is the rumor that a new AM/SSB rig will soon be released in Australia.

We hope to test the latter in our next (August/September) issue.

WERENER WULF BACK IN BUSINESS

Further to our prediction in the last issue that well known antenna designer/manufacturer Werner Wulf would be soon back in business we can now advise that as from June 1 he is in fact just that...

Werner sold out to Tomlinson Communications some 18 months back with the intention of developing locally built antenna rotators, however, following the disappearance of Tomlinson from the scene Werner has decided to re-enter the antenna market.

He also wishes to stress that he had no connection whatsoever with Tomlinson Communications nor has he, or us either, any knowledge of his current whereabouts. We say this because both Werner and CBA have received many enquiries from readers anxious to contact Mr. Derek Tomlinson.

Werner, who designed and developed the unique method off attaching Yagi elements to the boom by a 'cam', is once again building a full range of antennas for both CB and amateur use.

A three element 10/11m Yagi is listed at $147, four el. at $186, five el. at $225 and a five eighth 10/11m vertical is priced at $85.

Prior to publication of our next issue we expect to test a seven element 10/11m Werner Wulf Yagi and we will report on this in our next issue.

This time around Werner intends to market direct from his factory as this means that he can sell at a lower price than if he sells through retail outlets.

His address is 18 Cheleon Way, Albany Park, St. Albans 3021, Victoria or telephone (03) 366 7042.

640 MODIFICATION

If you have purchased one of the new Uniden PRO-640e rigs (reviewed in CBA May/June issue) you can have the channel 9 and 19 buttons altered to work instead on channels 8 and 35. Place to send it is to South Pacific Radio along with payment of $30.

RIs ON THE WARPARTH

It is more than just a rumor that the dreaded RIs have been extremely active in Victoria, South Australia and New South Wales during recent weeks. Quite a number of out-of-band operators have been visited, equipment seized and court cases pending.

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RUSSEL BRYANT GIVES TOP MARKS TO THE NEW TANDY

REALISTIC PRO2005 SCANNER

If I was asked to label the scanner scene at the moment, I would have to say the never ending story sums it up completely. Enthusiasts have never before had access to so many models with extended frequency range or large capacity memories. Often referred to as super scanners, they offer the scanner hobbyist more than ever before.

Not really a new scanner, the Realistic PRO 2005 is more an upgrading of a previous model. As its name would suggest, the latest Tandy is one better than the PRO 2004. We remember how well the 2004 rated when Dave Flynn reviewed Tandy's first super scanner in the January '88 issue of CBA.

The PRO 2005 is more advanced than its predecessor, with 400 memory channels (that will tap your frequency lists dry), improved specifications over its extended frequency coverage of 25 MHz - 520 MHz, 760 MHz - 1300 MHz, plus features not included in earlier models.

The first noticeable difference between the 2005 and the 2004 is the overall size, the 2005 is approximately one third smaller than its older brother. The reduction in external size is achieved by reducing the dimensions of the PC (printed circuit) boards. The statistics are 76mm high, 220mm wide, 205mm deep and weighs in at a respectable 2.2kg.

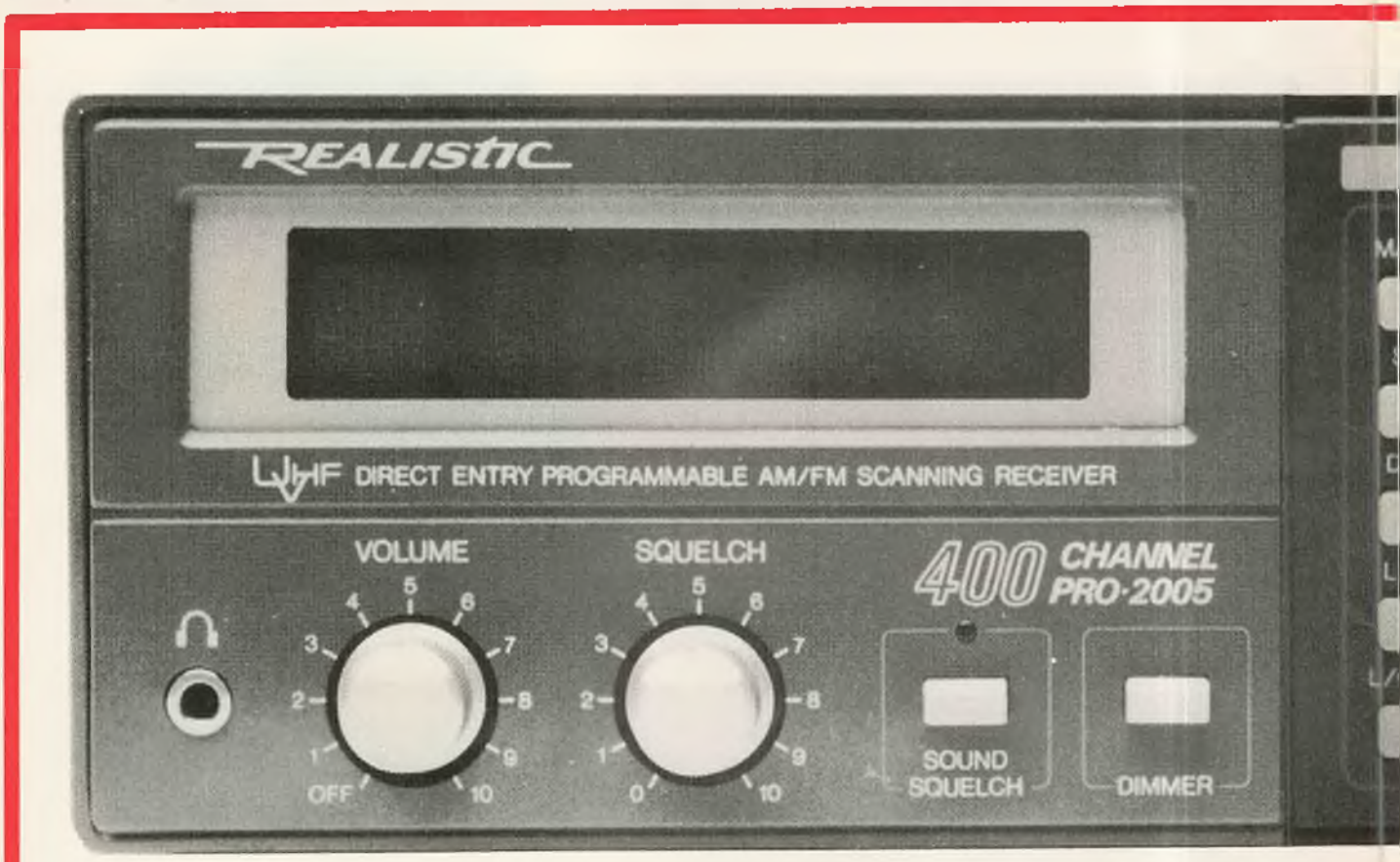
Gone is the black metal outer case, replaced with a grey ABS plastic shell. Gone is the sloping front, instead there's a straight up and down panel, more like a two-way radio. Out are the touch-pad control keys, in, the familiar grey rubberised buttons of the other Realistic scanners. The soft aqua blue background to the full feature LCD display has been retained in the PRO 2005. The display reads channel number, frequency, receiving mode, channel bank, function status (scan, manual, program and search), lock out and delay.

The layout of the front panel is basically identical to the PRO 2004, below the LCD is the volume and mute controls. To their right, the sound squelch (with red LED indicator) and display dimmer buttons. All are finished in soft chrome common to Realistic scanning receivers.

NO DIFFICULTIES

Anyone who has used the PRO 2004 will have no difficulties with the 2005. Programming and operation sequences are the same, as is the location of manual, scan and delay etc. To raise the PRO 2005 from the parallel, Tandy has included retractable legs.

With the legs in the lowered position the 2005 stands 10 to 15 degress from the tabletop. At this angle fading of the LCD (especially in bright light) is eliminated.



The rear panel supports exactly the same connectors of the 2004, including 10dB attenuator switch, BNC connector, AC cord plus external power (12 VDC), speaker and tape recorder sockets. Overall the PRO 2005 is a neater, cleaner looking package.

The handbook accompaning the unit, is, as you would expect, well written, clear and concise. All functions and programming steps are explained in simple, non-technical language. If this is the first scanner you have ever operated, nothing would be left to chance. Even the most common "birdies" are listed for easy reference.

The 400 memories are divided into 10 banks of 40, with bank one covering channels 1-40, bank two 41-80 and so on. Any number of banks from one to nine can be locked out of the scanning series. The numerical keys 0-9 are subtitled to indicate the channels belonging to that bank. The 10 search banks and 10 temporary monitor channels of the 2004 have been retained with the PRO 2005.

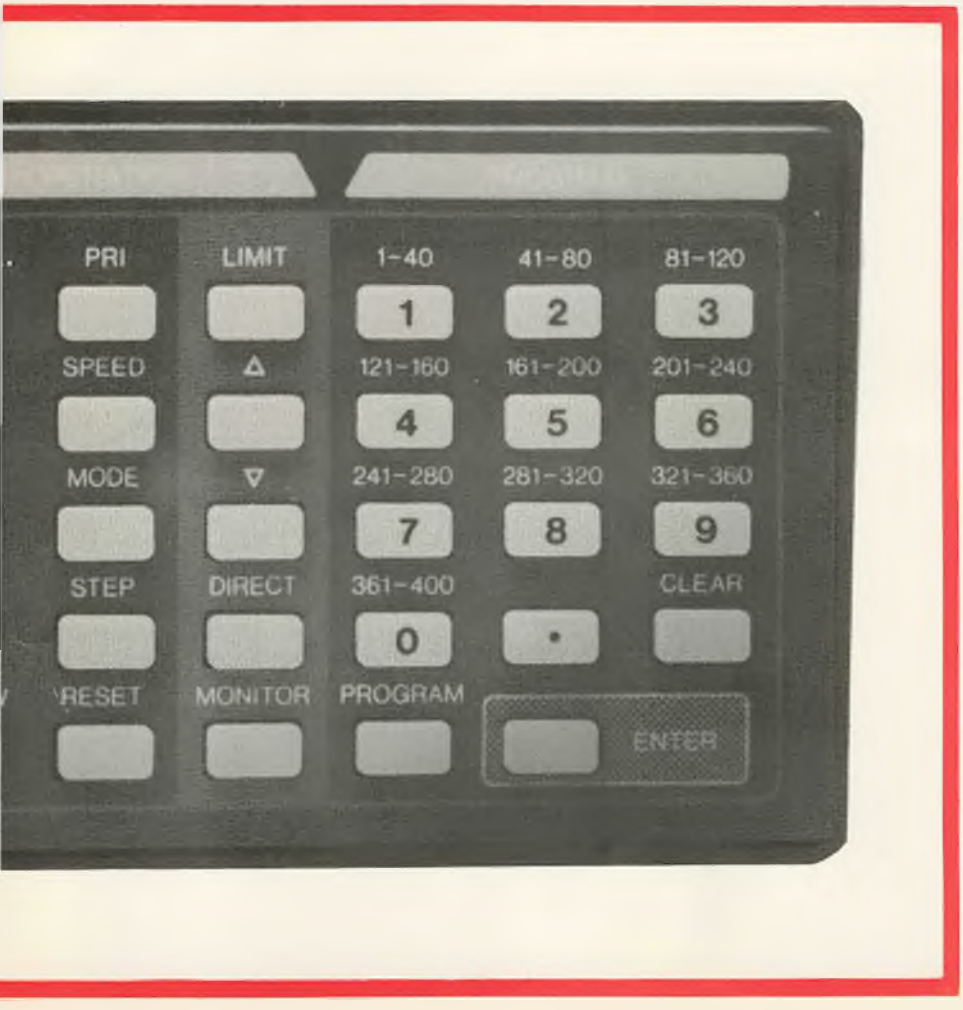
Memory back-up is from a nine-volt battery installed in the recess on the rear panel. An audio-visual warning is given when the battery level drops below a predetermined level, endangering frequencies programmed into the memory. On that point I have operated Realistic scanners for a week without battery back-up and without losing the memory. Just to be safe however, install a battery.

When a scanner has a memory capacity of 400 channels it takes time to check the status of any given channel. For example, how many channels are locked out of the scan sequence? The 2004s started a trend that has been continued in the latest PRO, called Lock-Out Review, it allows the user to check, one by one, any or all channels not being scanned — a time saving feature that should be built into other so-called super scanners.

Included are two search functions, the first is the usual method of programming the lower and higher limits, then setting the radio searching between the two. The "direct" search is activated by pressing the key labelled Direct, followed by an arrow key (up or down). The scanner will then search from the frequency that was displayed on the LCD.

At the fastest rate the PRO 2005 covers 16 channels every second (24 seconds to cover all 400 channels) or eight channels per second in slow mode.

When a frequency is programmed into a memory channel, the 2005 will select the receiving mode common to that frequency. Pressing the Mode keys alters the program to narrow FM, wide FM or AM depending on your choice. Search increments are automatically set when the search parameters are entered into the scanner. By using the Step key you can alter the stepping from 5 - 12.5 or 50 kHz.



As with all scanners, a compromise on-board antenna is supplied, in the case of the PRO 2005 a five-segment telescoping whip. It is connected to the radio via a hole in the top of the case and is suitable for most listening applications.

When Tandy delivered the PRO 2005 to me, they also sent an addition to their range of receiving antennae, in the form of a discone. It features a receiving range of 25 - 1300 MHz, which is ideally suited to the PRO 2004/2005. In addition it can handle transmission up to 200 watts on 144, 220, 440, 900 and 1296 MHz.

The central hub, which appears to be nickel plated brass, supports eight solid stainless steel receiving elements, as well as the eight tubular stainless ground plane radials. Cable termination is SO-239/PL-259 connectors, allowing flexibility when choosing the type of cable to run. All the necessary mounting hardware, including brackets, is supplied with the antenna.

I temporarily mounted the discone about three metres above the ground and connected it to the PRO 2005 with five metres of RG 58U. As you might expect the combination worked superbly across the entire receiving range of the scanner. Whether it be my imagination or not the Archer (Tandy) discone seemed to improve 800 MHz reception. I could copy 800 MHz trunked transmissions from 80 kilometres away. To get the most out of such a sophisticated piece of equipment such as the PRO 2005, the installation of an external antenna is almost mandatory. The Archer Base Station Discone Scanner Antenna is well suited to the job.

The PRO 2005 only loses points in two ways, the first is the 240 VAC cord. Permanently attached to the radio, it becomes a nuisance when the radio is used mobile. How about a detachable cord Radio Shack?

My other complaint is that the 30 kHz spacing on the cellular band has been deleted. It is obviously included in some models (overseas) and not ours, as the figures "30 khz" are visible at certain angles on the screen.

The best news of all is the price, exactly the same as the PRO 2004 at $749.95. The Base Station Discone is priced at $149.95 and compliments the PRO 2005 nicely.

Dave Flynn, in his review of the PRO 2004, voted it Scanner Of The Year For 1988. The 2005 surley must take the title of for '89.

Thanks to Michael Muranty of InterTan Australia for the loan of the PRO 2005 for this review.

Move over everyone else... here's the IC-R9000 and it's the state-of-the-art

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When ICOM release a new piece of electronic equipment you can almost bet that it will prove to be, for want of a better word, a 'trendsetter'. New for 1989 is the IC-R9000 communication receiver — read on....

In mid-1988 ICOM introduced the 'state of the art' IC-781 amateur transceiver — an incredible piece of electronic high technology which has set the standard against which other amateur rigs are judged.

Mind you, high tech does not come cheaply and the 781 sells for around $10,000.

That, however, was last year and the highlight of '89 — to date at least — is the shortly to be released ICR9000 which is certain to become the 'state of the art' receiver — even at its sizeable price.

ALL SINGING and ALL DANCING

For any shortwave listener this new rig is the 'all singing, all dancing' best yet receiver and its specifications and performance are, judging by the brochure, something which needs to be heard to be believed.

For openers it has all mode receiver capability with continuous tuning from 100 kHz to 1999.8 MHz — and that's just for starters.

You can listen to AM used by broadcast stations and VHF air band, or use SSB and/or CW to receive marine band, aircraft and amateurs or maybe FM on VHF and UHF. FSK (frequency shift keying) is also built in for receiving RTTY from news agencies, however, with the latter you will still require a demodulator which translates the received signal into alphanumeric characters which can then be read off the built-in CRT display.

BUILT-IN SPECTRUM SCOPE

The multi-feature CRT screen can, among many other things, be used as a spectrum scope where, at a glance, you can observe the signal spectrum of nearby receive frequencies — in other words, you can see where stations are and judge their strength from the screen.

Using the memory list function, you can see the contents of 10 memory channels by scrolling through them together with notes you have inserted against each to name the station or its operating times.

Direct keyboard entry allows you select frequencies and memory channels via the keyboard and there are in total 1,000 memory channels which can store frequencies, mode, filter width and tuning steps.

A 24 hour system of dual clocks with two kinds of sleep timers and six different daily times are available and time settings can be performed easily using the CRT display.

NUMEROUS SCAN FEATURES

The rig is equipped with numerous scan functions to search for desired stations quickly in wide frequency bands. The scan speed is very fast — 13 channels per second or more if desired. Also, the scanning speed is continuously adjustable to suit your own operating needs.

Unlike conventional receivers, the R9000 ignores beat signals and noise and the scan resumes immediately it has paused for signals that do not include voice components.

Tuning steps of 10Hz, 100Hz, 1kHz, 5kHz, 9kHz, 10kHz, 12.5kHz, 20kHz or 100kHz are provided while the MHz up and down switches allow the user to change the receive frequency in 1MHz steps — an automatic dial click function is included for tuning convenience when using tuning steps greater than 5kHz and this function is ideal for selecting FM mode stations.

Sensitivity, selectivity and stability are outstanding and the AFC function automatically and immediately tunes to the frequency of the signal in each FM mode — this function also compensates for frequency shifts in weather satellite signals due to the Doppler Effect.

The IF shift circuit moves the centre frequency of the passband to effectively reject nearby interfering signals in SSB, CW, FSK and AM modes and a threshold-adjustable, width-selectable noise blanker is included for eliminating long duration pulse-type noises such as the Russian 'woodpecker'.

Other features of the rig include:

* A dial-lock function to ensure there is no accidental frequency change.
* A combined S-meter and centre meter for accurate and convenient tuning.
* All mode squelch and S-meter squelch.
* Rack mounting handles.
* Bass and treble tone controls for comfortable listening.
* Four, yes four, antenna connectors.

For the technically minded, the specifications really tell the story.

Hopefully, we will be able to test drive the rig in time for the next issue and we understand that Amateur Radio Action magazine will also carry a full test in the near future.

Sufficient at this time to say that the R9000 looks to be the new communication receiver benchmark — and is likely to remain so for some considerable time.

VERSION	FREQUENCY COVERAGE
U.S.A., Europe	0.10000~1999.80000 MHz
Australia	2.00000~ 87.49999 MHz 108.00000~1999.80000 MHz
Germany	0.15000~ 26.10000 MHz 28.00000~ 29.70000 MHz 144.00000~ 146.00000 MHz 430.00000~ 440.00000 MHz
France	0.10000~ 87.49999 MHz 108.00000~1999.80000 MHz

Rx / IF	FREQUENCY		
	0.10000~29.99999	30.00000~499.99999	500.000000~999.99999
1st	48.79376~48.80000	778.60001~778.70000	278.60001~278.70000
2nd	10.70000	10.70000	10.70000
3rd	0.45000	0.45000	0.45000
4th	10.70000	10.70000	10.70000

FREQUENCY (MHz)	MODE			
	SSB, CW, FSK	AM	FM	Wide FM
0.10000~ 0.49999	0.5 μV	3.2 μV		
0.50000~ 1.79999	1.0 μV	6.3 μV	—	—
1.80000~ 29.99999	0.16 μV	1.0 μV		
30.00000~ 999.99999	0.32 μV	1.4 μV	0.5 μV	1.4 μV
1000.00000~1239.99999	0.63 μV	4.0 μV	1.0μV	4.0 μV
1240.00000~1299.99999	0.32 μV	2.0 μV	0.5 μV	2.0 μV
1300.00000~1599.99999	0.63 μV	4.0 μV	1.0 μV	4.0 μV
1600.00000~1999.80000	1.0 μV	5.6 μV	1.4 μV	5.6 μV

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'BACK TO YOU...'

Letters from readers are welcomed. They should be type-written and present an interesting viewpoint.

HOMING DEVICE

Dear Sir,

I have made a radio receiver UHF CB and I would like to know if you have a diagram of or instructions on how to build a homing device — something along the lines of a unit to fit to a dog's collar or an object being followed?

M. Duncan
Mento, Queensland

Well, your request is certainly a bit different, but, no we have absolutely no idea of where you can obtain such a device. If, however, you have built the receiver it shouldn't be at all difficult to also build a small transmitter which will put out a continuous tone just as long as the batteries last.

Alternatively, you might contact the Fisheries and Wildlife Department as it is using this type of device to keep a track on wild animals, etc.

Another thought is the CIA...!
— Editor

LEGAL OR NOT?

Dear Sir,

I am writing to you to try and find the answers to a number of questions. I've been on radio for about two and a half years, but, there are several things which continue to puzzle me.

If a radio is running 12 watts on SSB and 4-5 watts on AM and I use a power microphone can DoTaC take either the rig or the mic?

I have an old Super Panther rig which started life as an 18-channel set but was modded to 40 channels and, during the modification, it also received a 10kHz rise when I had it changed over — is that ok?

I've got a number of AM stations around my home and when I try to use SSB these AM stations splatter the hell out of me — what can I do about it?

Jayson C.
Canley Vale, NSW

The answer to part one of your letter is that no-one really knows whether a power microphone is considered legal or otherwise by the DoTaC. There was an article on this exact question is the Nov/Dec '88 issue of CBA.

I'm totally lost on part two as I haven't got the vaguest idea of what you're talking about.

I can only offer my sympathy on the AM splatter — there's not a thing you can do about it.
— Editor

SA COMPLAINT

Dear Sir,

I have a complaint about particular CBers — mainly those to be found on Ch 18 AM. Being located in Renmark means that there's not a lot of local CBers and I rely on skip conditions for DXing.

The thing that is annoying is that when I flick onto Ch 6 all I can hear is a bunch of skip stations having a QSO.

I thought that was why the CB service was allocated 18, 23 and now 40 channels so that operators can call on a specific channel and then move to a free one for the QSO.

G. Haynes
Renmark, SA

As with the previous letter I candidly can't understand what the question is...
— Editor

TELECOM TEASER

Dear Sir,

My father and I intend travelling in the outback of Western Australia and Northern Territory in July-August of this year. We will have a scanner in the vehicle and I would like to know what frequency Telecom uses for its radiotelephone service.

D. Corstorphan
Puckapunyal, VIC

I suggest that you drop a note direct to Bryan Russell — the contributor who looks after the 'Scanning Action' column. He can be reached through P.O. Box R16, Roselands,NSW 2196.
— Editor

IN A MUDDLE

Dear Sir,

I am a new reader of CBA and I do not understand why there are 27MHz and UHF radios and why there are AM and SSB modes — help!

G. McGrath
Bendigo, VIC

Glenn, I think the best thing you can do is to continue to read CBA and eventually the penny will drop as to what it's all about. Basically, 27MHz and UHF CB are two totally different services with totally different requirements and effectiveness while AM and SSB are two totally different modes, again with different requirements and effectiveness.

A 27MHz radio cannot be used on the UHF band and the reverse also applies. An AM/SSB radio can be used on both AM and SSB, but, an AM-only rig cannot be used on SSB.

See, easy isn't it....?
— Editor

SCANNER PUZZLE

Dear Sir,

Since buying a copy of your March/April edition of CBA I have gone from being an unlicensed, uniformed 'Good Buddy' to a highly inquisitive and licensed CBer with interests in everything from CB UHF to SW receivers.

I even managed to complete the competition entry only to realize that I was 10 days over the closing date when I purchased the magazine.

However, I am writing to you to question an article in 'Scanning Action'.

The article noted that scanners are a three-in-one receiver with UHF using a half wave six-inch whip, VHF highband centering at 162MHz using a quarter wave 18-inch whip and VHF midrange centering at 80MHz using a quarter wave 36-inch whip (why aren't we talking in metric? Ed.)

