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**The "Citizens Band" Magazine**  
*serving the user of two-way radio.*

**CB vs. CRIME:**

## **Exclusive — The CBers Who Stalked 'Son of Sam'**

### **Violence At Kids' Camps Calls For CB Security**

### **Rochester Elderly Receive Free Ears; Program Set To Protect Retirees At Home**

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- **Antenna Installation**
- **Base Interference**
- ..... **And More**

NOVEMBER 1977  
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Compiled by CB Magazine's Washington Bureau

## FCC Hits 'Improper' Local Regulation

Citizens Band Radio operators, as well as other users of the radio frequency spectrum who feel that state, county or municipal laws are hampering the legitimate use of their radios, are at last getting real support from the Federal Communications Commission.

The FCC has issued a formal notice to the public, including state and local governmental entities, spelling out its authorities under the Federal Communications Act of 1934, as amended, and encouraging the citizens to raise the question of "Federal Preemption" before local courts when they get snagged on local laws and when they're sure they're right.

In issuing the notice, the Commission pointed to an increasing number of complaints from the public about state and local laws dealing with radio and television which, it said, "are for the most part — related to citizens band radio and either ask whether a particular ordinance is constitutional, or complain about enforcement of a state statute thought to be in conflict with Commission regulations."

The agency pointed out that "State and Local Statutes may be preempted" by the Commission; "(1) When a local law conflicts with a law enacted by Congress, or (2) when Congress has adopted pervasive legislation in a particular field with the intent that regulation in the area will be conducted exclusively by the Federal Government."

Also, it said, "Local ordinances which unreasonably burden interstate commerce may be invalidated under the authority granted to the Federal Government by the Commerce Clause of the U.S. Constitution."

The Commission said it does not have the resources to routinely monitor state and local laws which impact on radio nor can it intervene in every local court proceeding in which the validity of various laws are tested, but that "licensees who feel victimized by an improper local law may raise Federal preemption in their own behalf."

It cautioned local legislative bodies to

"consider this issue when contemplating the enactment of ordinances in areas regulated by the Communications Act."

"Since many of the inquiries and complaints received by the Commission in this regard have concerned citizens band radio," the Agency said, "Local Legislative bodies should be aware that the FCC has issued extensive regulations governing this area. Accordingly, local ordinances designed specifically to regulate CB transmissions could be invalid according to (these) legal principles."

Don't get the impression that you can disregard all local laws, however.

The FCC explained that usually, the Courts — both State and Federal — are called on to make the final decision when a conflict arises between Federal and State law, and "whether a particular local statute has been preempted by Federal Legislation is a question of law," and "each case must be carefully judged on its own facts."

### VIRGINIA 'FUZZBUSTER' LAW

One of the first cases to get national attention after the FCC issued its statement (regarding radar detectors) involved a New Hampshire woman traveling through the State of Virginia — Mrs. Mel E. Edwards — who was arrested for possession of a radar detector by a plain-clothes policeman in an unmarked car, who, she pointed out, admitted that she had broken no other laws. Her "Fuzzbuster" was confiscated, and she was detained several hours in the town of Accomack in which she tried to post \$125 bond.

Her husband, Bill Edwards, a Hillsborough, New Hampshire, engineer and advertising manager, announcing his intention to file a Federal Class-Action suit against the State of Virginia, contended that Mrs. Edwards' arrest "violated every civilized concept of due process," in that his wife "was even forced to supply the tools to remove the 'Fuzzbuster' from her car," and "was harrassed and forcibly detained for breaking a law that doesn't exist in her

home state." He said Virginia "posts no warning that radar detectors are against the law."

### CB AND PUBLIC SAFETY

The people who design and operate the public safety communications system in the U.S. — who are members of the Associated Public-Safety Communications Officers — meanwhile, paid their due respects to CB radio in late August when they held their annual conference in Chicago.

One of APCO's goals is that "every citizen should have available a means of readily accessing public safety resources from home, public place, and vehicle while in motion on public streets and highways," and has formally gone on record as "seeking to use and improve the grade of service in the Citizens Radio Service"; to "particularly promote the proper use of CB Channel 9 or other such emergency channel or channels as may be proved useful to the Public Safety radio users"; and "to undertake whatever other such measures as may from time to time be deemed reasonable and prudent in promoting and improving emergency communications between the responsible citizen and the public safety radio users."

Inspector Robert Ellis, who heads the Communications Operations of the District of Columbia Metropolitan Police Department, as well as an APCO committee concentrating on CB radio, told the Chicago Conference that a survey he conducted clearly establishes the growing interest of state police agencies in CB. For instance, he said, 34 of the State Police Agencies which responded to his survey reported that about 9,000 state vehicles are currently equipped with CB radios — which is almost half of the vehicles they have in operation. Six states, he said, reported that all of their state patrol vehicles were equipped with CB, and five others (states) are planning to reach that goal.

The only state departments which reported that they have no CB radios in their cars, Inspector Ellis said, are Nevada, Rhode Island and Virginia.

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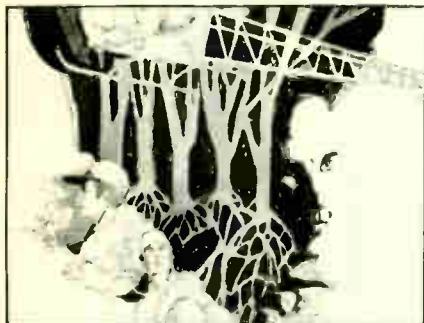


# Introducing the Ultimate Scanner.



Since 1961

VOLUME 14 / NUMBER 9 / NOVEMBER, 1977



— page 16



— page 24



— page 28

**GENERAL INTEREST**

- 16 **'Impossible' Circumstances Save Dentist's Life**  
Only a combination of Jan LeCompte's CB being left on, and a helicopter being available prevented two men being stranded in the swamp.
- 21 **Once Upon A Time, A Princess With A CB Radio . . .**
- 24 **Rochester Senior Citizens Armed With CBs In Pilot Anti-Crime Project**  
Officials hope to provide better life for aged citizens fearful of being victimized.
- 28 **Next Summer, Ask Your Kids' Camp About Their CB Security**  
Oklahoma murders and a Florida kidnapping spark summer camp protection using radio-equipped counselors and armed guards.
- 34 **CB Vs. 'Son of Sam'**  
Bronx civil patrol uses CB to stalk elusive .44-caliber killer.

**TECHNICAL ARTICLES**

- 40 **AM Base Station Directory**
- 41 **Directory of SSB Base Stations**
- 42 **Play It Safe . . . Don't Let CB Be The Death Of You**
- 49 **General Mobile Radio Service**  
Part Two of A Series. Simplex, Cross-Channel, Remote and Two-Frequency Paired Systems; Repeaters Are Discussed And Illustrated In This Issue.
- 60 **'Bleedover'**  
Isn't the selectivity filter supposed to prevent bleedover? Yes, but —
- 66 **Setting Up A Base Station For Maximum Performance**
- 70 **Base Station Interference And Its Remedy**
- 75 **How Antennas Work — A Basic Introduction**  
An antenna is a device which transmits and receives electromagnetic waves.
- 81 **Installing A Rooftop CB Antenna**  
Base station antenna installation has always been an insurmountable problem for many CBers. Here's one quick, easy and SAFE way to do it.
- 84 **Power Line Interference And How To Trace It's Source**
- 85 **Antenna System Maintenance — An Important Part of Good CBing**

**THE COVER**

- 58 **This Antenna Will Not Kill**

**DEPARTMENTS**

2 Washington Report	13 News Briefs	64 Questions and Answers	86 Classified Ads
7 Editor's Desk	46 CB Chuckles	84 Subscription/Change of Address Form	88 CB Happenings
9 Letters to the Editor	54 CB Scope		

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# Editor's Desk



## What Do CBers Want From The FCC?

**O**ur mail contains letters from many readers in which they offer suggestions on how best to utilize the CB channels. Some complain about the present use of channels; many letter writers simply complain about other CBers.

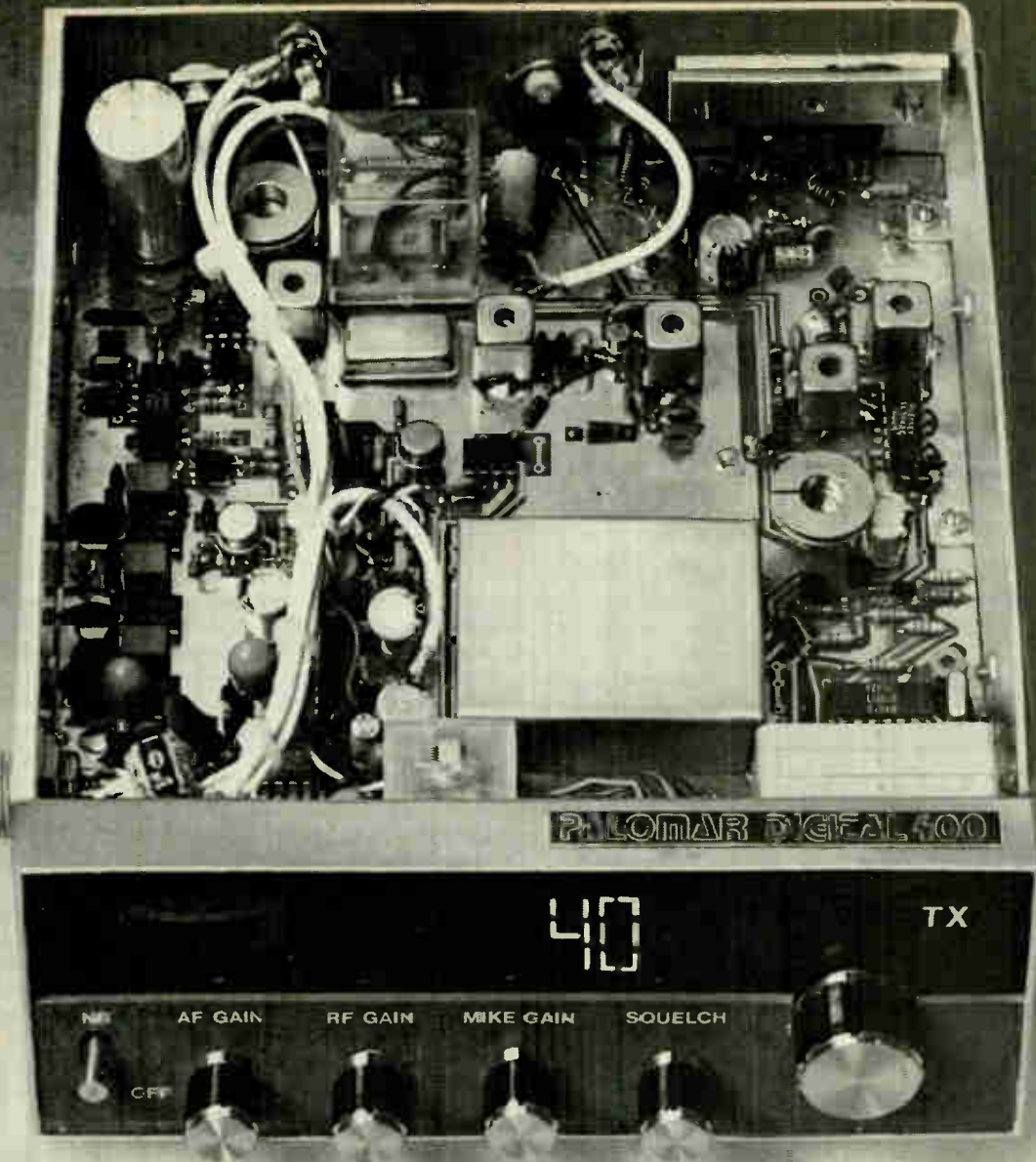
A number of the letters suggest various plans for better communication between moving vehicles, hoping to alleviate congestion on Channel 19. One is to use odd numbered channels for north-south highway traffic and even numbered for east-west. Others suggest matching highway numbers and CB channels — Channel 8 when traveling I-8 or I-80, for example. But, this may not be as simple as it sounds — how about alternate routes and unnumbered roads such as turnpikes? Further, there are local CBers to consider, who use these channels for communications with their bases.

Sidebanders write to complain about the AMers operating on channels considered by the sidebanders to be "theirs." FCC Rules designate all channels except Channel 9 for AM and/or SSB use; none is reserved solely for either mode of operation. A "gentleman's agreement" in many areas provided for AMers to avoid Channel 16, allowing sidebanders use of the channel without interference. But, not everyone's a gentleman and there's no legal way to force compliance. Some sidebanders are moving to the top five of the 40 channels, not as yet heavily used by AMers. Others suggest the FCC designate certain of the channels for sideband only.

It is not likely that the FCC will designate any CB channels for exclusive SSB use, nor for specific directions of highway travel. Even if the rules were amended to provide dedicated channels for specific use, there would still be the problem of enforcement.

One problem with all proposed changes is change itself — someone is bound to lose. When expansion of channels from 23 to 30 AM, with 40 SSB-only channels was proposed, there were many protests. It was feared that equipment for these new channels and applications would be too costly. Now, with computer-aided CB design techniques, it would be simple to accomplish. The idea was good, but would still leave the sidebander with gear that would not work on the new channels.

Fortunately, CB changes can now at least be viewed in an organized manner. PURAC (Personal Use Radio Advisory Committee) now provides the forum for discussion of these ideas with the FCC. So continue your letters to CB MAGAZINE and they will provide useful input for PURAC's important meetings between the users, the industry and the FCC.



## PALOMAR DIGITAL 400 STATE-OF-THE-ART: FUTURE TENSE.

You hear a lot of people talking about their 2-way radios incorporating state-of-the-art technology. But PALOMAR'S new DIGITAL 400 is so new, so advanced, so unique that it makes the rest of the industry's products obsolete!

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# Letters to the Editor

Address all Letters to: Editor, CB MAGAZINE, 531 North Ann Arbor, Oklahoma City, Oklahoma 73127.

## VAN ANTENNA SYSTEM

I would like to add my comments about CB antennas for vans. The best possible installation for a van, since it has such a large ground plane, is a pair of co-phased loaded whips mounted on the centerline of the vehicle, one in the front and one in the rear, 108 inches apart. This would give the best range and best radiation pattern.

Walter Went, Jr., KKS-8826  
New Milford, Connecticut

## OUR FACE IS RED

In my story, "Aspen Crime Busters," there was a photo of Bill Havu, but you incorrectly identified him as being George Maske, another member of this volunteer group who is helping the Aspen Police Department.

Darrell Arnold,  
Grand Junction, Colorado

## BRITISH SEEK AMERICAN HELP

Your readers may be interested to know that there are two groups fighting to legalize CB in Britain. The UKCBC is campaigning for a 27-MHz service along American lines which has the advantage of using equipment similar to that used elsewhere in the world, while we, the CBA, feel that 27-MHz AM is less suitable for a small, very densely populated country like our own and are after a VHF service using FM. The UKCBC and ourselves differ only on frequencies, however, otherwise liaise closely to obtain CB in Britain as soon as possible.

Since your editorial on our campaign was published in June we have received many letters for American CBers asking how they might help our campaign. There are two things that would really help us. First, write to the British Prime Minister, The Rt. Hon. James Callaghan, MP, PC, The House of Commons, London SW1A 0AA, England. Second, write to any British friends and relatives telling them about CB and advising them to join the CBA and help our campaign. We also welcome any Americans who wish to join our association and support our campaign. Our North American subscription is \$6 (U.S.) per year.

James M. Bryant, President  
Citizens Band Association

16 Church Road, St. Marks,  
Cheltenham, Gloucestershire,  
England GL71 7AN

## REACTer SAYS 'THANKS'

With all the credit that rightfully belongs to Harrisburg Area REACT for its Channel 9 monitoring and reporting emergencies to the authorities, there is one group of CBers that too often doesn't get its share of praise for what they do. Perhaps "group" is the wrong word; most of them are independent operators. We are referring to the CBers without whom our work would be difficult or almost impossible. Some of them we know by name. Some we have come to know by their call signs, and some by just their handles.

They are the 18-wheelers who now are flipping to Channel 9 in increasing numbers when there's a highway situation to be reported, knowing that in the Harrisburg area, for example, the odds are four to one that there'll be a REACT monitor listening. They are the 4-wheelers who radio in situations they observe. They are the base units that offer a 10-5 message when our monitoring units are unable to get back to the caller, and who cheerfully cooperate by standing by on adjacent channels when asked by REACT to do so because of channel bleed.

Without their help, all our abilities to contact the authorities would be of little use. To them we say "thanks, much" and "keep up the good work." It would be very expensive, in terms of manpower, times and equipment if REACT were to attempt to duplicate the on-the-spot, highly mobile coverage provided by the persons whom we call "the independents." We also want to give credit to the majority of the members of other, nearby emergency CB teams who assist us when occasion demands. Harrisburg Area REACT, KOG-1880 Harrisburg, Pennsylvania.

## CB WAY OF LIFE

Being a CBer for a relatively short time, I have appreciated and taken full advantage of the knowledge and information provided through **CB MAGAZINE**. Since the acquisition of my first mobile set, my interest has led me to set up a base station,

bringing many added hours of enjoyment right to my home. The reason for my initial purchase of a CB radio was the 70 miles of highway that I travel each day to and from work. It had become very difficult for me to get out on time each morning with that distance of driving ahead of me. My job had actually become jeopardized, and it ominously looked that I would have to give up my house and move closer, a position that I dreaded, as I enjoy immensely the area in which I now reside. Citizens band radio changed all of that.

Each morning, I would turn on the set as I began the journey to work, and each day I noticed that the "handles" began to sound more and more familiar. I even got up enough courage eventually to shout and say "howdy" to my fellow travellers. All of a sudden, I found I had friends making the long trip with me each morning, motivation for me to be out of the house exactly on time, or miss travelling with them by only minutes. Yes, dear sir, the actual truth is that CB saved me from an awful predicament by merely using my own enthusiasm to motivate me. I get in to work even early sometimes now. I want to thank the publishers of **CB MAGAZINE**. The initial seed to buy a set was planted one day while glancing through the pages of your publication. I send "all the good numbers" to you and CBers everywhere.

Myki Ann Lemieux  
"Pandora"  
Mystery Base, KAFE-5120  
Lake Carmel, New York

## READER RESENTS TERM

After I read my copy of the April issue of **CB MAGAZINE**, I wish to comment on the advertisement on page 14, for the "Jawjacking CB Dictionary." I resent, the usage of the word "Beaver", in particular "Eager Beaver." My last name is Beaver. I've always been a prompt, efficient person, willing and eager to help people when needed, so have been called "Eager Beaver" for many years. When the CB craze created the use of handles and other lingo, I naturally used the name I'd had for so long. At first, a few people challenged the name, but realized it

[continued next page]

wasn't meant to be derogatory. I am the recording secretary of an international club "The Good Foot CBers of Los Angeles." Now, after being known by that name for years, it's being dragged down by the slang users. Wasn't the idea of a female being known as a Beaver enough? Do a few foul mouthed people have the right to dirty a phrase up just to be considered funny on the airways? I don't plan to change my handle, nor my last name, so will probably have

to defend myself from all the new CBers for a while. All the fine people I've met so far, have accepted me as I am and the handle was fine until Bill Davis and his CB Jawjackers Catalog came along.