It was suggested that since most scanners only have one antenna socket, reasonable reception could be obtained by using a single 36-inch whip for all three bands.

I asked a friend with some knowledge on the subject if it were possible to hook three specialized whips up to a three-way adaptor incorporating an automatic switch circuit which would link up to the appropriate antenna at each particular MHz band not unlike the 'Eavesdropper' dipole antenna used for short wave reception.

My friend said he was aware of the three-way adaptor idea, but, only with a manual switch.

Can you please shed some light on the subject ?

C.A. Floyd
Upper Beaconsfield, VIC

Good question. No, I personally am unaware of any such automatic antenna switch and the 'Eavesdropper' (whatever happened to the distributor? Ed) is a trapped horizontal dipole which is very different to what you propose.

There are of course all sorts of 'trapped' antennas — vertical, dipoles, inverted Vees, etc., — but, this is not what you're talking about. It's fair to say that the 36-inch whip will provide acceptable reception over the three bands, however, a specific antenna will be a little, and I stress a little, better on each particular one — and here I'm assuming that your set is a handheld.

You don't mention what type of scanner you have — that is, whether it's a handheld or a base unit — but,

either way your reception will benefit enormously by hanging a good quality discone-type antenna up in the sky somewhere as height means better reception at the frequencies of which you're talking.

— Editor

NO TO DEREGULATION

Dear Sir,

Regarding Jeremy Pritchard's letter advocating the deregulation of CB.

Deregulation is a current trend which simply doesn't work.

What is really needed is a complete review of CB with a system of licensing the operator and not the rig.

Money raised from the licence fees would then be utilized to provide proper enforcement 24 hours a day.

Also, operators would be educated in basic radio procedure by DoTaC officers and parents should be made liable for junior's actions.

An operator should be no younger than 18 years of age.

Deregulation is not the answer!

P. Skinner
Kilsyth, VIC

You state what many operators genuinely believe, however, your proposal has no hope of ever getting off the ground. Firstly, the whole idea of CB is that ordinary citizens can get on air without the requirement of any study whatsoever — we don't necessarily agree, but, that's what it's all about.

Next, have you any idea of how much money is already generated by the licensing of rigs — or how much is put back into the system by way of enforcement of reasonable standards? The answer to the first is $3.7 million while the answer to the second is not a helluva lot!

So your idea of money paying for enforcement, while a great idea, is obviously not one the DoTaC is even halfway interested in...

Restricting licenses to 18 year olds and above could never work, nor should anyone expect it to — there are thousands of intelligent kids out there who are rapt in CB and why should their pleasure be spoilt because of a few whackers?

Thanks for the letter Mr. Skinner, but, I'm afraid it's just pie-in-the-sky.

— Editor

FIGURES QUERIED

Dear Sir,

In your last issue there were a couple of paragraphs which, among other things, stated that CBers contribute $3.5 million to the government by way of licensing fees.

Firstly, I want to know if this figure is correct and, if it is, why we don't get better policing of the channels against the 'brain dead' and sundry other no-hopers?

Secondly, if there are as claimed in these paragraphs 263,880 licensed CBers and only 17,536 licensed amateurs why don't we receive a better deal from DoTaC?

C. Ratting

Fremantle, WA

To answer your questions — yes, the figure is correct and the reason we don't get better policing of the CB bands is that the government really doesn't give a damn just so long as it continues to receive the licensing fees. As for number two question — the amateurs are self-regulatory (as supposedly are CBers), however, because it is necessary to achieve a certain degree of electronic knowledge and pass an examination before becoming an amateur the people who qualify as amateurs are generally not nerds (although this is not totally unknown).

Because of the difficulty in obtaining the licence, amateurs are not about to risk losing it through some ridiculous and/or childish on-air behavior and so they are in fact genuinely self-regulatory. On the other hand, anyone — and I mean anyone — can purchase a CB licence by simply handing over the necessary cash so operators don't have much to lose by way of stupid behavior.

— Editor

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WE TAKE A GOOD LOOK AT THE NEW

CB REGS-ARE YOU AFFECTED

The rules and regulations for the CBRS, known first as the RB14 and now as DOC14, have not only been given a facelift but had some major surgery into the bargain, however, some of the regulations require some in-depth examination — that's what we've done...

Overall the new booklet is very well laid-out, with good use of color and a 'plain language' style making it far easier to read and understand than any version to date. DoTaC's Publications Officer has done an excellent job, and most other brochures have been redesigned along the same lines.

In comparing previous editions of DOC14 with the latest release, it is immediately clear that an amount of legalese deadwood has been removed, and where possible replaced with plain English. In some places the DOC14 takes on the role of an operators' guide rather than a riot act, which does much to promote the 'user-friendliness' of the publication.

Bandplans for both 27 MHz and 477 MHz are also greatly improved, especially in regard to listing of special useage channels. More recent DOC14s used a variety of footnotes (such as A, B, C, CD and CS) to denote these channels. For instance, ch. 11 was listed as the DSB (double sideband) call channel. Now DSB is simply another name for AM, and while it is technically spot-on the lack of any such explanation caused no small amount of confusion.

The new booklet highlights calling and emergency channels in green, and lists them beneath each bandplan.

But to the heart of the matter — how significant are the changes, and how are you affected by them ?

State Law

9. Licensees should note that in some states it is an offence under State Law for drivers to use radiocommunication equipment while a vehicle is in motion.

This subject has been brought into the public eye by the antics of mobile phone users, many of whom happily chat away while swerving like a Formula One car on the warm-up lap. The relevant laws vary between states. In NSW it is illegal to use radiocommunications equipment while driving, whether it is a carphone or a two-way radio. In Victoria, however, the rules are more general, and it is an offence to do anything which may be considered to interfere with your driving. Don't be caught — ignorance is not considered a valid excuse in court. Find out what rules apply in your state.

Inspection

14. The licensee shall at any reasonable time, permit a Departmental inspector to inspect and test the equipment associated with the station(s) covered by the licence. All radio inspectors are issued with identification cards which are numbered and bear the photo of the inspector. If the licensee has any doubt about the legitimacy of the inspector they should contact the nearest Departmental office.

A clear statement of where you stand in the event of a call from the RIs, and also some hints on how to ensure that your visitor is not a bogus one with a jealous eye on your gear. CBA also advises that if you are visited outside office hours and the DoTaC cannot be reached, call the police to verify the person's identity and explain your reasons to the supposed RI. If in doubt, don't let them in.

Emergency Channels

18. Channels 5 and 35 are legally designated as emergency channels. The use of these channels for non-emergency purposes is an offence under the Licensing and General Regulations and may attract a fine of $1000 maximum. The channels are to be used only when a situation of extreme emergency exists and immediate attention is required. Messages of a non-urgent nature should be confined to other channels. Channel 5 is designated as the primary emergency channel.

This is a reworking of an equivalent section in the previous regulations, which has wisely been expanded to make mention of the fine applicable. But curiously no reference is made of 27 MHz ch. 9 being accorded the same status, an oversight which should be corrected or at least clarified at the first opportunity.

Repeaters

The revised DOC14 contains a number of substantial changes regarding UHF CB repeaters, and I would advise potential and current repeater sponsors to obtain a copy and read the relevant sections carefully.

To begin with, DoTaC no longer places a restriction on the number of repeaters in each area. Previously only three services were allowed in each capital city (two general purpose and one emergency) and one in other areas. As UHF CB repeaters flourished this limit became out—dated and you only have to look at any capital city and many regional areas to see it has been ignored for years. So it is pleasing to see it officially dropped and a more flexible attitude adopted.

23. Applicants for repeater station licences must recognise that ...
..(h) the issue of the licence will be reviewed if a licensee has not commissioned the repeater station twelve months after the initial licence was issued;

At last ! This newly-added paragraph recognises and sets into concrete a ministerial decision made in 1986, when UHFers became concerned that although a certain repeater had been licensed for some years it had not yet appeared on air. After many appeals they approached the Minister of the day, who replied that when a service had been licenced but not operational for twelve months the Dept. could request an explanation and where possible a commitment to establish the service as soon as possible.

23(h) goes one better by changing 'could' into 'will', with a review of the licence implying that approval may be withdrawn. There have been some half dozen cases where individuals, clubs and even retailers have held a licence without commencing service, effectively blocking any moves to establish a working repeater.

Well done, DoTaC, and not too soon.

22. Repeater stations may be authorised to operate as transportables under certain conditions which include:

(a) No formal frequency assignment will be made for transportable repeaters.The licensee can select any CB channel, but it cannot be the same frequency as an existing repeater within 100 kms. (b) The transportable repeater operates on a no-protection/non- interference basis and on a secondary basis with respect to fixed CBRS repeaters, ie the transportable CBRS repeater is to cease operation if interference is caused to an existing fixed CBRS repeater.

(c) The licensee must advise the relevant State Manager of the proposed station location and the channel to be employed prior to commencement of operation.

(d) The licensee cannot operate a transportable repeater at the one location for a period of more than one month without prior approval from the relevant State Manager.

For the first time, transportable 477 MHz repeaters are given full recognition. This will be a relief to many potential sponsors of these devices, who in the past have often had to surmount massive paperwork in order to obtain their licence.

In the past transportables were generally allocated to ch 8/38, a decision which became less practical as the repeater network grew and more fixed 8/38 services were established. That any channel may now be used, the choice itself becoming the responsibility of the licensee and not the Department, will eliminate many problems of co-channel interference.

Paragraph (d) is a well-placed guard against transportables becoming surrogate fixed services, especially in instances where applications for a fixed repeater licence have been refused.

25. Subject to the above conditions, repeater stations may be established at distances seperated by:

— except for co-channelled or emergency repeater stations as detailed in the following points, not less than 20 km; or

— in the case of co-channelled general stations (ie operating on the same channel/frequency pairs), not less than 100 km; or

— in the case of stations operating on the emergency channel pair (3/35) (sic), and with the proviso that an omni-directional antenna with 5 degree beam down-tilt is used, not less than 75 km.

In all cases, an antenna system configured to restrict coverage to the required service area will be stipulated, at the discretion of the Department, but will be such that the EIRP does not exceed 21 watts.

Two significant changes which should improve the repeater service no small amount.

The introduction of minimum distances between repeaters should help to reduce interference due to co-channel allocations. Consider the situation which developed when repeaters in Wollongong and Sydney (less than 100 km distant) were both given 8/38. Users from both cities endured a year of interference and it was only because the Riverlands Repeater Group volunteered to shift to 4/34 (and then spent some time convincing DoTaC to let them) that each repeater was able to provide a fully effective service. Under the new DOC14 this would never have occured.

Some readers may even prefer a greater seperation, citing as example the summertime ducting between the 1/31 repeaters iof Sydney and Newcastle. But with the limited repeater channels available being shared by an increasing number of services, we must accept occasional ducting will always be a problem.

Under the new rules no repeater can be located within 20 km of another, regardless of channel. This will cut down over-servicing of some areas, which results in a short-fall of available channels at a later date;

Additionally, the antenna system of a repeater may now be designed to employ any radiation pattern desired by the licensee, provided it keeps within EIRP limits. Another step towards a more flexible service — the former DOC14 restricted licensees to an omnidirectional system and required special approval for directional antennae.

There are numerous districts, especially in the country and along the coast, where peculiarities of local terrain or population spread can now be catered for by using a directional pattern designed with the service area in mind.

Unless of course you want to give a full-quieting signal to the sheep.

24. CBRS operators should avoid:

— using repeaters for short range communications; and

— using the channels assigned to a repeater when in communications range of the repeater.

More evidence of the Department's new approach. While neither of these actions are an offence in themselves, they are sensible guidelines and DoTaC is to be commended for including them in an effort to better educate CBers.

CBA definitely would have preferred that DoTaC make some efforts at consultation with CBRS users before such revisions. The end results may well have been the same, but the principle of public input should be maintained to ensure that any changes are for the better. In this instance they were, and DoTaC is to be credited for them.

ends

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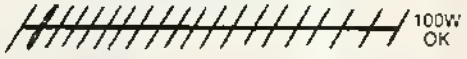

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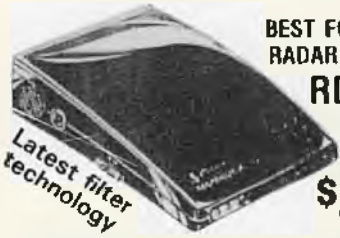

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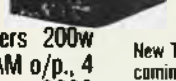

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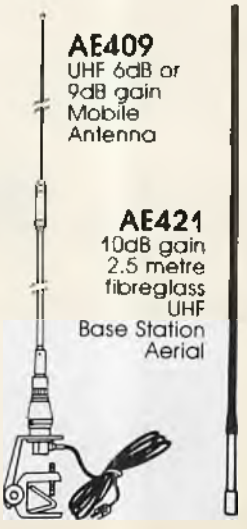

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Bandspread

Welcome to Bandspread, the column that covers area of interest from 'DC to Daylight'.

If 27MHz or VHF is where you are, or if you are a scanner user, shortwave fanatic, amateur radio operator, or a combination of everything, drop me a line.

Possibly you have picked up some new gear, and want to let everyone know how good you think it is, then write a few lines to me for the widest coverage.

Remember, to read about it, you have to tell me about it. Address your news to P.O. Box 514, Toukley, NSW, 2263.

SANTRONICS NOW UNIDEN

Late news, however here it is.

Starting April 1989, Uniden Japan took control of the Santronic Corporation in Australia. This achieves one step marketing which is Uniden Corp's global concept. What this means is that Uniden has complete control over their Australian operations. The advantages for the scene here is the possibility that the full range of Uniden products may well be introduced to Australia, rather than the ones Santronic have chosen to import.

Examples of this range include the PRO-800 AM/SSB base unit, and the extensive line of scanners, many of which have been previously imported by Lee Andrews.

The same applies to the Uniden HR-2510, a 28MHz mobile all-mode ham radio which has proved popular overseas — and again Lee Andrews has been importing these and they are selling well, especially in their 26-30MHz modified form.

A few interesting points about the Uniden HR-2510 'ham radio'. The radio divides the bands up into 500KHz segments, giving each a 'channel number' based on a 10KHz spacing, eg 28.5MHz is called channel 15 in that band, along with full frequency readout.

Anyway, the unmodified ham version of the HR-2510 has all channels at 10KHz steps. Fair enough, but, when modified with slid down to CB frequencies, it automatically designates channel 1 as 26,965 MHz and progresses through to channel 40 at 27.405MHz — fully observing the occasional 20KHz jumpers nearer to the bottom of the band and the fact that 25 and 25 are BELOW 23 in frequency. The bottom line is that these companies try to convince us that the rig is designed SOLELY as an amateur rig. Think about that lot for awhile.

Still, it is allmode, just about all-feature and would look great next to all the rest of the radios, just kidding DoTaC!

120 CHANNEL FM

Last issue an article on 27MHz FM appeared, complete with a reproduction of an advertisement for the HY-Gain V/2795 (120 channel AM/SSB/FM) to show what gear was available back in the 70s.

The company advertising was Marr Communications — now Argent, with the same phone number as that shown in the ad — and Argent have been flooded with calls from people wanting to know if it is still available.

Such is the demand for 27MHz FM radios that some of the big name opposition companies have called to try to get stocks.

Just the shot for some enterprising types out there, though I assume non-type approved radios might be a little difficult to import these days.

FIELD DAY ON JULY 2

The Sydney Radio Group has announced the date for their 4th Communications Field Day.

It is to be held at the St Ives Showground, Mona Vale Road, St Ives, on Sunday 2nd July.

For all of you that have not had the opportunity to attend any of the Sydney Radio Group's previous field days, a brief rundown on what to expect. The Field Day encompasses all aspects of communications and related electronics. A 'buy and sell' market also operates for new and secondhand equipment. Previous field days have had excellent displays of operating satellite equipment, amateur television, radio teletype, fax, citizen band and other related displays. Further info relating to the Field Day can be obtained from Graham Cotterell on (02) 467 1833 during business hours. Just have to pray for the usual weekend weather (rain) to stay away.

THE CAPTAIN OPENS IN BRISBANE

Now for something new for the people of Brisbane — 'the Captain has landed'. Not from 'up there' but from down here! Captain Communications have just announced the opening of their newest store at 3401 Pacific Highway, Springwood, Qld. Now banana-benders don't have to travel all the way to Sydney to check out the Captain's extensive range of communications equipment, just down the road at Springwood or phone the happy staff on (07) 808 5122. But, is the northern outlet somewhere for the Sydney staff to go and relax when the weather down here gets to them??

AMATEUR TRANSCEIVER KIT

Regular readers of CBA's sister publication, Amateur Radio Action, would have noticed the articles on kit building, and the rundown on constructing the amateur HF tranceiver. The HF transceiver kit features 30 watts PEP output over any 500KHz segment within 2 to 30MHz. The builder/writer of the article was very enthusiastic about the kit, and presented his approach to construction in a way that should spur on all the adventurous radio types to have a go. The last paragraph sums it all up, quote, "I hope this kit will be around for a long while, Dick Smith. It is unique in the world as far as I can see and is a credit to the Dick Smith organisation."

After such a glowing write-up, I was impressed and checked it out. Guess what, out of stock, and the further response was that, not only was the HF transceiver kit to be discontinued, but the other VHF/UHF kits are being phased out as well.

So much for the kit being around for a while yet.

It would pay to hotfoot it down to your local Dick Smith store to reserve your kit before it is too late. Better still, ring DSE head office and ask why such an excellent kit is to be discontinued.

If amateur radio is to continue to expand and continue in this country, then these kits are the ideal way for people on budgets to get involved in the hobby.

How about it, DSE?

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UNIDEN BEARCAT 200XLT

Uniden's latest release – the BEARCAT 200XLT. A solidly built scanner which offers a number of features new to the scanner scene.

The BEARCAT 200XLT has coverage of the 800MHz band, which includes Telecom's 'Mobilenet' cellular phone system, the Australian trunked radio network and many new two-way services in the crowded capital cities.

FEATURES:

- 200 channels in ten banks
- VHF air/mid/high, UHF low/mid/high (800MHz) bands
- Ten priority channels
- Full scan/search function
- Scan lock-out
- Rugged carry case
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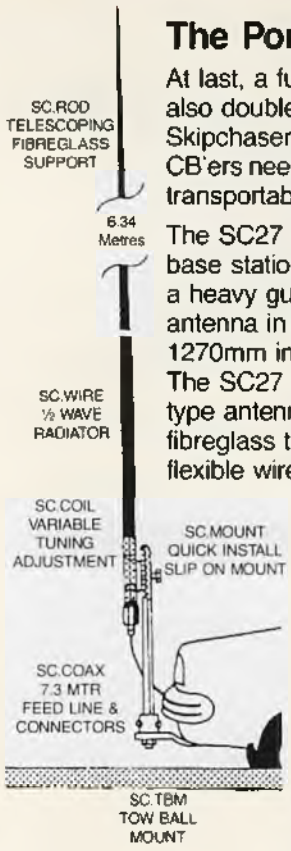
SPECIFICATIONS:

- Channels 200 (10 x 20ch banks)
- Frequency range 66-88/118-174/406-512/806-956 MHz
- Scan speed 15ch.sec • Power 12Vdc • Weight 570 g
- Search speed 25 freq/sec

The Portable SC27 SkipChaser



At last, a full size portable antenna which can also double as the base antenna. The Skipchaser is the perfect answer for those CB'ers needing base station performance in a transportable package.

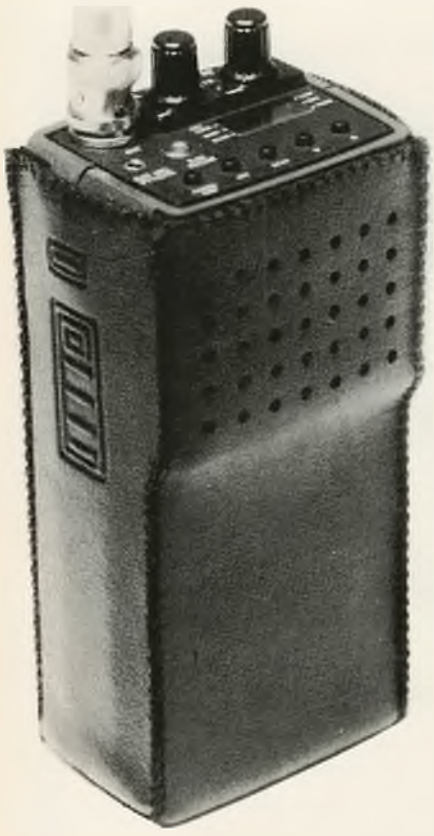
The SC27 is a completely portable 27MHz base station antenna. It is supplied backed in a heavy guage polythene bag and the whole antenna in its disassembled form measures 1270mm in length.

The SC27 is a half wavelength end fed dipole type antenna which relies on a telescoping fibreglass tube assembly to support the flexible wire six-metre long radiator.

The tuning unit, when fitted, can easily lower the VSWR down to 1.2:1.

To secure the SC27 on your vehicle, the antenna comes equipped with its own steel mast with a coupling designed to fit a standard size tow ball.

A full 24 feet of RG58c/u cable is supplied complete with PL259 connectors at each end.



REGENCY AR477 UHF HANDHELD

If you've been waiting for a 477MHz handheld with electronic channel selection, scanning and channel lock-out, plus channel programmable duplex, LCD readout and five watts up the stick, this is it!

The AR477 is the first 477MHz handheld which is smaller than the antenna! The crucial dimensions are 125 x 50 x 40 and it weighs in at just 44 grams. For such a compact radio, the AR477 really packs the features in.

Earphone, battery charger and speaker mic sockets are fitted. The scanning function covers the chosen band in two seconds. A one-second delay allows the other side of a conversation to be heard. A channel lockout is provided.

Other functions include a programmable duplex function and a keylock function which disables the keys. A charger and ni-cads are supplied plus 9V "transistor" terminals.

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According to CB gossip, Werner Wulf is a ripoff artist who makes lousy antennas. We'd like to set the record straight. The truth is that Werner's reputation for honest dealing and quality workmanship was ruined through no fault of his own. He's about to start making antennas again, and we'd like to welcome him back. (We think our antennas are the best, but if we didn't, we'd buy one of his).

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SSB ENGINEERING . . VOLUME 2 covers "second generation" PLL rigs, has updated information on many of the older rigs, and includes some build-it-yourself test equipment projects. Price $17.50 including postage.

SSB ENGINEERING . . VOLUME 3 covers the latest PLL ICs, has a ham radio modification section and an AM-to FM CB conversion section. Price $20 including postage.

THE CB PLL DATA BOOK is the CB modifier's Bible. This all-new International Edition covers over fifty specific phase-locked loop ICs, with manufacturers' cross-references. Price $15 including postage.

THE SCREWDRIVER EXPERT'S GUIDE will enable the average non-technical CBer to locate and repair up to 95% of CB radio problems, as well as helping the advanced hobbyist to tune and modify his equipment for improved performances. Price $15 inlcuding postage.

THE CB MODIFICATION HANDBOOK covers Australia's most common CB radios. Everything from a few extra channels to full-house conversions covering hundreds of channels, 5 kHz steps, increasing power, slides etc. Price $15 including postage.

THE LINEAR AMPLIFIER HANDBOOK has thirteen complete transistor amplifier plans, HF, VHF AND UHF, from 15 watts to 1000 watts, full parts lists, component layouts, and full-scale printed circuit negatives take the mystery out of building your own CB or ham linear. $15 including postage.

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NEW SELCALL MODULE FOR PHILIPS FM620

A Melbourne company has produced a new 'Selcall' module for the popular Philips FM620 UHF transceiver.

GSA Technology's GSA2112 selective-calling module transports the *full range* of commercial signalling features into a wholly-Australian UHF CB rig for the first time, and allows users to program more than 100,000 different five or six-tone frequency sets to allow only chosen signals to be heard. Although there's no coding of transmissions, the system allows complete filtering of unwanted signals.

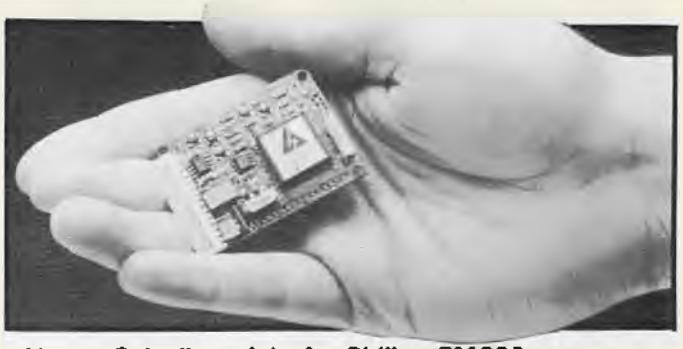
Measuring just 80 X 40 X just 10 mm, the entire module fits out-of-sight inside the FM620.

Despite its small size, the microcomputer-controlled board is cram-packed with the latest technology, and allows simple programming of no fewer than six different types of tone sets. It utilises the latest 'surface-mount' construction technology and a tough 'through-plated' printed circuit board for efficient operation and rugged dependability.

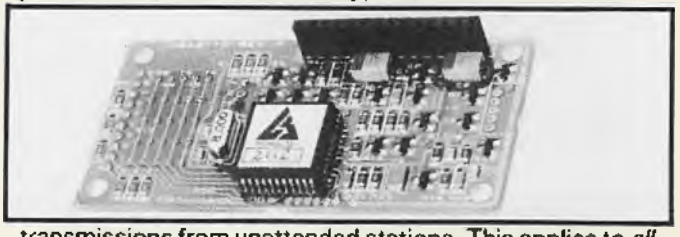
Transceivers with the GSA unit installed are compatible with *all* other rigs using *any* of the various international-standard tone set systems. They also offer user-selectable sixth-tone signalling options including alert states or agreed code messages such as 'away from vehicle', 'out to lunch' or other agreed code messages.

Provision has also been made for the rig to *automatically* respond to any calls sending the correct tones. Obviously, the clever sixth 'status' tone comes into its own in these cases, allowing the remote station to 'interrogate' the radio to request a status whether the operator is present or not.

Regular readers of **CB Action** won't be surprised to learn that our wireless regulations have failed to keep pace with this kind of technology. Despite the obvious safety benefits of auto-response systems DoTC *specifically bans* transmissions from unattended stations. This applies to *all* transceivers used in Australia — unless you get yourself licensed as a repeater, of course!



Above: Selcall module for Philips FM620 measures just 80mm x 40mm x 10mm while five tone sequential encoder/decoder shown below measures slightly smaller 50mm x 37mm x 6mm. Both are produced by GSA TEchnology Pty Ltd.



Contact GSA Technology, 1 Hall Street, Hawthorn, Victoria 3122 or phone (03) 822 7858 for more information.

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5. Leopard $369
6. Elect TX472S $469
7. 4dB non ground plane antenna $28
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9. UHF 10dB base antenna $150
10. UHF 12dB base antenna $179

MARINE RADIOS

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SCANNER AERIALS

HERE'S THE RUN DOWN ON

USED SW RECEIVERS

This is part two of STEPHEN NEWLYN's report on used SW receivers and covers Sony, Yaesu and several less well-known manufacturers. Part one appeared in the May/June issue.

Perhaps the most innovative manufacturer of shortwave receivers is Sony.

Although this used receiver article is essentially covering radios made after 1974, Sony did make a number of SW radios before that time which should now be collectors' items.

Sony has changed direction in recent years and is now into manufacturing 'high class' portables, however, in the early 1980s it also had a wide range of 'tabletop' communication receivers including one model (CRF-1) which had performance equal to professional units.

This proved that the company had the ability to compete with Kenwood or ICOM in the specialised communication receiver market.

In a recent development Sony has announced the release of a $6000 receiver with 350 memories, CRT tuning, FAX reception with built-in printer, SYNC tuning and many other extras, however, it is unclear whether this unit is a 'showpiece' or is due for serious production.

NOT ONE CANNED BY THE CRITICS

Since the mid-1970s Sony has been making its name with very good quality SW receivers and of the many sets released by this company during the past 15 years not one has been 'canned' by the critics — some of them had design faults, but, on the whole if you purchased a Sony receiver you were (are) buying quality.

The Sony ICF-5900W (which was released in 1976) was, at the time, a 'must have' radio for anyone serious about shortwave listening.

It had SW coverage from 3.9MHz to 28MHz with an unfortunate gap between 10MHz to 11.7MHz due to the circuitry design, SSB reception, S meter and a dial accuracy of 10kHz — all in a portable with the measurements of just 223 x 234 x 102mm.

Its performance was good, but, a new generation of receivers was already in the planning stage at Sony which made the 5900W look a bit out of date by comparison.

Between the eventual release of its 'new generation' receivers to replace the then current range Sony released a small but important unit to the range called the ICF-7600 — this was the forerunner to a series of receivers with the ICF- prefix. It featured MW/FM and five SW bands which were covered by a reasonably accurate analogue scale.

It was, at that time, one of the smallest receivers manufactured to have good performance, however, the 7600 had no SSB reception and only had 'single conversion' circuitry (a follow up receiver called the ICF-7600A was released in 1982 with 'dual conversion' and seven SW bands).

Both the 7600 and 7600A are sized 179 x 117 x 31mm (width, height, depth).

NEW GENERATION RECEIVERS

In 1978 the first of the 'new generation' SW receivers was launched on the expanding marketplace.

The ICF-6700W was a 'table top' unit with (at that time a rarity on consumer radios) an LED digital readout with an accuracy to within one kilohertz, frequency stability of plus or minus 200 Hertz, good SSB reception, an analogue dial showing approximate frequency, inbuilt telescopic antenna and good audio reception.

It covers MW, FM and SW 1.6MHz to 30MHz with a gap between 10.4 and 11.4MHz — again due to the design circuitry. Its size is 453 x 184 x 227mm (WHD).

A good receiver and perhaps one of the best produced by Sony is the ICF-6800W. Released in 1980, it had PLL (Phase Loop Lock) tuning, digital readout to the nearest kHz, an analogue dial accurate to five kHz, excellent audio, frequency coverage of MW, FM and 1.6MHz to 30MHz in 30 bands, good reproduction of SSB signals and good frequency stability.

Its size is the same as the ICF-6700W and its inbuilt telescopic whip and carrying handles makes it a 'large portable' to take on camping trips, however, Sony released two versions of this radio and the later version can be identified by orange lettering on the lower front portion of the radio and a serial number above 30,000.

Both version are good receivers and good luck to you if you can locate the later version.

CRF-1 IS ONE OF THE BEST

The CRF-1 size of 260 x 100 x 330mm (WHD) plus its continuous coverage of 10kHz to 30MHz (accurate to the nearest 100 Hertz) and excellent stability (plus or minus 10 Hertz) makes it one of the best portables the company has ever produced.

Apart from the unusual tuning system which involves rough tuning using an analogue scale to within 100kHz of the desired frequency then, with the main tuning knob pushed in, fine tuning, the CRF-1 was designed in the late '70s and is a 'classic' receiver from that period.

A receiver which is not widely known is the CF-950S — an analogue only readout receiver, SSB reception and SW reception from 1.6MHz to 22MHz. An unusual feature of this unit

Left: Sony ICF-2001 was released in 1980 and was the first to have 'keyboard entry frequency'.
Right: The Yaesu FRG-7 introduced thousands of people to shortwave listening away back in the 70s.

is a built-in cassette recorder and this radio is classified as a 'large portable'.

It would have to be said that the most exciting thing to happen to SW receivers during the past 15 years is 'keyboard frequency entry' — the ICF-2001 was the first consumer (table top or portable) radio with keyboard entry.

Released in 1980, it made SW tuning much easier and established a whole new way of tuning a shortwave receiver. Covering FM, MW and SW 1.6MHz to 30MHz with an accuracy of one kiloHertz, its only major drawback was high battery consumption so a 'mains' adaptor was a must when buying this radio — also, the lack of a conventional tuning knob meant that you had to tune via up/down buttons which was, and still is, annoying.

Overall, however, not a bad set !

In 1983, just when you thought the 2001 was the ultimate portable radio, Sony came out with the ICF-7600D. Measuring only 179 x 117 x 31mm (WHD) it featured ten memories, 12/24 hour clock, digital readout (accurate to the nearest kHz), SSB reception and MW, FM coverage. No problems with this unit and a good performer. An updated version was released in 1987 called the ICF- 7600DS and there is no significant difference between them.

In 1985 a receiver was released that, if compared with a 'professional' communications receiver of, say, 25 years ago would win convincingly — so what you say ! Well, that's not the end of it.

Sony, listening to criticism of its earlier 2001 model, released its ICF-2001D. This is a portable measuring 288 x 158 x 55mm and covering MW, FM and SW 150kHz to 30MHz plus the 'airband' 116MHz to 136MHz.

Frequency stability is plus or minus 50 Hertz, frequency accuracy is plus or minus 100 Hertz, it has excellent SSB demodulation, AM sync tuning (automatic tuning of the clearest sideband of an AM signal), 32 memories — which store both mode and frequency — 12/24 hour clocks, scan and search modes, keypad and manual tuning with a conventional tuning knob, on/off timer settings plus all the usual features you would find on a 'tabletop' communications receiver.

This set is still being manufactured — but, the Aussie price is a whopping $900.

At the opposite end of the scale is the ICF-5100 which is the latest in very small radios produced by Sony. Similar radios called the ICF-4800, ICF-4900 have been produced in the past but all have limited band coverage and no digital readout.

The 5100 for example has FM, MW and coverage of the 49, 41, 31, 25, 19, 16 and 13 metre bands in a case measuring 144 x 76 x 25mm (WHD). However, according to most independent reviewers the set suffers from images and poor audio.

SONY'S ULTIMATE IN LATE '70s

Sony's flagship during the late '70s and early 80s would have to be the CRF-330K. Measuring a huge 451 x 349 x 207mm, this set has frequency coverage of LW, MW, FM and SW 1.6MHz to 30MHz with PLL tuning accurate to the nearest kHz, digital readout, quartz clock,, manual tuning (very accurate analogue dial with one kHz accuracy) plus a built-in cassette recorder.

At the time of its release it was considered the 'ultimate', especially with its outstanding audio reproduction.

However, with Kenwood, ICOM, Yaesu and JRC products now widely available it could not be considered a worthwhile purchase — even secondhand.

In 1988 Sony released its replacement for the ICF-7600A.

Called the ICF-7601, it has ten SW bands plus MW and FM. Using 'dual conversion' circuitry on SW, it covers the 120, 90, 60, 49, 31,, 25, 22, 19, 16 and 13 meter bands and all have extended coverage so that any 'out of band' broadcasters can be heard.

Although this radio does not have digital readout or keypad tuning, it does its job very well for the price and its size of 192 x 122 x 35mm makes it ideal when travelling.

Another interesting product from this company is the ICF-7600DA which looks like a conventional SW radio but isn't. It has a digital readout which looks like an analogue dial and also has a digital display which only reads to the nearest five kHz and has no SSB tuning.

It measures 186 x 117 x 32mm, however, it may be advisable to choose a model such as the ICF-7601 or 7600DS which give good value for money performance.

Yet another innovative product from Sony is the PRO-80 SW receiver/VHF scanner. Looking very much like a handheld transceiver, it has coverage from 150kHz to 108MHz, SSB is possible and 40 memories and scanning modes are available. An earlier (and similar looking) radio called the AIR-7/8 was available in the early '80s but had limited SW coverage which was only up to 2 MHz plus LW, MW, FM, AIR and VHF-HI.

PRICES:

ICF-5900W **$150-$200**, ICF-7600 **$60-$80**, ICF-7600A **$80-$100**, ICF-6700W **$350-$400**, ICF-6800W **$400-$500**, CRF-1 **$600-$700**, CF-950S **$300-$350**, ICF-2001 **$250-$300**, ICF-7600D **$350-$400**, ICF-2001D **$600-$700**, ICF-4800/4900B/5100 **$50-$100**, CRF-320/330K **$700-$800**, ICF-7601 **$200-$220**, ICF-7600DA **$300-$350** and the PRO-80 **$600-$700**.

YAESU:

Although no portables have been manufactured by Yaesu, its sets are likely to appeal to someone looking for 'something extra'.

The company's 'classic' receiver would have to be the ubiquitous FRG-7.

Housed in a case measuring 340 x 153 x 290mm (WHD) it had general coverage tuning from 500kHz to 29.9MHz with a frequency stability of plus or minus 500 Hertz and an analogue frequency scale accurate to five kiloHertz — USB, LSB and AM signals can be heard and when using the three position 'tone' control the audio can be adjusted to best suit the signal being received.

The FRG-7 is a product of mid-1970s technology and was the first 'general coverage' receiver launched by Yaesu although two 'amateur only' receivers were available from this company prior to the FRG-7 — these were the FR-101S and FR-101D.

AOR

THE 21st CENTURY **AR3000**

100 kHz ▮▮▮▮▶ 2036 MHz continuous
LF-MF-HF-VHF-UHF-SHF all mode AM-SSB-FM
monitoring and surveillance

PROFESSIONAL RECEIVER

The AR3000 now extends your listening horizons further than anyone believed was possible. Covering the entire frequency spectrum from 100 kHz to 2036 MHz without any gaps in the range, the AR3000 brings the general coverage receiver to a new level of performance and utility.

Not only will the AR3000 cover the widest range of any receiver so far on the market, it will allow listening on any mode. USB, LSB, CW, AM, FM (wide), FM (narrow) — all are provided in the AR3000.

Tuning rates are user selectable from ultra-fine 50 Hz steps for SSB and CW, right up to 100 kHz steps for the UHF communications and TV bands. A slight pull on the spring-loaded tuning knob will increase the tuning speed by a factor of 10, for really fast tuning.

No less than 400 memory channels are provided, arranged in four banks of 100, and each channel will hold frequency, mode and RF attenuator setting. The first channel of each bank can be used as a priority channel, thus giving four priority channels in all.

No less than four search bands are available, and each search band can be programmed by the user to operate anywhere in the tuning range of the receiver. As an aid to searching, up to 48 individual frequencies can be locked out to prevent the receiver stopping on continuously-occupied frequencies.

The performance of the AR3000 is guaranteed by the use of 15 band pass filters before the GaAsFET RF amplifiers, unlike previous generation receivers which use broad-band untuned-input circuits. The AR3000 thus has high sensitivity across its entire tuning range, and equally outstanding dynamic range and freedom from intermodulation effects.

An RS232 port is provided which allows full remote control by computer of the following facilities:
Frequency.
Receiver Mode.
Frequency Steps.
Writing to Memory.
Recalling from Memory.
Squelch On/Off.
Signal Strength.
RF Attenuator On/Off.
Memory Bank Changeover.

The comprehensive front panel gives readout of all important parameters including signal strength on a high-contrast liquid crystal display, which is illuminated for use in low-level lighting. The display includes a real time clock for accurate log keeping, and there is also a timer for unattended monitoring.

The AR3000 is powered from any 13.8 Vdc supply, and a suitable mains power supply is provided with the receiver.

Write for specifications and colour brochure.

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QUEENSLAND
416 LOGAN ROAD, STONES CORNER
QLD 4120.
PHONE (07) 394 2555

USED SW RECEIVERS

The FRG-7 was sold initially without a 'fine tuning' control, however, later models incorporated this desirable feature.

To sum up this unit — a good buy !

THEN CAME THE FRG-7000

In 1977 Yaesu released the FRG-7000, a 'digital' version of the FRG-7 and which had a 24 hour clock, on/off timer, SSB/CW reception and good audio from the standard speaker. Essentially there are no major differences between the 7 and the 7000 other than better frequency stability — the latter measures 360 x 130 x 300mm (WHD).

The FRG-7700 was not only a significant advance in receiver technology, but, it also introduced a whole new range of accessories using the 7700 prefix — in particular the FRT-7700 antenna tuner.

Becoming available in late '81 early '82, the 7700 was greeted with general enthusiasm by most people. The set featured an accurate to one kiloHertz digital readout, high frequency stability, 24 hour clock, optional 12 memories, accurate analogue scale (5 kHz), on/off timer, squelch, AM, SSB and narrow band FM and, surprise, an accurate signal meter.

7700 — BEST TO DATE

The performance of this set is good and it outperforms Yaesu's previous efforts — perhaps the only grizzle is that memories are not provided although the rig has the controlling switch for them, however, the internal circuit board must be purchased separately.

The most recent offering from Yaesu is the FRG-8800. Released in 1984, this is Yaesu's first receiver with keypad tuning, it also has 12 memories, scanning, 100 Hertz frequency accuracy, high frequency stability (plus or minus 80Hz) and AM, SSB and NBFM (narrow band FM) modes and an LCD bargraph type signal meter plus, naturally, manual tuning.

While this receiver is a good performer you should also consider ICOM's IC- R71 or Kenwood's R-5000.

PRICES:

FRG-7 **$200-$250**, FRG-7000 **$250-$300**, FRG-7700 **$350-$400** and the FRG-8800 **$600-$700**.

OTHER MANUFACTURERS:

Although I have listed the major manufacturers of SW receivers there are others who have watched what's happening in this facet of the industry and decided to become a part of it — usually with only limited success.

The R.L. Drake Company of the USA, a well known manufacturer of amateur and satellite equipment, released a general coverage communications receiver (0.5 to 30MHz) away back in 1977.

Built in Japan by the Seiwa Corporation, it had analogue readout accurate to within five kiloHertz and a frequency stability figure of 500 Hertz. The Drake SSR-1 was a reasonable performer and, at the right price of $200-$250 is a good buy.

Also from the same company, but manufactured in the USA, is the R7/R7A series of receivers. These are top-of-the-line radios with everything about them being first class quality — with one minor exception. Frequency stability does not compare with other 'high performance' receivers and the cost is high at between $800 and $900.

Philips, better known for its TV sets and refrigerators, has recently released two new receivers. The first is the D-2935 portable with digital readout, nine memories, coverage from 150kHz to 30MHz plus FM.

The second is the portable/tabletop model called the D-2999 with frequency coverage of 150kHz to 30MHz plus FM, 16 memories, clock/timer and scanning facilities.

Both sets are manufactured in Hong Kong to Philips specifications, however, at the time of writing it is unclear whether these sets are widely available in Australia.

Overseas' critics have suggested that the D-2935 is the better of the two, but, a later version of the D-2999 has also received plenty of praise.

The German firm Grundig produce good quality portables, but, few are sighted in Australia.

Two are worth looking at if you can find them.

The Satellit 3400 and Satellit 650 are both huge portables offering excellent audio, general coverage tuning, SSB reception plus memories/preset. It's difficult to give a secondhand price due to their rarity in this country but a figure of $500-$650 sounds fair enough to me.

Vega, Selena or Spidola — do any of these names ring a bell ?
If not I'll explain them to you. These are the names of USSR manufactured SW radios which in the mid to late 70s were widely marketed by a company called Electroimpex.

The Selena is the better of the batch with more metre bands included, however, with the cheaper and more modern 'digital radios' they are now not worth much — probably about $60-$100.

Back to Sony for a moment or two.

The ICF-SW1 is a classic example of Sony technology in action.

With a size only slightly larger than a cassette tape, it has a digital readout, keypad tuning, clock/timer, 10 memories, FM stereo reception and up/down tuning, however, you need to buy a ICF-SW1S (S means system) to use this receiver effectively.

The system includes an active antenna, stereo headphones, and an attache- style case in which to carry everything. However, the 'system' available in Australia does not come with the 'auto-voltage' power supply (at least not to my knowledge) because of the necessity to obtain approval for that type of power-supply from the authorities.

Its price is very high — around $800 for the complete system, but, the radio itself is very compact and performs well.

(There is a comprehensive report on this radio in the Nov/Dec '88 issue of CB Action).

I hope that this look at secondhand receivers has given you a better and clearer insight into both the radios and their likely prices.

Yeasu FRG-7000 was a 'digital version' of the FRG-7 and hit the market in 1977.

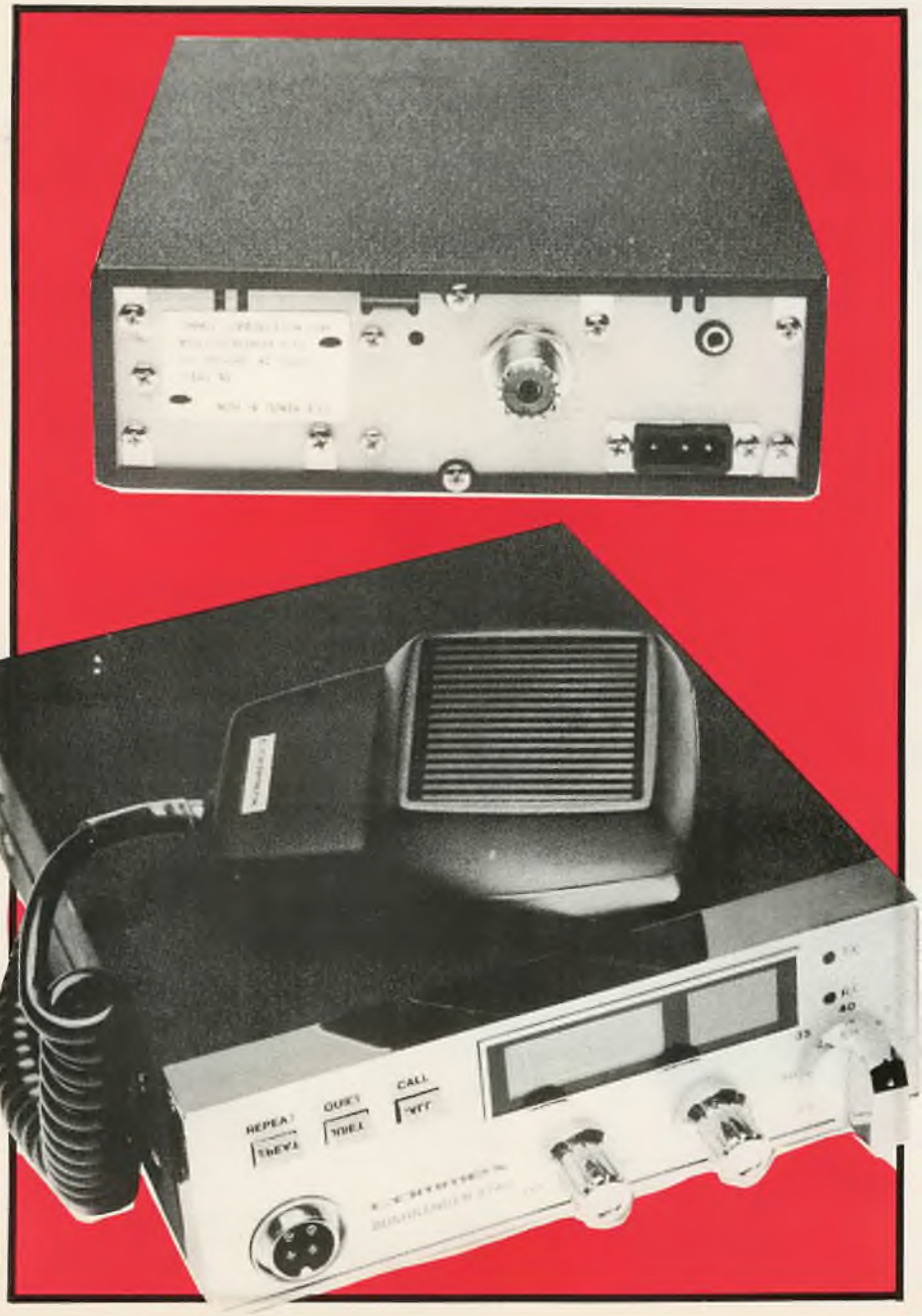
ROD FEWSTER REVIEWS THE NEW

BUSHRANGER UHF-CB

The Bushranger UHF-CB is the first release from Brisbane-based importer Commex Communications Corporation and a 'Plain Jane' if ever I saw one, but although the front panel looks Spartan alongside the latest upmarket AM and SSB transceivers the Bushranger has every feature needed in a UHF rig, including performance to spare.

The front panel is presently available in either silver or black. Controls are fairly standard .... rotary ON-OFF/VOLUME, SQUELCH, and CHANNEL SELECTOR, and push-button REPEATER, QUIET (Tone Squelch), and CALL (Tone Call) functions.

(QUIET and CALL are only used if the rig is fitted with an optional selective calling module.) Channel readout is the familiar red LED variety, and every fifth channel is marked 'around the dial'.