Joyce Beaver  
"Eager Beaver"  
La Puente, California

#### CHILDREN ON CB PROBLEM

My great concern is the large number of children operating CB

stations without parental supervision and general disregard for common courtesy and FCC rules. My days as a CBER date back to when the license fee was \$20. I would gladly pay that fee again if the FCC would enforce the rules, particularly in our area. James R. Reeves, KKE-5749  
Eureka, California



## sound and safe



### **CB Hump Mount Speaker.**

*Eliminates CB installation problems. Any transceiver mounts on the Kamel speaker, speaker mounts on the hump, fits snugly when driving. CB dials easy to see, easy to reach. For safer operation. To remove, just unplug antenna and power leads, lift entire unit and place in trunk for maximum security. No screws to unscrew. No*

*hassle. Acoustically designed speaker deadens static and channel noise, eliminates voice distortion. We make having an expensive CB rig in your vehicle safe and worthwhile. Isn't it about time somebody did?*

*Kriket Care*



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Indianapolis, Indiana

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#### NEW YORK LAW ON RADAR DETECTORS

Reference is made to "News Briefs," May 1977, and an article entitled, "Radar OK in New York State" on page 14. Although a local court justice has ruled on the legality of radar detectors, the effects of the law (Section 397, New York State Vehicle and Traffic Law) have not been diminished. A superior court has not yet ruled on this local criminal court decision, therefore, the law is in full force and effect. In essence, Section 397 prohibits a person from equipping "... a motor vehicle with a radio receiving set capable of receiving radio signals on frequencies allocated for police ...". As an example, the New York State Police is licensed by the Federal Communication Commission to operate radios and radar on specific radio frequencies.

N. F. Gianguialano,  
Major - Traffic  
New York State Police  
Albany, New York

#### SUPER-SCANNER A BEAM?

In the November issue of **CB MAGAZINE**, E. B. KFO-0871, West Bend, WI, asked the question, "Is a Super Scanner antenna classified as a beam or omnidirectional?" In Part 95, April issue 1975, under subpart A general, it gives the definition of omnidirectional antenna as follows. "Omnidirectional antenna: an antenna designed so the max. radiation in any horizontal direction is within 3 dB of the min. radiation in any horizontal direction." To my way of thinking, this includes the Super Scanner, as the gain is: Omnidirectional 5.75 dB, directional 8.75 dB. Robert E. Stouffer, KGP-3736  
Springfield, Ohio

The Cobra 50XLR CB has it all. AM/FM Stereo. Cassette. And CB. All in one compact unit. All engineered to bring you the same loud and clear sound Cobra is famous for.

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Installation Kit makes them the easiest in-dash radios to install. And our Nationwide network of Authorized Service Centers makes them the easiest to service.

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### Sidekick is there when you need it.

Rugged, dependable 12V power. A full charge gives you 4-5 hours of continuous CB use.

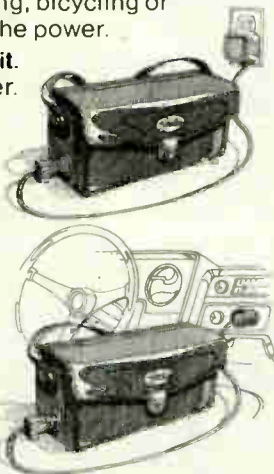
And Sidekick comes with both AC and DC chargers. So you can recharge at home or on the road.

What else will Sidekick do? It'll run your portable TV, radio, tape deck, high intensity lighting, depth and fish finders. And Sidekick is safe. Its revolutionary sealed construction means no acid leakage.

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*Beat the Holiday Rush... Order Gifts Now*

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## RADIO CLUB TO CELEBRATE

**NEW YORK CITY** — The 68th Anniversary Celebration Banquet of The Radio Club of America will be held Friday, November 18, at the New York Sheraton Hotel. The club is the world's oldest radio communications society. Information about the banquet may be obtained from Jack R. Poppele, 145 Main Avenue, Clifton, New Jersey 07014.

## DARIEN SEEKS END TO PROSTITUTE USE OF CB

**DARIEN, CONNECTICUT** — A band of alleged prostitutes reportedly advertising on CB and offering their services in a darkened Connecticut Turnpike rest stop here were arrested July 15th. A state police stakeout unit arrested a male transvestite who had allegedly threatened a plainclothes policewoman engaged in the crackdown of "highway hookers" soliciting truckdrivers at this busy truckstop. The location has acquired a reputation for being the East Coast center for the radio-dispatched prostitutes who cater to the longhaul truckers along Interstate 95, according to Lieutenant Vincent Brennan, commanding officer at the state police barracks in Westport.

## HAMS NAIL ILLEGAL CBER

**AMARILLO, TEXAS** — Californian James Edward Krueger, 35, was arrested here on a federal warrant charging him with jumping bail in Los Angeles. Krueger, who had been traveling in a converted bus, had been sought by the Amarillo Repeaters Society since last year, according to the group's spokesman, Joe Cowan. Cowan said he believed the man to be a CBER using the ham frequencies without the required amateur license. The warrant had been issued upon Krueger's failure to appear for trial in Los Angeles on Federal weapons charges.

## COLUMBUS REACT MEMBERS LEND EARS TO THOSE IN NEED OF ASSISTANCE

**COLUMBUS, OHIO** — One call Jean "City Sub" Lowe of COPCERN (Central Ohio Police Citizens Emergency Radio Network) handled last year dealt with a motorized

streaker. "A man in a gold Cadillac was driving through Northern Lights Shopping Center, getting out and running around the car nude," she reported. The REACT unit, formed in

June, 1963 with 27 charter members, now has a roster of 70. Headed by Franklin County Sheriff Harry Berkemer, the unit has been run by [continued next page]

## CB OVERSEAS

# CB Use In Australia Now Legal

The Australian Government has begun issuing licenses for the newly established Citizens Radio Service. The licenses, which cost \$20 per CB set a year, authorize operation on 18 channels in the 27-MHz band. Base stations may not communicate over distances greater than 20 miles (32 kilometers). Mobile units may communicate over any distance within Australia; communication with stations outside of Australia is prohibited. Call signs consist of three letters followed by three numerals. The first letter designates the state in which the licensee resides. (For example, VCE-123 would be the call sign of a licensee in the state of Victoria.) The call sign pertains to the transceiver, not the operator. A person with four mobile units and a base station would be issued five different call signs.

American-type 23-channel sets may be used on the 18 CB channels, but 40-channel CBs may not be used. Except in special circumstances, the use of gain-type antennas is prohibited.

Licenses are now also available for the new 40-channel 476-477 MHz FM band. This is similar to the General Mobile Radio Service (formerly Class A CB) band in the U.S. except that output power is limited to 5 watts. A list of frequencies and channel designations follows:

### AUSTRALIAN CB CHANNELS

Australian Channel Number	U.S.A. Channel Number	Frequency [MHz]	
1	5	27.015	
2	6	27.025	
3	7	27.035	
4	8	27.055	
5	9	27.065	
6	11	27.085	EMERGENCY CHANNEL
7	R/C	27.095	CALLING CHANNEL
8	12	27.105	
9	13	27.115	
10	14	27.125	
11	15	27.135	
12	16	27.155	
13	17	27.165	
14	18	27.175	
15	19	27.185	
16	R/C	27.195	
17	20	27.205	
18	22	27.225	

deputy Arthur Green and other deputies, since 1975.

## ALERT TEAM PROVIDES REST-STOP FOR BOTH MAN AND BEAST

OKLAHOMA CITY, OKLAHOMA — The ALERT Citizens Team of Oklahoma, Inc. (ACT) has provided for the creature comforts of man and beast traveling along busy I-35 through the area. Volunteers report serving an average of 2,600 motorists each holiday weekend. Their roadside location, north of Oklahoma City includes a fireplug for "city dogs," a tree stump for "country dogs," and a litter box for "kitty kuzins." People are served coffee, orange drink, iced tea and cookies; appropriate pet foods and fresh water are served their four-legged passengers.

## TENNESSEE HOT LINE

NASHVILLE, TENNESSEE — Visitors to this state will be aided by CB radio directions, thanks to units that have been placed in each of the eight Tennessee Welcome Centers across the state. Tourist-related information will be distributed through the

Tennessee CB HOT (Helping Out Travelers) Line, announced Tourist Development Commissioner Tom Jackson. Welcome Center personnel are being trained to answer tourist questions and aid in emergency situations, via CB. Ask for "Tennessee Traveler" on Channel 1, for travel assistance.

## CB LICENSE APPLICATIONS UP


WASHINGTON, D.C. — Applications for CB licenses increased by over 10 percent for the first half of 1977 as compared with the same time period for 1976. According to figures from the FCC, 3,254,825 applications were received from January 1 through June 30, 1977. During the same time period in 1976 the Commission received 2,927,874 license applications. The year 1976 was a record for both license applications and CB radio sales.

A total of approximately 11 million CB licenses have been issued by the FCC since 1958, with over half of these having been granted in the past 18 months, according to John Sodolski, staff vice president of the Electronic Industries Association and head of its Communications Division.

## EIA TO STANDARDIZE SELECTIVE CALLING SIGNALS

WASHINGTON, D.C. — Standardization of selective calling signals for CB radio systems will be undertaken by a technical committee organized by the Electronic Industries Association's Communications Division. The move was announced today by John Sodolski, EIA staff vice president and Stuart Meyer, chairman of the technical committee. The committee is sponsored by the Communications Division's Citizens Radio Section.

## CBers NOT BLAMED FOR RFI

KEESLER AIR FORCE BASE, MISSISSIPPI — Five radios of the Resources Management Group's Expeditor Net at this base were being affected by radio frequency interference (RFI). An engineering analysis established that a repeater station operated by members of Keesler's Amateur Radio Club was the source of the interference. After club members realigned the repeater, no further interference was reported. (Air Force Communications Service Intercom) 

## FCC Proposes CB Rules Change

The FCC has proposed rewriting and simplification of Subpart D, Part 95, FCC Rules and Regulations, to make the CB rules easier to understand. At the same time Docket No. 21318 calls for certain changes in the rules. If the proposed rules are adopted, some of the following would become effective:

**IDENTIFICATION.** A CB station must be identified by the official call sign at the end of each communication. The call sign must be transmitted in the English language. A phonetic alphabet may be used as an aid to identification (for example, KOD-1935 could be transmitted: "King Ocean David Nineteen Thirty Five" or "King Ocean David One Nine Three Five"). The use of a handle "in addition" to the call sign is permitted.

**TRANSMISSION TIME.** The five-minute transmission time limit, followed by a one-minute silent period applies to both interstation and intrastation communications.

**RADIO PAGING.** A CB station may transmit one-way communications for the purpose of "voice paging."

**ANTENNA HEIGHT.** Both directional and omnidirectional antennas may extend up to 30 feet (10 meters) above a tree or a building of any height, or 60 feet (20 meters) above the ground.

**CHANNEL DESIGNATORS.** Channel numbers (1-40) are applied to all CB frequencies. (Present rules do not refer to CB frequencies by channel numbers.)

**NUMBER OF UNITS.** Each CB station license automatically authorizes use of up to 25 transceivers. If more are required, special written permission must be obtained.

**CB REPAIRS.** All internal repairs and adjustments to a type-accepted CB transceiver may be made only by, or under, the supervision of a licensed First-Class or Second-Class Radiotelephone Operator — even when connected to a nonradiating artificial antenna. An unlicensed person may adjust his or her own antenna and make radio checks.

**REMOTE CONTROL.** A CB base station may be controlled from a remote location, but only with written permission by the FCC.

# It's a tough life for a CB antenna

... and Archer builds 'em to take it! Bad weather, corrosive road surface chemicals, jolts from overhead objects, and wind drag at highway speeds—all these factors make it hard for an antenna to remain electrically sound and properly tuned for maximum efficiency. At Radio Shack's Archer antenna plant, we've designed a process to meet the challenge. It involves using superior military-specification and industrial grade materials, custom equipment for uniform coil construction, and multiple testing stages for each antenna. Take an inside look at our no-hole trunk mount whip. It's a typical Archer: a trouble-free antenna you can install and forget about. Because Archer remembered everything—quality, durability, and performance. It's just 21.95\*—at The Shack®.



1— This whip can take punishment. The 17-7 stainless steel is precipitation hardened. A precision loading coil lets Archer keep the whip short so there's less wind drag and less chance of hitting garage or other overhead objects.

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3— The heavy-duty shock spring provides stability at highway speeds with just the right amount of give under sharp stress. The heavy-gauge stainless steel is electro-polished to a handsome scratchless gloss.

4— Sturdy ½-inch PVC coil housing with brass top and bottom fittings. The interference-fit keeps out rain, dust and fumes that can cause corrosion or detuning.

5— The Archer coil construction process. Using our unique, custom-designed equipment, heavy-duty 16-ga. copper wire is tension-wound on a mil. spec. coil form. Both ends are hand-soldered to brass pins for secure, low-resistance joints.

6— Streamlined and tapered PVC base with gaskets above and below for weatherproofing. Heavy, zinc-plated mounting bracket underneath for quick and stable mounting. Even the set-screw shows our special care: its cupped point gives you a good ground connection without penetrating the trunk metal.



## FREE! New '78 Catalog

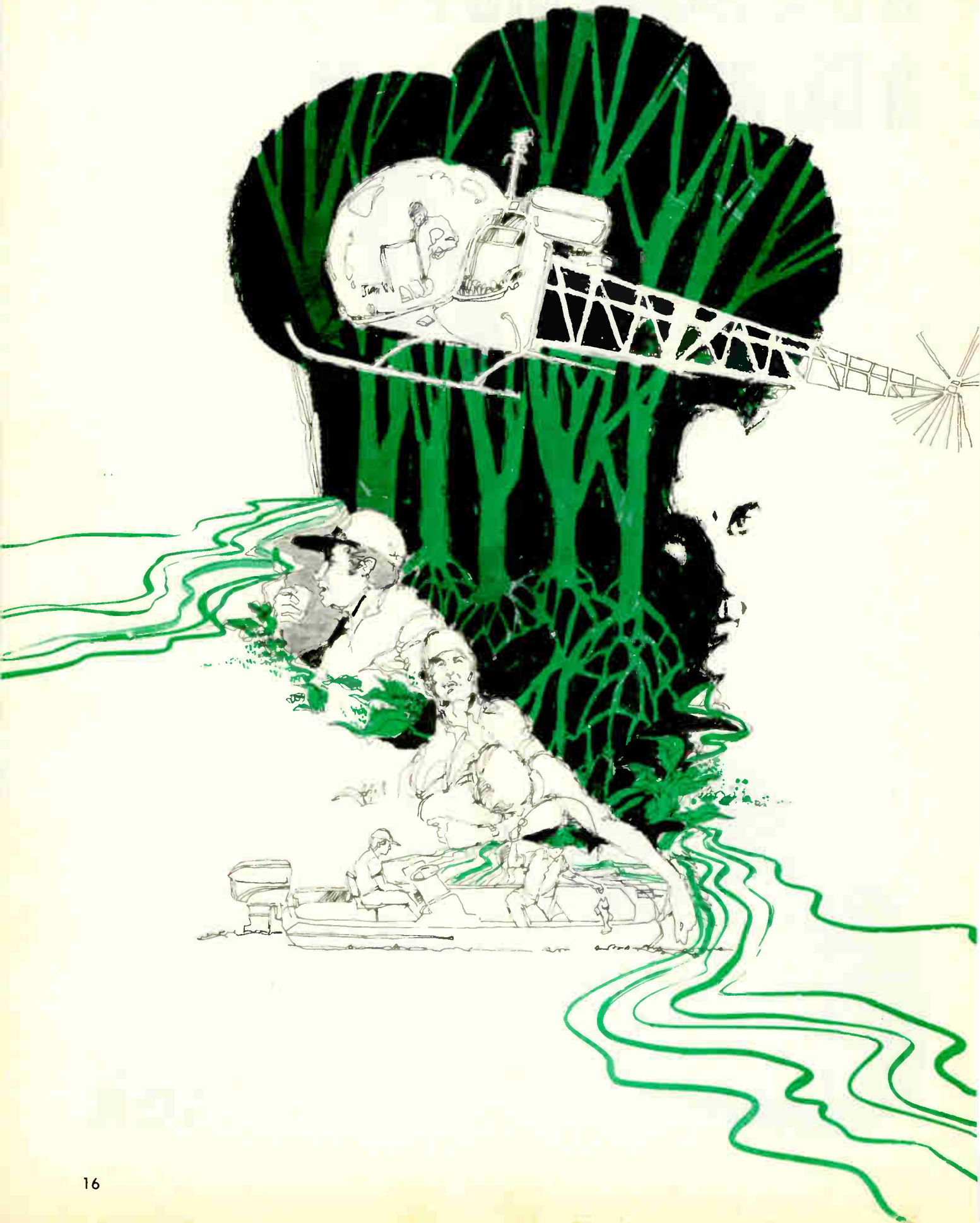
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## HELP!

# 'Impossible' Circumstances Save Dentist's Life

Only a combination of Jan LeCompte's CB being left on, and a helicopter being available prevented two men being stranded in the swamp.

By Barbara Anderson

Jan LeCompte was carrying a basket of clothes to the washing machine when she heard the call: "Does anybody have a copy on this unit? . . . please . . . please . . ."

Later, Mrs. LeCompte would remember that she thought the voice sounded desperate. At the time the first thought that flashed through her mind was annoyance at her husband who must have left their CB base station — installed only two weeks previously — turned on when he left for work.

"Go ahead, mister, I have you," said Mrs. LeCompte into the microphone.

"This is Jim LeMay. I've had an accident."

In telling the story, Mrs. LeCompte recalls that she realized the voice on the radio wasn't used to talking on CB, so she gave LeMay her name, and told him to stand by while she cleared the channel.

Since the CB base station had been installed in their home, Mrs. LeCompte had let family and friends know that she "hated talking on that thing." With a full time job at her husband's hardware store in Houma, Louisiana, Jan had her hands full with housework when she was at home, and the noise from the CB distracted her. If she had passed through the room where the base station was located seconds later, she would have turned it off and never would have heard the call, and Dr. Herbert Bensel would be dead instead of being busily engaged in his dental practice in New Orleans. Dr. Bensel is alive today only because of a series of circumstances that would never be accepted by a reader of a suspense story.

At the time that Lynn LeCompte left his new CB to go to his hardware store, Dr. Bensel and Carlos Cashio were involved in a fishing tournament staged by the Dixie BASSmasters Club, attempting to catch the big ones in the marsh a few miles southwest of Houma.

Also that morning, Petroleum Helicopters Inc.'s Houma heliport operations had begun as normal. Copters were dispatched for various offshore drilling platforms, probably to return late that evening. There was one exception. At about 11:00 a.m., Union Oil Company asked PHI to have its helicopter return to the Houma heliport and remain there until needed — a break for the pilot, who probably wouldn't have had time to eat lunch on the run that day.

Shortly after 11:00, Dr. Bensel and Cashio decided to try another location. The dentist steered his 17-foot boat, driven by a 150 horsepower motor, toward a new

*[continued on following page]*

HELP! is a regular feature spotlighting those who give their time, talents and resources to help those in need. Readers are invited to nominate individuals to be so covered. The editor requires (a) An accurate account of the event; (b) Full details; (c) Names and address of those involved. Send to: **HELP! EDITOR**, CB Magazine, 531 North Ann Arbor, Oklahoma City, OK 73127.

fishing site. As it skimmed over the water, he turned to flip the switch to his fuel tank. At that instant, the boat slammed into a tree.

Jim LeMay and Dr. Barry Alldredge, two other Dixie Bassmasters, were traveling the same canal. They arrived at the scene of the accident less than two minutes later. Cashio was conscious, but with injury to his left leg. Dr. Bensel, unconscious, had critical head and neck injuries.

Some time prior to the accident, Dr. Bensel had removed the CB radio from his boat to his automobile, but left the antenna. On the other hand, LeMay had a broken antenna on his boat, but his CB was still intact.

At the accident site, Dr. Alldredge realized that Dr. Bensel had to have hospital treatment as soon as possible if he were to live. Obviously, a helicopter was the answer, but how were they to obtain one? LeMay decided to try the CB antenna from his boat with the radio from Bensel's boat; fortunately, they worked. He made his first attempt to contact help about the time that Jan LeCompte was sorting clothes to wash. Again and again he tried with no response. "Does anyone have a copy on this unit?"

"When I walked through the room I heard him; he sounded way, way back," says Mrs. LeCompte. "And even when I did reach him, I realized I could never get his location with all of the interference, so I told him to stand by while I cleared Channel 14. We have several large base stations that use Channel 14, so I told them I had a 10-33 and to please clear the channel. And did they! I've never heard a CB channel so clear!"

When Jan LeCompte got back to LeMay, she discovered that this was a boat accident instead of the highway accident she had assumed. After determining the accident location, she tried to reach the Coast Guard, only to discover that the Coast Guard is not on duty in that area on Saturdays and Sundays. Next, Jan called the Terrebonne Parish Sheriff's office, which in turn telephoned PHI's Houma airport

for assistance.

PHI personnel immediately obtained clearance for the flight to the accident site. Within a short period, two paramedics from Acadian Ambulance Service and a Terrebonne Parish sheriff's deputy were aboard the helicopter and it departed.

The accident occurred approximately 15 miles southwest of Houma at 11:20 a.m. Although the pilot knew the general location, the exact location was something else again. LeMay could see the chopper as it flew near them, but the pilot's vision was obstructed by trees near the canal.

"We organized a sort of four-way communication system", says Mrs. LeCompte (whose CB handle is '2 x 4'). "LeMay gave me instructions on his CB to tell me which way the helicopter should turn to find them; I repeated the information on the phone to the sheriff; the sheriff would then relay the information to the pilot in the helicopter on his mobile unit."

By noon, the helicopter had reached the accident scene, but was unable to land at the exact site because of the trees. Using the four-way communication system, arrangements were made to land the helicopter as close as possible to the accident, and then use the other boat to get the injured men aboard the helicopter.

In helping move the men through the marsh, LeMay received a badly bruised leg, and it was decided to leave him with the boats while Dr. Alldredge accompanied the injured men to the hospital.

To keep in contact with the now-injured LeMay, and to guide rescuers to the accident scene, Mrs. LeCompte kept at the CB base station for four hours, keeping Channel 14 clear all the while.

"Ever now and then one of the big base stations would come on and ask if I still had a 10-33 and I would tell them I did. I'd ask them to please go down two channels, not just one, because if they were anywhere near me I couldn't keep in contact with LeMay because of the bleedover."

While Mrs. LeCompte was helping rescue LeMay, she was

also helping contact the hospital in New Orleans. Hospital personnel were advised by the CB-to-base station-to-telephone communications system on Dr. Bensel's condition. "Dr. Alldredge thought Dr. Bensel was dead," says Mrs. LeCompte. "The hospital had to be told what to have ready to try to save him."

After months of hospitalization and recuperation, Dr. Bensel again is busy at his dental practice. He can't speak of the accident from any first-hand knowledge because a form of amnesia has blanked his mind of the accident and the 35 days afterwards when he lay unconscious in a New Orleans hospital.


"My surgeon told me that if I could remember all the things that happened that day, I'd probably be climbing the walls," says the dentist.

But Dr. Bensel does know what CB did for him, and he's sworn never to go fishing again without his CB radio.

"What can you say about something to which you owe your life? How can you say you love it, when if it hadn't been there you would be dead? And Jan LeCompte — I told her she saved my life, but there's no way I could thank her for what she did for me.

"You know, we were only four or five miles from the highway and you would have expected a CBer in an automobile to answer Jim's call for help. Mrs. LeCompte was some 25 miles away, yet by some fluke she could hear him and she wasn't afraid to get involved."

Today, Jan LeCompte wears a beautiful bracelet with a charm engraved: "You are a life saver," a gift from Dr. Bensel. And Jim LeMay still has the antenna from Dr. Bensel's boat, also a gift from the dentist.

"The ironic thing is, I'm the one who broke the antenna on Jim's boat. About eight months before the accident, we were out fishing and space was cramped and I turned around in a hurry and accidentally kicked over his antenna. I had been meaning to buy him a new one, and had just never gotten around to it. You can bet I gave him the one that saved my life." 



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## *A Princess With A CB Radio . . .*

By Eleanor Johnson

Reprinted with permission from *Suburban Trib.*

**T**his is the story of a red headed nurse and a handsome attorney in the Chicago area. She's from Downers Grove; he's from Naperville.

It's hardly the stuff romantic tales are made of. There weren't any singing violins in the background, only ear-splitting noise. They got acquainted in the presence of several curious bystanders, many of whom interrupted their conversation. And they didn't ever get a good look at each other.

But the tale has one ingredient many romantic stories lack: It's true.

It started on the Eisenhower Expressway during the morning rush hour.

He was called Mouthpiece, he told her and the other CBers monitoring Channel 19. She laughed and said her handle was *Panhandler*.

She didn't mean a beggar. She meant a person who handled pans. She was a nurse, she said.

He said he'd chosen his handle the same way: to represent his profession. That's what he was — a mouthpiece for his clients.

The other CBers within earshot could tell something was beginning to happen. There weren't as many "Break 1-9's" as usual. Mouthpiece and *Panhandler* had the channel almost to themselves.

By the time they got to Harlem Avenue, they were talking more openly, almost as if they were alone. They were both new to CB. Wasn't it great, they said. People were so friendly. When you didn't have a CB, you got the impression everybody

out on the road was a grouch, ready to sideswipe you if necessary to get where he wanted to go.

But when you had one, everybody was your friend. She said she'd been traveling in Wisconsin once and gotten into a conversation with four or five other drivers near her. Later they all stopped and had lunch together.

He said CBing had been an eye opener for him, too. He'd had strangers talk him through detours and even leave the expressway to help him find a specific address.

As they approached the city there was less and less interference on the channel from their silent audience, and *Mouthpiece's* voice held more urgency.

"What's your wrapper?" he wanted to know, and she told him about the car she was driving, with its bumper sticker about nurses.

Somewhere between the western suburbs and the spaghetti bowl, he must have pulled his car up beside her and gotten a look. He must have liked what he saw.

Because the next thing the listening CBers knew he was asking her for a date and they all held their breaths to see what would happen.

"Do you have time for a cup of coffee before work?" *Mouthpiece* wanted to know.

Negatory. She had to check in at the hospital on time.

How about a drink somewhere Tuesday night? Also negatory. She had another appointment.

[continued on page 23]

# Shakespeare's Big Stick Antenna.<sup>TM</sup> World famous performance. And right in your own backyard

Punch out the big signal from 60 feet up with Shakespeare's Big Stick. The omnidirectional fiberglass base station antenna that outperforms anything on the 40 channel band. Illuminating 12 times more capture area. And sending the signal energy out to the horizon in a unique, low angle radiation pattern.

This half-wave coaxial sleeve antenna incorporates exclusive Shakespeare engineering in fiberglass to outrange taller, heavier metal antennas under all conditions. Withstanding ice and winds up to 125 MPH with no damage to reception. And pretuned to a low SWR over the 40 channel band.

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He couldn't make it himself Wednesday. He had a "marital case" to attend to.

She knew about marital cases, she said. She'd been that route herself. He said he had also.

How about Friday night?

She'd like to, but would he believe she was going camping for the weekend?

He would believe. So would the other CBers listening. It was obvious that Mouthpiece was getting the brushoff.

Then she said abruptly, "I could make it Thursday night."

He jumped at it. Thursday night it was. Would 7:30 be all right? Did she know where the Derrick was on Ogden Avenue?

She did. She would be there.

The airways erupted immediately with comments from the hitherto silent witnesses.

"Whew! I didn't think you two were going to get together," said one CBer. "Listen, I'm going to be there to see if you both show up."

So were some of the others, they said.

On Thursday at 7:20 p.m. she was on her way down Ogden Avenue in Lisle in her car with the panhandler bumper sticker on it, and she said over the CB, "Break for that Mouthpiece."

But Mouthpiece didn't answer. He was already sitting at the bar at the Derrick, with an empty stool beside him.

She came in slowly and hesitated. Then he nodded to her and she sat down.

There wasn't even a second of embarrassed silence. They started talking just as if they'd never

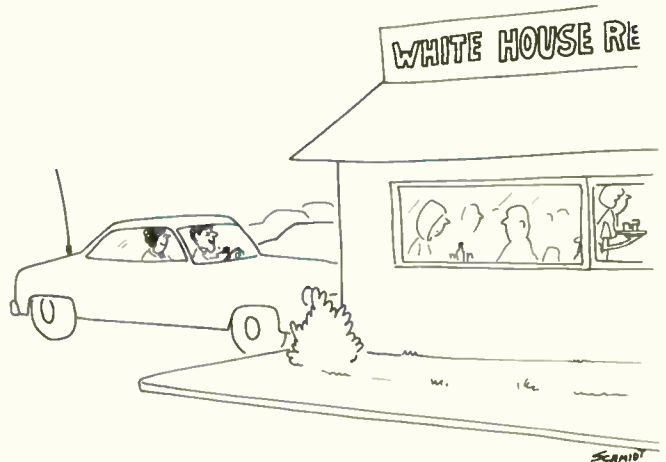
stopped since that morning on the Eisenhower.

Only one of the CBers who'd been there showed up at the restaurant. He brought his wife with him.

"She didn't believe me," he told them after he'd introduced himself and her. "And when I convinced her you'd really gotten together on CB, she bet me you wouldn't keep your date."

The nurse from Downers Grove and the attorney from Naperville looked at each other and smiled, like two people who shared a secret.

When you have a CB radio, you can do without the singing violins. **CB**



"I've got to sign off now . . . Helen and I are having dinner at the White House tonight."

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Model B-130 RTA New CB Model

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## CB AND THE ELDERLY

# Rochester Senior Citizens Armed With CBs In Pilot Anti-Crime Project

Officials hope to provide better life for aged citizens fearful of being victimized.

This month, if everything goes as planned, selected senior citizens in Rochester, New York, who fear they are about to become victims of a crime, will be able to radio for immediate police assistance over free citizen band radio sets given to them by the State of New York.

By early next year, some 10,000 elderly residents of the upstate city of 325,000 will be armed with the CB sets. If the \$500,000 anti-crime CB program proves successful in Rochester, state officials said similar programs will be established in seven other target areas of New York.

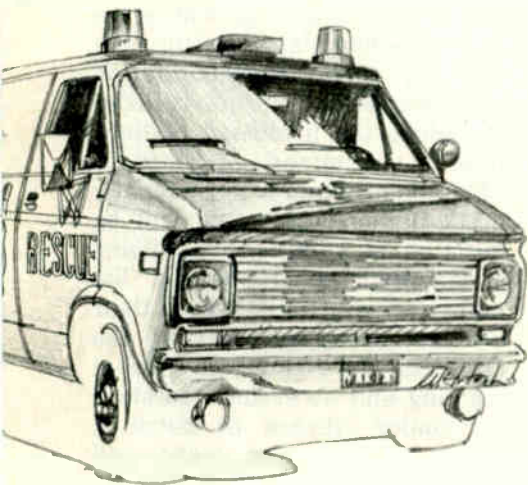
The CB program, part of Governor Hugh Carey's statewide campaign to combat crime against senior citizens, has been greeted with mixed reviews. While state officials have high hopes that the program will allay the fears of senior citizens, others have criticized it as being ill-planned and have suggested that it may make the elderly targets of thieves who want to steal their CBs. "Giving CB radios to the elderly in Rochester is a signal to hoodlums in the area to come and get it," said Senator Ralph Marino, a Long Island Republican, who heads the state

senate's select committee on crime. "It will create a whole new crime wave." Marino, whose mother lives in Rochester, added: "I would hope the state could give her better protection than a CB."

Frank Rogers, commissioner of the New York State Division of Criminal Justice, who is coordinating the Rochester program, conceded in an interview with **CB MAGAZINE** that there could be problems. "If it turns out that more sets are being ripped off than are being utilized, that more are being used for strictly pleasure or if they are jamming the airways and traffic is such

that we can hear nothing, then we will put in an alternative plan." Optional plans include paging devices and alarm system connected to telephone lines.

"There are a lot of buts that will have to be experimented with," said Rogers. "Can a senior citizen, trained by a youthful person, be taught how to use it? Will the senior citizen be so



afraid of it, because of the normal trepidations of some senior citizens to something new, that they won't use it? Will it be so accessible that they will use it whenever they feel they are in trouble? That's what we would like for them to do. Or, will the opposite be true?"

"Basically, what we are trying to do is to allay their fear of being assaulted, mugged and robbed and to make them feel more at home both in their residences and on their streets — to get them out from behind locked doors and to get them to enjoy that which they have the right to enjoy."

In announcing the Rochester program last May, Governor Carey said he felt the distribution of CB sets to the elderly would help reduce their fear of crime. "Fear of crime in the home is a cause of the isolation and loneliness so common among the elderly," said Carey. "One way to combat this fear is to establish reliable, direct communication links between senior citizens and law enforcement officials. Throughout the country, citizen band radios have been used by

the public to report crimes in progress to the police. In many instances, the use of the radios have resulted in speedier response by law enforcement officials and a greater degree of safety for our citizens."

The governor's announcement seemed to catch city officials by surprise. Rochester Police Chief Thomas Hastings said the CB project "was not developed at the grass roots level in the community" and was "handed down from the top." Months after the announcement, the police department was still discussing plans for implementing the program. "Usually, we do all this ahead of time and not after the fact," Captain Thomas Conroy, head of the department's research and development office, told **CB MAGAZINE**.

Despite the possible problems, both officers were fairly optimistic that the program could be made operational. "Those of us involved in this project are pretty realistic, and I'd have to say that if the problems are too great to overcome, that we'd have to scrap the idea," said Chief Hastings. "But right now I can't see any problem that would cause us to drop it. If you get to an obstacle you can work your way around it. Somewhere, somehow, this program will become a reality."

"Our feeling is there is no sense getting into something that no one is going to use," Conroy told **CB MAGAZINE**. "We know there are a lot of practical applications to CB, but we don't know that this is one of them. We are certainly going to look at it to find out."

During the summer, the police department sent out questionnaires to senior citizens and their organizations to see if they favored the plan and whether they would make use of the CB sets if they received them. Conroy said responses varied.

"I don't mean to put down the idea. It has a lot of merit," said Phil Mulivor, editor of a newspaper for Rochester's senior citizens, the *Golden Times*. "But, I think CB is not the thing senior citizens would ask for. If the state wants to come into Rochester and

spend half a million dollars, it might do better in supplying the basic necessities. A lot of these people don't have anything to protect or to be stolen. It is ironic in a certain way. They need food or clothing more than a CB set."

Mulivor said that although Rochester has a large senior citizen population of 56,000, crime statistics show that only about one percent of the city's major crime were directed at the elderly. In 1976, there were 407 reported crimes against the elderly. But Mulivor agreed with police officials that the elderly may be fearful of reporting crimes.

"I think more important than the number of reported crimes is the fear of crime," said Beatrice Montgomery, director of the Monroe County Office for the Aging, who favors the CB program. "This fear is a very real thing. Senior citizens are afraid to avail themselves of the services we provide. They are afraid to go out on the street. People are becoming more withdrawn and isolated. The CB program has tremendous possibilities and needs to be implemented.

"Anything that protects the senior citizens, gives them a feeling of security and puts them in immediate contact with the police is good," said Mrs. Montgomery.

Others were less enthusiastic. "It's a horrible waste of the taxpayer's dollars," said City Councilman Charles A. Schiano, who charged that the program was "conceived in idiocy," adding: "It's a sham, a waste, gimmickery at its worst." Nonetheless, the council approved the program on June 14, and the State Legislature overwhelmingly voted on July 6 to approve the governor's supplemental budget, which included \$500,000 for the anti-crime program.

There has been much confusion over what kind of CB units the state would provide. A spokeswoman for the state's criminal justice division first said that the senior citizens would be given light, portable CB units that could be carried on a belt or in a purse. Later, it was announced

[continued next page]

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that the radios would be desktop models that could be used only in the home.

Commissioner Rogers said that at first, surplus 23-channel sets would be bought through competitive bidding. But, he said state and city officials are also experimenting with three-channel and 23-channel portable sets. "What we hope to do with this amount of buying power is to force the experimentation by CB companies, especially those with offices in the state, to come up with something that is much more mobile, practical and useable for the senior citizen population." He said the state would encourage the development of portable sets that weigh a pound or less.

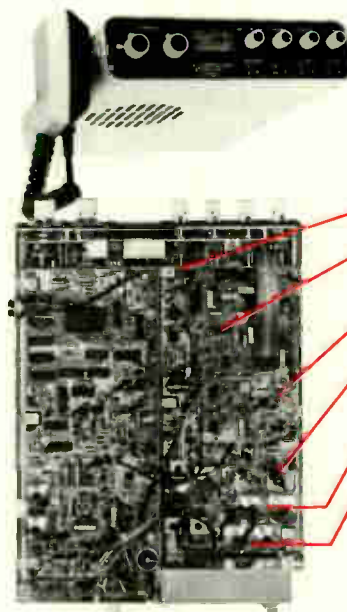
Rogers said he favored the use of CB sets over paging devices and alarm systems. "The problem with the use of any radio communication from a civilian to police is the verification factor which police demand," he said. "The simple alarm could not guarantee a response in many cases. We need a verifying factor that says, 'Yes, I am in trouble' and some way of ascertaining

that it is a true emergency and not just a mistake or an accident or something like that." With CBs, he said, patrolmen would know exactly what kind of situation was facing them.

The state's program to curb crimes against the elderly also includes other proposals. Neighborhood escort services will be provided to the elderly. A mobile crime prevention bus will serve as a traveling classroom for both creating public awareness and educating senior citizens in order to reduce the likelihood of their being victimized. An identification program to permanently mark personal property will be initiated in hopes of identifying stolen articles throughout the state and returning them to their owners. Staff members of the Office for the Aging will conduct training and awareness sessions for senior citizens at nutrition sites, senior citizen clubs and centers.

"I believe these programs will help senior citizens feel free to walk their streets without fear and lead lives of comfort and security," said Governor Carey.

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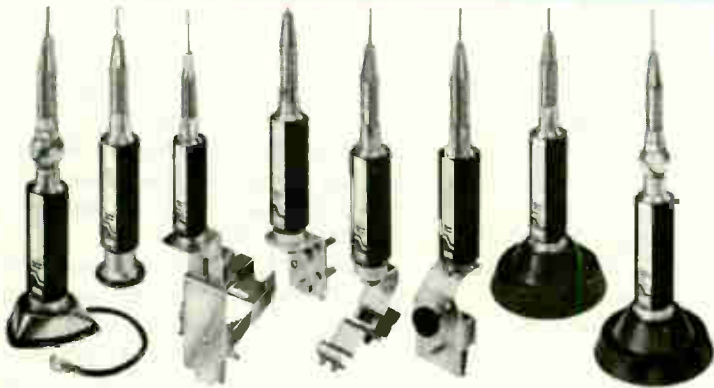
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Northeastern Oklahoma includes the southern end of the Ozark Mountains. It is in this rugged country Camp Garland and Camp Scott are located. Surveying the area where police searched for the suspected murderer without success, Explorer Scouts Mike Fowler (left) and Dave Peterson (center) discuss the possibility he will ever be found with Mike Vegher, camp director.



# Next Summer, Ask Your Kids' Camp About Their CB Security

Oklahoma murders and a Florida kidnapping spark summer camp protection using radio-equipped counselors and armed guards.