The mike socket is positioned where all mike sockets should be positioned .... on the front panel. If you've ever tried to install a rig with a side-mounted mike neatly in a dashboard or a console you'll know what I mean. The mike itself is the usual CB type with a curly cord which thankfully is long enough to reach from the passenger's side of a vehicle without over-stretching.

A mike hanger is supplied.

The rig features TX and RX LEDs as well as an analog ('needle') S/RF meter which will please the 'what am I pushing Good Buddy ?' types no end and enable serious hobbyists to keep an eye on repeater performance variations, align their beams, etc. The rear panel sports the industry-standard three-pin DC power socket (DC power lead with in line-fuse supplied), an SO-239 antenna socket, and an extension speaker socket.

The case is finished in the usual crackle-black found on most CBs, and measures around 195mm x 160mm x 53mm not counting knobs, antenna socket and mounting hardware.

The black-enamelled steel mounting bracket is substantial and features a three-position angle-adjustment slot. The rig is attached to the bracket with large plastic-headed mounting bolts .... not the usual one-per-side but TWO on each side. Rubber washers fit between the rig and the bracket, and once it's fixed in position the Bushranger will stay there through thick and thin.

The rig weighs around 1.6Kg.

I never place blind faith in manufacturer's specifications. Some of the rigs I've tested over the years have had immaculate claimed specs but have performed like ruptured ducks on-air, which is where it all counts. Others I've tested have fallen short of claimed specs yet surprised me with their on-air performance.

The Bushranger not only exceeded the manufacturer's specifications (by a fair margin in some cases) but also performed flawlessly on-air. Transmitted audio in both simplex and duplex modes was invariably rated as 'perfect' with the supplied microphone.

I added a Voicecraft DM-453 electret condenser 'power' microphone for a while and the audio reports jumped to 'studio quality' (generally speaking, 'power' mikes are useless or worse on FM, but if used correctly a decent electret condenser mike can make Donald Duck sound like Richard Burton).

Received audio is what's commonly referred to as 'two-way quality'..... a little on the harsh side for my personal liking but deliberately made that way to cut through background noise while mobile. This seems to be the current trend among CB radio manufacturers .... they ALL sound a bit harsh to me (maybe old age has affected my lugholes).

I guess any serious hobbyist using a Bushranger as a base station would add a more mellow-sounding extension speaker anyway. The receiver itself was nothing short of brilliant.

With the Bushranger hooked up to an Antenna Agencies 12dB base stick I could hear (but not trigger) the 2/32 Gunalda repeater quite clearly....something I've never been able to do without the benefit of tropospheric ducting with any other transceiver apart from the type-approval sample 'Ranger' I played around with a few weeks ago (the receiver sensitivity for 12 dBSINAD on the type-approval sample was an amazing 0.23 microvolts).

I figured that this was a specially-tuned example of the breed, but the randomly-selected rig I used for this Test Report tested out a whisker under 0.29 microvolts.

The internals are clean and well laid-out, and the rig should be a breeze to service. Obviously the Ranger factory is taking quality control seriously.

The Bushranger is well-protected against reversed-polarity connection. To test this I deliberately hooked the rig to a 12 VDC battery backwards then re-connected it the right way around, and it still worked fine !! (Don't try it yourself though. Reversed-polarity barbecues aren't covered by warranty.)

Conclusion .... excellent value for money. The recommended retail price is $399, but check around for prices before you spend your money. There are bargains around.

For the technically-minded, here are abridged manufacturer's specifications together with actual bench test figures produced with an IFR 1200S monitor.

The test transceiver, Serial Number 900346, was selected at random from the stock shelves. Tests were performed on channel 24 (477.000 MHz) after a 10-minute warmup.

TRANSMITTER SECTION	MANUFACTURER	ACTUAL
Frequency Tolerance	± 0.5 kHz	-0.13 kHz
Carrier Power	5.0 Watts	4.83 Watts
Current Drain	1.5 Amps	1.37 Amps
Modulation Frequency Response (1 kHz 0 dB reference at 600 Hz Deviation)		
Lower at 500 Hz	-6 dB	-6.3 dB
Upper at 2.5 kHz	-8 dB	+8.1 dB
Microphone Sensitivity for 3 kHz Deviation	3.0 mV	2.7 mV
Maximum Deviation at 1 kHz	± 5 kHz	± 4.8 kHz
Maximum Deviation at 6 kHz	± 1.5 kHz	± 1.4 kHz
RECEIVER		
Sensitivity for 12 dB SINAD	0.5 uV	0.29 uV
Overall Audio Fidelity (1 kHz=0 dB reference)		
Lower at 0.5 kHz	+3 dB	-3 dB
Upper at 2.5 kHz	-8 dB	-8.1 dB
Adjacent Channel Selectivity (± 25 kHz)	55 dB	57.3 dB
Maximum Audio Output Power	3 Watts	2.93 Watts
Audio Output Power at 10% THD	2 Watts	2.01 Watts
Hum and Noise Ratio at 1 mV Input	40 dB	42.5 dB
Squelch Sensitivity at Threshold	0.5 uV	0.18 uV
Squelch Sensitivity at Tight	2.0 uV	2.42 uV
S-Meter Sensitivity (Full Range)	100 uV	90 uV
Image Rejection Ratio	50 dB	55.2 dB
IF Rejection Ratio	65 dB	67.1 dB
Oscillator Dropout Voltage	10.8 Volts	9.8 Volts
Current Drain (No Signal)	300 mA	273 mA
Current Drain (Maximum Output)	800 mA	774 mA

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SYDNEY SCENE

by Steve Griffin

I guess I ruffled a few feathers in the last issue about all the clubs disappearing. Quite a few letters came in from the clubs, in some cases complete with application forms. Although we are not running a Club column any more (mentioned by all correspondents) I will give any club a good rap in this column.

OK, fair enough, this is a Sydney-based column, but I'll give all states a fair go.

★ ★ ★

Sydney Radio has come through with flying colors with its regular newsletters and more events are coming up. A couple of great events include the annual Field Day, which is on in July at St. Ives Showgrounds. Tied in with this will be a world record attempt at staying on radio. Mike Speed will kick the new attempt off at the BP Service Centre at Normanhurst on 1 July and must carry on until 8am, 7 July. Mike, known as 'The King', holds world records for events like showering, crawling and ironing. He also managed to crack the darts and poker machine records back in 1983-4.

Mike has come up with sponsors including BP Australia, Coca Cola, Sydney CB Radio Centre, The Lions Club and Col Crawford Pty Ltd. All proceeds are going to The Royal Blind Society and the more sponsors the better. Media coverage has been organised and the format of the overall event is good. A little something of interest is that Mike managed to pull the poker machine handle 45,000 times during which he went through a whopping $9,000.

He struck 48 jackpots and raised $3000 for the War Veterans Home at Narrabeen. Pretty good huh! How's the arm Mike? By the way, if you wish to take part on air, hunt around for him somewhere in the 40ch range. If you do manage to talk to him, he will send you a 'Commemorative QSL Card' to say that you made a good contact.

Must put in a little hello to some fine operators who have, or will be, sending QSL Cards: 25AT108 Hiro, in Japan, 201AT108 Peter, in Hawaii, 41E39 Chris, in NZ, 216 Win, in NZ, and the 454 Tom, California (USA).

★ ★ ★

Another club worth plugging is the Queensland Blue Heeler Club in Geelong, Vic. The club is going well with quite a number of members in all states and is open for membership. Although the club is national, it has state reps. Outings and meetings are arranged as often as possible. The QBH Club is a 'full-on' group in the International DX scene and has QSL cards, T-shirts and more promotional items available to members. The president of the club, Terri, has given me an impressive rundown and it sounds great. Keep up the good work and I hope you get more members because it sounds like it may become really something.

★ ★ ★

A letter also came in from the President of the LA Radio Club here in Sydney. The club still exists and Wayne tells me that most members are early birds and are on with their morning get-together on Ch.33LSB, or close to it. Others in the group are on between Chs 34USB starting at around 8.30pm. The next major event a fox-hunt BBQ, etc. will be on 18 September. The venue is yet to be advised as a large enough clubroom is being sought. Meetings are once a month, on a Wednesday night, at various locations, until a clubroom is found. Anyone with any ideas on a clubroom, hall, etc. that can be used once a month, give Wayne a call between 5pm and 7pm weeknights on 750 0078. Wayne also has a bulletin board using Commodore gear which is switched on between 7.30 and 11.30pm on the same phone number. The club is genuine and I know it has been in operation for more than 12 years. It is a radio and electronics club and a number of members also dabble in computers.

★ ★ ★

The Alfa Tango International DX Group, (you know, the one we've all heard of on SSB), is an Italian based group with members all over the planet.

All members use the country prefix (Aust .43) in front of their allocated number eg. 43AT121. Membership in this club is sought by many Australians and there are three different categories. The club contains members with a passion for DX and national and international events are organised regularly. The winners of the events are awarded with various prizes. The club has more than 100 divisions and more than 5000 members throughout the world.

Unfortunately there isn't enough space here to cover all the different categories and what they get up to but if you are a serious operator and want to be in on the goodies you can write direct to its headquarters at PO Box 140, ASTI, 14100, Italy or contact me at the PO Box below.

By the time this issue hits the newsstands I should have all the information you need. A wide range of promotional items are available to members including wall certificates, rubber stamps, QSL cards, envelopes, a big directory of members, decals (car type) and more, much more. Sounds good. . . then get writing.

★ ★ ★

A little message from deep inside says to all of you who have parents who you don't see too often to get off your bum and make an effort. Believe me it hurts to see them go. If you don't/can't see them at least keep in contact. Reason is. . . . you never know what will happen.

★ ★ ★

Another club deserving of recognition is the Ultra-Lite Radio Club of Carina in Qld. The club, which has been going strong since May '88, has monthly meetings and regular outings such as fishing trips, BBQs and fox hunts. The most recent was down from QLD to NSW for a poker machine night. Regular newsletters are sent along with a section they call 'The Sandbagger'. This section is like a candid camera that catches members 'being themselves'. (This would be phone book size in Sydney). As a club it does not canvas for members but if someone is genuine enough then they'll become part of a very popular group.

★ ★ ★

Another letter from Queensland asks why so many people use 80 channels or more. The letter stated "you would think it was CH.35 at around 7pm, even on 27.805." Hmmmm. . . . must be a few pirates up in Fewster Territory. I think there are a few here, but obviously not that many.

★ ★ ★

New products, as mentioned in a previous issue, are starting to appear on the market. The first is a nice little handheld from Imark in Melbourne. The Sawtron KQ109-40D05KW scanning portable transceiver is for use in the 450 to 486 Mhz commercial range, BUT, is also approved for UHF CB. Should the commercial operator wish to use both facilities they can be programmed to suit.

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★ ★ ★

Another little item is CB Licence application forms.

Sometimes the DoTaC runs out of forms so I decided to pick up a few. I have a couple of hundred (no wonder the DoTaC runs out — Ed) here should anyone need them. Drop me a line and I will send one to you no charge if you send a stamped self-addressed envelope. Also, the RI's have been quite active around the Hornsby to Strathfield and Glebe to Parramatta areas lately. . . . hence the reason for the forms.

★ ★ ★

That's about it for this issue so to all the clubs, keep all the letters coming, and try and get them in before the first week of the month if you want it in next issue.

Also, a few letters had no names or addresses on them (silly) and to top it off they were pretty useless stuff. One was about Ratbags and the other on magazine faults.

Look, if you have a serious complaint, don't be a chicken. We accept criticism and I think we have broad shoulders too. It's not as if we are going to bomb your antenna farm or your house. . . . well I don't think we would. . . . would we boss??? (it depends. . . . Ed).

★ ★ ★

One last thing, Dick Smith Electronics has popped up its own quality control dept. Apparently the 'Top Guns' have given the go-ahead for some serious testing at the warehouse before the equipment hits a store. It seems one company has already had a range of radios put through the wash and when the. . . . hit the fan they were returned unused. Dick Smith has set some new high standards and they aim to keep it there. . . .so look out suppliers, your wellbeing and your reputation is at stake.

I think it's a great idea.

Anyway bye for now. . . . don't forget the address is PO Box 40, Gladesville 2111. Also people know me on-air as Unit 121. Mostly not on until late. For those of you who asked, no I don't have a regular channel. . . Bye for now.

SANTRONICS NOW UNIDEN AUSTRALIA

Leading Australian electronics distributor, Santronic Corporation P/L, is now to be known as Uniden Australia following the purchase of the local company by the international giant Uniden Corporation of Japan, the world's largest producer of two-way communications equipment.

Key assets in the deal, which now forms Uniden Australia P/L, was Santronic's Australian and New Zealand wholesale distribution systems comprising 1200 dealer outlets for industrial, business and domestic communications equipment.

The agreement, however, leaves decision making in the hands of the company's existing Australian management.

Mr. Roy Metaxis, Uniden Australia's managing director and former Santronic principal, says that Uniden products have Australia's largest market share in radar detectors, VHF marine radio and radio scanners and 15 percent of the cellular 'phone market.

Founded in Japan in 1972, Uniden Corporation was a relative late-starter in communications equipment manufacturing, but, has since captured large world market shares including 60 percent of the world's CB radio sales.

Mr. George Eishi Hatano, Uniden Corporations head office representative and Uniden Australia P/L director, said,'Santronic were Uniden's Australian wholesaler for eight years. The strong relationship made a marriage suitable.

For CBA's part, we believe that the move will further strengthen the already strong grip Uniden products have on the market and we are heartened to hear that the existing local management remains in place.

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477 Report

UHF NEWS AND HAPPENING:

If you've read 'On Channel' this issue, then you'll know that we've just finished another game of musical chairs here at CBA. When the music stopped, former UHF columnist Greg Towells was promoted to our new 'DC To Daylight' section, and as resident UHF fiend I've inherited this page.

So let me start with a vote of thanks to Greg, who has done so much since kicking off CBA's UHF column some years ago. The 477 Report will continue to bring you up to date with UHF happenings throughout Australia, and I'm sure readers will keep up their support (both written and verbal).

Facts 'n Figures

The response to CBA's last Reader Survey was positively fantastic. Feedback is invaluable to any magazine — you've already seen many changes in CBA which were a direct result of your comments, and there are still more to come as we 'fine tune' the process.

The survey also yielded some interesting data on special interest areas. Of the total number of responses, 35 per cent operated on 477 MHz, and from within that group almost a quarter were UHF-only.

But for UHFers, the world doesn't end at ch. 40 — almost half of us own a scanner and 39 per cent a short-wave receiver. A surprising 42 per cent use a personal computer, the most popular being the Commodore 64 followed by an equal number of Commodore 32s, TRS-80 and Apple IIe models. My Amstrad ranked way down the list!

15 per cent of UHF operators surveyed held an amateur licence — 42 per cent were novices, a third full-calls, a quarter limited and three per cent held a combined (limited/novice) licence. Almost half of the non-amateurs surveyed intended to obtain a ham licence.

UHFers seem to be very law abiding, with 98 per cent of respondents holding a CB licence. 39 per cent of us have a UHF beam, but only six per cent use a linear (or admit to the fact !). The band was mainly used as a hobby by 53 per cent of readers, for social contact by 30 per cent, and for business by 17 per cent.

VOICE OF AMERICA MAKES A MOVE

By Rob Williams

Shortwave stations around the world are constantly receiving complaints from listeners about reception problems in their area.

These problems are nothing new and as more stations use the already overcrowded bands the number of complaints will increase even more.There are several ways for broadcasters to improve their signal strength. Over the last year or two we have seen numerous stations agreeing to swap air time on each other's transmitters.

This, however, has limitations and doesn't solve all problems.

For instance the station requiring the relay needs to fit in with the transmitter schedule of the owners of the station as well as political differences between the two countries.

Some of the bigger international broadcasters have their own relay network located at various points around the world allowing them to provide a much better signal into the required target area.

This is a very expensive option,not only building the station but in maintaining the facilities.

The Voice of America (VOA) is one such station making extensive use of a chain of relay stations to broadcast around the world.According to VOA's latest frequency schedule they use some 19 sites broadcasting either on shortwave or mediumwave in 44 different languages.

VOA's relay stations were, in the past, fed with SSB signals from transmitter sites originating from within the USA. However, many sites are now being fed direct via geo-stationary satellites. But, despite these relay sites, VOA still has trouble in providing an adequate signal to their target zone.

To overcome this problem they have commenced a $US1.3 billion program to upgrade facilities around the world over the next two years.

This work not only involves improving existing transmitter sites and building new ones but also upgrading studios and satellite links to the relay stations.

A total of $US365 million been spent on work to date.

On 2 September last year VOA introduced phase one of a satellite interconnect system (SIS) to link its studios in Washington to relay stations in Greenville (North Carolina) and Delano (California). In the next few years VOA plans to connect all their relay stations around the world to its SIS.

Before the end of 1988 VOA were to link Thailand and Botswana to the SIS. Following them will be Antigua and Belize. Before SIS was introduced VOA used a mixture of landlines, micro-wave links, shortwave and satellites to get signals from Washington to its relay stations. VOA was leasing 43 individual circuits, covering 10 different routes to its relay stations.

At any time of the day VOA could be broadcasting up to 16 different programs simultaneously — using SIS all broadcasts are incorporated into one digital signal before being sent via satellite to the Caribbean, Central America, Europe and Africa via its Greenville site.

Greenville can receive as many as 30 programs originating from Washington before transmitting them to an Intersat satellite over the Atlantic Ocean.

At the relay station, the satellite earth terminal will decode and select the required signal to be broadcast at that time. In England, the VOA signal from the Intersat satellite over the Atlantic Ocean will be received and then retransmitted to another Intersat satellite over the Indian Ocean to provide a signal for its Asian relay stations.

SIS will also improve two-way communications with technical people at the relay stations and Washington. In the past VOA had to rely on Telex, telephone or HF radio for engineers to communicate with Washington.

As mentioned earlier, VOA will also be upgrading transmitter sites and VOA has three objects in its aims to improve service.

1) A need to get its relay stations closer to its audiences.

2) Have an ability to control its relay station antennas.

3) Install modern, efficient transmitters which use less energy and hence reduce the power bill.

Four SW transmitter sites are planned to be built during the modernization program and these will be located at Morocco, Thailand, Sri-Lanka and Botswana.

Each site will cost approximately $US200 Million to install.

Morocco will have 10 x 500Kw shortwave transmitters, Botswana will get 6 x 500Kw transmitters. Currently VOA has 1 x 35Kw transmitter operating from Botswana on 621kHz in conjunction with the Government.

Sri-Lanka will have 6 x 500Kw SW transmitters (currently equipped with 3 x 35Kw SW transmitters). Thailand will have 7 x 500Kw SW transmitters with one being operated by VOA for Radio Thailand.

VOA currently has 1 x 1Mw mediumwave (MW) transmitter on 1575kHz in Thailand.

A third of all UHFers owned handheld or portable 477 MHz rigs. The most popular of these was Icom's IC40, followed by the Electrophone TX475. A wide margin seperated these from the Uniden UH005, Royce TS-133 and Emtron Ace.
Favourite rigs for mobile and base stations were the FM320 and FM620, just leading Electrophone's ever-popular TX470 series. These three were way ahead of the rest of the field, which then came down to the Uniden UH001/007 models, the Sawtron family and Pearce-Simpson's Leopard series.

Repeater Update

Extraordinary ! As I write this there are now almost 250 repeaters on 477 MHz, forming a network that stretches from major cities along the coast and inland to towns and rural stations. And we haven't stopped yet ...

3/33 Bathurst/Orange should be on-air within the next few months, thanks to the continued efforts of the Central West UHF Repeater Association and the generous support from local UHFers. Further donations are still welcome - write to PO Box 1062 Bathurst 2795, or call CWURA President Bob Fenton on (063) 37 5660 ah ... further west to Dubbo, and the Orana Region Amateur Radio Club have been granted a licence for ch 1/31, to be co-sited with their VHF amateur repeater in the Warrumbungles. THe club has already received many donations towards their target of $6000 and aim to have the full amount by the year's end. Contact the club c/- Lot 28 Bencubbin Estate, Dubbo 2830.

Please take a minute to browse through our repeater list and check to see if your local repeaters are properly represented. Have we got the coverage area right ? Is the correct channel listed (don't laugh, it's happened !). Maybe we don't have the name of the repeater sponsor, God bless their cotton socks. Perhaps we've missed out the repeater entirely, or it is listed but isn't in service.

This list is updated not by the Department, but our readers — so if we've got it wrong, please drop me a note (a phone call to the boss isn't good enough) and help us make it right. Deadline for next issue is mid-July, so make it snappy if you can.

In Memorium - 934 MHz

The lobby for a world-wide standard UHF CB allocation has failed.

British authorities have decided that the UK 934 MHz band is vastly underused (licence figures for 1988 showed only 4000 operators), and will be allowed to die a natural death over the coming years.

The allocation has been given over to a group consisting of big league companies such as Motorola, for development of the Personal Advanced Radio System. PARS is an 80 channel service which combines elements of cellular and trunking techniques. By using only low-powered handhelds and multiple base stations, the network will have a very high capacity and will closely resemble Japan's high-tech 900 MHz Personal Radio Service.

PARS has been given primary user status on 934, so British UHFers must accept the interference it will generate. They're well-practiced at tolerance, having also been on the receiving end of interference from base stations in the nearby UK cellular network.

As of January, British UHF rigs cannot be imported or sold, excepting as second-hand radios. The British DTI does not expect to officially close 934 for CB for at least 10 years, which it claims is the useful lifetime of equipment already in operation. But it privately concedes that interference may drive UHFers from the band much sooner.

The closure of 934 MHz has dealt a fatal blow to hopes of a European UHF CB band, first proposed at the 1979 World Administrative Radio Conference. Agreement was reached on the establishment of a UHF PRS in the vicinity of 930 MHz, although only the UK and Holland established such a service in the following years. A poor response to the Dutch 928 MHz CB service also led to a government decision to re—allocate the band last year.

Perhaps efforts for UHF CB in Europe were never meant to be as successful as those which established the 27 MHz FM system throughout the continent.

(As a matter of interest, the DoTaC's draft 900 MHz bandplan is being circulated within industry for comment at time of writing, and includes a PARS allocation between 933-935 MHz).

Over To You

Okay, now it's your turn to do some writing — on local UHF activities, repeater news, your own views on the 477 MHz scene or even any questions you may have, just write to me (David Flynn) at PO Box E160 St James, Sydney 2000 (enclose a stamp for reply).

Let's hear from you !

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SCANNING ACTION

THE WHERE, WHY AND WHAT ABOUT SCANNERS

As promised, an update on the V/Line radio system, and where to hear the military, feature in this month's column.

Since Scanning Action outlined the new Australia-wide railway channels (Jan/Feb 89), we have been inundated with letters detailing their use across the country, more specifically in Victoria.

It was a letter from David in Wyong NSW (he is the winner of the Frequency Guide from Andrews Communications) that contained the most comprehensive information. David says the State Rail Authority is conducting tests of the new frequencies using selected locomotives throughout various parts of the State.

NSW locos operating on the Sydney-to-Melbourne standard guage line have been fitted with additional radio equipment to meet the needs of the Victorian system. The radios are installed permanently in the cabs, (no handhelds are used at present). Conversations take place between the driver and "control", who directs crews as to track delays, changes in times and schedules. Trains, can, in turn, advise of problems they encounter en route. It appears one of the motives behind the new allocations is to enable locomotives to be shared between systems. The Victorian channels and their lines are:

416.975 407.525 MELBOURNE YARD
417.850 408.400 SOUTH WESTERN LINE - MELBOURNE TO WARRNAMBOOL
418.150 408.700 NORTH WESTERN LINE - NORTH GEELONG TO MILDURA
418.450 409.000 EASTERN LINE
418.750 409.300 LONG ISLAND & SUBURBAN AREAS
419.050 409.600 NORTHERN LINE - BENDIGO
419.350 409.900 WESTERN LINE - MELBOURNE TO BORDERTOWN ARARAT TO MT GAMBIER LINE
419.650 410.200 STANDARD GAUGE - ALBURY TO MELBOURNE
419.950 410.500 BROAD GAUGE - ALBURY TO MELBOURNE GOULBURN VALLEY AND NORTH EASTERN LINE

Other interesting frequencies employed in railway communications in Victoria are:

82.860 V/LINE MELBOURNE
77.690 EMERALD TOURIST RAILWAY VJ3LZ
80.430 BELLARINE PENINSULA RAILWAY VH3CWT
407.525 ALBURY SHUNTERS (SRA)
465.550 SUBURBAN ELECTRICS
465.900 WODONGA SHUNTERS
467.000 PORTLAND SHUNTERS
469.500 SPENCER STREET STATION MASTER (simplex)
469.600 METROPOLITAN RAILWAYS (simplex)
469.675 DRIVER TO GUARD RADIO (simplex)
469.700 DRIVER TO GUARD RADIO (simplex)
469.725 DRIVER TO GUARD RADIO - SHUNTING (simplex)
486.575 V-LINE SECURITY

An update to the Queensland channels comes from David of Sydney who writes, QR uses 417.275 MHz as the local channel at Rockhampton. I would like to hear from anyone else with information on QR's use of frequencies and locations.