The road winds over the wooded hills and past the modern brick farm houses in northeastern Oklahoma. It dead ends before a locked chain-link gate. We sound our horn, but no one comes to the gate. A wary looking dog discourages opening a small side gate and walks to the

Trooper Eugene Aube used a personal CB on patrol almost 3 years prior to the state purchasing official CBs. Besides assisting in traffic control, the trooper says the radio has great PR value. "They know we're not out to get them."



caretaker's house. More honking. Finally, a uniformed guard drives up. He acknowledges the visitor is expected, but still he searches the visitor's car.

A top secret missile base? No. Just Camp Waluhili: the Campfire Girls' summer camp.

Three weeks earlier, not 20 miles away, three young girls were sexually abused and murdered at Camp Scott near Locust Grove, Oklahoma. Only days before, a sheriff's posse (including local CBers) and state troopers had abandoned the organized search for the killer, suspected of hiding in the nearby woods. And on this mellow summer day, the radio gave periodic updates on the kidnapping of a Girl Scout in Florida.

Peggy Jacks, Camp Waluhili director and veteran of 20 years of supervising Campfire Girl camps, explains, Campfire Girls have always considered camp safety of "vital importance."

However, this year, security at Camp Waluhili is tighter than in the past.

The day the camp opened — the day after the Girl Scout murders, Burns Detective Agency guards arrived on the scene. "We acted the same day we heard of it," Mrs. Jacks said.

The rest of the 200-plus acre camp's security is not new, including the locked gate and almost constant supervision of campers by counselors. "And we've always had our CB radios," Mrs. Jacks adds.

Ralph Morrow, Burns' chief of security for Camp Waluhili, says the radios are part of the reason the guards can protect the camp. "We're controlling the area in its entirety — controlling it."

The camp's CB system was patched into the Burns' security system with little re-education of the staff. "The people were oriented to the proper use of the radio," Morrow says.

In contrast, the Boy Scout's Camp Garland, located about a mile from the Camp Scott murder scene, had only a very loosely

[continued]



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## Kid's Camp Security . . .

[continued]

organized security system of scout masters and camp counselors.

Upon hearing of the crime, Mike Vegher, Camp Garland's director, says, "Our first reaction was to get hold of the sheriff's department to find out what they would tell us to do, which was mainly secure our own area." The sheriff didn't say how.

The 40 staff members — 10 of whom are adults over 25, and the rest older teenagers, met and devised a plan. Boys would move only in groups. All campers would be back at their troop sites by 11 p.m., making it easier to spot trespassers. A vehicle patrol would be organized and a radio communications system established.

"All our troops had at least one CB radio mounted in their transportation," Vegher recalls. "We allowed them to take one vehicle with radio into troop sites (where) before vehicles were not allowed." Base stations also were needed in the office and at the swimming pool, on the far side of the camp.

As necessary as a good pair of hiking boots, a CB radio links a troop site at Camp Garland to the camp office. Mounted on the same board as a tape player, the unit was removed from a vehicle along with a gutter mount antenna, for which woodland neighbors can find other uses.



Vegher took his communication problem to two 15-year-old Explorer Scouts, Mike Fowler and Dave Peterson, both in their second year as paid staff members. "He told me about it that evening and I had it all set up in about two hours," Fowler says. Like any good Scout, Fowler had come prepared with his tool box. He has done most of the work toward a novice ham license, and both he and Peterson operate CBs regularly using their parents' licenses.

The two Scouts, using equipment owned by camp staffers, put together the base stations. Both were mobile units operating off power packs. A base antenna was located for the camp office, but only a mobile antenna was available for the swimming pool. It was mounted on a 55-gallon barrel, which served as a ground, and the contraption was hoisted onto the pool office roof. "It worked," Fowler shrugs. "It got out."

Fowler installed his personal mobile unit and the quarter-master's twin antennas in the camp jeep, which, along with a CB-equipped pickup, was used to patrol the camp. Two other CB-equipped vehicles were dispatched along with some staffers to perimeter troop sites "which kind of made a circle around everybody," Peterson explains.

Vegher conducted the radio check when the six units were in position. Fowler remembers, "As each person checked in, it was the best feeling I got because I knew everything was working." While Fowler contends setting up the system "wasn't that big a deal," he was curious if such innovations as an aluminum foil shield on a coaxial cable splice would work.

Staff members changed the watch every hour. The patrol vehicles moved at random, but made sure each troop site was passed each half hour. Radio silence was maintained except for emergency reports (though Fowler and Peterson admit to ordering a midnight snack). The only emergency report proved to be a raccoon in a garbage can.

After a week's vigilance, exhaustion began to take its toll



Peggy Jacks, director of Camp Waluhili, displays the portable CB radio, carried by any group leaving the immediate camp area. This unit and the other camp CBs have been used since before Mrs. Jacks arrival six years ago.

on the staff. The perimeter watches were eliminated along with the patrolling pickup. The base was removed from the swimming pool. Tree limbs knocked out the twin antennas so the radio was removed from the jeep.

The jeep continued to grind noisily through the tangled trails at night. Vegher says he likes the cranky sound. "We're not trying to catch him (the murderer). We're trying to keep him away. We have 140 boys here. That's our first concern."

It was concern for the 100 boys and 100 girls who attend Camps Camelot and Carlisle during two-week sessions throughout the summer which prompted Frank Stowers to equip the West Virginia camps with a CB system. The administrator of public and community affairs for Union Carbide in South Charleston, West Virginia, purchased three 5-watt walkie-talkies and a base station this spring for the 250-acre camping area. Stowers says he has been concerned for several years over the difficulty in relaying accident reports from remote campsites to the main office.

Even in the West Virginia mountains, the far away crimes

have brought changes, Stowers reports. The boys and the girls camps used to operate independently. Now, the overnight campouts are coed. Stowers says the presence of teenaged boys should make any attacker hesitate. The walkie-talkies, which also plug into the cigarette lighters on vehicles (and use magnetic antennas), are used by the campers to check in every evening. Each Camp Garland troop also checks in by CB at 10 p.m. each night.

When the Campfire girls at Camp Waluhili move outside their main camp area, they too carry a CB radio mounted inside an aluminum case on a pack frame. Large dry cell batteries ensure maximum output and operating time. Even inside their camps, both the Campfire Girls and the Boy Scouts at Camp Garland move in groups.

In both camps, tents now are pitched much closer and cabins often are used for younger children. At Union Carbide's West Virginia camps, overnight campers sleep close to the fire, encircled in pioneer fashion by tractor-drawn wagons, which often transport campers to remote areas.

Stowers plans to expand his CB system to include a second base, since only the girl's camp has a base at the moment. While the Union Carbide camp operates on the same channel as local CBers, the Oklahoma camps transmit on little used channels. Stowers feels using more public channels increases the chance of an emergency call being heard.



"Fred Akins! You know perfectly well you lost that CB radio on purpose!"

Stowers also counts the CBers who surround the camping area as part of his security system. "They're kind of primed to give the camps a call if they see suspicious characters around." But like many camp officials, Stowers says a low profile is the

**New wilderness survival rules: Move about in groups, sleep close to the campfire and carry walkie-talkies.**

best defense. "We're fortunate we're in the middle of a pretty good chunk of real estate. Very few people outside of (Union) Carbide know we're in there."

Mrs. Jacks contends the assaults are a "freaky thing." She compares them to wild animal attacks experienced by other campgrounds. But it is a danger which must now be counted. "We absorb the cost and know it has to be," she says of the Burns' guards.

While Vegher wonders if assaulting campers may become a problem similar to skyjacking, he plays down the "terror" surrounding the crimes. "It happens in the large cities all the time. It just happened in the woods, which for some reason spooks a lot of people." He adds the boys showed little reaction to the nearby murders. "I guess they become accustomed to things like this."

However, Explorer Fowler notes, morale is "generally down." Though Fowler says it is beginning to improve, "people just don't feel good." Peterson also notes there was a decline in "population" at Camp Garland, though many boys were allowed to return.

The Campfire Girls too were the subject of much parental concern, but Mrs. Jacks reports, "We have lost very few of our own who have been here before."

[continued]

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**Kid's Camp  
Security . . .**

[continued]


Scout Master Bill Ritchey, of Tulsa's Troop 274, took all his boys to Camp Garland after the murders. He and his assistant,

"As each person checked in,  
it was the best feeling  
I got because I knew  
everything was working."

Donald Hailey, were joined by two or three other fathers who drive to the camp each night after work. "It's lessened our duties," Ritchey says, noting the staff patrols were doing most of the worrying. Even though the suspected murderer was being sought in the woods just up river, Ritchey contends his troop couldn't have been safer. "When we don't come up here, we go to public use areas where the boys are more open to abuse."

Hailey interjects, "We don't have motorcycles trying to run us down."

"We've had abuse of every type in public use areas," Ritchey continues, listing rock throwing, stealing, knocking down tents and even shooting at them.

Ritchey, who hasn't had a son in scouting for 13 years, has a touch of the old philosopher about him as he sits with Hailey, who cradles a portable CB. "We've always known it can happen." But he contends of organized camping, "It's the only way to continue camping . . . to do it any other way, it would destroy scouting." 

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# CB Vs. 'Son Of Sam'

Bronx civil patrol uses CB to stalk elusive .44-caliber killer.

By Pete Bowles

*(Editor's Note — A suspect in New York City's year-long "Son of Sam" murder case was arrested the night of August 10th. in Yonkers, New York, just north of the city, apparently ending the largest murder hunt in New York's history. The 24-year-old postal worker, David Berkowitz, was arrested after police tracked him down through a ticket which had been placed on his illegally parked car in the vicinity of the largest shootings of July 31. Asked by arresting officers if his name was David Berkowitz, the man replied: "No. I'm the 'Son of Sam'." The following is an account of a CB civilian patrol which assisted police in trying to track down the killer.)*

Almost every night for the past year they went out in CB-equipped cars to patrol their Bronx neighborhood in search of New York's .44-Caliber Killer, or as he calls himself, the "Son of Sam."

The CBers are members of the civil patrol of the Pelham Bay Community Association, a 1,700-family civic organization which, among other things, is trying to keep crime out of its predominantly Italian-American, working class neighborhood in the northeast Bronx. They also are friends and neighbors of Mike Lauria, an Association member whose 18-year-old daughter, Donna Lauria, was the first person to fall victim to the elusive killer. Since her death on July 29, 1976, the killer fatally shot five

others and wounded seven in the Queens and Bronx boroughs of New York City, always with the same .44-caliber "Bulldog" pistol.

The crazed gunman, who in two letters identified himself as the "Son of Sam," did his dirty work at night. Police say he roamed neighborhoods in Queens and the Bronx in a car or van, looking for couples parked in cars or lone pedestrians on the streets. After finding a likely victim, the killer stalked his prey on foot. Four of the five dead victims were young women with shoulder-length brown hair. "If the intended victim is in an auto, he approaches from behind and shoots through the passenger side window," says an internal police memo sent to detectives on the case. "If the intended victim was on foot, he approached as if to ask directions and then shot the victim at close range." Police say he also shot combat style, two handed from a crouch. The gun was probably carried concealed in a plastic bag or paper bag.

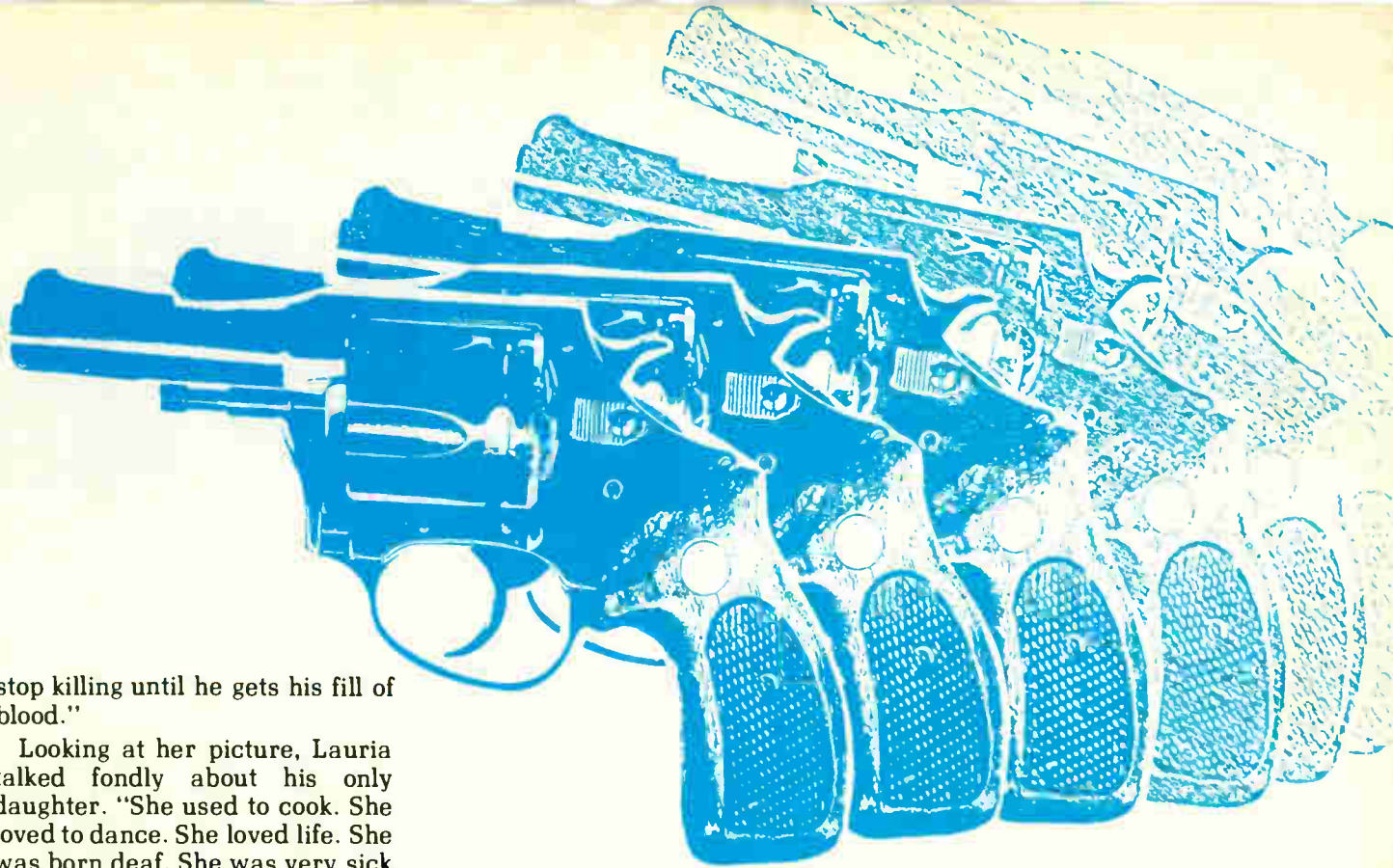
Police, who interviewed thousands of people in connection with the case and tracked down 2,000 men identified as possible suspects, described the .44-Caliber Killer as "a neurotic, schizophrenic and paranoid, with religious aspects to his thinking process, as well as hintings of demonic possession and compulsion." They add that he is probably "shy and odd, a loner inept in establishing personal relationships, especially with young women." Most of what police knew about the killer is based on a letter he left on the front seat of a car between the

bodies of two victims. The manhunt cost the city \$16,000 a day since April, when homicide investigations of the first six attacks were officially combined. Much of the police effort has involved the tracing of owners of 28,000 .44-caliber "Bulldog" revolvers, manufactured by the Charter Arms Company of Hartford, Connecticut.

On the eve of the first anniversary of his daughter's death, Lauria, as he did every night, patrolled the streets of Pelham Bay, a portable citizen band radio and a police composite sketch of the .44-Caliber Killer on his dashboard. Before the capture, he said, "I've got a hole here that can never be filled," pointing to his heart. "Yeah, I guess you could say this is something of a vendetta. I just want a few minutes with him. I just want to know why. Then I'll turn him over to the police. But if they ever let him go, if they ever send him to a nut house and then he's released, I swear on my daughter's grave, I'll . . . ."

Lauria, who denied reports of friends that he carried a gun with him on patrol, recalled one of the two letters written by the killer. The letter, which was sent to New York Daily News columnist Jimmy Breslin and later turned over to police, said: "Tell me, Jim, what will you have for July 29th? You can forget about me if you like because I don't care for publicity. However, you must not forget Donna Lauria and you cannot let the people forget her either. She was a very sweet girl, but 'Sam's' a thirsty lad and he won't let me

[continued on page 36]



stop killing until he gets his fill of blood.”

Looking at her picture, Lauria talked fondly about his only daughter. “She used to cook. She loved to dance. She loved life. She was born deaf. She was very sick and we thought we might lose her then. If God had to take her, why didn’t He take her then? Before I really got to know her.”

At about 12:30 a.m., Lauria and two other members of the Pelham Bay patrol sped off to check out a radio call that a suspect had been seen. “Someone was spotted who fit the description,” said Pat

Daverese, president of the Pelham Bay Association. Two minutes later they came back to patrol the streets around Lauria’s apartment building. “We told the police and they told us to back off. They’d take over,” explained Daverese. The tip turned out to be nothing, just another of the

hundreds of tips the patrol members have received over the last year.

The nightly CB patrol usually consisted of several dozen men who cruised the neighborhood in 10 cars equipped with CB radios

[continued next page]



Above:  
A CB-equipped patrol car cruises along the business district of the Pelham Bay section of the Bronx, a middle-class neighborhood of some 40,000 residents.

Right:  
Manning the base station at the Association’s headquarters are, left to right, civilian patrol members Wayne Maroney, Neil Daverese and Joe DePasquale.



## 'Son of Sam' . . .

[continued]

streets with walkie-talkie units. The radios were purchased by the association with membership dues. The patrol members kept in constant touch with a base station at Association Headquarters which boasts a 22nd-story antenna-location. They had numerous chases during their year-long search for the killer.

"Once we thought we had him," Daverese related, describing a foot race that occurred in mid-July. Patrol members had chased a man resembling the police composite until he jumped a fence over the Hutchinson River Parkway and escaped toward the Bronx State Hospital. "You should have heard the (CB) radio," said Dom De Yorgi, the Association's vice president. "I got him!, 'I lost him!' The radio was jumping off the desk."

Association officers, in an interview with **CB MAGAZINE**, were quick to point out that the civilian stalkers of "Son of Sam" were not vigilantes and that they follow procedures drawn up for them by the New York City Police

An Association member looks on as CBS correspondent Bill Moyers, seated left, interviews Cicerelli and De Yorgi for a CBS television special about how New York survived the summer of 1977, a summer which saw a blackout, terrorist bombings and the killings of "Son of Sam."



Department. "We don't carry guns," said Daverese. "We are not vigilantes."

"We are not into this cowboy and Indians stuff," added Fred Cicerelli, the Association's executive secretary. "We are only the eyes and ears of the police department. Numerous times we had reason to believe we had spotted the killer. But it was handled strictly along the lines of procedures we must adhere to. If any man breaks the rules, hits anybody or uses any violence, or even questions anybody without police being there, we let him go. We don't need them." Cicerelli, an unemployed personnel director, said all the patrol members have been approved for the civil patrol by the commanding officers of New York's 45th Precinct, which covers the Pelham Bay area. The members also carry identification cards issued to them by the police. Precinct officers have taught them about the proper use of CB radios.

Cicerelli explained how the patrol operation works: "We stay a safe distance away and we follow a suspicious character. We keep reporting in on where he is. One car will drop him off and another car will pick him up so he won't become suspicious." Patrol members, if they think the person they are trailing is a likely suspect, radio Association Headquarters over Channel 5. The base station operator will either radio the 45th Precinct over emergency Channel 9 or telephone the precinct house over a hot-line telephone that connects the two groups.

"We call them and tell them why the man is suspicious," continued Cicerelli. "We have had people walking down the street with prayer beads in their hands acting suspicious. "Son of Sam" was supposed to be religious. We have had other people who don't belong in the community with strange looks in their eyes. Maybe they have a package in their hand that looks like a gun. So, we pass this along to the police. People around here see the guy behind every bush. Let's fact it, almost every person up here has an opinion on who



CBS television crew rolls the film as reporter Bill Moyers interviews Mike Lauria, an association member whose daughter, Donna, was the first to be killed by the "Son of Sam."

they think he is." Many in the community, where two others have been slain by "Son of Sam," believed the killer was one of their neighbors.

"It's brought out the younger guys," De Yorgi said of the search for the killer, "the young single guys, the young marrieds who are afraid for their wives and girlfriends. It isn't just the fear of the .44. It's also the excitement. I don't know if any of them would admit it, but you can see it in their actions."

Police are divided on the patrol's usefulness. "We don't want them to go out and patrol on their own," said Sgt. Walter Krapatask, desk officer at the 45th Precinct. "We don't advise it . . ." But at the Queens headquarters of the special Homicide Task Force assembled to track down "Son of Sam," Detective Leonard DiPietra told **CB MAGAZINE**: "We got a lot of help from them. They were trying to do the best they could." He noted that several CB patrols in Queens assisted police in the case. "We don't want any vigilantes out there, but these CB people are doing a real community service."

Daverese agreed that not all policemen are supportive of the patrol's efforts. "Certain ones think we spooked the guy. But we did not spook him. We were just protecting our neighborhood. We

[continued on page 39]



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\*Patent applied for

# 'Son Of Sam'...

[continued from page 36]

don't want nothing like him up here any more."

While the police have expressed appreciation for the work of the CB civilians, they also were concerned about the possibility that the killer himself may have been monitoring CB messages. For that reason, on the anniversary of Donna Lauria's death the Pelham Bay group loaned two CB radios to police patrol cars assigned to the area. "They wanted to know what we were doing," said Daverese. "They didn't want us to get out of hand."

Although most of its time has been spent recently on the .44-caliber case, the Association is involved in many other projects designed to keep the Pelham Bay neighborhood alive. Cicerelli, noting that many of the residents formerly lived in the East Harlem section of Manhattan, said the Association was formed about 18 months ago as a result of burglaries in the area. "We noticed certain neighborhood changes taking place," he said. "Merchants were starting to put up roller gates on their stores." In East Harlem, he explained, the arrival of roller gates meant a change for the worse. "The gates make a store look like an armored car." Cicerelli, Daverese and De Yorgi decided to form the Association. "We didn't want to have to run from our neighborhood as we did in East Harlem," said Cicerelli. "We wanted to make a stand."

"We are into neighborhood stabilization," said Cicerelli. He said that the Association, in addition to its anti-crime patrol efforts, provides young escorts to senior citizens, transports the ill and injured to hospitals, negotiates landlord-tenant disputes and counsels people in need of help. Its office, on the ground floor of a 22-story apartment building at 1730 Mulford Avenue, is also used as a

social and meeting hall for neighborhood groups.

"The patrol responds to all kinds of complaints in the community," said Cicerelli. "It might observe a holdup in progress, which we report to police over the CB." He again stressed that his men are unarmed. "If we know that any of our men carry any kind of a weapon, be it even a broom stick, that man does not go out on patrol. We don't want any of our people endangered. They are not to leave the car ever, except if they see an old lady being mugged. In those situations, they will get out and assist the old lady or old man and try to stop the perpetrator."

The Association's CB patrol, as were several other CB groups in the city, was commended by the New York City Police Department for its community service during the massive electrical blackout which put New York's 9,000,000 people in the dark on July 13-14. "We didn't have one break-in in this neighborhood," said Daverese. Thousands of looters were arrested in other parts of the city during the blackout. "We patrolled the whole neighborhood for 48 hours," said Daverese.

(Another CB group that was active during the blackout, which virtually shut down the city for some 48 hours, was the State Emergency Radio Volunteers (SERV) of the Midwood Station section of Brooklyn. Members of the group worked hand-in-hand with police in directing traffic and stopping looting of stores in the area. "We were operational five minutes after the lights went out," said the group's chief, D. Rothschild, whose members patrolled the streets of the entire 70th Precinct and parts of the 61st and 63rd Precincts. "Anyone who even thought of looting either changed their mind or moved on when they saw that the area was well covered.")

On the first anniversary of the first .44-caliber killing, both the Pelham Bay Civil Patrol and police stepped up their efforts. In both the Bronx and Queens, police and CBers kept in touch over CB mobile units. On the three bridges that connect

Queens and the Bronx, policemen with tape recorders stood by toll booths, taking down the license numbers of all vehicles that passed.

But the "Son of Sam," apparently chose to stay home. At dawn, the Pelham Bay patrol members returned to their homes, exhausted and discouraged. But police and CBers kept up their vigil and on August 10, their search ended with the arrest of David Berkowitz. **CE**

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## Communications, Etc.

# AM Base Station Directory

Although more than 50 AM base station transceivers are listed here, there are undoubtedly several others on the market, since there are more than 100 CB manufacturers who produce transceivers under various brand names. Not included in the listing are hundreds of mobile transceivers that can be used as base stations when powered through an AC-to-DC power supply. Transceivers that are listed here are specifically designed for use at fixed locations

and to operate from 117-volt AC house current. Some are also operable from a 12-volt DC source in a vehicle, on a boat or at a fixed location where utility power is not available.

Since nearly all have very similar ratings for receiver sensitivity and transmitter output power, these specifications are not listed. An "X" in the S/RF meter column, for example, indicates that such a meter is included. Absence of an "X" in the SWR meter column indicates that

the set does not have a built-in SWR meter.

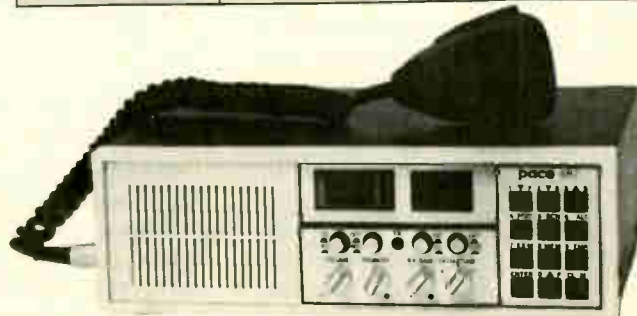
All modern base station units have a built-in automatic noise limiter, but only some also have a built-in noise blanker. In the RF Gain Control column, an "X" indicates that the set has a variable control for varying receiver gain or input signal level. "L/D SW" in that column indicates that the set has a local-distance switch that functions as a two-position RF gain control.

MAKE	MODEL	S/RF METERS	SWR METERS	117VAC POWER	12VDC POWER	NOISE BLANKER	RF GAIN
ALARON	B5050	X	X				L/D SW
BOMAN	CBH990	X	X		X		X
COBRA	86XLR	X	X	X			
COBRA	89XLR	X	X	X			X
COLT	800	X	X	X			
CORNELL-DUBILIER	MARK 20	X	X	X			X
COURIER	CARAVELLE 40D	X	X	X			X
COURIER	CONQUEROR 40D	X	X	X			X
FANON	FANFARE 880DF	X	X	X			X
GEMTRONICS	GTX 5000	X	X	X	X		
GENERAL ELECTRIC	3-5871	X	X	X			X



Midland 76-858 AM base station transceiver in an off-white molded cabinet.

MAKE	MODEL	S/RF METERS	SWR METERS	117VAC POWER	12VDC POWER	NOISE BLANKER	RF GAIN
PANASONIC	RJ-3600	X	X	X	X		X
PANASONIC	RJ-3660	X	X	X	X		X
PEARCE-SIMPSON	JAGUAR 40-B	X	X	X	X		X
J.C. PENNEY	6237	X	X	X			
PRESIDENT	DWIGHT D.	X	X	X	X		X
PRESIDENT	ZACHARY T.	X	X	X			X
RCA	14T 303	X	X	X	X		X
REALISTIC	NAVAHO TRC-431	X	X	X			
REALISTIC	NAVAHO TRC 455	X	X	X	X		X
REGENCY	CB 701	X	X	X			X
ROBYN	T-240D	X	X	X			X
ROYCE	1-621	X	X	X	X		
ROYCE	1-625	X	X	X	X		X
ROYCE	625	X	X	X		X	X
SBE	TRINIDAD III	X	X	X	X		X
SEARS	57/61-3808	X	X	X	X		X
SONAR	FS 2340	X	X	X			X
SPARKOMATIC	CB 5000	X	X	X			
SPARKOMATIC	CB 5100	X	X	X		X	L/D SW
SURVEYOR	2790	X	X	X		X	
TEABERRY	"T" Dispatch	X	X	X			
TEABERRY	"T" Command	X	X	X	X		X
TEABERRY	"T" Control	X	X				X
TEABERRY	"T"	X	X				
TRANSONIC	BCB 410	X	X	X		X	X
ULTRA	403	X	X	X			
UTAC	STUDIO 6000	X	X	X			X
VECTOR	790	X	X	X	X		X



Pace 8117 AM base station with keyboard entry controls at right.

HANDIC	3605	X	X	X			
HANDIC	4005	X	X	X			
HY-GAIN	VII	X	X	X	X		
RAY JEFFERSON	CB 702	X	X	X		X	
E.F. JOHNSON	MESSANGER 4230	X	X	X			L/D SW
E.F. JOHNSON	MESSANGER 4250	X	X				
KRACO	4045	X	X	X			
LAFAYETTE	TELSAT 1140	X	X	X	X		
LAKE	4500	X	X	X			
MIDLAND	76-858	X	X	X			
MIDLAND	76-863	X	X	X	X		
PACE	8117	X	X				X
PACE	8155	X	X	X	X		
PALOMAR	HF 50	X	X				X



Craig L231 AM base station has a unique feature . . . a front panel switch (sixth from the right) that enables selection of either of two antennas . . . as for example, an omni or a beam.

# Directory Of SSB Base Stations

More expensive, but offering greater flexibility of operation are the Single Sideband/AM combination units listed below. Typically these are operated in the AM mode, LSB (lower sideband) or USB (upper sideband) mode, for transmission and reception. In these listings, an "X" indicates the specified feature is included. Absence of an "C" does not necessarily mean that the feature is not included, but it does mean that our information source was not explicit in his material.

All SSB transceivers have a clarifier control that enables fine-tuning of the receiver for clearest reception. Although SSB set sales account for only a small percentage of the total CB market, the demand for these transceivers is growing because of their superior performance capability.

BRAND	MODEL	S/RF METER	SWR METER	115VAC POWER	12VDC POWER	NOISE BLANKER	RF GAIN CONTROL
BROWNING	GOLDEN EAGLE MARK IV	X	X	X	X	X	X
COBRA	135 XLR	X	X	X	X	X	X
COBRA	139 XLR	X	X	X	X	X	X
COURIER	CENTURION PLL 40	X	X	X	X	X	X
CRAIG	L 231	X	X	X	X	X	X
CPI	Ultra 2000	X	X	X	X	X	X
FIELDMASTER	PRO 400	X	X	X	X	X	X
HY-GAIN	VIII	X	X	X	X	X	X
LAFAYETTE	TELSAT SSB-140	X	X	X	X	X	X
PACE	CB 1000 BC	X	X	X	X	X	X
PEARCE-SIMPSON	SUPERBENGAL 40	X	X	X	X	X	X
J.C. PENNEY	6241	X	X	X	X	X	X
PRESIDENT	WASHINGTON	X	X	X	X	X	X
REALISTIC	TRC-457	X	X	X	X	X	X
ROBYN	SB 520D	X	X	X	X	X	X
ROYCE	1-641	X	X	X	X	X	X
SBE	CONSOLE V	X	X	X	X	X	X
STONER	PRO 40	X	X	X	X	X	X
TEABERRY	STALKER TWO	X	X	X	X	X	X
TEXAS INSTRUMENTS	SM 172	LED DISPLAY	LED DISPLAY	X	X		
TRAM	D201	X	X	X		X	X

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- Handsome black Cylolac is both durable and attractive.
- No-scratch feet protect fine furniture.
- Fits all Astatic TUG8, TUG9, and TUP9 D104 microphones, including the Golden Eagle and the new Silver Eagle.

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You've been on the air for the past three months mobiling around town and now decide to install a base station. You go to the local radio store and buy the best CB base station and antenna your money can buy. You're finally home with all of the new goodies; you want to get on the air as soon as possible and talk to all nearby CBers from your home. But, wait a minute! Now is just the time to put the brakes on the brain! As anxious as you are to get on the air, taking a few minutes to plan safety into the base station assembly project might be the best thing you could do for yourself.

Considering these frightening examples of accidents, which might have been avoided had good safety practices been followed? A father and son were killed when the antenna they were attempting to raise contacted high voltage lines. An 18-year old CBER died from electrocution after the antenna he was attempting to install contacted high voltage lines (see June 1977, News Briefs). A ham was seriously injured when he fell off his antenna tower while servicing the antenna. A young woman was thrown across the room when lightning struck her antenna while she was on the air. She was not seriously hurt, but her equipment was not so lucky. The antenna, house wiring, and radio were destroyed when more than a million volts surged through them. The body of another CBER was found in her home, still holding a melted mike in her hand, by the police. The officers reported that she had burns on her right hip, upper right arm, torso, and neck as a result of lightning striking her antenna.

Certainly we value our lives quite dearly; but there are some sobering statistics of home electrical accidents which would indicate otherwise. The National Safety Council records over 300 home electrocutions annually. Not all of these are CB related, but the Council recorded over 100 CB antenna related electrocutions last year, making CB radio the major cause of home electrocutions in the U. S. (see "The Last 10-4," *Family Safety*, Summer Issue).

## SAFETY FIRST

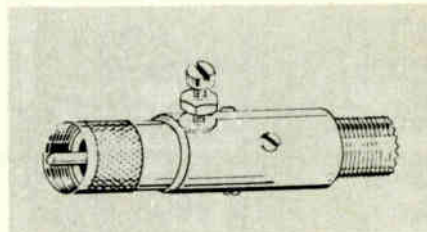
# Play It Safe . . . Don't Let CB Be The Death Of You

By Joe Lynch, KWX-9527

What can you do to avoid becoming a CB statistic? Treat high voltage lines with utmost respect. If you do not remember anything else from this article, please remember that **HIGH VOLTAGE KILLS!** When raising an antenna take care to keep any part of it at least 10 feet from power lines. If the power lines run in front of your house, raise the antenna from the rear. Even though the FCC allows a 60-foot height limit, if that footage would put the antenna within 10 feet of the power lines should it fall, forget the extra height. If, while raising the antenna, it begins to fall, let it drop. Two CBers were killed when the antenna they were raising started to fall. They grabbed it as it was falling and when it hit the high voltage lines they died. If they had not grabbed it, the antenna and high voltage lines would have been destroyed, but they would have lived. Always use rubber gloves and boots when raising the antenna as they provide the best protection for you should the antenna somehow come into contact with high voltage lines.

After the antenna is up, secure it properly with an adequate number of brackets or taut guys and, in the case of towers, be sure the concrete base is wide and deep enough for your antenna. Check the wind factor for your part of the country to determine the number and type of guys needed. Most tower manufacturers have these data and will gladly furnish any other pertinent information.

Once you get the antenna up and secured, ground it. The next most dangerous threat to your CB antenna is lightning. An antenna is not properly grounded unless a wire runs from the ground side of the antenna to a grounding rod. This wire should be at least a number 8 or 10 in size and the grounding rod should be at least six feet into the ground. The next provision to take in protecting against lightning is using a lightning arrester at the transceiver. Cushcraft's Blitz-bug® lightning arrester has a lug on it for attaching a wire to a ground rod outside the window. If you have a rotor, put a plug and jack in the line going to the rotor box.



Cushman Blitz Bug Lightning Arrester.

When an electrical storm arrives at the home 20, disconnect the plug from the rotor box, the lightning arrester from the rig, and the rig from the 110-volt outlet in the wall. Stay off the air until the storm is over. Lightning can play its share of pranks. One prank it played was to strike a house, setting it on fire, then striking a nearby fire alarm calling out the fire trucks. Lightning can strike twice in the same place. In El Cajon, California, two palm trees graced

the entrance of a furniture store. During an electrical storm, lightning struck one tree burning it to the ground; moments later lightning struck the second tree with the same results. It is no prank to have the rig and half the house wiring destroyed by one bolt of lightning.

Sooner or later you may have to climb up the tower or lower it or the mast to service the antenna. If you lower the tower or mast, follow the manufacturer's directions for lowering them. In the case of a mast on a roof, do not stand on the top rung of the ladder to service the antenna. Always have someone hold the ladder steady if you are going to be standing on one. Do not use a ladder that has to lean against the mast; rather use one that is self standing and can easily support your weight. If you are going to climb a tower, even 20 feet up, wear a safety belt. That ham who fell off his tower would not have if he had been secured to the tower with a safety belt. Thoroughly inspect the belt for tears or cuts and have someone qualified teach you how to use it.

Your local electric power company will gladly advise you about installing or servicing the antenna. They don't want to lose a customer any more than you want to lose your life. Besides, they do not want to become involved in legal hassles which might occur as a result of someone getting killed by their electricity.

Some of the base stations that are still being manufactured today are tube type. As sophisticated as solid state has become, some of us still like to see the glow of filaments and feel the warmth of the old rig when it is sitting on the operating desk. This nostalgia is great as long as the cabinet is kept on the rig. Generally, servicing of the rig should be left to a trained professional. However, if you suspect a tube is bad and want to climb inside to pull the tubes out, do it safely. High voltage is used to run tubes and, as stated earlier, it is dangerous! Turn the rig off, unplug it and let it set for an hour. When removing the tubes use a tube puller and not your bare fingers. That warmth felt earlier is due to the tube heating up to over 150°. Be sure that the tube number is clearly indicated on the chassis or tube diagram when the tube is removed. If you install the tube in the wrong socket after checking it, you might have a belated 4th of July celebration on your hands with the ensuing smoke and fire. Rigs have been known to catch on fire and "burn to the ground" from just such a mistake.

What do you do if you see the results of someone's mistake? If a person has been electrocuted, breathing, or heart, or both, have stopped. Illustration 1 and 2 give specific instructions on performing first aid for breathing or heart stoppage. These instructions are courtesy of the Naval Oceans Systems Center Safety Office. Wallet size cards

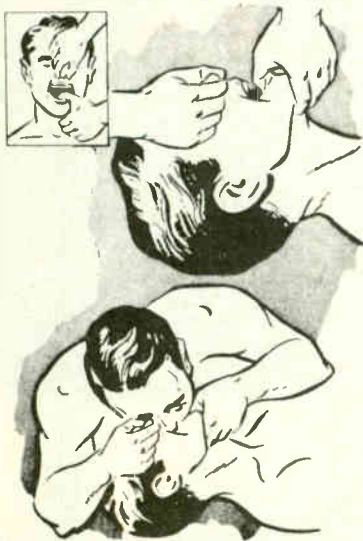
can probably be obtained from the local Red Cross office or the National Safety Council, Chicago, Illinois 60611.

Before approaching the victim, determine if he is still in contact with live electricity. If so, get a belt, rope, or other non-conducting material to use in pulling the victim away from the source of the electrical shock. If you directly come in contact with the victim you also could be electrocuted. While performing the first aid, if possible, have someone phone the fire department and explain to them what has happened. Most fire departments have medical equipment that is used to save an electric shock victim's life.