To the many many readers who wrote with details on the railways, thank you. The input was fantastic, unfortunately there was only one prize. Please keep the information coming — the network of monitors is growing daily.

NAVY, ARMY and AIR FORCE FREQUENCY LISTINGS

Our next topic for discussion is the dozens of frequencies belong to the Navy, Army and Air Force. To attempt to list them all would be mind boggling as they fill many more pages than I am allowed. Instead the list will contain specific frequencies and their users, as well as the lower and upper limits to search, where no user is known.

30.100,30.300,30.700, 30.900,31.500 ARMY RANGE - CONTROL HOLSWORTHY SINGLETON KAPOOKA DUNTROON PORTSEA PUCKAPUNYAL CANUNGRA GREENBACK MURRAY BRIDGE BIDOON.
32.300 RAAF - 5 SQUADRON FAIRBURN
33.530 ARMY - VICTORIA BARRACKS
37.500 ARMY - RANGE CONTROL HOLSWORTHY
38.450 ARMY - VICTORIA BARRACKS
41.900 ARMY - DARWIN
42.000 ARMY - TOWNSVILLE
42.800 ARMY - AIR TO GROUND TOWNSVILLE
43.550 ARMY - AIR TO GROUND OAKEY
44.400 ARMY - AIR TO GROUND HOLSWORTHY
44.550 ARMY - RANGE CONTROL SINGLETON
48.300 ARMY - AIR TO GROUND TOWNSVILLE
46.350 ARMY - RANGE CONTROL HOLSWORTHY
50.750 ARMY - AIR TO GROUND HOLSWORTHY
55.900 NAVY - HMAS COONAWARRA DARWIN
60.350 ARMY - AIR TO GROUND OAKEY
61.350 ARMY - RANGE CONTROL SINGLETON
70.460 ARMY - SINGLETON VL2EN
70.700 ARMY - FIRE SERVICE SINGLETON VL2FZ
72.500 ARMY - DARWIN VZ8AM
73.100 ARMY - DARWIN
73.400 NAVY - GARDEN ISLAND WA VZ6CK
76.550 NAVY - HMAS CERBERUS VL3HV
76.670 NAVY - HMAS CERBERUS AMBULANCE VL3HV
76.730 NAVY - HMAS CERBERUS VL3HV
78.040 ARMY - ENOGGERA BARRACKS
78.220 ARMY - PUCKAPUNYAL
78.190 ARMY - FIRE SERVICE HOBART VL7DEF
78.700 ARMY - TOWNSVILLE
78.820 ARMY - DARWIN
78.940 ARMY - TRANSPORT
79.000 ARMY - VIC, ACT, NSW, QLD, SA, WA, TAS, NT - MOBILES
79.240 ARMY - MILITARY POLICE
79.420 ARMY - FIRE SERVICE HOBART
80.100 RAAF - AMBERLEY VL4RR
80.640 NAVY - JERVIS BAY
80.760 NAVY - JERVIS BAY
80.820 ARMY - WILLIAMTOWN
83.340 ARMY - PUCKAPUNYAL, SALISBURY, PORT WAKEFIELD
84.630 ARMY - SA VL5CX
84.750 ARMY - PUCKAPUNYAL, SALISBURY
119.000 USAF - RICHMOND
128.100 USAF - RICHMOND
132.300 NAVY - NAVAL AIR STATION NOWRA
149.000 RAAF - WILLIAMTOWN NSW
149.150 RAAF - WILLIAMTOWN NSW
149.180 ARMY - FIRE SERVICE MOOREBANK, SINGLETON, BANDIANA, MELBOURNE, PUCKAPUNYAL, WODONGA, BRISBANE, OAKEY, TOWNSVILLE, EL ALAMEIN (SA), MURRAY BRIDGE, WOODSIDE (SA).
149.200 RAAF - AMBERLEY
149.450 ARMY - FIRE SERVICE MOOREBANK
152.300 ARMY - RANGE WORK VIC, QLD, NSW
156.025 NAVY - HMAS PENGUIN
156.200 NAVY - NAVAL HARBOUR MOVEMENTS
156.475 NAVY - AUSTRALIA WIDE
156.500 NAVY - HMAS STIRLING
156.600 NAVY - HMAS STIRLING
162.130 NAVY - TRANSPORT VZ28B
163.000 ARMY - PUCKAPUNYAL, MONEGEETA
165.340 ARMY - MOOREBANK
165.730 NAVY - NAVAL POLICE VL2WQ
167.800 ARMY - PUCKAPUNYAL, SALE
167.800 NAVY - WILLIAMTOWN, MARIBYNONG
170.490 NAVY - NOWRA NAVAL AIR STATION
174.015 ARMY - HOLSWORTHY
450.325 NAVY - GARDEN ISLAND
450.400 NAVY - GARDEN ISLAND
461.350 NAVY - HMAS CERBERUS
463.100 NAVY - HMAS STIRLING WA
463.850 NAVY - NAVAL AIR STATION NOWRA VZ2GY
463.850 NAVY - FREMANTLE WA
469.475 NAVY - GARDEN ISLAND DOCKYARD NSW
469.575 NAVY - GARDEN ISLAND DOCKYARD NSW
469.800 ARMY - PUCKAPUNYAL VL3DEF
471.425 ARMY - ALBURY, PUCKAPUNYAL, WILLIAMTOWN, MARIBYNONG
471.450 ARMY - ALBURY
471.500 ARMY - PUCKAPUNYAL, WILLIAMTOWN
471.675 ARMY - ALBURY
471.825 ARMY - ALBURY
485.125 NAVY - GARDEN ISLAND NSW

The Army has hundreds of low band channels to choose from on any given day. They may use one for an escort or convoy and never be heard on it again for years, so moitoring them is unpredictable. The limits to set your scanners on are:

32.500 MHz - 39.825 MHz, 40.025 MHz - 49.950 MHz, 50.000 MHz - 55.950 MHz, 60.000 MHz - 62.000 MHz, 67.000 MHz - 69.000 MHz.

That is about it for the services, anybody with anything to add drop me a line at Scanning Action.

READER MAIL . . .

Some letters from the mailbag. Gary from Tanilba Bay, NSW writes that he is 15 years old and just starting in scanning. He would like to know where to listen.

Firstly Gary, the very column you are reading will assist you with frequencies and users. Plus the many frequency guides that are available are excellent value for money, when it comes to who is where. As to what you can pick up in your area, here are a few to keep you going:

PORT STEPHENS SHIRE COUNCIL	494.175 MHz;
POLICE - NEWCASTLE	84.000 MHz;
POLICE - MAITLAND AREA	83.850 MHz;
POLICE - NORTH OF NEWCASTLE	83.925 MHz;
AMBULANCE - NEWCASTLE CITY	76.715 MHz;
AMBULANCE - OUTER AREAS	76.670 MHz;
FIRE - NEWCASTLE	78.100 MHz;
FIRE - NELSON BAY	78.010 MHz;

Good luck with those Gary, and remember to use the SEARCH function on your new scanner to discover other radio users.

The next letter from a reader in South Australia is rather interesting. Having been stopped by the police he was questioned extensively about a scanner that he had in his possession. Questions like what is it and how does it operate were asked by the police officer. When our reader said he didn't know any police frequencies he was allowed to leave. He goes on to say, he thought scanning was legal and that he now takes a dim view of the police. All I can say is, scanning is legal (I plan to find out DoTaC's official policy on the matter) and as far as the dim view of the constabulary, don't judge all by the actions of an uninformed few.

The best or most interesting letter received will win a MOBILE ONE mobile scanner antenna, compliments of MOBILE ONE.

GOVERNMENT SEEKS TO BAN SCANNERS

On May 19 the Melbourne 'AGE' newspaper ran the following, 'Yesterday's ministerial meeting also decided to seek controls of the use of radio scanners, which can be used to monitor police and emergency services. The ministers will ask the Federal Government to consider banning the importation of scanners'.

The ministers referred to are state and police ministers so it appears that yet again attempts are to be made to ban the use (or maybe even possession of) scanners.

This is not the first such occasion on which such an attempt has been made and, while few would dispute that scanners have been used by criminals to listen to police frequencies, we (CBA) would imagine that in this modern day and age the police can protect their frequencies by using some form of 'scrambler or encryption to make it impossible for the public to listen.

Strangely though, the same report says that the same ministers are urging Telecom to reconsider selling a new telephone scrambler that could be used (by criminals) to beat police 'phone taps.

In short, it looks to be a safe each way bet.

Given the huge number of scanners already in operation throughout Australia we would doubt that there is anything at all to be gained by this belated attempt to ban them.

Surely, it would be easier for all concerned if the police introduced a 'scrambler' system to their transmissions rather than try for an overall ban.

We'll keep you posted on any new developments.

REVIEWS FOR NEXT ISSUE

The Sept/Oct issue will have plenty of scanner reviews including, we hope, the AOR880 and AOR900 plus the Sony PRO80 handheld.

One thing which I would like to hear is feedback on any problems or shortcomings of scanners which readers have found in their day to day operation. Obviously, our reviews are based on a limited period of time and with a brand new unit - if you have found any problems, we would like to hear about them.

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CB FROM THE CARIBBEAN

Jack, the 67-W-07, presents this profile of the Caribbean island of Aruba, home of the Flying Eagle DX group . . .

The Caribbean Sea plays host to literally hundreds of islands that form the entire West Indies chain, an area rich in history, dating back to the days of sailing ships which created such legends as pirates, slave trading and black birding, those were the days when the skull and cross bones flew proudly from the masts of many a fine sailing vessel.

In the 1980s however, these legends are now buried deep in the pages of numerous history books and lay testament to this region's torrid and bloody past, a time when life had no value, a time where greed and power dictated the main curriculum undertaken.

With sunspot cycle number 22 surging along we find ourselves coming into contact with names and places that we had never heard of before. Many of these names, totally unfamiliar to us, generate curiosity and many an hour has been spent trying to find these places in the atlas or on a world map. Being so numerous and cluttered close together many islands in the West Indies are not mentioned in detail in most atlases, unless of course you have one of the more expensive lines available.

Sometimes these islands rate a brief mention in Australia, usually on the six o'clock news, where we are told of a military coup taking place, or a political leader being assassinated or removed by force from office, even a severe hurricane might rate a brief mention but only to tell us the heartbreak and damage it has caused. Even so, the names do not sink into our minds as these places are too far away to concern us.

The West Indies chain commences with the Bahamas to the north and then it winds its way south, deviating to the east, passing through some of the more well known island groups of Haiti, Puerto Rico, Guadeloupe and Grenada, it is here at Grenada, that the West Indies chain turns sharply to the west and terminates at the island of Aruba in the Netherlands-Antilles group, some 25 kilometres from the coast of Venezuela, the northern tip of the South American continent.

DUTCH COLONY

Aruba was claimed for Spain in 1499, but was first colonised by the Dutch in 1636 and hence formed part of the Dutch possessions in the West Indies. In 1954 Aruba became a member of the autonomous federation of the Netherlands Antilles. With regard to the DXCC countries list, Aruba was then under the heading of Netherlands Antilles which included neighboring islands of Curacao and Bonaire. It wasn't until 1986 when Aruba received separate status, and had its first elected Prime Minister installed that it received semi-independence. Shortly after, Aruba was made a separate DXCC country on the radio bands with the amateur radio prefix of "P4" being designated.

Aruba enjoys a pleasant climate all year round with an average temperature of 27 degrees celsius. This is tempered by north-east trade winds. Rainfall is low, averaging about 510mm annually. Although the official language on Aruba is Dutch, the dominant language is Papiamento (a mixture of Dutch, Spanish, English, Arawak Indian plus several West African dialects). Spanish and English are also widely understood and used. Most of the inhabitants profess Christianity and belong to the Roman Catholic Church. The capital and administrative centre is the city of Oranjestad.

Aruba is a small island, only 193 square kilometres in area and in 1983 the population density was 347 people per squre kilometre. The population is estimated to be around 67,000 (1983 statistics).

FLYING EAGLE

Although Aruba has a separate status within the Kingdom of the Netherlands, there is a Governor, appointed by the Crown, who represents the monarch of the Netherlands on Aruba and holds responsibility for external affairs and defence (the Netherlands are responsible for Aruba's defence) Military service (national service) on Aruba is compulsory.

For many years, Aruba was totally dependent on the refining and shipment of petroleum and petroleum products to sustain its economy, however, falling demand and the cut of discounted petroleum proviced by Venezuela led to large financial losses and cutbacks in production. In March, 1985, the refinery closed and this led to a loss of 40 per cent of the government's revenue, and a 30 per cent increase in unemployment resulted from this.

To emphasize Aruba's separate status, a new currency (the Aruban guilder) was introduced in 1986, on par with the currency of the Netherlands Antilles (Bonaire and Curacao).

TOURISM FLOURISHES

With the collapse of the oil industry, Aruba had to turn to new methods of generating revenue. The soil was of poor quality and that, combined with a low annual rainfall, meant that agriculture was virtually out of the question so tourism was promoted and substantially improved and today remains the island's only viable source of economic activity. Tourists, mainly from the USA and Venezuela, make up the main percentage of visitors and in 1986 the tourist industry was employing 4850 workers on a full-time basis.

Education on Aruba is not compulsory and medical care is provided free of charge, by the government. In 1986, Aruba received $4538 million in aid from the Netherlands, most of which went into budgetary assistance and the revitalization of the tourist sector. Her Majesty, Queen Beatrix of the Netherlands, is Head Of State.

CB radio has been present on Aruba since 1972 in an illegal form. Even today the operation and maintenance of a CB radio station is illegal and although there are a number of moves being made to legalise CB radio things have moved at a slow, if not stagnant pace. On an island like Aruba, which is only 19.6 miles long and about six miles wide, there are quite a few active CB radio operators, with the majority of them on the AM mode on the standard USA 40-channel system.

In the mid '70s two separate groups of radio enthusiasts approached the

Government organisation SETAR, which roughly stands for the Service of Telecommunications of Aruba, to lobby for the introduction of Citizens Radio Service, modelled on the American 23-channel AM/SSB service. They met with a negative response from SETAR and the groups were disbanded.

The body that makes up SETAR tends to ignore the CB radio issue but has introduced penalties for those caught operating CB radio equipment. The penalties are reasonably light. SETAR officers normally confiscate the radio but leave you with the antenna as there are no laws covering the possession of a radio antenna. There is no court case or fines, just the forfeiture of the CB radio transceiver.

The officers of SETAR are not overly concerned with illegal CB radio stations operating from Aruba and the chances of getting the dreaded knock on your door are very slim. If you do happen to be the unfortunate recipient of a SETAR visit, it will most likely be connected with an interference complaint directed at your station. Usually a TVI or BCI complaint will draw SETAR reasonably quickly to your door. So, as long as you operate a good clean station and don't cause interference with other services, there is no problem with the authorities.

Members of the Flying Eagle DX Group have renewed pressure on SETAR for a legal Citizens Radio Service, but the government has been slow in constructing a set of regulations governing a CB radio service, and does not appear to be keen to recognise such a service. The only response from SETAR has been that it is looking into an FM band 27MHz service only and will not subscribe to, nor entertain the possibility of an AM/SSB service as the characteristics of this service promote contacts outside the country, which at present is illegal but also is ignored.

FM MODE ONLY

During 1988, a group of DXers reapproached SETAR to promote a legal CB radio DX Club, and after several meetings with officials nothing at all came out of it. It seems that SETAR has its mind made up in favor of an FM mode only and will not be influenced by outside ideas from lobby groups. The whole situation is quite ridiculous — a sort of a Mexican stand-off — with SETAR holding the winning hand but too stubborn to put the cards on the table.

The Flying Eagle DX Group was formed on 16 August, 1986. Prior to this there was no established DX group in operation on Aruba with most DXers belonging to clubs outside the country or operating as an independent station with no club affiliation at all. The Flying Eagle DX Group was the idea of John Maduro who felt the need for a locally based DX group that would unite those with a passion for DXing on SSB. With the help of fellow DX enthusiasts, Jesus (1-FE-02), Papito (1-FE-03), Robert (1-FE-04) and Leo (1-FE-05) the idea was put into motion and after a series of meetings the club was formed, with John installed as president.

Above: We can think of many places it would be nice to be DXing from and, judging by this view of Aruba, this has to be one of the nicest.

The Flying Eagle DX Group is held in very high esteem around the world and is now well known here in the Pacific region. Joh, 1-FE-01, informs me that the club has nine local members based on Aruba and 141 members overseas based in 54 different countries. Local members are admitted free of charge while overseas members only pay $US2.00 or three IRCs for which you receive your membership certificate and group number. The club already has had its first DX contest this year and will be looking forward to launching many others. Enquiries about the Flying Eagle DX Group can be directed to John, 1-FE-01, PO Box 633,

Below: Leo, signing as the 1-FE-05, has a somewhat better than most radio shack.

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CB FROM THE CARIBBEAN

Oranjestad, Aruba DWI, Caribbean Sea.

The availability of new CB radio equipment is restricted on Aruba as the local radio and electronics stores, of which there are only three, are not licenced to import radios capable of 27MHz transmission. They are only licenced to import and sell commercial, amateur and marine band radios and one must produce the licence of proficiency before the radio is sold to the customer. The stores operate under strict SETAR regulations in this matter. Requests for 27MHz CB radios are rejected by the stores who refuse to handle equipment outside SETAR guidelines.

All of the red tape still does not prevent the people of Aruba from getting CB radios, as there is a secondhand market among radio enthusiasts. Some of the radios bought secondhand have seen two, three, or more owners but there still is a market for such equipment, and now and again an illegally imported radio surfaces.

Prices on Aruba vary for secondhand equipment. Small AM mode only CB radios retail for about $US25-75 while the AM/SSB type CB radios retail around $US100-175. If you are fortunate enough to come across an illegally imported new radio, like a Cobra or a President, then you should be prepared to pay between $US350-500 for the privilege of acquiring it.

On the technical side, most CB radio repairs are done by backyarders, not professional technicians. Parts are widely available through Aruba's three electronic stores and also by mail ordering direct from overseas. From time to time parts are obtained from defunct CB radios that lay about in someone's junk box. The local price for repairs ranges from $US15 through to $US50 depending on the nature of the work carried out.

Aruba is not without problems, as there are a large number of AM-only 40-channel CB radios about and there are quite a few "brain-dead" operators who make life difficult for other users who cannot afford an SSB mode radio. John and Leo tell me that there are your usual foulmouths, music players and general ratbags to be found on the AM modes around Aruba. I should think on an island so small they shouldn't take too long to catch and get dealt with appropriately.

AMATEURS INCENSED

The local radio amateurs on Aruba are not too pleased about the illegal CB radio operations, especially those operating on the SSB mode. The local amateurs have been making some rumblings to SETAR about this activity through their local radio club, the Radio Amateur Club of Aruba. These amateurs see the art of working overseas DX as their exclusive right, not to be shared with illegal CB radio operators who are working an abundance of DX on 27MHz. RACA has stated in its argument that it is not fair that illegal CBers should remain unchecked by SETAR while RACA's members had to study for eight months in order to pass their amateur licence examination for the privilege of being able to work "unlimited" DX.

Four element, dual polarity, Yagi does a nice job for the group.

On the other hand, members of RACA have no objections to the eventual legalisation of Citizens Radio in Aruba providing that it is done properly from the start as they too approve of an all-mode CB radio service based on the current American 40-channel AM/SSB system. However, the RACA also makes it clear that the new laws should include a clause preventing CB radio stations making contacts outside Aruba, in other words make working DX illegal and subject to a penalty. The RACA also has expressed interest in an examination being made available for all CB radio operators covering the rules and regulations governing the spectrum and its usage. This sounds very fair to me although John did not comment on this in his notes.

It's a small DX group, but, they are extremely active and much sought after by serios DXers.

John predicts that it is inevitable that CB radio in Aruba will eventually be made legal, and he is fairly confident that it will be based on the American 40-channel AM/SSB system with similar power output requirements. However, John is not confident that the issue of working overseas countries will be dealt with in a proper manner. The rumblings from RACA have not boosted the image of the serious DXer or 27MHz.

Ironically, it is the serious DXer on 27MHz that is giving Aruba such a good name and reputation around the world. I have heard nothing but praise and respect for the Flying Eagle Club. Despite the size of Aruba and the small number of active operators on SSB it has become quite well known and popular around the globe.

It is a pity that the members of RACA cannot sit down with the 27MHz DXers and exchange views in a civil manner. Together they would have the strength required to pressure SETAR into approving a suitable CB radio service tailored to satisfy all parties. The amateurs would also become winners as CB radio DXers would get a better viewpoint of the amateur radio hobby and could aim to sit the amateur radio licence thus boosting the ranks of amateur radio operators on Aruba. That already has been proven here in Australia where amateur radio groups have worked in harmony with CB radio groups to boost the image of both hobbies with the amateurs benefitting from the flow-on from CB to amateur radio, providing a much needed boost to the flagging number of radio amateurs.

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CB ACTION/MOBILE ONE/RF INDUSTRIES

DICK SMITH COMMUNICATIONS

WORDMAZE

This issue's Wordmaze has as its prize eight Super Spring Skipwhips courtesy of Australia's major antenna manufacturer, Mobile One.

In addition there are also eight Spectrum Wall Charts courtesy of Sydney based RF Industries and because we stuffed up the last contest — a Dick Smith HCA-804 27MHz transceiver.

The first correct answer drawn will receive the rig plus an antenna and spectrum chart while the next seven (one from each other State) will receive the antenna and chart.

1. What Island does the Flying Eagle DX Group operate from?
2. What is the name of the DX operator who signs as the 121-AT-105?
3. What is the surname of the antenna designer/manufacturer who is back in business from June 1 of this year?
4. What are the initials of the designer/manufacturing company of the Ground Independent antenna reviewed in this issue?
5. What is the surname of the reader who intends travelling in the outback of Western Australia and N.T. in July-August?
6. What name is the AR477 UHF handheld (reviewed in our May/June '89 issue) being marketed under in Australia?
7. What is the first name of the company which recently obtained an American patent (refer May/June '89 issue of CBA)?
8. What 'noise' (QRN) is considered of little consideration to most radio operators?
9. Who, first name only, of JUST Communications said, "it's different and we (CBA) should check it out"?
10. What company (first name only) has 'popped up its own quality control department' in respect to its electronic equipment.?

ANSWERS:

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

NOTE: The correct answers MUST be circled in the Wordmaze as well as listed above.

D D C N A H P R O T S R O C
U G I K P I J Z Y J U Q E E
Y E T O C X A A C A Y E I A
K O C I F I Z E O K D X C K
A N A F S W D C R O A J R D
A E L M L T A E G Z U A M T
J C A E I U T L A B E G Y S
O T G V E E W U Y E I C A E
Y N W E P Q M E L E N M Q A
I A L A N I L I E E I O P B
I Y V A K R B A G N O U R U
R U N T A O E E L I O R U R
O E O F M M R L B G M A Y A
M S I G G A T G R O X Z I K

The answers can run in any direction — horizontally, vertically, diagonally — and also back to front. Find the ten words hidden in the maze, mark them on the Wordmaze and also list them, and post your entry to:

CB Action/Mobile One Wordmaze
GPO Box 628E
Melbourne Vic 3001.

The closing date is July 21 and the winner will be selected from all the correct entries received by that date. The draw will be conducted in the offices of CB Action and the results and solution will be published in the next issue. The judges decision is final and no correspondence will be entered into.