In the way of home precautions, acquaint your family with the CB station and the potentials of electric shock. Show them where the circuit breaker is located that controls the electricity to the rig and how to turn it off. Teach them the first aid described in Illustrations 1 and 2, and always have the emergency telephone numbers right next to the phone. Teach your child as early as possible how to call the operator to report an emergency. You possibly could save your own life.

Your club, group, or organization should appoint a safety chairperson to acquaint the members on how to be a safe CBer. This chairperson should become familiar with everything unsafe about CB operating. This person should also go to the Red Cross classes, learn about first aid for electric shock and teach this treatment to all of the club members and their families. It is very sad to lose any of your good buddies prematurely. Anything that can be done to prevent this kind of unexpected tragedy will certainly be welcomed by all the members.

A lot of points discussed in this article are really common sense. However, we humans have the uncanny ability of doing dumb things when we do not think. To begin thinking safety is the purpose of this article. By exercising the proper precautions with your CB operating, you will successfully live through your good times! **CB**



Mouth-to-mouth artificial respiration.



Closed-chest heart massage.

# This Antenna is guaranteed clearer than any other

**K40** no other antenna can claim all these features!



**1** RADIUS 180° TIP provides static dissipation without requiring ball. No ball loss—ever!

**3** FULL LENGTH 56" WHIP ground from 17-7PH Stainless Steel for 300% increase in signal-transmitting surface over 36" and 42" whips.

**2** CRITICAL ASSEMBLY, material and specifications adhere to U.S. Government Specs for mobile antennas (MIL-A-55288B-EL).

So unique—77 new patent claims pending or issued including U.S. Patent 3,626,051.

**4** WHIP ADJUSTABLE OVER 2" for fine-tuning SWR—NO cutting!

**5** METL-PLAS construction combines metal and plastic into one heterogeneous coil for highest permanent tolerances—less than 2% variance from antenna to antenna!

**6** COMPUTER DESIGNED ISOLATION CHAMBER dampens static, provides clearer reception than ordinary solid inductance cores.

**7** QUARTER-TURN QUICK RELEASE removes antenna from mount.

**8** 30° ROTATING BASE permits vertical adjustment on any angled surface.

**9** FULLY ASSEMBLED with 18' of co-ax with in-line connectors for trouble-free mounting!

**10** Optional UNIVERSAL MOUNT adapts for mounting anywhere you want it: mirror, luggage rack, gutter, etc.

Available direct from the manufacturer to dealer!

RUST PREVENTION—all metal components plated to MIL-SPEC QQ-C-320B, MIL-STD 868 and 870.

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**GUARANTEE I:** The K-40 will transmit farther and receive more clearly than the antenna it replaces or the customer will receive a prompt and full refund from the Registered K-40 Dealer who installed and tuned it.

**GUARANTEE II:** Materials and workmanship are guaranteed for a full 12 months. Any part that fails to perform satisfactorily will be replaced absolutely free.



# to transmit farther and mobile CB Antenna made!\*

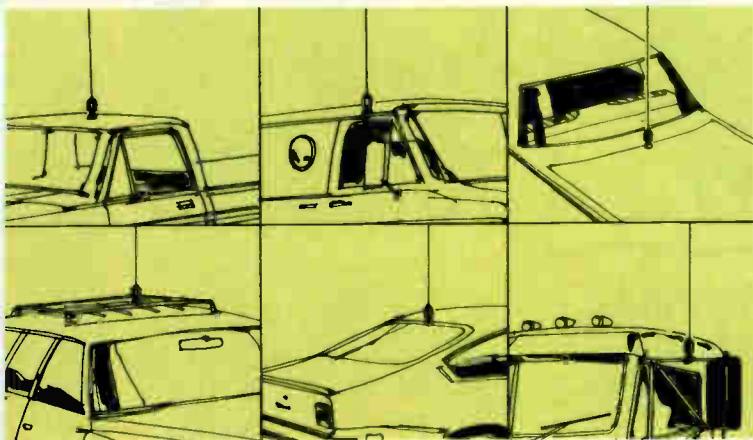
**\$38.50 buys all this performance... and wait'll you see it transmit!**

**Guaranteed more power!** \*This claim is made because we've tested it with hundreds of CB'ers in all fifty states for over one year! The K-40 was *conceived* in the Research Department of one of America's most innovative engineering companies... then *perfected* in the research labs of one of America's most respected universities and *proved* in actual use by 771 experienced CB'ers with 23 & 40 channel radios.

**30% increase!** \*Average performance rated (VSWR and Efficiency combined) 30.5% better than all other brands tested, including Antenna Specialists, Avanti, Hy-Gain, Shakespeare, Turner, Newtronics, etc.

**Equals full-length whip!** The all-new K-40 was designed to equal or exceed the performance of a full-length whip—guaranteed to out-perform all other mobile antennas!

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**See your Registered K40 Dealer for a demonstration.**

## Here is what those CB'ers actually said:

### K-40 vs. ANTENNA SPECIALISTS

"I'm a truck driver and I've been a CB'er for ten years. Compared to my Model M-410, "Big Momma," I recorded a 40% to 50% increase in transmission distance, clearer reception and a lower SWR by 20%. Frankly, the K-40 is the best antenna I've tried so far—over Antenna Specialists, Francis, Shakespeare, Hustler, Avanti—I tried them all."

*John H. Collett, 207 McFee, Bastrop, Louisiana*

### K-40 vs. NEWTRONICS

"Compared to my XBLT-4, the K-40 can consistently transmit 40% further and the reception was better. I compared the two antennas using my Cobra Model #138 which has 69 channels. Quality is very good. I'd say the K-40 is the perfect way to complete any CB system."

*Jerome R. Browne, 7800 S. Linder, Burbank, Illinois*

### K-40 vs. HY-GAIN

"I own a Volkswagen dealership and I've been a CB'er for over 12 years. I operate a TRAM XL5 with a Hy-Gain HELL CAT antenna that I've owned for over a year. The K-40 was better in reception with a measured SWR of 1.2. The K-40 was 20% better than the HELL CAT and transmitted 50% further."

*Dale A. Dayden, 14 Barbara Dale Lane, Annapolis, Maryland*

### K-40 vs. FIBERGLASS

"I replaced my Francis with the K-40 and greatly improved my reception. The transmission was excellent, about a 30% improvement over my Francis. I talked well over 45 miles to an Astro Beam base. K-40's SWR of 1.1 was 10 to 20% better than my Francis!"

*H. Canse, 1964 Mt. Zion Road, York, Pennsylvania*

### K-40 vs. DUAL-ANTENNA

"My twin Hustlers do not perform as well as the K-40. I got an improved performance on reception and about a 30% increase in transmit distance using the K-40. I've been a CB'er for 17 years, and I'd say it's superior to any other antennas."

*James L. Andrews, P.O. Box 1509, Titusville, Florida*

### K-40 vs. WHIP

"I'd rate the K-40 superior, although the transmission and reception of the K-40, compared to my 102" Antenna Specialist whip, was just about identical. I was able to tune the K-40 lower than my 102" whip. I think the K-40 is one of the best looking antennas on the market and overall, I'd rate the performance about as good as my 102" whip."

*Daniel A. Rohlf, R.R. #2, Box 88, Binford, North Dakota*

# K40

American Antenna, 1945 South Street, Elgin, Illinois 60120

**An All American Product from an All-American Company**

# Funny BONES



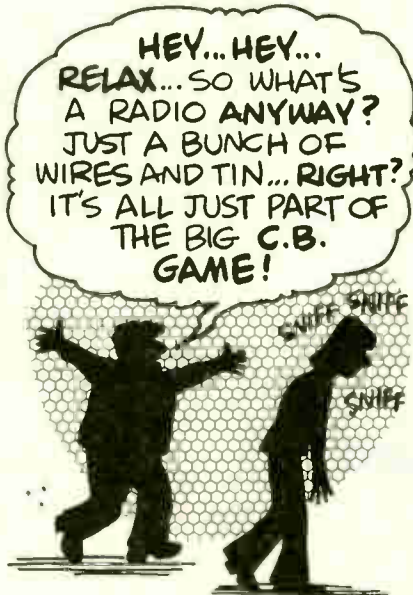
HEY...  
WHAT'S THE  
MATTER?

WAAAAA!  
WHY ME!?! WHY ME!?!  
WAAAAAAAAA!!



A FORTY CHANNEL  
MOBILE UNIT BROKE ON  
ME TODAY!!

IT STARTED TO SMOKE  
AND THEN IT JUST WENT  
KAPOWIE!



HEY...HEY...  
RELAX...SO WHAT'S  
A RADIO ANYWAY?  
JUST A BUNCH OF  
WIRES AND TIN...RIGHT?  
IT'S ALL JUST PART OF  
THE BIG C.B.  
GAME!



YOU'VE  
GOT TO EXPECT A  
FEW PROBLEMS  
EVERY NOW AND  
THEN, HONEY...SO  
JUST RELAX!

GEE...



I'M GLAD YOU FEEL THAT WAY,  
BONES, IT WAS YOUR RADIO!!

HUH?



WAAAAA!  
WHY ME?!?  
WHY ME?!?  
WAAAAA!

CB MAGAZINE will pay \$25 for each written "CB Chuckle" published. CB oriented incidents or humorous fiction are welcomed. (No cartoons please.) Manuscripts of original material should be addressed to: CB Chuckles Editor, CB MAGAZINE, 531 North Ann Arbor, Oklahoma City, Oklahoma 73127.

## Fun And Games On Channel 19

CBers are always helpful, coming to the aid of motorists in need. I think.

By Rob Kerby

Chatting with the courteous folk on Channel 19 is always such a joy.

Recently — with my gas guage 'way below Empty and southbound on I-35 just inside San Antonio — I picked up the mike, opened up the squelch, waited for a pause in the chatter —

And broadcast:

"Hey, uh, break one-niner for a local information."

"We moved down to Charlottesville when Ah was ten," answered my radio. "but Ah nevah did evah git used to them othah kids, y'know, mah age —"

"Breaker for a radio check," interrupted an over-modulated child's voice. "How a — " The kid's radio cut out. " — check?"

"but when we moved to Austin —" continued the first voice.

Suddenly, drunkenly, off-tune, bawled a cowboy:

"Lack a bridge ovah trubbull'd wotter, Ah'll a-lay me down, lack —"

Piercing, distorting, crackling:

"Break . . . dio . . . check," demanded the child's voice.

"— ovah truh-ub-bull-d wotter —" continued the mournful yodeller.

Then, "Breakah nahnteen for' a Smokey RE-port," yelled another voice.

"— Ah will lay-ay me DOW-WOW-WOWN —"

"— 'bout it Smokey re — (garble)"

"— SMOKEY?" chattered the radio.

"— come deh Smokey RE-port?"

"Whassat 20 on th' Smok —"

"— then when we moved back to Austin, Ah musta bin, ah, hell, mebbe twelve?"

I gripped my mike.

"How about a local information?" I called

"— fer . . . rad . . ." spat the child's voice. "Come on?"

"Hola, diez y nueve, lo CHINGA, perdoname," called a Mexican voice. "Hola, Joselita —"

"— lack a BRIDGE ovah truh-ubulled WOTTER, Ah will LAY ME DOWN (tap, tap, tap on the microphone)"

"Hey, git LOST y'l'il radio checker and you singin' idiot. We got us a definat Smokey SITUATION," hollered a new voice. "What's that location —"

Bridge Over Troubled Water drifted out over the airwaves in a mournful, discordant whistle.

And —

"Breakeh for' tha' L'il Cupcake," called a woman's voice. "Y'll out theh, L'il Cupcake? How 'bout it for' dat L'il" interrupted by:

"Hey, you come on back there, radio check, don't pay no mind —" drowned out by:

"Hernando, te vayas a me —" and

"Come on back on that Smokey report? They'ah walkin' all ovah —" against a background of:

"— an' then we moved out West when Ah was —"

"— fo' tha' L'il Cupcake?"

"— back, radio check, don't y'll take no truck w —"

Then, loud, yelled:

"Well, let's all play radio check. That's whut these her radios is fer, ain't it? Come on kiddies, let's awl play Riddio Check! WHOOOO—eeee! Whut's you' 20, good buddy? Whut's the' handle? Hey, how's this ol' raddio a-puttin' out?"

"— you guys go to another channel?" somebody else was asking, "We're tryin' to locate a Smokey southbound —"

I lifted my mike again.

"How 'bout a break for local information?" I asked.

"YOU go to 'nother channel —" bellered an irate voice.

My car sputtered. I pumped the gas pedal.

"— fo' tha' L'il Cupcake," continued the lady-breaker.

"One mo' time fo' —"

"— rad . . . check . . ."

"— SMOKEY —"

"Joselita, donde ere la madrita —"

I picked up my mike.

"Hey, SMOKEY REPORT," I bawled, aiming my coughing car for the shoulder — out of gas.

"COME ON, SMOKEY REPORT," yelled my radio.

I gripped my mike.

"Yeah, this is th' L'il Cupcake and them ol' SMOKEYS is wall-to-wall in the troubled water, all worryin' 'bout theh childhoods —" I yelled. I laughed crazily, my car gliding to a stop.

"One more time," I yelled, "Let's go for a radio check an' —"


I paused, running out of material.

"WHERE'S DEM SMOKEYS?" yelled the ear-walkers.

"Come on BACK? Whazzat twenty?"

"L'il Cupcake?" called the lady-breaker.

"for that radio check," hollered fourteen kids.

I smiled, leaned over and turned off my radio. 



"\$1 for the car, \$3 for the CB!"

**The wait is over,**

# FM-CB

**is here!**

**Standard introduces  
the GMR-1.**



The **GMR-1** is Standard's newest addition to its fine line of communication devices. It's the radio that the serious CB user has been waiting for.

Designed specifically for use in the new UHF-FM "General Mobile Radio Service" Class, the **GMR-1** offers you the increased clarity of the uncongested UHF-FM bands at an affordable price.

Until now, CB users have been faced with a simple choice: CB that is overcrowded or CB that is overpriced. Now they can have a third choice.

With no more effort than it takes to get a Class D CB License, the CB user can obtain a GMRS License and with it, all the advantages of UHF-FM operation that the **GMR-1** has to offer.



You can enjoy a fantastically increased range through the use of repeaters. Repeater service is now readily available. This means you need only to purchase the number of **GMR-1** radios that you will actually require.

Increased range can also be added either by using a higher antenna or by using a gain antenna.

You even have benefits on the road because the **GMR-1** is UHF-FM and does not pick up ignition noise.

Far and away, the biggest advantage of the **GMR-1** Radio is that it is a Standard. It has the rugged built-in dependability that Standard is famous for. So, if your customers want to move up to quality, let them move up to Standard.

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Communications**

**FM-CB**

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Standard Communications Corp.  
P.O. Box 92151  
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- Please send more information regarding FM-CB by Standard.
- Please have a representative contact me regarding FM-CB by Standard.

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Code/Phone \_\_\_\_\_

- I am a dealer.
- I am a distributor.
- I am a CB user.

# General Mobile Radio Service

## Part Two Of A Series. Simplex, Cross-Channel, Remote and Two-Frequency Paired Systems; Repeaters Are Discussed and Illustrated In This Issue.

This is the second in a series of four articles about the General Mobile Radio Service [GMRS], formerly known as Class A Citizens Radio Service. The GMRS is assigned eight channels in the 460-470 MHz landmobile band and uses frequency modulated [FM] transmitting and receiving equipment for communicating.

By Leo G. Sands,  
KBX-5065

The GMRS differs from CB (Class D) in some aspects. Since GMRS is assigned to the UHF frequency spectrum the distance covered by the transmitted signal is limited to somewhat greater

than line of sight, prohibiting reception of unwanted skip signals. The nature of frequency modulation minimizes ignition noise interference. The FM "capture effect" allows reception of only the strongest signal and excludes all others. The interference and confusion of receiving several signals at once as on CB are eliminated on GMRS.

As stated in Part 1 (October CB), the licensee is normally assigned only one of the eight channels for transmitting. Similar to CB, a licensee is allowed to talk with any other licensee, but only when transmitting on the licensee's assigned channel. (The licensee is not normally allowed to transmit on any other of the eight channels.) In a later part of the series we shall discuss how a licensee may talk to licensees assigned to other channels by "cross-channel communication."

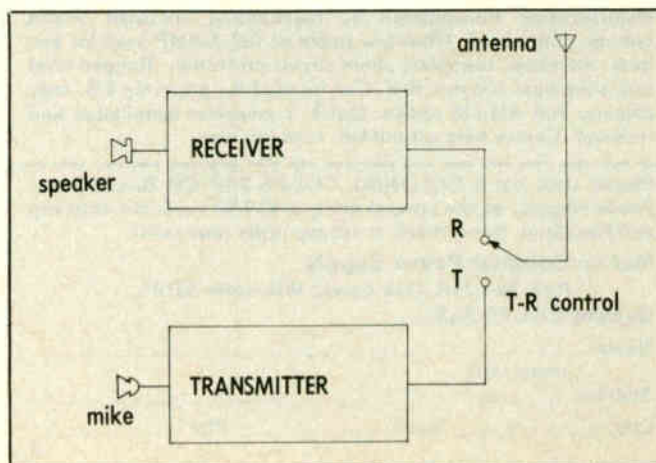
Each GMRS channel consists of two frequencies, one for transmissions by base stations and mobile units, the other by mobile units only. The two frequencies are separated by 5 MHz. These two frequencies together are called a "paired" channel.

[continued next page]

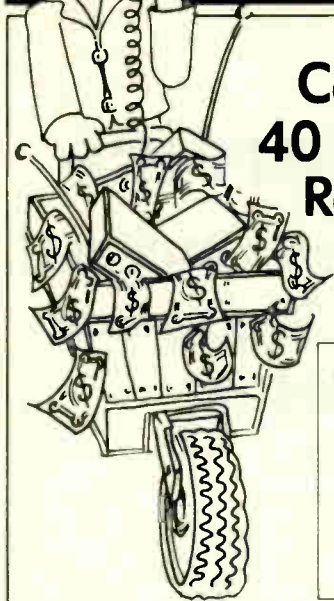
TABLE 1  
GENERAL MOBILE RADIO  
FREQUENCIES SERVICE

base stations and mobile units (MHz)	mobile units only (MHz)
462.550	467.550
462.575	467.575
462.600	467.600
462.625	467.625
462.650	467.650
462.675	467.675
462.700	467.700
462.725	467.725

Figure 1. Functional block diagram of a locally controlled single-frequency or two-frequency simplex base station or mobile transceiver.



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OF BUCKS!

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1607 Western Ave., Chicago Heights, IL 60411

## GMRS...

[continued]

Table 1 lists the base-mobile and mobile-only frequencies of the eight channels. The license applicant has the choice of requesting authority to transmit on the base-mobile frequency only, or on both frequencies.

### SINGLE FREQUENCY SIMPLEX SYSTEMS

The advantage of operating on the single base-mobile frequency is that base-to-base, base-to-mobile and mobile-to-mobile communications are all possible. This type of operation is called a Single Frequency Simplex. All units transmit on the same frequency and when within radio range, may communicate with each other. This is much like CB units that communicate regularly with each other on the same channel. Column 1 of Table 1 lists the frequencies available for this purpose.

Since only single frequency operation is required, the base station and mobile units may be single-channel or multi-channel types equipped for operation on one channel. Each base station and mobile unit consists of a receiver and transmitter, as shown in Figure 1. When the PTT switch is operated, the transmitter is activated and the receiver is cut off, the same as a CB set.