Photostat copies of the entry form are not acceptable.

QUEENSLAND SCENE

FURIOUS FEWSTER TELLS IT HOW IT IS

THE ONE BORN EVERY MINUTE DEPARTMENT

I didn't really believe this would happen, but it did !!

Not one but TWO CB Action readers phoned me to find out where they could buy the multiple-sideband Dai Nippon Donkyc super-rig I mentioned in the last Queensland Scene....and no, they weren't Irish.

South Pacific Radio's advert lists an optional windscreen for the DM-7400 power desk mike.

They received a mail-order for one of these microphones and, 'the parts kit to attach it to the windscreen on a LandCruiser'.

EMERGENCY REPEATERS

My bit on the 5/35 emergency repeater situation in the last issue attracted a couple of letters and a large number of phone calls from both the 'for' and 'against' factions.

Calls from Robert-not-Bob Smith were conspicuous by their absence....maybe he doesn't love me any more.

Surprisingly, a number of calls were from UHFers who identified themselves as 'commercial' users.

I didn't think they read CB Action.

Most of the 'fors' seemed to me to be on the old, 'I'm a Monitor' (with a capital 'M') ego-trip or the, 'I'm doing a marvellous job for the community and making enormous personal sacrifices for no gratitude', types who seem attracted to emergency monitoring like flies to a dungheap .

... and a couple were out-and-out ratbags who should be euthanased at the earliest opportunity for the good of mankind in general and in one instance for the good of myself in particular.

One scummy (Brisbane no STD pips) specimen rang to say that he hoped I'd prang my car with my wife and kids aboard and that he'd hear me calling for an ambulance just so he could ignore me.

Hopefully this piece of brain-dead garbage is not really representative of the current crop of emergency monitors.

One guy rang to tell me that he'd been involved in three major car accidents recently and was able to contact an emergency monitor on 5/35 instantly on each occasion and that emergency monitors saved his life and the lives of the people in the other cars and blah blah blah.

It sounded too good to be true, but, if it was then the clown should have his licence cancelled immediately as he's obviously a menace on the roads.

It was obvious to me that a Victorian 'for' group got their heads together and launched a planned phone in 'support the monitors' campaign but the organizer clearly misinterpreted the article as proposing the total abolition of both HF and UHF CBRS emergency monitoring.

The rest simply followed like sheep, each making almost identical statements including one to the effect that, '..a single life saved makes emergency channel monitoring worthwhile', as if reading from a prepared script.

(Brainwashed - maybe?) — I'd have preferred a bit of independent thought.

The 'againsts' outnumbered the 'fors' by a fair margin, with most of these citing instances where their calls for assistance on 5/35 had gone unheeded and had subsequently been answered promptly on 'open access' repeaters.

To be fair to all concerned I asked all callers for their locations and the approximate time they made their un-answered calls (I wouldn't seriously expect volunteer monitors to be rostered on at three o'clock in the morning in Woop Woop) and all but one was within what I consider to be a reasonable place/time frame .

Where and when one could reasonably expect an 'emergency' repeater to be monitored.

A couple of Brisbane 'commercial' users said that Robert W. Smith's figure of nine emergencies being handled on 1/31 and 7/37 between January and August last year was so low it was ludicrous — let's be fair fellas....Robert's figure was 'to his knowlege' (not a firm quote) and that 'commercial' bases handled major and minor traffic accident reports 'almost every day'.

This could be so as there are literally hundreds of UHF-CB 'commercial' mobiles on Brisbane roads during daylight hours.

DoTaC — WELL MAYBE...

A caller who identified himself as being with DoTaC in Canberra (Andrew Gardiner of Brisbane DoTaC reckons he was an imposter but he sounded pretty genuine to me) rang to say that the unofficial consensus of opinion among Radio Inspectors and everyone else in the Department who has anything to do with the CBRS is that '5/35 emergency repeaters are an ongoing useless waste of spectrum space and a Departmental cock-up of major proportions which should be rectified as soon as possible', but, that officially the issue had been 'put on the back burner'.

Too Hard File maybe...??

He reckoned that Brisbane suffers from the worst repeater congestion in Australia during 'commercial' hours, followed by Melbourne, and that both cities are burdened with seldom-used 'emergency repeaters' which would alleviate congestion on existing repeaters by up to 30% if opened up for general use.

He also pointed out that much of the blame for this waste of the spectrum is down to me, as I was partly responsible for convincing the Department to allocate 5/35 for exclusive emergency use in the first place.

'A monster of your own creation', were his exact words.

Oh well... it seemed like a good idea at the time.

Correction ..... it WAS a good idea at the time !!

It just didn't work out the way I thought it would.

The bottom line seems to be that most sensible UHFers would like to see 5/35 opened up for general use, and the more I think about it the more I'm inclined to agree.

THE GARDEN GNOME IS BACK

The scourge of the Brisbane pirate scene, well-known Radio Inspector Andrew 'The Garden Gnome' Gardiner has once again returned from America after his annual holidays.

(They must be paying him too much).

Incidentally, there is no truth in the rumor that DoTaC regularly send, 'the Gnome' to America to learn new torture techniques for extracting confessions from out-of-band operators.

Brisbane Bad Buddies will heave a sigh of relief at the news that Andrew is planning to emigrate to the USA with his American-born wife in the near future, provided he can wangle a resident visa and a work permit and a gun licence and a dog licence and a CB licence (naturally) and that the Oz Dollar doesn't drop below US 12 cents.

I offered to put in a good word for him for employment with the US Department of Disinformation but Andrew, a Greenie from way back, plans to start a commercial bird sanctuary in the wilds of Idaho, specializing in breeding Black Eagles and Albatrosses for export to Australia.

STOLEN CAR LIST FORGET IT...!!

Now for the most aggravating performance I've ever encountered on CB radio — the infamous CREST 'Stolen Car' broadcasts.

I was only made aware of the 'Stolen Car' broadcasts recently (lucky me) but I'm told they've been transmitted several times a day on HF channels 11, 16 and 35, and on the Brisbane UHF repeaters, for months !!

I made a point of listening to a few of these 'community service' transmissions recently and found that they consist of several minutes of monotonous drivel detailing a list of vehicle makes, models, colors, registration numbers, etcetera, usually smack bang in the middle of ideal skip conditions when half the DXers in Australia are trying for contacts.

Can you imagine anyone writing down a dozen or more car descriptions and rego numbers as they drive along a busy highway — or pulling over to write them down ? I can't.

Generally the only people in a position to safely record the

details would be base station operators, all of whom would be wise to copy the list in its entirety just in case one of the stolen cars happened to drive through the living room.

Each broadcast was immediately followed by tirades of abuse directed at the monitor by numerous understandably irate Cbers from all over the country.

I even heard a couple of American stations bitching about one broadcast.

On one occasion, in reply to the horde of abusers, a CREST station claimed that the 'Stolen Car' transmission was, 'an official police broadcast on behalf of the Queensland Police' and that the police rang CREST each day with an updated list of stolen vehicles.

Rubbish !!

These broadcasts are NOT 'official police broadcasts on behalf of the Queensland Police'. The police did tell CREST in writing that they had no objection to CREST broadcasting the daily 'Stolen Car' list (Brisbane commercial radio stations do so, and the lists appear in newspapers) but this DOESN'T make the broadcasts 'official police, etc., and the police do NOT ring CREST every day with an update .

It's the other way around.

As for the CREST monitor I heard telling abusers that both VKR (Police Radio) and DoTaC were monitoring the broadcasts to catch them in the act ... dream on, Good Buddy !!

I've got news for you, and it's all bad !!

Queensland Police media man Ian Hatcher informed me that he's received so much flak from CBers on the subject he's beginning to wish he hadn't agreed to let CREST do the broadcasts in the first place, and DoTaC confirmed that broadcasting 'Stolen Car'lists on designated calling channels is in contravention of the RadCom Act.

Police did actually apprehend a car thief recently when a CBer listening to one broadcast spotted and followed a listed car and called in the location on his CB....and they all lived happily ever after .

But what if the stolen vehicle had been the getaway car in an armed bank hold-up and the occupants, realizing the CBer was tailing them, had cut loose with a shotgun and blown his head off?

Or worse .... what if the car thief had spotted the tail, panicked, put the boot in, and hit an oncoming minibus filled with pre-schoolers head-on at 150 kilometres an hour ?

Obviously the amount of on-air abuse these broadcasts attract indicates that the a majority of CBers aren't too happy about having the call channels, official and defacto, jammed several times a day, and even DoTaC and the Queensland Police are starting to come down with a bad case of the irrits.

In the public relations department these 'Stolen Car' broadcasts are a disaster for all concerned.

As a 'community service'...they suck !!

Time to bow out gracefully, CREST !!

NEW REGS?

As I write this (mid-May) a swarm of DoTaC officers are head-down-and- bum-up in Canberra trying to sort out in which direction to jump Regulatory- wise.

So far they've been unable to decide whether to make total anarchy compulsory across the entire electromagnetic spectrum or to publicly garotte unlicensed CBers on prime-time television - they're working on it ....!

PUBLICATIONS OF INTEREST TO SHORTWAVE LISTENERS

Further to Stephen Newlyn's report on used shortwave receivers elsewhere in this issue, he has supplied the following information on publications of interest to SW listeners.

The first is the 'Receiver Guide', a free of charge 32 page booklet which gives additional details on several of the radios mentioned in the article. Also, request a 'Radio Nederlands' program guide and say that you 'saw it in CB Action'.

Your letter should be addressed to: Media Network, Radio Nederlands, P.O. Box 222, Hilversum, 1200 JG, Netherlands.

Note: The 'Guide' will be posted surface mail so allow about two months for delivery or, if you require it quicker, drop a note to the above address and ask the return air mail cost and then include the necessary charge with your request.

Other publications include: Radio Receiver:Chance or Choice — a 225 page book with over 60 reviews of shortwave receivers by noted West German expert Rainer Lichte. This publication was printed in 1985, however, a supplement to this book called 'More Receiver Chance and Choice' was published in 1987 with 14 more reviews including the R-5000 and the NRD-525.

Both these books are published by Gilfer Shortwave, P.O. Box 239, Park Ridge, NJ 07656, USA.

Alternatively, any major bookshop is likely to have it in stock or can order it for you — its ISBN number is ISBN:0-914542-16-8 — or you can order it direct by including $US28.90 for air mail return to Australia from the US publisher. This is the price for the 225 page book only, the supplement is extra.

Other receiver publications include 'Passport to World Band Radio' edited by well known expert Larry Magne of the USA. In this book, apart from a listing of broadcasts from SW stations, Magne provides brief and sometimes biting comments on receivers ranging from small portables to JRC's NRD-93/95.

The USA price for this book is $US14.95 plus $US10 for air mail to Australia.

From the same author are the 'White Papers', 12 to 15 page documents giving very in-depth reviews of mostly 'communication receivers' with the emphasis on the technical aspects, but, in an easily read style. I am unsure whether these are available in Australia but for further information send three IRCs (International Reply Coupons — which are available from the post office) to International Broadcasting Services, Box 300, Penn's Park, PA 18943, USA.

Finally there is the 'bible' — the WRTVH (World Radio TV Handbook) which each year has reviews of most recent releases from manufacturers during the previous twelve months. These reviews are an extension of the free 'Radio Nederland' receiver guide mentioned earlier and go into far greater detail.

The 1989 edition is now available through major book shops.

SAY
YOU
SAW
IT
IN
CB Action

THE SIMPLE ART OF... GETTING ESTABLISHED

One of the most daunting prospects for any new CBer is getting his station properly established. It doesn't really matter whether you're setting up a CB rig into a car, truck or home base, the rules are basically the same. Likewise, the same basic rules for setting up a 27MHz station apply if you're setting up a UHF station.

Confused . . . ?
Read on . . .

A radio transmitting station can be basically broken down into four distinct sections:

★ the power supply;
★ the transceiver (or separate transmitter and receiver);
★ the cable;
★ the antenna.

This simple 'break down' applies equally to a low powered CB radio station as it does to a 100,000 watt broadcast band transmitter but for the sake of simplicity, we will be referring to a CB radio station with its 4/5 watts output (low power) installed in the car or home.

POWER SUPPLY

There are quite a few varieties of power supplies available to the CB radio operator but for ease of explanation, we will look at two different types: the wet cell battery with a charging system; and a 240 volt AC to 13.8 volt DC converter.

A motor vehicle already has its own wet cell battery (with a charging system) so this is the obvious source of power for your mobile CB station.

While vehicles are advertised as having either a 12 volt or a 24 volt system, in fact they deliver about 13.8 volts and 27 volts respectively when under full charge. This depends on the setting of the voltage regulator on the vehicle and it is not too uncommon to find 15 and 30 volts in some vehicles. A volt meter placed across the positive (+) and negative (-) terminals of a battery while the engine is running (and has been running for 10 minutes) will indicate the maximum supplied current through the battery. If the voltage exceeds 15 VDC, no radio equipment should be connected and the regulator should be checked.

A permanently installed volt meter inside the car should be used to keep a watchful eye on both the ability of the battery to retain a charge and the current supplied by the alternator.

In 24 volt systems; either a 24/12 volt converter should be used for the radio supply current or the battery should be tapped off at 12 volts.

Whatever the voltage system, a direct lead should be taken from the battery to the CB radio without resorting to the vehicle's wiring loom. The lead should be heavy gauge to prevent 'lead resistance' which reduces the voltage available at the rig.

While a wet cell battery can be used at home in conjunction with a battery charger, permanently connected to the battery, fumes from the battery acid can and do destroy curtains and other fabrics inside the home. If a particularly high current is required (more than 10 amps), the wet cell battery is the cheapest and probably best source of power. In this case, the battery could be placed outside the house and a set of leads run to the 'shack.

Caution: the cell caps should be removed from the battery while under charge. Failure to carry out this precaution could result in an explosion.

The best overall power supply for the home is a 240 volt AC (alternating current)/13.8 volt DC (direct current) converter which is capable of supplying sufficient current for your rig.

These converters or power suplies should be designed especially for use with CB radio and the direct connection of battery chargers or model railroad supplies should be avoided.

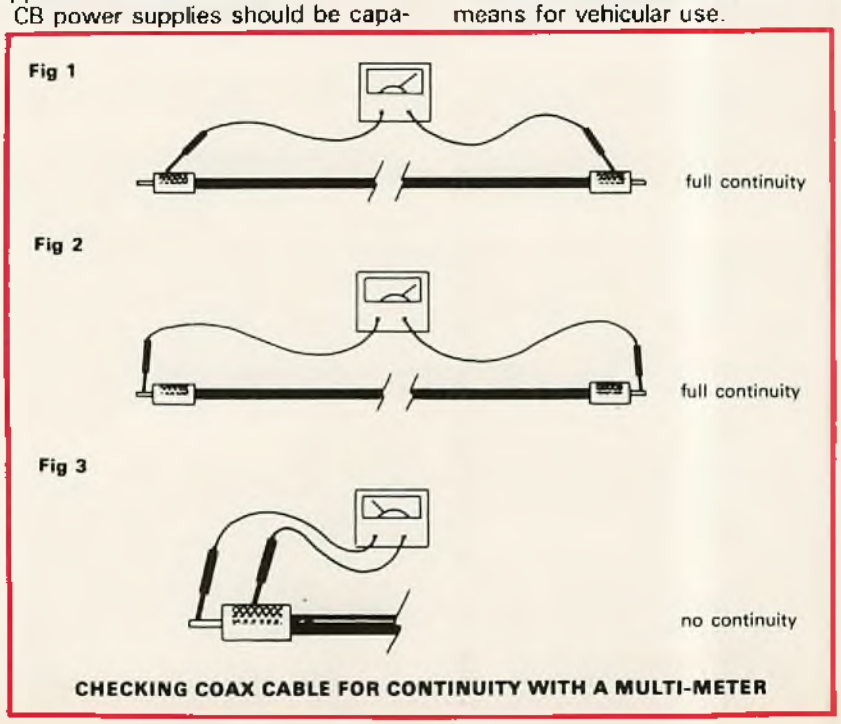
CB power supplies should be capable of supplying 13.8 VDC with at least 1.5 amps continuous for AM only and UHF radios, and at least 2.5 amps continuous for combined AM and SSB radios. The minimum (continuous) rating for your supply must be more than the maximum rated current requirements listed in hour rig's handbook. If in doubt, ask your local CB retailer.

Some base station CB radios already have a built-in power supply and are designed to be directly connected to the 240 volt mains. In these cases, an 'out board' power supply is not required.

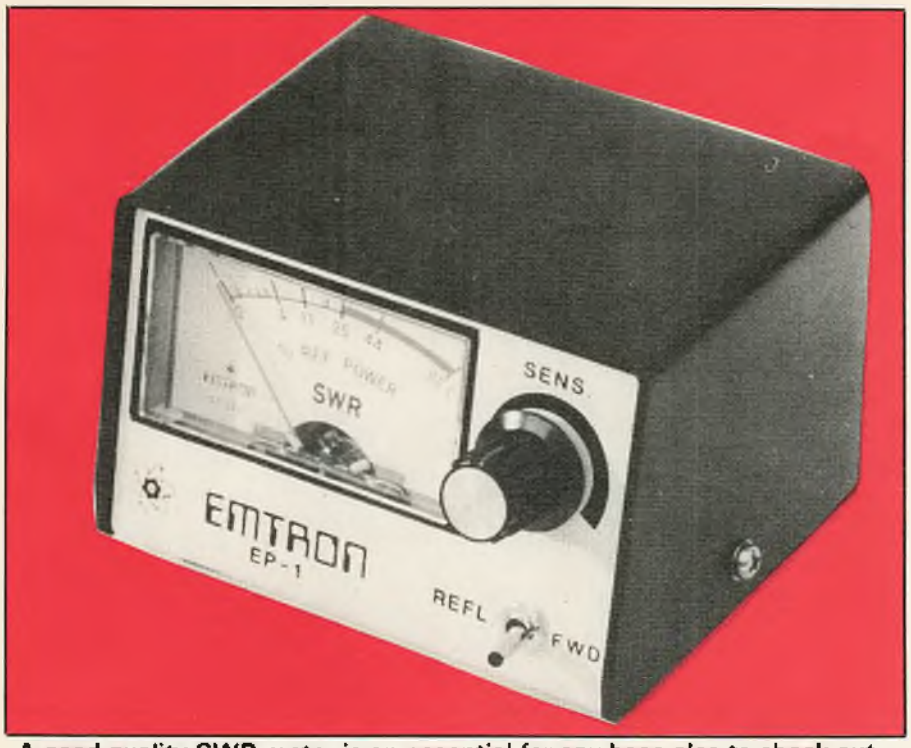
CABLE

Most modern CB radios (both 27 MHz and 477 MHz) require a nominal 50 ohm load for efficiency in both transmission and reception. To achieve this load, a 50 ohm antenna must be connected to the rig, usually using 50ohm (rated) coaxial cable.

This cable comes in two basic sizes: ¼ inch diameter (called RG59) and ½ inch diameter (called RG8 or RG213). The thinner RG58 cables are suitable for short cable runs which usually means for vehicular use.



CHECKING COAX CABLE FOR CONTINUITY WITH A MULTI-METER



A good quality SWR meter is an essential for any base also to check out the SWR on a mobile whip.

The thicker RG8 (RG213) cables are used in base stations where runs over 50 feet are often experienced.

While RG58 cables can be used for shorter base station cable runs, line losses usually restrict their use to the 27 MHz band as losses increase with higher frequencies.

The most popular connector for 27 MHz CB equipment is the PL259 plug mated to the SO239 socket and most CBers should be able to fit the plugs to each end of the coaxial cable. A light weight soldering iron is required and the 'trick' to fitting the plugs lies in ensuring that there is full continuity between the two inner connectors and also between the two outer connectors without continuity between the outer and inner connector.

This can be checked with a multimeter set to read 'ohms' on the highest scale on the dial (more than 10,000 times). Do not check the cable after one end has been fitted to the antenna as a 'short' will often be indicated between the outer and the inner connector.

Figures 1, 2 and 3 indicate the readings you should get with properly terminated coax.

As a general rule, coax cable should not be joined and it should not be subject to sharp bends. The cable should be regularly checked to ensure that the outer PVC covering is free from fractures and abrasions.

Exposed connections should be water-proofed with a silicon based water-proofing compound (like 'Selastic') and the cable should be fully supported to prevent movement in high wind or having too much weight on the plug. 'N' connectors used with most UHF base aerials are particularly subject to problems when the weight of cable is allowed to be taken on the connector.

A single loop of cable immediately below the connector and taped to the mast is often used to take the weight off the connector.

ANTENNA

The antenna is often the most misunderstood item in the system and subsequently, is often poorly installed or positioned.

Without doubt, 'height is might' when antennas are discussed and as a general rule they should be mounted at least 10 feet above a house roof or tree.

Most surfaces will 'reflect' RF signals and unless the antenna is well clear of these reflectors, problems in transmitting range or with the antenna tune will result.

Most antennae must be tuned for best results and while some base antennae are pre-tuned at the factory, many have to be adjusted after the antenna has been installed.

Mobile antennae are usually called 'whips' and serve the same basic function as all other antennae. On 27 MHz, whips are in fact only half an antennae — the body of the vehicle must provide the other half.

The shortest antennae at 27 MHz is 18 feet long, which is impractical for fitting to a vehicle.

To counter the 'minimum 18 foot' problem, two measures are usually taken. The first is to half the length of the antenna by using the vehicle's metal body as halve of the antenna. This means that the antenna is reduced down to a more workable 9 foot with the remaining 9 foot being made part of the vehicle.

While 9 foot is not too excessive, it does tend to limit the potential installation points on a vehicle and means that the 'best' point on a car — centre of the car's roof — is not practical. To counter the second problem, the 27 MHz antenna is again shortened, this time by including a loading coil so that the transmitter 'sees' a full length antenna without there necessarily being one fitted.

The loading coil on a 27 MHz whip antenna may be one of four common types: bottom loading; centre loading; top loading; and variably wound helical. The efficiency of loaded antenna depends on the position of the loading coil and theoretically, the 'best' is the variably wound helical, followed by top loading, centre loading and bottom loading.

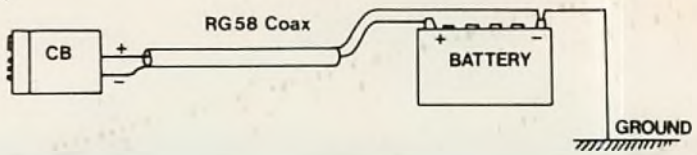
For practical purposes, there is little real differences between these four and purchasers may find that personal preference plays a larger part in selecting the 'right' antenna than does technical (and theoretical) advantages.

As the common 27 MHz whip has been shortened, it stands to reason that the smallest antenna available is not as efficient as the larger version. The larger antenna has less loading and

Height means everything with an antenna — this Station Master base it at a height of four metres and gets out extremely well.

GETTING ESTABLISHED

Fig 4



TYPICAL CONNECTION OF A MOBILE RIG USING COAX AS A POWER CABLE

is therefore closer to the correct resonant length.

Theoretically at least, the 'best' 27 MHz whip is the nine footer, followed by the eight footer, the seven footer, the six footer, etc. For practical purposes, the six foot is probably the most versatile as it can be easily mounted in the centre of a car's roof and exhibit the best radiation pattern.

A mobile 27 MHz antenna is therefore a compromise as we must balance out not only the most practical antenna as far as length is concerned, but also the best mounting position on a vehicle.

The common mounting positions on sedan cars are as follows:

Centre Roof. The highest position on the vehicle gives the furtherest radio horizon and if the antenna is mounted very close to the centre of the vehicle, the radiation pattern is the closest to omini-directional (circular).

Side Roof. A side roof mounted antenna (usually on the gutter) has the same height advantage as centre roof mounted but instead of the radiation pattern being omni-directional, the strongest signal favours the opposite side of the vehicle to that which houses the antenna. In other words, if the antenna is mounted on the left hand side of the vehicle, the strongest signal will be towards the right hand side.

Bonnet Mounted. The bonnet or boot mounted antenna have a shorter radio horizon than the roof mounted types and tend to be directional along or across the bulk of the vehicle. For example, if an antenna was mounted on the front leading edge of the boot — in the middle — it would have the strongest signal (both transmit and receive) along the vehicle towards the front. If the antenna was mounted on the mudguard or fender, it would transmit diagonally across the vehicle towards the opposite corner.

Bumper Bar Mounted. Bumper bar mounted antennae are usually full nine foot whips. Due to the height disadvantage of this location, there is usually a shorter radio horizon than the previous types. Again the antenna is directional across the bulk of the vehicle towards the opposite corner.

Another consideration for mobile antennae is the physical attributes and problems associated with each type. While many Australian CBers prefer the fibreglass whips (often incorrectly called 'helicals') there are many different types of fibreglass rod used. If the rod is flexible enough to withstand hitting overhead branches, etc, it may not be strong, enough to remain vertical while the vehicle is in motion. Likewise, a fibreglass whip which does stay vertical at high speed may be too inflexible to absorb the shock of hitting overhead obstacles. A compromise is therefore required.

Base station antennae are also subject to problems with the different materials used in the construction. Lightweight aluminium may save the manufacturer quite a lot of money in the long term but the end result for CBers is not as good. Thin walled aluminium antennae tend to sway more in the breeze and have been known to telescope (one section inside another) after the excessive movement has sheared off one or more of the fixing screws.

Some CBers rectify this problem by tying nylon fishing line to the top sections of the antenna which act like guy wires. Unfortunately nylon line has a life of less than two years when exposed to the ultra-violent rays from the sun so operators who wish to guy the top of their antennae with nylon must be prepared to replace it about every 12 months.

When aluminium base antennae are subject to salt impregnated air the subsequent corrosion between the jointed aluminium sections can seriously affect the efficiency of the antennae and can push the SWR way behond the practical limit of 2:1.

To rectify this problem, the antenna must be regularly dismantled and cleaned with an abrasive household cleaner, like steel wood. A thin layer of petroleum jelly (Vaseline) over the aluminium at the joint should retard the corrosion at this point but still leave a good electrical contact.

Regular maintenance of your antenna — both mobile and base — is essential for continued efficient operation. At least once a month the SWR should be checked and any variation noted. The antenna is your rig's link with the atmosphere and should receive regular TLC (tender loving care).

The four basic sections of your radio station (power suply, rig, cable and antennae) are equally important for successful operation. If any one section is not working properly the entire system will be affected. Any one could therefore become the weak link in the chain.

Regular maintenance is essential to ensure that your station is working at its theoretical best. Nothing less can be tolerated. This is particularly true with UHF installations where every single item must be set up perfectly.

Getting a CB station established is not really hard, if you pay attention to small details and don't rush into the exercise without proper preparation.

Help Us Fight

Muscular Dystrophy

With 16,000 sufferers Australia wide, Muscular Dystrophy picks a fresh bunch of almost two hundred little Australians every year.

It then proceeds to destroy vital muscles. First in the legs. Then those in the arms. And finally, the whole body.

It takes about ten years.

The mind remains fully alert and aware to the inevitable end.

From the onset of the disease, ever increasing care and support is needed. Both physical, and moral.

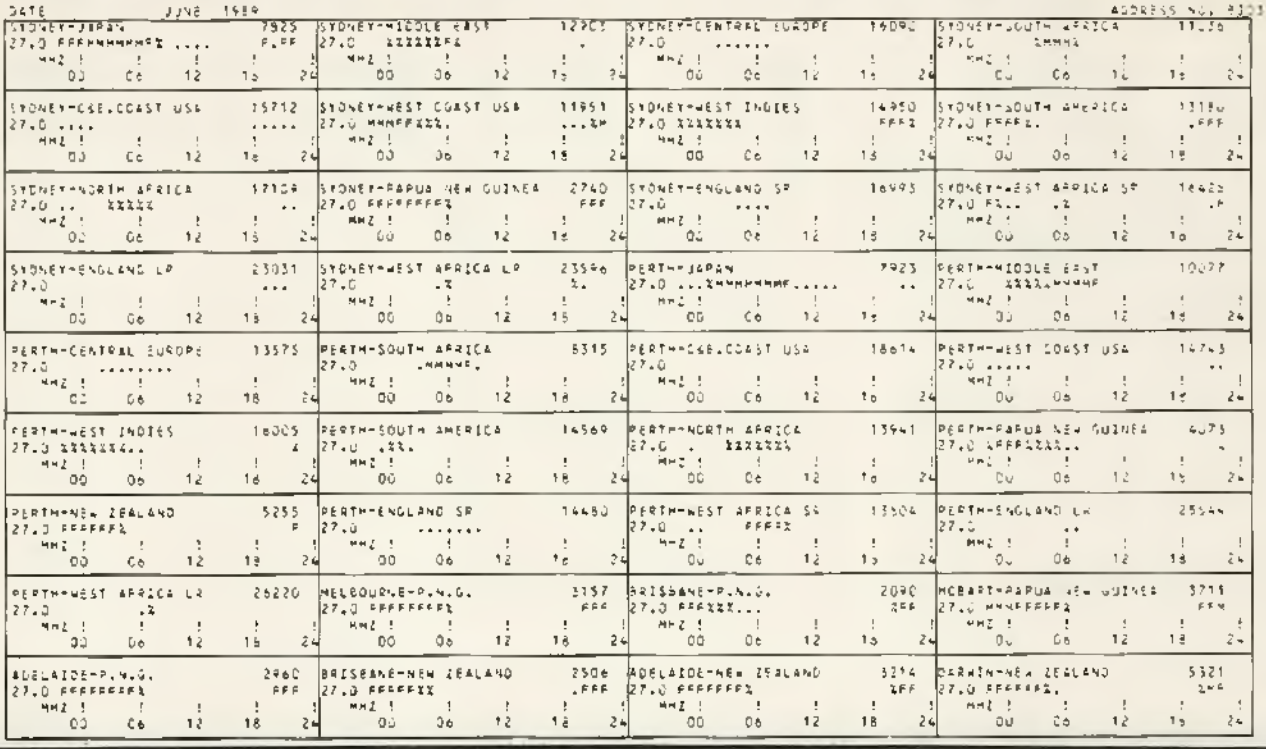
The distress suffered by these children and those close to them is awesome.

Please, now is the time to give. For more information please phone the Muscular Dystrophy Association of Victoria on telephone 370 0889, or write to M.D.A.V., 208 Union Rd., Ascot Vale, 3032.

Fight Muscular Dystrophy

DONATIONS —
M.D.A.V., P.O. BOX 9932,
MELBOURNE, 3001.

NOTE: Skip conditions are virtually the same from Sydney as they are for all other East Coast areas — likewise Perth predictions can be taken as similar to those for other West Coast areas.



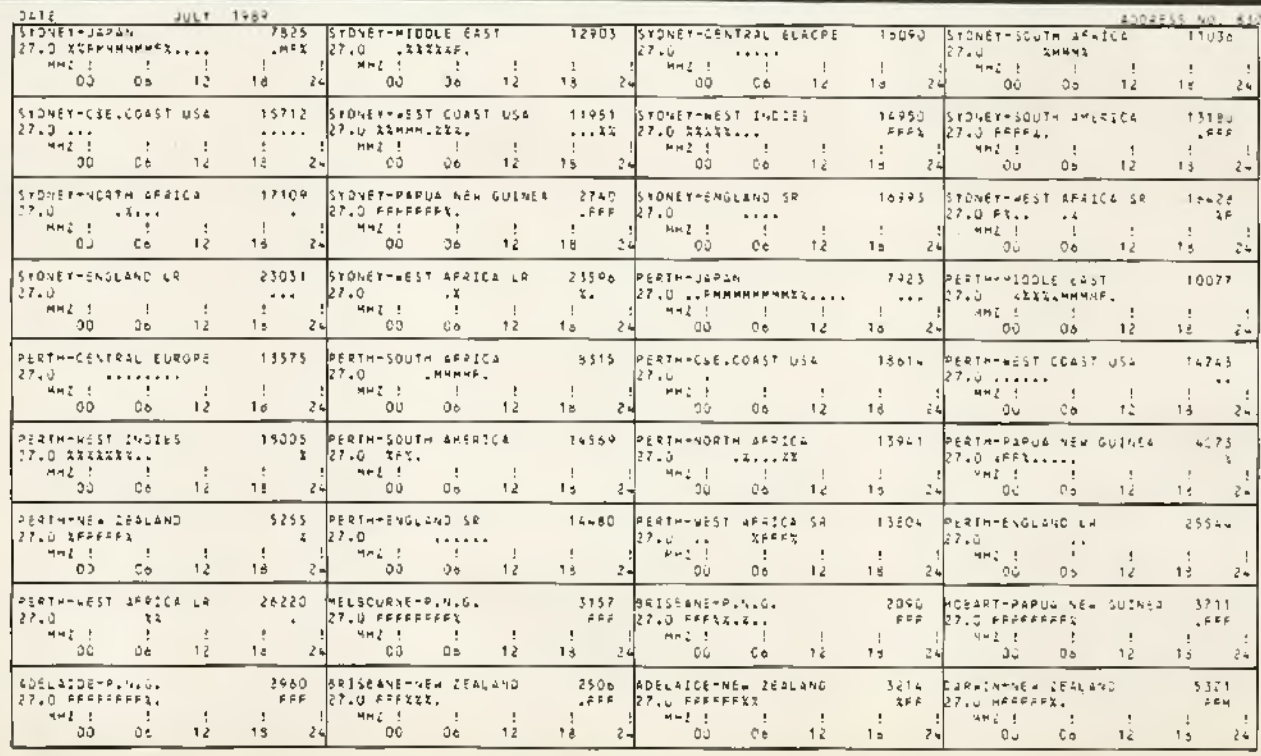
These GRAFEX style predictions present in pictorial form the expected HF propagation conditions between Australia and a number of important DX areas. For each circuit, the "East" terminal refers to the eastern half of Australia. The horizontal axis of each graph represents the hours of the day in Greenwich Mean Time from 0000 hours to 2300, reading left to right. The vertical axis represents increasing frequency.

A GRAFEX symbol represents the predicted propagation conditions for a particular frequency at a particular time. The meaning of each symbol used is given in the key on the next page. The letter "F" designates the best conditions for HF communications.

Grafex prediction charts supplied courtesy of the Ionospheric Prediction Service, 162-166 Goulburn Street, Darlinghurst, NSW.IPS offers pre-recorded telephone information. To access the service, please phone (02) 269 8614.

LEGEND TO GRAFEX SYMBOLS

- Propagation is possible but probably on less than 50% of the days of the month.
- % Propagation is possible on between 50% and 90% of the days of the month.
- 'F' Propagation is possible by the First F modes on at least 90% of the days of the month.
- 'E' Propagation is possible by the E modes on at least 90% of the days of the month.
- 'M' Propagation is possible by both the First and Second F modes on 90% of the days of the month.
- 'S' Propagation is possible by the Second F mode on 90% of the days of the month.
- 'A' High absorption — above the ALF but probably too close to it for good HF communication.
- 'X' Complex mixture of modes including the Second E mode.



DX INTERNATIONAL

JACK HADEN (67-W-07) WITH WHAT'S BEING HEARD ON THE DX CHANNELS

Even though we are halfway through 1989, the 11-metre band is stil giving us a roller-coaster type ride through the world of DX. Signals are up one day, then down the next. Most of this activity can be attributed to some large solar disturbances taking place. These disturbances tend to knock the band around quite a bit, creating unreliable band opening times and paths.

Perhaps during the winter period the band will settle down and in turn offer some choice openings to some of the rarer countries seldom heard in our region. Propagation paths to northern and western Africa have been very poor and unpredictable from day to day, also some openings by way of the northern Indian Ocean region would also be most favorable with most DXers.

One has to be on constant alert when looking for signals from regions just mentioned. checking both the long and the shortpaths consistantly is a must, looking for signs of a band opening to these areas takes quite some time, but the rewards are worth it. Most avid DXers have already been doing this and as a result, have picked up the odd new country or two.

By now most of us will be tired of the same old rabble and noise generated by western Europe, the same old hurly-burly night after night tends to wear a little thin with most of us. So let's hope that winter brings about a better change in propagation paths, especially to western and central Africa.

Recently there has been a number of 'slims' appearing on the band, but unfortunately some time often passes before their cover is eventually blown. The recent slims have been up there with the best and have been having a field day soliciting "donations" to cover their mailing costs. Once such slim is Miguel, who normally signs as 106-AT-101 from Melilla, a Spanish territory on the north African coast. It appears that Miguel has launched his own DX-pedition to Morocco and signs as 76-AT-0, in actual fact he is not in Morocco at all but comfortably at home in Melilla. I understand by pulling this one off he is soon to lose his Alpha Tango membership as penalty for causing discredit to the club.

Another slim doing the rounds hails from Brazil but tells everyone he is on a DX-pedition to Trinidad and Martin Vaz islands. He has been signing as 290-AT-0 and requests the usual cash donations. I have been told that this gentleman has made a small fortune out of this caper, mainly by conning stations in North America.

Word from Italy informs me that the 86-AT-101 call being used by Darrel in Nepal was not approved and possibly this one may be a slim also. At the present, no one I know of has yet received a card from the address given in Bangkok, Thailand for this one, so it looks like a case of not holding one's breath in anticipation of a card materialising.

Quite a few prominent DXers are beginning to question the alleged DX-pedition recently performed by Sugeng, who signs as 91-AT-142 from Indonesia. Over the past few weeks Sugeng has stated on air that he was in fact operating from Singapore, and later on from West Malaysia with a planned operation from Thailand to follow. As usual, a cash donation was requested to his Indonesian QSL address to cover costs, however, he said on air that he had no official QSL cards to cover his alleged Singapore and West Malaysian operations and that a picture postcard would be sent as proof of contact. From what I have heard, cards will be issued from Indonesia and not from the places of alleged operation, raising questions as to the validity of his DX-peditions. Additional information received by me pointed to the fact that Sugeng was operating from Pulau Batam, an Indonesian island which can be seen clearly from any high-rise building in Singapore Harbor.

So, he was not in Singapore at all but still within the boundaries of Indonesia and this in anyone's book does not count as Singapore. With regard to his alleged operations from West Malaysia, this too is open to question. Notes from the Alpha Tango group fail to mention any official or unofficial activity in these countries being approved in favor of 91-AT-142. I do not

CYCLE 22 IS HEADING FOR A PEAK AND THE DX IS ROLLING IN

entertain such operations just mentioned and tend to give them a miss when I hear them. Until more concrete information comes to hand I would treat this one with suspicion.

AFRICAN & INDIAN OCEAN REGIONS

South Africa has been putting some excellent signals into eastern Australia with Braan, who signs as 44-AT-116, making a solid five by nine impression on the meter at 0711z. Braan is in the Lynwood Manor region of South Africa.

Another good solid signal from South Africa came by way of John, who signs as 44-AT-130 from Paardekraal. He was a steady 10/DB over nine at 0745z. Also noted was Pete, who signs as NW-101 from Namibia, in South West Africa. Pete was a fair five by three as 0832z but quickly faded out.

One station receiving some attention is Regis, who signs as 186-ICC-02 from the country of Djibouti on the northeast coast of Africa. Regis was five by two at 0405z and the signal held quite well for some time. Regis is connected with the French military and will be in Djibouti until February, 1990. QSL cards go via an address in Paris, France and two IRCs should be included to assist with the postage.

An unusual surprise from a country seldom heard from comes by way of Mick, who signs as 174-AT-598 from Uganda. Mick was heard on the band at 0603z with a very poor four by zero report and had quite a pile-up of stations wishing to work him. QSL cards go via his Alpha Tango group address.

Some brief activity was heard from the Somalia Republic by way of Marco, who signs as 159-AT-101. Marco was barely readable on the shortpath at 1055z.

Mauritania has been present on the band with the only noticeable station being Patrick, who signs as 66-AT-101. Patrick was very weak in signal strength at 0330z and he was heard working stations in the US which were giving him five by nine reports.

Activity from Kerguelen Island has been noted with a station signing as 255-ICC-01 being heard at 0735z with a small four by two report. Kerguelen Island is in the southern Indian Ocean and is a French territory.

The island of Reunion has been coming in quite well recently, with Gert, who signs as PI-974, putting a healthy five by seven signal into eastern Australia. I have been informed there are quite a few people waiting for QSL cards from this station, so beware.

MIDDLE EAST

This area has had its moments as far as propagation is concerned on the 11-metre band and vary from day to day. Kuwait has been coming into Australia quite strong from 0500z onwards, usually until the band closes. One particular station signing as 102-VC-563 was a steady five by seven at 0458z with only slight fade being noticed. Also heard was 1-KA-56 operated by Abdullah at the later time slot of 1219z. Abdullah was a good five by five but was subject to heavy fade.

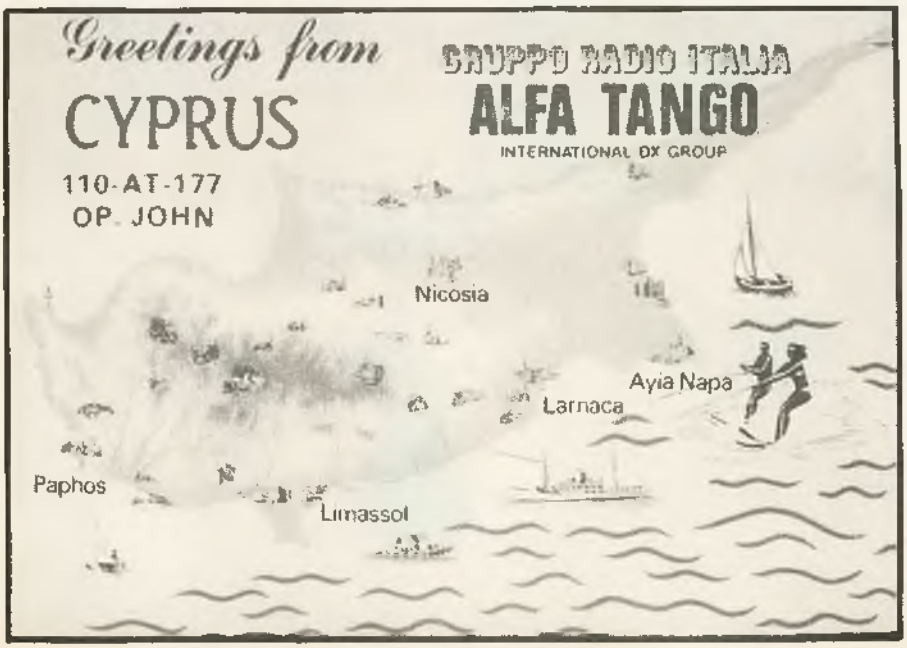
Israel has been very active on the band recently with Ronald, who signs as 97-AT-103, leading the way. Ronald, who lives in Tel-Mond was heard at 1145z with a reasonable five by six report. Using a Multimode Three through a quarter wave vertical antenna he seems to be doing quite well for himself.

Another station noted from Israel is Jimmy, who signs as IC-27 from the holy city of Jerusalem. Jimmy was heard at 0450z with a report of five by four which held quite well for some time.

A reasonably good signal from the United Arab Emirates came by way of Don, who signs as the 666 portable. Don is working in Abu Dhabi for six months and operates from his car using a Superstar 360-FM. Don was heard at 0955z and mentioned that he does not QSL.

Popular Lebanese DXer Hani, who signs at 1-PW-055, has been off air owing to his antenna system being hit by shrapnel during hostilities in Beirut. Hearing news like this makes us folk here in Australia feel rather lucky that we do not have a war going on near our backyards. By the time you read this Hani should be back on the band pursuing his favorite hobby of DXing.

Also out of Beirut, Sami, who signs as



Left: Pat, the IDX-50 from Dublin, Ireland uses a President Adams transceiver and puts a good signal into Australia on most nights. Centre: While serving in the US Army, Mike — the MJS-514 — still finds time to catch up on some DX out of Seoul. The radio is a military AN/6RC-106 and no, we don't know if that's what he DXes on. . . . Lower: Cyprus is a much sought after QTH and this card came from John, the 110-AT-177.

112-AT-110, has been quite active. He was heard at 0856z with a report of five by four peaking at six at times.

Nothing was heard from 20-AT-200, a Portugese operator who was supposed to be operating out of Algeria during April and May and I know of no one else who heard of any operations from this station.

Also, nothing was heard from Aldo, who was signing as 1-AT-526/92-AT from Libya. Although I did on numerous occasions hear stations in western Europe calling Libya, nothing was audible at this end at the time.

EUROPE

Much welcomed activity has been heard from the Principality of Leichenstein by way of Valdimar, who signs as 40-WW-2. Valdimar was noted at 1148z with a very constant five by six signal report, he then proceeded to deal with quite a large pile-up of stations wishing to work him.

Plenty of signals have been heard from the Azores Islands, one particular station, Rogerio, who signs as 75-AT-101, was logged at 1330z with a steady five by five report.

East Germany made a rare appearance on the band with Michael, who signs as 46-AT-102, being present only for a brief period. Michael was only a five by three at 1150z and soon left the band when things became congested.

Hungary has been coming into eastern Australia quite well recently proving that there is still activity after all in Eastern Bloc Europe. George, who signs as 109-AT-108, was a good five by five report at 1303z. George uses a President Jackson radio through a Moonraker four-element Yagi antenna from a location not far from the capital, Budapest.

Closely following George was Zsolt, who signs as 109-AT-138. Zsolt was heard at 1505z with a small five by two report. He didn't hang around the band for too long as some troublesome UK stations latched onto the scent so to speak.

Another station from Leichenstein was noted at 0829z. This was Frank, who signs as 40-AT-102, and was barely readable and was only concerned in establishing contact with 91-AT-142, who was supposed to have been in Singapore at the time.

A powerful signal from Greece was heard by way of Cristos, who signs as 18-AT-136. He was logged at 1209z with a good five by nine report and had no shortage of takers to his calls.

Luxembourg has been quite plentiful on the band lately with Daniel, who signs as 4-WE-04, being present at 1300z leading the way. His signal was a reasonable five by four and held quite well. Also observed from Luxembourg was Mich, who signs as

DX INTERNATIONAL

LX-105, and was noted at 1215z with a small four by one signal report.

Iceland has appeared on the band at odd occasions, providing much needed relief from the usual hustle and bustle of western Europe. Steve, who signs as 27-AT-112, was logged on the band at 1119z with a very poor four by two signal report although he picked up to five by five later on.

The Republic of Ireland has been putting some really strong signals into eastern Australia at odd times with IDX-50, operated by Pat, being a good five by nine at 1058z. Pat was soon joined by Karen, the IDX-13 at 1107z, with a lesser signal of five by three. Both Pat and Karen live in Dublin, the capital of the republic.

The Isle of Man is still proving to be popular with DXers as 137-AT-122 operated by Richard soon found out. Robert was logged at the late hour of 1548z with a 10/DB over nine signal which quickly faded out as the band prepared to close down.

Jersey Island was heard on a number of occasions by way of the Alpha Tango DX-pedition (reported in last month's DX-pedition notes), operated by Jose, who was signing as 167-AT-0. He was heard at 1301z with a fair five by two signal and had no shortage of takers wishing to estalish contact. The QSL cards for this one go via 14-AT-027 with a green stamp or two IRCs to cover return postage.

The Coffee Cup Collector, George, who signs as 21-AT-127, was found prowling the band at 1333z with a good five by seven signal. As you may have gathered, George, from Sweden, collects souvenir coffee mugs and to date has quite a number from around the world.

Sardinia Island has been well represented by Vincenzo, who signs as the 165-AT-118. Vincenzo was heard at the early time slot of 0702z with a huge 10/DB over nine signal which held very well indeed. His antenna is a five-eight wave Mantova vertical.

CENTRAL/SOUTH AMERICA & THE CARIBBEAN

Firstly I will deal with the rumor about the proposed 88-AT-0 operation from Cuba. This turned out to be a farce, blown out of proportion by the rumor-mongers in North America. It turned out that a Canadian DXer was off to Cuba for a holiday and he suggested that there was a remote possibility that he may appear on air, but he had no authorisation to use the call 88-AT-0. It turns out that he didn't appear anyway and many people who 'bought' the rumor wasted their time looking for him. So, now you know. It wasn't a planned DXpedition, only a vague hint of possibility of activity, a very vague one at that.