### CROSS-CHANNEL COMMUNICATION

With a Single Frequency Simplex System, a GMRS licensee is able to communicate only with stations assigned to the same channel. Cross-channel communication permits the licensee to communicate with licensees on other channels. Although the licensee is not legally able to transmit on any but the channel assigned him, he can legally receive on any channel. Assume that his system operated on 462.550 MHz and he wants to communicate with other GMRS licensees operating on 462.625 MHz. If he has a multi-channel unit, he can equip it with crystals to transmit on 462.550 MHz when set to Channel 1 or 2 positions and receive on 462.550 MHz when set to Channel 1 and 462.625 MHz when set to Channel 2. The licensee transmitting on 462.625 MHz would have to be able to receive on 462.550 MHz to permit communication with the licensee assigned to transmit on 462.550 MHz. Again, either may legally transmit except on his specifically assigned transmitting frequency.

A four-channel unit would permit transmitting and receiving on the licensee's assigned channel and receiving on three other channels. At each channel position a transmitter crystal for the assigned transmitting channel is required. In the other positions, crystals are installed for reception of the other desired channels. Cross-channel communication is possible with both base stations and mobile units equipped for multi-channel operation.

An alternative to using a multi-channel transceiver is using a scanner type UHF monitor receiver equipped with crystals (or adjusted if synthesized), for receiving the eight GMRS base-



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Now you can use your mobile CB rig in your home, shop or office with the new COLONIAL COL-PS-3AR CB regulated Base Station Power Supply. Permits maximum transmitter output and distortion-free transmission by maintaining full-rated output voltage under load. Ultra-low ripple at full 3-AMP load for low hum operation. Complete short circuit protection. Rugged steel and aluminum construction. Can be used for powering CB, tape players, and AM-FM radios. Quick, convenient installation and removal. Comes fully assembled, ready to use.

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B

mobile frequencies. Whatever the technique used for receiving on channels other than the assigned channel, one should monitor his own channel before transmitting to avoid causing interference to communications in progress.

### REMOTE CONTROL

The base station is usually locally controlled; the base station and operating controls are in the same room. When it is not feasible to install the antenna high enough for adequate range, the base station and its antenna system may be installed at a remote location, such as the roof of a high-rise building, on top of a water tower or on a hilltop. The base station is controlled from the operating point through a leased telephone circuit (dedicated wireline), as illustrated in Figure 2.

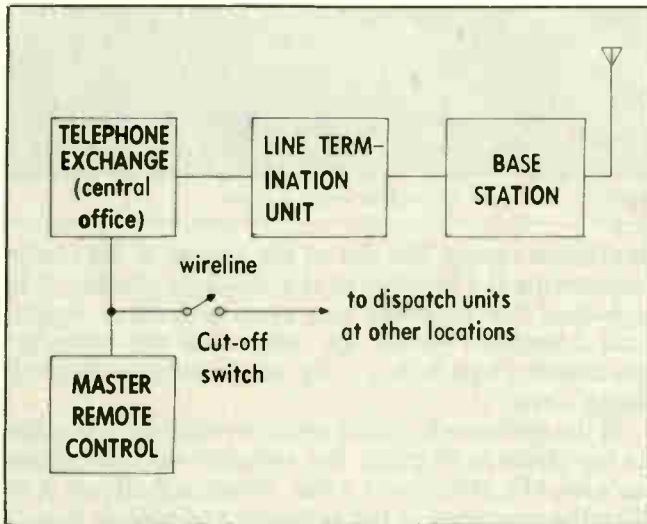


Figure 2. Functional block diagram of a remotely controlled base station.

Normally, the audio output of the receiver is fed through the wireline to the remote control unit where all transmissions on the operating frequency may be monitored. To transmit, the PTT switch is operated. This causes DC to be applied to the wireline which energizes a relay in the line termination unit at the base station location. With the PTT switch closed, the base station transmitter is turned on and voice signals from the control point are fed through the wireline to the base transmitter. Some remote control systems employ a subaudible tone to control the base transmitter.

A remotely controlled base station may be shared by two or more GMRS licensees when so authorized by the FCC. The cost of buying or leasing the equipment and the operating costs may be divided among the participants, none of whom may profit financially from the sharing arrangement. Each participant would have a remote control dispatch unit connected to the master remote control unit, as shown in Figure 2, through a dedicated wireline.

If all of the participants are located on the same block or in the same apartment complex, they might be able to install their own interconnecting wirelines. When it is necessary to cross streets, one

[continued]

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# GMRS...

[continued]

must usually lease the required circuits from the local telephone company.

## TWO-FREQUENCY PAIRED CHANNEL SYSTEMS

When a GMRS system consisting of a base station and one or more mobile units operates on a two-frequency paired channel, the mobile units cannot communicate directly with each other unless the base station is operable as a repeater station. Ordinarily, a GMRS base station is manually controlled and consists of the elements previously shown in Figure 1.

To permit mobile units to intercommunicate through the base station, the hookup shown in Figure 3 is used. The transmitter and receiver operate simultaneously when the repeater switch is closed. Normally, the base operator throws a switch that feeds the audio from the receiver to the input of the transmitter. For example, the base station could receive on 467.550 MHz and transmit on 462.550 MHz. At the end of an exchange of information, the base operator opens the switch.

An antenna duplexer is required for transmitting and receiving at the same time, when using only one antenna. Figure 5 illustrates the use of an antenna duplexer. The duplexer passes the base transmit frequency to the antenna and the base receive frequency from the antenna to the receiver. It also isolates the receiver input from the transmitter

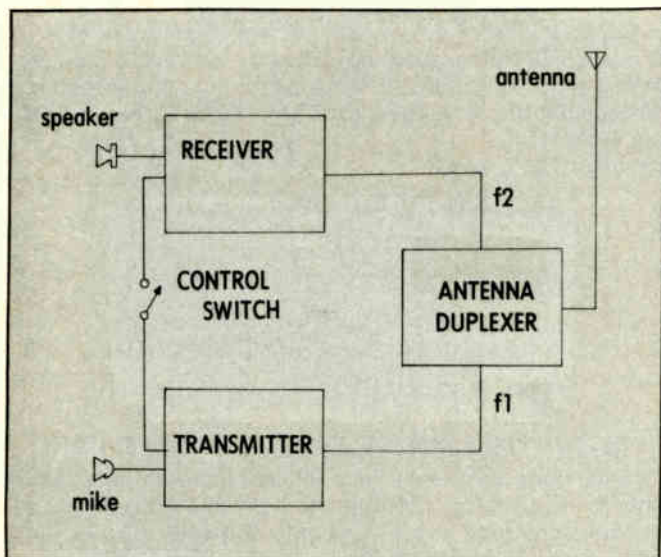


Figure 3. Functional block diagram of a two-frequency base station operable in the simplex or duplex mode.

output. The alternative to using a duplexer is to use two separate antennas, one for transmitting and the other for receiving. The two antennas would have to be separated far enough from each other to maintain adequate isolation. The use of two antennas can be more expensive than a duplexer because two coaxial transmission lines and the two antennas would be required.

## REPEATER STATIONS

When a base station is operated as a repeater — as discussed earlier, the mobile-to-mobile range depends upon the effective elevation of the base antenna. Figure 4 diagrams how a repeater station

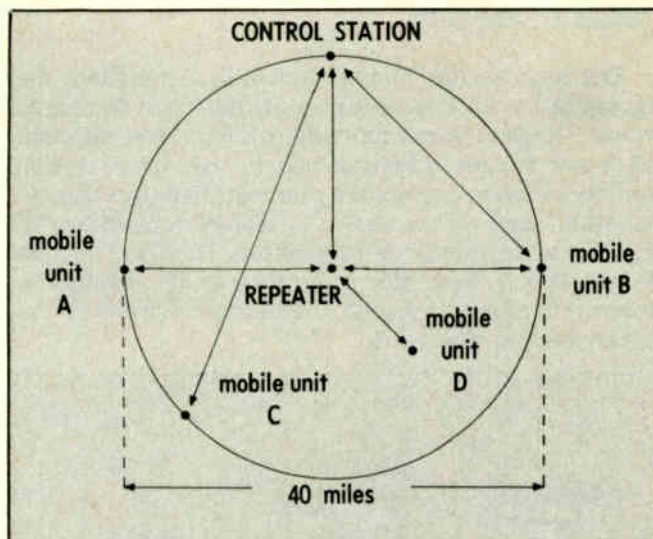


Figure 4. Top view of mobile relay system.

increases range. The dot at the center of the circle represents the location of the repeater station. It is assumed the repeater can receive from a mobile unit anywhere within the circle and the repeater transmitter can be heard by mobile units within the same area.

If the distance from the repeater station to the rim of the circle is 20 miles, the repeater station covers an area of 1,256 square miles. When mobile unit A is 20 miles due west of the repeater and mobile unit B is 20 miles due east of the repeater, they are 40 miles apart and can communicate with each other. Without the repeater, the direct mobile-to-mobile communications range over flat terrain would be about five miles.

When mobile unit A and mobile unit C are 10 miles from each other, as shown in the drawing, the radio signal still travels over a 40-mile path, 20 miles from mobile unit A to the repeater and 20 miles from mobile unit C to the repeater. When mobile unit D is 10 miles from the repeater and 17.5 (air) miles from mobile unit B, their radio signals, when intercommunicating, travel 20 miles between mobile unit B and the repeater, and 10 miles between mobile unit D and the repeater, for a total of 30 miles.

A repeater station consists of a receiver, transmitter, control unit and an antenna system, as illustrated in Figure 5. Since an antenna duplexer is used, only a single antenna is required for simultaneous transmission and reception. The receiver is operational at all times and the transmitter is normally off. When the repeater picks up a signal on the mobile-only transmit frequency (f2) of a two-frequency paired channel, the presence of the signal is sensed by the control unit. This causes the transmitter to become operational. The audio information from the output of the receiver is fed to the input of the transmitter modulator. The trans-



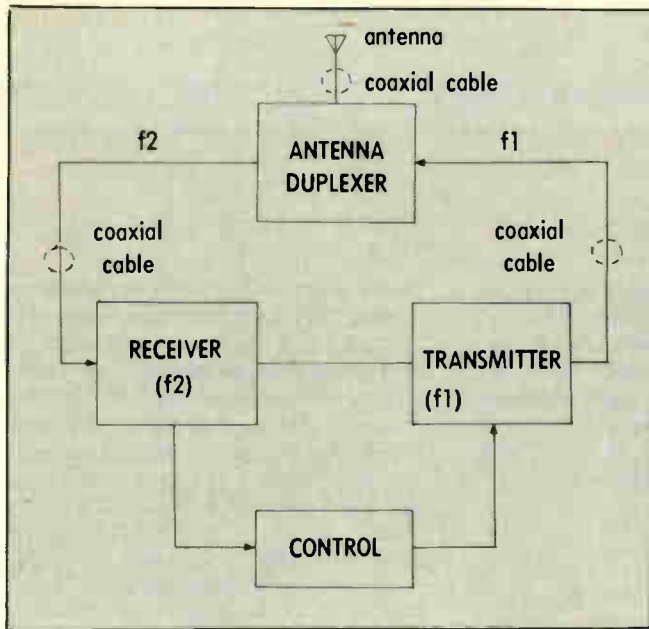


Figure 5. Functional block diagram of an automatic repeater station.

mitter repeats (rebroadcasts) the information picked up from a mobile unit.

When the repeater can be actuated by a carrier signal, it is known as an "open" repeater which can be used by anyone within radio range. To prevent use by unauthorized persons, many repeater stations are equipped with coded tone squelch systems so they will only respond to a specific coded signal.

### CONTROL STATION

A base station used for communicating through a repeater is known as a control station and is technically a "fixed" station. As shown in Figure 6,

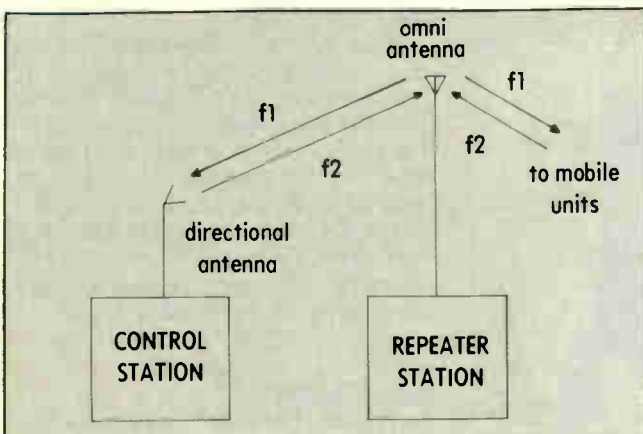


Figure 6. The control station(s) of a GMRS mobile relay system communicates with mobile units and other control stations through the repeater station.

a directional antenna may be used at the control station since it transmits solely on the mobile-only frequency to the repeater station and receives from the repeater station on the base-mobile frequency. There is no need to radiate energy in other directions. Furthermore, the use of a directional antenna allows the use of a lower powered control station transmitter and minimizes interference to other systems operating on the same frequencies in the general vicinity.


NOVEMBER, 1977

In Figure 4, a control station was shown as being located 20 miles due north of the repeater station. At that location, if the repeater range is 20 miles, the control station can communicate through the repeater with mobile units and other control stations at distances as great as 40 miles, provided none of the intercommunicating stations is more than 20 miles from the repeater. When the control station communicates with mobile unit C 35 miles away, the radio path consists of two 20-mile paths for a total of 40 miles.

### REPEATER RANGE

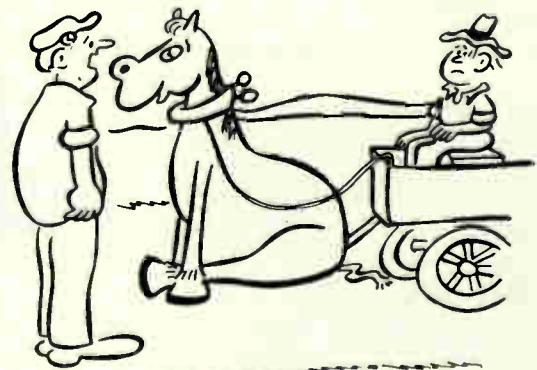
Over flat terrain, the mobile to repeater range is approximately 20 miles when the effective elevation of the repeater antenna is 200 feet. This is because the radio horizon is 20 miles for an antenna 200 feet above earth. If the repeater antenna is only 100 feet high, its range is reduced to 15 miles. However, if the repeater is on a mountain top where the antenna will be 3,000 feet above the valley below, range could be up to 70 miles, or 140 miles mobile-to-mobile. Tests conducted in California over 20 years ago with 10-watt transmitters showed that mobile-to-mobile range through a mountainside repeater could exceed 100 miles.

### COMMUNITY REPEATERS

The cost of buying or leasing and maintaining a GMRS repeater station may be shared by two or more GMRS licensees when authorized by the FCC. As stated earlier, if it is an open repeater, it can be accessed by anyone within range. A major concern by the potential users is over who will pay to put up and operate a repeater station. In some areas, it can be expected that CB clubs will do so. Possibly, some GMRS manufacturers, distributors, or both might put up repeaters to boost sales of GMRS equipment. However, no one can charge for the use of a GMRS repeater station. The only ones who can directly profit from installation of repeater stations are equipment suppliers and lessors. 

### NEXT IN THE SERIES

The next in this series of articles will describe equipment that can be operated under a GMRS license in the Personal Radio Services.



deLormier

"When I heard on the CB about somebody having a sick horse, I thought he had engine trouble."

## SPECIAL NOTICE

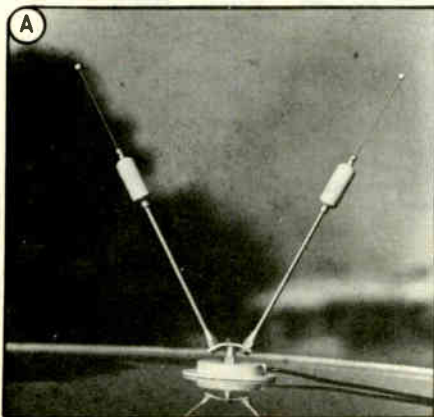
Some of the CB products described in CB Scope, in product reports, in articles or advertisements, may not be offered for sale or lease, or sold or leased until FCC approval has been granted. Publication of information on these products may sometimes occur, however, before grant of FCC approval.

### MOBILE ANTENNA (A)

We tried the Super "V" magnetic mount mobile antenna on both a Pinto station wagon and on a Datsun B-210 Hatchback and it worked well on each. Originally tested on a three-quarter-ton truck, it had been installed on the cab roof, immediately ahead of the van body; reception and transmission had been reported as excellent. In our tests, both in the city and on the road, radiation pattern was acceptable, and it proved omni-directional. SWR, set at 1.2:1 in both of the twin, center-loaded radiators, remained constant. The magnetic base mount resists 25-pound pull and remains steady at high speeds. Base is only 1/2 inch high; entire antenna only 14." Supplied with 11-feet of cable, the Super "V" may be quickly disassembled and carried in attache or suitcase. For more information, write Medcom Enterprises, P.O. Box 6232, Lubbock, TX 79413, or use SPEDE No. 117-1.

### DUMMY LOAD (B)

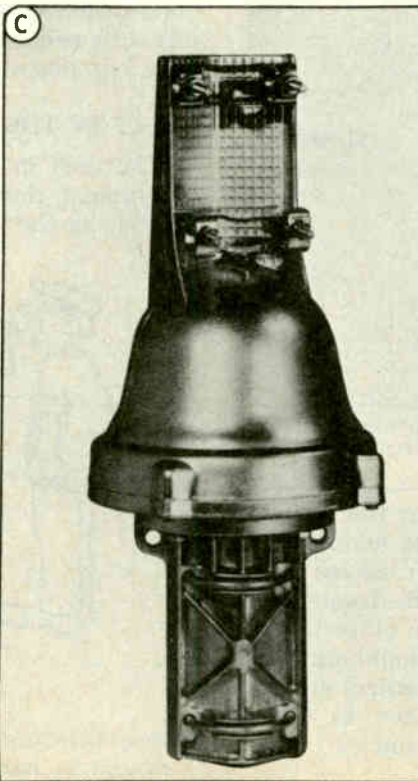
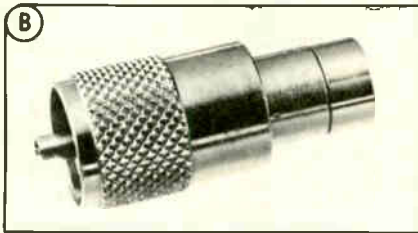
A new dummy load that can be used to prevent unlawful transmission during tuning or testing of a CB radio transmitter, designated Amphenol Model 83-887, properly terminates a CB rig into a 52-ohm resistive load allowing the transmitter to be keyed without causing illegal interference to other stations. Providing maximum legal CB power handling capacity — 4 watts continuous — the dummy load also can be used to check the antenna system by comparing transmitter



performance into the antenna and into the dummy load. It can also be used with an SWR bridge or wattmeter to make precise transmitter adjustments. The device mates with SO-239 type connectors. For more information contact: Amphenol Connector Systems, Bunker Ramo Corporation, 33 East Franklin St., Danbury, CT 06810, or use SPEDE No. 117-2.

### ANTENNA ROTOR (C)

The Big Talk beam antenna rotor system features accuracy, ease of operation, quietness and a deluxe rotor motor control box. The stained wooden cabinet control box enables the operator to preset four rotor positions for instant selection with push buttons. The four most used positions can be identified by the snap-off, etched button cover. The settings and identification can be changed at the operator's discretion. A dial



control offers a 36% scale for rotation to "zero in" on a signal from any direction. Both dial and preset buttons are activated by a start button that positions the rotor to the selected direction and automatically shuts off all power. The powerful motor, 800 inch-pounds of stall torque, turns heavy antennas, even under severe wind and ice conditions. A disc brake holds the antenna securely in a stopped position. It requires 115 volt AC power and weighs 17.5 pounds. For further information, contact Douglas Graham, Cornell-Dubilier Electric Corporation, 150 Avenue L, Newark, NJ 07100, or use SPEDE No. 117-3.