A number of stations from Bolivia have been about, with Juan-Carlos being the most prominent. He was using the call CPXD-5 and lives in Cochabamba. He was heard at 0610z with a strong five by seven report. Juan-Carlos uses a Cobra GTL-148 radio into a vertical antenna with around 12 watts power on SSB.

Peru has been well represented on the band with station CLOCH being one of the strongest signals out. Operated by Rony, his signal was a good five by nine at

It takes all kinds — this is a fairly novel way of sending a QSL card from jungle of Africa.

0733z. Following in the trail of Rony was Jose, who signs as 4-TC-305. Jose was a good five by six at 0800z. He uses a Pacific S-800 radio into a five eighth groundplane antenna from his home in the capital of Peru, Lima.

Good strong signals have been logged from Chile, with Marcos, the 32-AT-121, showing the way at 0406z with a good 10/DB over nine signal. He was closely followed by YZ-725, operated by Jaime from the north Chilean city of Iquique at 0457z with a massive 20/DB plus 30 signal over nine, one of the best signals heard from Chile for some time.

Paraguay has been making some odd appearances on the band, usually with the run-of-the-mill novelty calls being predominant, however, 67-AT-112 operated by Jorge, has been active and was logged at 0219z with a five by three report. Jorge resides in the capital city of Asuncion.

San Andres Island has been about the traps also, by way of David, who signs as 81-AT-103. David was noted at 0510z with a rather poor five by one peaking two signal report. Although his signal was down he had no shortage of takers to his numerous calls. Let's hope his QSL record is better than Bassam's. the 81-AT-104, as mentioned in my last column.

Allen, who signs as the AT-35 from Honolulu in the Hawaiian Islands, uses a Cobra 139 radio into a Moonraker antenna.

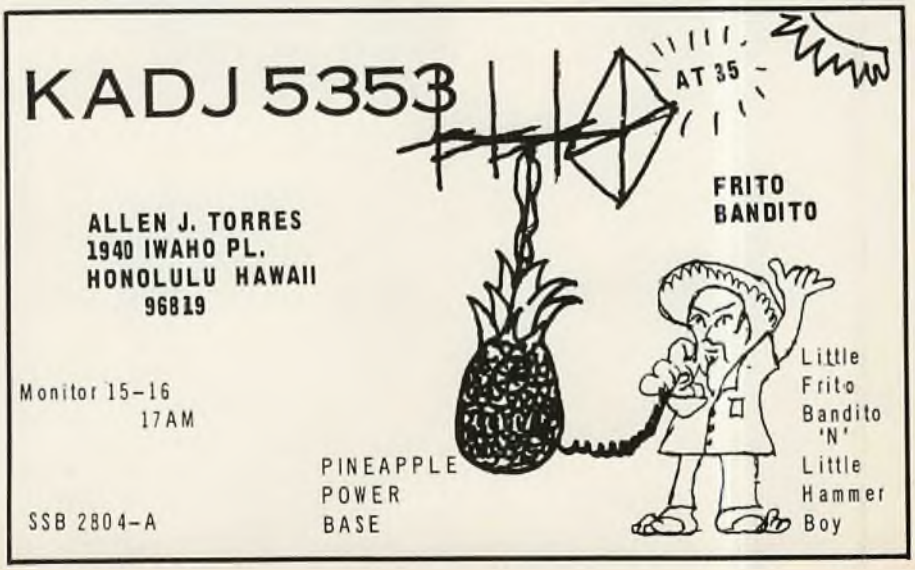
Martinique Island has been popping up from time to time also, usually by way of David, who signs as 136-SK-101. David hails from Le Lamentin on the island. He uses a Pacific-3 radio through a AV-140 antenna with only 12 watts on SSB. David was a readable four by one at 0649z. He QSLs on receipt of the contacts card.

Bermuda has made one of its rare appearances on the band by way of Bob, who uses the call 649. Bob lives at Devonshire in Bermuda and at 0710z was a massive 20/DB over the nine and the signal held for nearly one hour with minimal fade.

The island of Saint Vincent has been active by way of Len, who signs as the KP-579. Len was heard at 2202z with a report of five by four.

The Bahamas has been well represented by Farley, who signs as the 121-AT-105, and lives near Nassau, the capital. He was a small four by one at 0649z.

Saint Barthelemy Island in the French West Indies was heard at the rather late hour for this region of 0915z. Station SAM



operated by Peter was an excellent five by seven but subject to much fade. The island is so barren that fresh water has to be shipped into Saint Barthelemy from outside the island, although it is reasonably popular with tourists so there must be something else to offer.

NORTH AMERICA

As usual signals from this region are still with us on a near daily basis, and at various times the signals are well into the red on the meter. At times North America starts to come in around daylight here in eastern Australia and lasts well into the afternoon, only to re-appear again on the longpath around 1430z onwards.

All of the usual stations are about, ranging from Mexico right through to Canada and Alaska, making this region one of the most easiest to obtain. the Mexicans still present quite a problem in the QSL department and unless you are desperate for a card from there I would suggest you wait for the card to arrive first, especially from stations using novelty calls, although some of the Alpha Tango members also do not seem too reliable.

ASIA & THE PACIFIC REGION

There is never a dull moment in this region judging by some of the new countries that have made their debut recently. As normal, we still get the hurly-burly from Japan, Hong Kong and Indonesia which tends to get tiresome.

However, there has been some interesting stations about to keep us glued to the speakers in anticipation.

The DXpedition to the Galapagos Islands went off on schedule with Tony, who was signing as 145-SK-0, appearing on time, however, not many stations here in Australia had the opportunity to secure this one, although New Zealand seemed to do quite well. I monitored Tony at 2158z with a rather poor signal of four by one at its best. Then again, it was better than nothing at all.

A surprise to add some spice to the hobby of DXing came by way of Peter, who was signing as WY-01 from Campbell Island. Even though Peter hasn't the facilities at hand to QSL he still created quite a pile-up with stations wishing to secure a contact. Peter was logged here at 0635z with an exceptional 20/DB over nine signal. Peter will remain on Campbell Island for another four weeks or so before returning to his home in New Zealand.

Tonga has secured a prominent operator on the band by way of John, who is signing as 25-E-01. John is stationed on Nuku'alofa, the main centre of the Tongan Island group. Although John does QSL please be considerate by including sufficient funds for return postage as he is a little stuck for funds while in Tonga. John was logged at 0230z with a solid five by seven signal report.

The JX-109, operated by Jerry, aboard his maritime mobile home is now in American Samoa. Currently Jerry is off air due to problems with his old Superstar radio which doesn't appear to like the salt atmosphere that it has encountered.

Pitcairn Island has made the odd appearance on the band by way of station VIVA, at 0610z. This station was a good five by nine steady and was not answering any calls directed to his callsign. At first I thought that this station may have been a slim but information from 201-AT-113, Denis in French Polynesia, confirmed the authenticity of the station and its call.

Nauru Island was heard on the band by the courtesy of Brian who signs as 705. Brian is on Nauru for sometime with the CSIRO and was heard at 1015z with a 10/DB over nine signal. Brian is not particularly interested in QSL exchange.

The Eastern Caroline Islands have been very prominent on the frequency of late with KO-167, operated by Blacky, leading the way. Blacky lives on the main island of Moen, in the Truk Group and was heard at 1154z with a signal report of five by five. Also close on the heels of Blacky comes Perry, who signs as 579. He was lodged at 0449z with a five by three report. Perry is also on Moen Island in the Truk Group, a famous World War Two area held by the Japanese during the war in the Pacific.

Kiribati has been quite noticeable on the band with various stations making their appearances. Willie, who signs as UNIT-209, was a rather light five by three at 0100z, not a bad effort considering he was using a longwire antenna at the time. Willie lives on Betio, part of Tarawa atoll.

As usual there has been a lot of noise generated by our Tasman neighbors in New Zealand and barely a day passes that we do not hear from them. One good signal from New Zealand belongs to VM-00, operated by Steve. He was logged at 0901z with a solid 50/DB over nine, yes, 50/DB and although there was slight fade it was still an impressive signal. Earlier in the day I monitored an exceptionally strong signal from Ron, who signs as 41-SW-31, from the south island of New Zealand. Ron was 20/DB over nine at 2213z and held the signal quite well.

Despite being the subject of negative publicity, I can assure you that station HOTEL-02 out of Taipei, Taiwan is the real thing. I have received notes from two independent stations that have already received his QSL cards posted on day of contact from Taipei. Operated by Rainer, a German working in the Republic of China (Taiwan), station HOTEL-02 is only on for brief periods at a time owing to problems there which you will no doubt understand. I logged HOTEL-02 at 0816z with a signal of five by five.

Possibly a slim is bootlegging the callsign of 114-AT-108 out of the Asian country of Pakistan. Even though I have heard this station on a number of occasions, I haven't had word from anyone that has secured a card from this one. 114-AT-108 was last monitored at 1130z with a good five by six report but despite many calls directed to him they went unanswered.

Prominent South Korean DXer, Han, who signs as 100-AT-101, has been in a wee bit of strife lately with the authorities. They wanted to find out why he was receiving so much mail from overseas countries and are now investigating him.

LONGPATH NOTES

Longpath has been shaping up to be a very good bargain lately. Excellent openings via this medium have been more than rewarding for most DXers. Although at times I myself have observed if we get an excellent longpath opening in our mornings and mid-afternoons then the path to Europe at night via the shortpath is somewhat weaker and less dependable. This happens from time to time but not on a regular basis

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AUSTRALIAN UHF REPEATER LIST

AREA	CHANNEL	LOCATION	SPONSOR
ACT			
Canberra	2/32	Isaacs Ridge	Philips — TMC
Canberra	8/38	Isaacs Ridge	Philips — TMC
New South Wales			
Albury	4/34	Lavington	Albury Communications
Armidale	4/34	Armidale	New England Mobile Comms
Bathurst	8/38	Mt. Panorama	Serv-U Appliance Centre
Bega	6/36	Mumbulla Mtn.	A.McCoy Two-Way Radio
Brendalilla Rge	7/37	—	Outward Bound Australia
Broken Hill	4/34	—	B. Hill UHF Club
Broken Hill	7/37	—	B. Hill UHF Club
Bulahdelah	7/37	Cabbage Tree Mtn.	Great Lakes UHF R ter Grp
Canberra	2/32	Isaacs Ridge	Philips Communications
Casino	6/36	Malanganee Range	Nathan Ross Electronics
Coffs Harbour	6/36	Coffs Harbour	Countrywide Communications
Cooma	4/34	—	Biamac Communications
Corowa	1/31	Corowa	Corowa Electrics
Cowra	7/37	Bellview Hill	Harvey Electronic Services
Deniliquin	3/33	Deniliquin	Deniliquin Machinery
Ebor	1/31	Nr. Armidale	—
Glen Innes	7/37	Mt. Rumbee	Glen Innes A.R.C
Goulburn	4/34	Mt Gray	Double Diamond
Harden	1/31	Mt Bobbara	—
Hay	4/34	—	Phil Shields Electronics
Inverell	2/32	Inverell	—
Jindabyne	1/31	Corrinya Alpine C.	Marist Brothers
Lismore	2/32	Raus	—
Moree	6/36	—	D. Groth Radio-Electronics
Murrundi	3/33	Liverpool Range	—
Muswellbrook	4/34	Mt. Arthur	General Communications
Narrabri	2/32	Castletop Mountain	L. Hannaford Electrical
Newcastle	1/31	Charleston	—
Newcastle	6/36	New Lambton	General Communications
Parkes	2/32	Parkes	Bionics Australia
Portable NSW	Various.	GT Electrics	
Stanthorpe	8/38	—	—
Sy. Outer West	8/38	Kurmond	Riverlands Repeater Group
Sy. Outer West	4/34	—	Riverlands Repeater Group
Sydney	1/31	Hurstville	Practronics
Sydney	2/32	—	Argent Comms
Sydney	7/37	Chatswood	Philips Communications
Sydney	3/33	Prospect	Philips Communications
Tamworth	1/31	Windworth	Landlink Communications
Tenterfield	3/33	Mt. McKenzie	Nathan Ross Electronics
Tumbarumba	3/33	Mt. Ikes	—
Wagga	1/31	—	Riverina Communications
Wagga	7/37	Wagga	Riverina Communications
Walbundrie	2/32	Walbundrie	Corowa Electronics
Walcha	8/38	Walcha	WalGraz
Wiccania	1/31	Murtee Station	—
Wingham	1/31	Wingham	—
Wollongong	8/38	—	Phil Day
Queensland			
Atherton-Mareeba	1/31	Rocky Creek	Marteens Electronics
Bajool	4/34	Mt Hopeful	Mt. H UHF Rpt Assoc
Biloela	7/37	Mt. Bertha	Biloela Repeater Assoc
Blackdown	6/36	—	Blackdown UHF Rpt Assoc
Brisbane	1/31	Mt. Cotton	Philips Communications
Brisbane	5/35	Mt. Glorious	ACRM (Q'land)
Brisbane	7/37	Toohey Mnt.	Olbis Industries
Bundaberg	1/31	Mt. Perry	Bundaberg Hi-Fi Stereo
Bundaberg	4/34	Sloping Hummock	B'berg Hi-Fi Stereo
Burnett Ranges	6/36	Munduberra	Custom Scientific Elects
Cairns	3/33	Mt Yarrabah	GcG Communications
Caloundra	6/36	Bald Knob	Ralph Hill Electrical
Chinchilla	3/33	—	—
Clermont	1/31	Clermont	—
Clermont	7/37	—	Clermont SES
Dalby	4/34	Mt. Mowbullan	GT Communications
Emerald	8/38	Emerald	Emerald Dist Rpt Assoc
Gladstone	6/36	Mt. Larcom	Nixon Controls
Gold Coast	4/34	Coolangatta	Philips Communications
Goondiwindi	4/34	Goondiwindi	Border TV & Radio
Gunalda	2/32	Mt. Kanigan	Ralph Hill Electrical
Ingham	2/32	Mt. Cudmore	R.E. Pugh
Ipswich	4/34	—	Ipswich Rpt Assoc
Leichhardt	1/31	Mt. Hope	Driscoll Pastoral
Mackay	3/33	Fairleigh	Mackay Citizens Rpt Grp
Marlborough	2/32	Broadsound Range	Marlborough UHF Rpt Assoc
Middlemount	1/31	—	Middlemount S.E.S
Milla Milaa	8/38	Milaa Milaa	Bill Jones Communications
Monto	3/33	Pine Mountain	Monto UHF Rpt Assoc
Mt. Alexandra	8/38	Mt. Alexandra	Bill Jones Communications
Mt. Isa	1/31	Lake Julius	Q'land Education Dept
Mt. Stewart	1/31	Mt. Stewart	Olbis Industries
Murgon	7/37	Mt. England	Murgon Repeater Assoc
Palm Island	6/36	Palm Island	Palm Island Council
Pialba	8/38	Ghost Hill	Maryborough Sugar Factory
Quilpie	2/32	Trinidad Station	DEA Pegler & Co
Rockhampton	1/31	Mt. Archer	Capricornia UHF Rpt Ass
Roma	1/31	—	Roma Teleradio
Springsure	3/33	Rodda Lookout	Bauhinia SES
Stanthorpe	8/38	Amiens	Mt. Peanga Rpt Assoc
Taroom	2/32	Mt. Kinnoul	Taroom Repeater Assoc
Tin Can Bay	3/33	Double Is. Point	Tin Can Bay Lions
Toowoomba	2/32	Picnic Point	Custom Scientific Elects
Yaraka	7/37	Mt. Slowcombe	Yaraka Repeater Assoc
South Australia/Northern Territory			
Adelaide	1/31	Summerton	Philips Communications
Adelaide	5/35	Upper Sturt	A.C.R. (SA) Inc
Blinman	3/33	Patawarta Hill	Gum Creek Station
Burra	8/38	Mt. Bryant	Mt. Bryant Repeater Assoc
Ceduna	1/31	Coppuduruba Hill	Ma Ross Electrical
Clare	7/37	Quarry Hill	Midnorth Repeater Assoc
Cleve	2/32	Mt. Nield	Cleve Repeater Station Inc
Coonalpyn	6/36	Coonalpyn Hill	Upper S.E. Repeater Assoc
Hawker	7/37	Mt. Aleck	Wilpenna F. Fighting Assoc
Manimum	8/38	Mt. Beevor	S.A. Antenna Services
Mt. Gambier	5/35	Mt. McIntyre	Crest S.A. Mt. Gambier
Mt. Gambier	7/37	The Bluff	S.E. Repeater Assoc
Myponga	2/32	Nr. Myponga	Aust.Volunteer Coastguard
Naracoorte	4/34	Lucindale	Naracoorte Repeater Assoc
Oodnadatta	1/31	Mt. Jane North	Todmordon Cattle Co
Orroroo	2/32	Black Rock Peak	Tocps Electrical Services
Parndana	4/34	Nr. Parndana	Ki Repeater Assoc
Port Lincoln	8/38	Pillawarta Hill	K.M. Electronics
Port Pirie	4/34	The Bluff	Dist.Council of Mt. Remarkabl
Price Hill	1/31	—	Dist. Council of Carrieton
Renmark	6/36	—	Riverland Repeater Group
Snowtown	6/36	Barunga Ranges	Largies Electrical
Tarcoola	6/36	Nr. Tarcoola	A.J. & P.A. McBryde
Truro	4/34	Nr. Truro	Barossa Repeater Assoc
Warooka	7/37	Mt. Gore	Power Communications Service
Welland	3/33	Trott Park	Philips Communications
Wilkatana	8/38	Mt. Arden	Mt. Arden Repeater Assoc
Tasmania			
Devonport	1/31	Roland	Rick Rickard TAJ-652
Hobart	1/31	Grass Tree Hill	Sth Tas Rpt Assoc
Launceston	2/32	Mt. Arthur	Launceston Rpt Assoc
Devonport	3/33	Railton	Rick Rickard TAJ-552
N-E Coast	3/33	Tower Hill	N-E Repeater Group
Midlands Area	4/34	Millers Bluff	Midlands Rpt group
Hobart	5/35	Mt. Faulkner	CREST (Tas)
East Coast	6/36	Mt. Toombs	East Coast Rpt Assoc
West Coast	6/36	St. Valentines Pk.	N-W Coast Rpt Assoc
C. Highlands	7/37	Barren Tier	C-Hlands Assoc
Burnie	8/38	Round Hill	N-West Coast Rpt Assoc
Hobart	8/38	Mt. Nelson	Harts Pty Ltd
Portable Tas	Var	Tasmania-wide	Rick Rickard TAJ-652
Victoria			
Alexandra	1/31	Mt. Eildon	Weeks radio
Ararat	6/36	Mt. William	Mt. William UHF Rpt Grp
Bairnsdale	1/31	—	G'land Repeater Assoc
Ballarat	2/32	Mt. Buninyong	C'tral Highlands R. Assoc
Ballarat	5/35	Mr. Warrenheip	B'rat Rural Elgency Motors
Ballarat	7/37	—	Ballarat Communications
Bendigo	4/34	Specimen Hill	Central Vic R. Assoc
Bendigo	8/38	Mt. Alexander	—
Carrajung	4/34	Carrajung	Carrajung UHF R. Assoc
Cavendish	8/38	Mt. Dundas	Hamilton UHF Users Grp
Foster	6/36	Mt. Fatigue	G'land Repeater Assoc
Geelong	4/34	—	G'long Amateur R. Club
Gippsland	7/37	Mt. Taylor	G'land Repeater Assoc
Hamilton	5/35	Mt. Bainbridge	Hamilton Electronics
Hawkesdale	4/34	Hawkesdale	—
Lorne	3/33	Weeaproinah	—
Mansfield	2/32	The Paps	—
Melbourne	1/31	—	Omega Radio Club
Melbourne	3/33	—	W.I.A
Melbourne	3/33	Lysterfield	Philips Communications
Melbourne	5/35	Olinda	Paravic Sports Assoc
Melbourne	7/37	Frankston	Powerband Communications
Mildura	3/33	—	Ferguson Sec & Sound
Moe	2/32	Moe	G'land Repeater Assoc
Myrtleford	8/38	—	Alpine Repeater Group
Penshurst	1/31	Mt. Rouse	Hamilton UHF Users Grp
Portable-Vic	Var	State-wide	Omega Radio Group
Shepparton	7/37	Shepparton	Angus Communications
Strathbogie Rge	3/33	Mt. Wombat	Goulburn-Murray R. Grp
Wangaratta	6/36	Warby Ranges	Corowa Electronics
Yelta	3/33	Yelta	Nor-Co Sales & Service
Western Australia			
Albany	3/33	Mt. Melville	—
Bencubin	2/32	Bencubin	—
Boyup Brook	4/34	Dinninup	Boyup Brook Comms Grp
Bunbury	2/32	Shenton Ridge	B'bry & Dist UHF R. G.
Coolgardie	7/37	Mt. Burgess	—
Denmark	1/31	Denmark	—
Esperance	4/34	Esperance	—
Kambalda	1/31	Kambalda	Goldfields Repeater Assoc
Kellerberrin	1/31	Kellerberrin	C'tral Wheatbelt Rpt Grp
Kulin	4/34	Kulin	—
Lancelin	4/34	Lake Karakin	Gingin Shire Council
Manjimup	8/38	—	Manjimup Comms Radio
Margaret River	6/36	Ellen Brook	Margaret R. UHF Rpt Grp
Meekatharra	1/31	Hill View Station	—
Mt. Barker	7/37	Mt. Barker	Plantagenet Rpt Group
Mt. Marypeaks	6/36	Mt. Marypeaks	—
Perth	1/31	Wanneroo	Philips Communications
Perth	3/33	Roleystone	Philips Communications
Perth	5/35	Maddington	CREST (WA)
Portable WA-wide	—	Gary, WAX-723	
Ravensthorpe	8/38	—	—
Wickham	1/31	Wickham	Wickham Radio Club
Wyalkatchem	6/36	Wyalkatchem	D & G Pearce
York	7/37	Mt. Bakewell	York Repeater Group

NOTE: This information is provided by various sources and relies upon reader input for the lists' accuracy. If you are aware of any non-listed or no longer operating repeaters please advise to: REPEATER LISTING, CB Action, P.O. Box 628e, GPO, Melbourne 3001.

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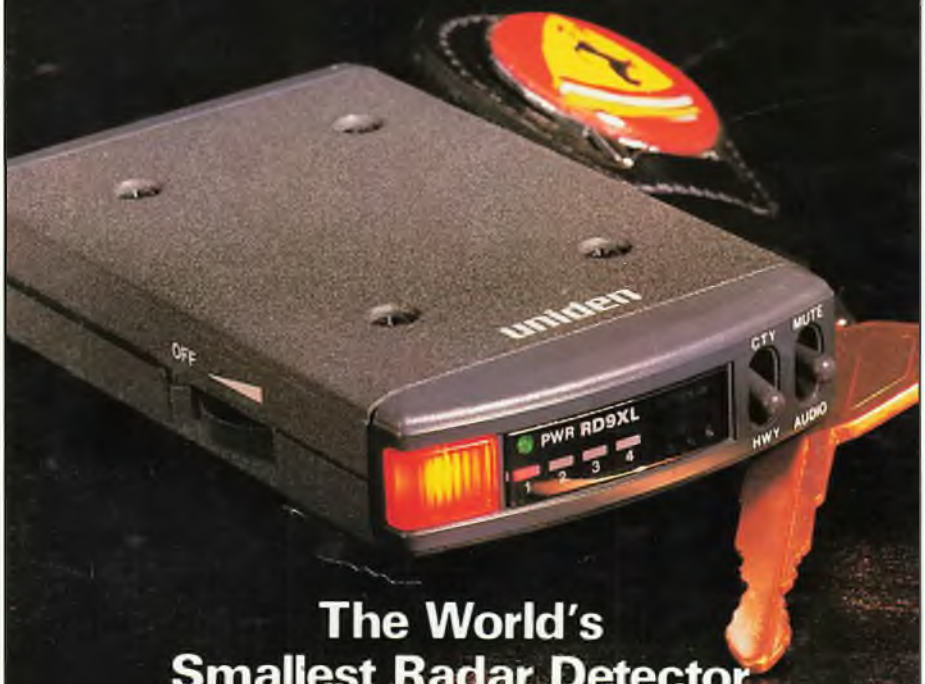

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