### BASE POWER SUPPLY (D)

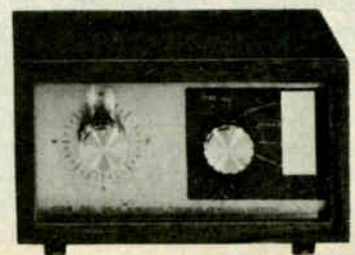
The Quiet Talk ITM is an AC-to-DC power supply that enables using a mobile CB set as a base station. The unit delivers up to 3 amperes at 13.8 volts DC. Voltage regulation is +0.3 percent no load to full load (less than 1/20th of a volt variation). Ripple (hum) is less than 3 millivolts (0.003 volt). Solid state protection circuitry makes this power supply short circuit proof. For more information, ask for the CDE Quiet Talk ITM data sheet when writing to Douglas Graham, Cornell-Dubilier Electric Corporation, 150 Avenue L, Newark, 07101 or use SPEDE No. 117-4.

### NOISE FILTER (E)

GC Electronics has a 60 amp noise filter (18-268), claimed to eliminate or reduce greatly irritating noises in your mobile CB radio caused by an alternator or generator system. Designed to provide a broad range (2-400 MHz) of noise suppression generated at different speeds, the filter is easy to install in cars, trucks and boats. Thorough instructions are included. For more information, write GC Electronics, 400 South Wyman, Rockford, Illinois 61101, or use SPEDE No. 117-5.

### CLASS A MOBILE (F)

"Repeater talkaround" capabilities have been incorporated in Pace Model B1 4000



## A REVIEW OF NEW PRODUCTS AND SERVICES

UHF/FM mobile unit. A channel spread on transmit of up to 5.5 MHz, without power reduction, adds flexibility to the system by permitting direct mobile-to-mobile as well as mobile-to-base communications. Standard features include 6-channel capability, provision for optional tone squelch, a seven segment LED (light emitting diode) digital channel readout, a separate speaker for individual placement, full 10 watts of RF power output, 5 watts of audio output, detachable sturdy microphone, and electrical specifications to match those found in more expensive radios. For full details, contact F. Hamer, Business Radio Marketing Manager, **PACE Communications**, Division of Pathcom, Inc., 24049 South Frampton Ave., Harbor City, CA 90710, or use **SPEDE No. 117-6**.

### PRODUCT BROCHURES G

Five new product line brochures include all 25 Sencore instruments grouped in five product lines. The colorful six-page "mini-catalogs" feature (1) Digital Multimeters, (2) Communications and CB Instruments, (3) Oscilloscope and Power Supplies, (4) Transistors and Tube Testers, and (5) TV and Radio Service Equipment. Each details applications and uses for each instrument, plus complete specifications for easy reference. Featured in the brochures are Sencore's new FC45 230 MHz frequency counter and TF46 portable super cricket transistor and FET analyzer. The brochures are available at Sencore distributors or from **Sencore**, 3200 Sencore Avenue, Sioux Falls, S.D., 57107 or use **SPEDE No. 117-7**.



### CABLE CONNECTORS H

A new line of connectors allows splicing and termination of CB coax using only a pocket knife and pliers. Manufactured by the Cambridge Connector Division of Hi-G Corporation, the line is reported to deliver good rf transmission, connect in seconds, for in the field or permanent cable assemblies. "Fasfit" connectors are made of nickel-plated brass, and are available for RG-58/U and RG 8/U, at most electronic stores. For more information, write Steve Friedman, Director of Marketing, **Hi-G Corporation**, Spring Street, Route 75,, Windsor Locks, CT 06096, or use **SPEDE No. 117-9**.

### MICROPHONE CLIP I

The **Gold Line** microphone clip (No. 1108) holds a mobile microphone in position on the dash of a car or truck. It is backed with a rugged adhesive that gives excellent holding power. It is claimed that it can't vibrate or pull free. At your Gold Line dealer's.

### MOBILE ANTENNA J

A base-loaded 54" mobile whip antenna, called the Metz CB-40, features a 17-7 PH



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stainless steel tapered whip, 1.5:1 SWR or less over 40 channels, plus an extra-strong magnetic mount with a 90-pound grip. A patented transformer, hermetically sealed in a heavy-walled stainless steel housing, is said to be the secret of the new unit's performance. All matings parts are silver plated for optimum conductivity. Each transformer is hand-wound using 25 feet of wire and tested to exacting tolerances. The unit comes equipped with low-loss RG-58 MILSPEC coax and a PL-259 connector. For more information, write Metz Communications Corp., Laconia, New Hampshire 03246, or by using SPEDE No. 117-10.

## BASE STATION ANTENNA <sup>(K)</sup>

"Planetary Seeker" is a new 4-element base station antenna pretuned for 40-channel operation with a reported gain of 14 db. It has side rejection to 55 db and F/B rejection to 30 db. VSWR is less than 2:1 and the power

rating is 2 KW. Matching is accomplished by a coaxial balun. The unit operated with a light duty rotor. Maximum element length is 18'6" and the turning radius is 7 ft. It has a cross boom length of 14 ft. The complete antenna weighs 12 lbs. and it will withstand winds up to 100 mph. All elements assemble without cutting or fitting and only ordinary household tools are required. For more information about the Model 840 "Planetary Seeker," write Valor Enterprises, Inc., 185 West Hamilton Street, Ohio 45383, or use SPEDE No. 117-11.

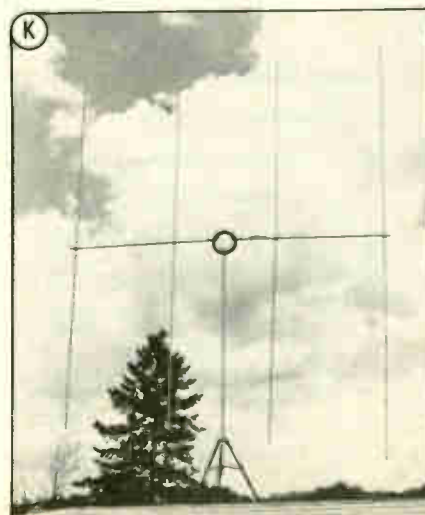
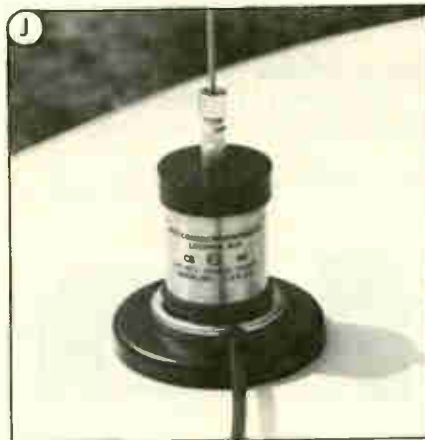
## PERFORMANCE TESTER <sup>(L)</sup>

A comprehensive radio transmitter tester covering the 1.8 MHz-30 MHz frequency range, called the CPI WM-1000, features three separate meters, one for power, one for SWR and one for modulation. Readings on the 2-1/2-inch meters are fast, accurate and unconfused with the easy-to-read expanded

scales. The WM-1000 reads both average and true peak power on the 20, 200, or 1000-watt range scales. The SWR and modulation meters allow on-the-spot calibration, and function with from 1 to 1000 watts forward power. The SWR meter features a 30 dB directional coupler for accurate measurements down to 1.1:1. Modulation is measured through a true full-wave type meter which reads the entire modulation waveform. The unit also features a built-in battery check circuit and an automatic shut-off circuit to prolong battery life, should the unit accidentally be left on after use. Further information is available by writing Communications Power, Inc., 2407 Charleston Road, Mountain View, CA 94043, or by using SPEDE No. 117-12.

## CB PACKAGE <sup>(M)</sup>

The Robyn 007-140P is a 40-channel CB package that includes everything necessary for a complete mobile CB installation, a CB transceiver with plug-in microphone, truck/roof mount antenna, weatherproof PA speaker and all necessary hardware and cables. The transceiver has phase-lock-loop circuitry and also features a two-way intercom, illuminated S/R/F meter and channel selector and a wood grain front panel. For further information contact: Robyn International Inc., PO Box 478, Rockford, MI 49341, or use SPEDE No. 117-13. <sup>(H)</sup>





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# Product Report

## This Antenna Will Not Kill!



The Hustler Homing Pigeon™ is contained in a decorative housing and installs instantly, just like a pole lamp between any floor and ceiling 7-1/2 to 9-1/2 feet high.

**E**lectrical power lines, wind gusts and slippery footing can make installation of an outdoor antenna dangerous and even fatal! Now there's a completely safe choice, the new Hustler Homing Pigeon™. (Patent Pending) instant-setup CB base antenna — the first indoor antenna, introduced by New-Tronics Corporation in Cleveland, Ohio. New-Tronics is the originator of the Hustler brand of CB and amateur mobile and base antennas. The Model HP-27 Homing Pigeon antenna is designed especially for CB use in circumstances where outdoor antennas are prohibited, for example:

- CONDOMINIUMS AND APARTMENTS, which have strict

regulations against outdoor antennas.

- SUBURBAN AREAS AND SMALL COMMUNITIES with local ordinances prohibiting outdoor antennas for CB use.

- RELUCTANT INDIVIDUALS WHO DO NOT wish to install an outdoor antenna due to dangerous overhead power lines or other personal safety reasons, or those who prefer not to advertise that they are CB operators.

Before discussing what to expect of the Hustler Homing Pigeon™, let's briefly review how a transmitting and receiving antenna work. Picture your CB radio as a water hose with the water pressure turned on full force. The nozzle on the end of the

hose is the antenna. With the nozzle wide open, you can project a stream of water over a great distance. Conversely, the nozzle can be adjusted to a minimum opening, thus producing a small stream which will only travel a short distance. Your CB transmitter has a fixed amount of power and will give the best performance connected to a properly designed large antenna on a roof or tower. This is the wide open nozzle. A shorter antenna, in a less desirable environment, will give reduced performance, which we compare to closing the nozzle.

So what can be done for the thousands of people who want CB communication but want an indoor antenna? One answer is the Hustler

Homing Pigeon<sup>T.M.</sup> which meets the following requirements:

- **ADJUSTABILITY**—Setup and adjustment is quick and easy. An assembly wrench, used once, is provided. The only other tool required is a VSWR bridge. The antenna length is the maximum practical for indoor use with normal ceiling heights, adjustable for self-support in a vertical position (adjustable length is 7½ to 9½ ft.).

- **PERFORMANCE**—Designing for minimum space use (the Homing Pigeon<sup>T.M.</sup> takes only about 1½ square inches of floor space) and safety, an ideal indoor antenna has no ground reference and cannot use radials. These conditions dictated the electrical design parameter for Homing Pigeon<sup>T.M.</sup> and resulted in an end-fed, loaded half-wave antenna that requires no radials and gives maximum performance equivalent to or better than a good mobile installation.

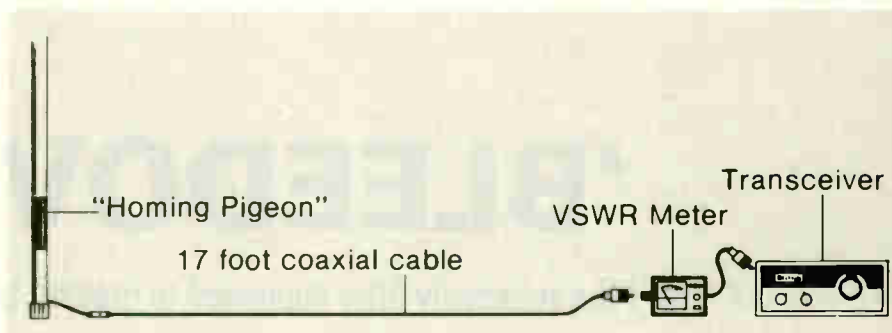
- **EYE APPEAL**—The Hustler Homing Pigeon<sup>T.M.</sup> is designed to be used exclusively indoors. Because it is attractive it doesn't look at all like an antenna — it blends into the immediate surrounding decor. It's designed to look like a self-supporting pole lamp — without the lamps — done in walnut and with gold trim.

- **EFFICIENCY**—Getting the best efficiency from this indoor antenna was accomplished by various engineering techniques so that maximum communication range is

Using the supplied tuning gage, the top (shown) and bottom tuning sleeves of the Hustler Homing Pigeon are quickly and easily adjusted for pre-tuning. Final tuning adjustments are accomplished using a VSWR bridge.



NOVEMBER, 1977



Typical setup for final tuning procedure.

more than proportional to its height. Communication range of the Hustler Homing Pigeon<sup>T.M.</sup> will vary from one to 20 miles or more, depending upon its environment and the height above ground:

- **CONDOMINIUMS AND APARTMENTS**, from fourth to 12th floor with good environment, range can be up to 20-25 miles.

- **PRIVATE HOMES**, with good environment: range of eight to 12 miles should be attainable with the antenna installed on the second floor in the attic; range of six-eight miles can be expected to be attainable when the antenna is installed on the first floor of a frame house; when installed in the basement range will probably be one mile or less.

The ideal location for the Hustler Homing Pigeon<sup>T.M.</sup> is close to an outside non-metallic wall. Practically, the antenna should be located a minimum of 1½ feet from a wall. However, other locations are workable at somewhat reduced range.

The antenna should not be installed in close proximity to large metal objects (such as filing cabinets, metal doors, or screens) and definitely not in an all-metal mobile home or recreational vehicle. Since any antenna is extremely sensitive and affected by its environment, it is important to point out that nothing should be attached to the Homing Pigeon<sup>T.M.</sup>, such as decorative flowerpots, etc.

Once the antenna has been installed and properly tuned by means of the tuning sleeves, caution should be taken that the positions of the sleeves are not disturbed unless the

location of the antenna is changed. With each change of location, the antenna must be retuned. This presents no problem, however, since the tuning procedure is quick and easy.

A sample Homing Pigeon<sup>T.M.</sup> was tested at **CB MAGAZINE'S** testing lab and was found to be as good as advertised.

Several locations were tried and there was a noted difference in the minimum value of SWR. The actual on-the-air tests were tried at three different heights. At ground level or slightly below, base-to-mobile distance was about two miles. At first floor level, six feet above ground, the range increased to five miles, while at 20 feet, the range was nine miles over rolling terrain. In an apartment building, the range should be excellent.

The Homing Pigeon<sup>T.M.</sup> is designed to accept the full legal output power limit of 4 watts of the transmitter portion of a CB transceiver as specified by the FCC. Power in excess of the legal limit can permanently damage the antenna. Damage due to excessive, illegal power used is readily apparent and all warranties, written or implied, will automatically be nullified and will not be honored by New-Tronics Corporation, its dealers, distributors, or agents.

The new portable Hustler Homing Pigeon<sup>T.M.</sup>, Model HP-27, is supplied complete with a 17-foot coax cable and factory-installed connectors. The suggested list price for the Homing Pigeon<sup>T.M.</sup> is \$42.95. For more information write to: Sales Department, **New-Tronics Corporation**, 15800 Commerce Park Drive, Cleveland, Ohio 44142. ©

# 'BLEEDOVER'

Isn't the selectivity filter supposed to prevent bleedover? Yes, but—

By Jack Helmi

If the transceiver contains a selectivity filter that is supposed to eliminate adjacent channel interference (bleedover), how come you can hear Channel 10 transmission when monitoring Channel 9? Isn't the selectivity filter supposed to prevent bleedover? Yes, but —.

Assume that the receiver selectivity rating is 40 dB at  $\pm 10$  kHz. This means that when monitoring Channel 10, with the squelch set to awaken when a 1-microvolt signal is received, the squelch will awaken when a 100-microvolt carrier signal on either Channel 9 or 11 is intercepted. Of course, if

the adjacent channel signal is unmodulated (carrier only), you won't hear anything but noise. If it is modulated, you might hear the voice transmission.

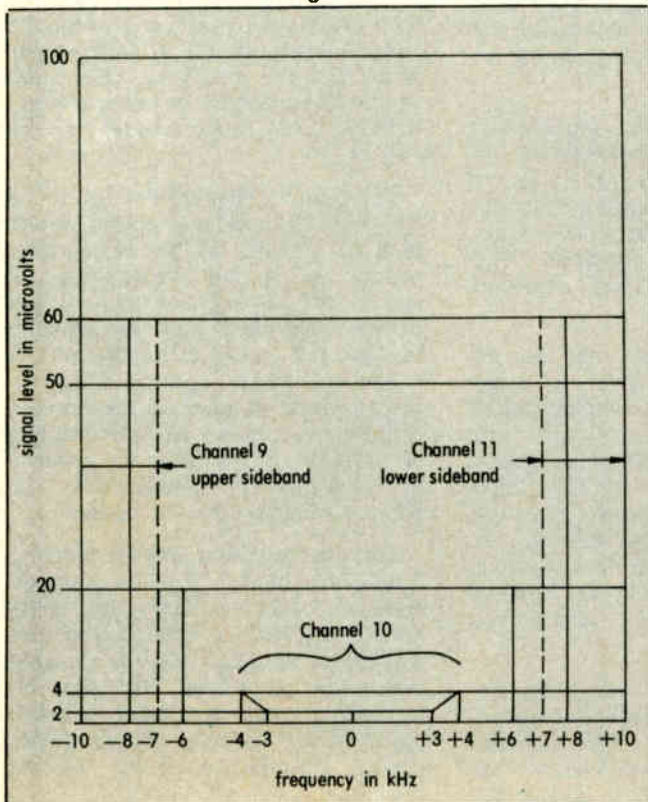
Figure 1 shows what a typical selectivity filter does. On the bottom line, 0 represents the translated carrier frequency of Channel 10 (translated from 27.075 MHz to 455 kHz, for example). The filter bandwidth is 8 kHz — it extends from 451 kHz ( $-4$  kHz) to 459 kHz ( $+4$  kHz) at its  $-6$  dB points. With the squelch set to awaken when input signal level is 1 microvolt, it will respond to a 1-microvolt on-channel signal. (The discussion assumes that there are no distant transmitter and local receiver frequency errors — ideal conditions.)

On the bottom line  $-10$  kHz represents the translated carrier frequency of Channel 9 (translated from 27.065 MHz to 445 kHz) and  $+10$  kHz represents the translated carrier frequency of Channel 11 (translated from 27.085 MHz to 465 kHz). The translated Channel 9 carrier frequency is 6 kHz below the filter bandpass and Channel 10's is 6 kHz above. It is shown in Figure 1 that at  $-10$  kHz, it requires a 100-microvolt (40 dB stronger) signal than at 0 kHz to awaken the squelch. The same is true at  $+10$  kHz.

Now, assume that the Channel 9 signal is modulated and that its upper sideband extends from  $-10$  kHz to  $-7$  kHz, within 3 kHz of the lower edge of the filter bandpass. Also assume, for the sake of easy explanation, that the level of the sideband signal is 50 microvolts at  $-7$  kHz. Distorted voice might now be heard. But, if the carrier level of the Channel 9 signal is 400 microvolts, instead of 100 microvolts, the level of the sideband signal will be 200 microvolts at  $-7$  kHz and around 100 microvolts at  $-9.5$  kHz. Although the translated Channel 9 signal's sideband is still 3 kHz below the lower edge of the filter bandpass ( $-6$  dB point), the voice will be heard because the signal is strong enough to overcome the attenuation of the filter. The same is true of a strong signal on Channel 11 and of any adjacent channels. The voice is heard even if only one sideband is passed

[continued on page 62]

Figure 1





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117

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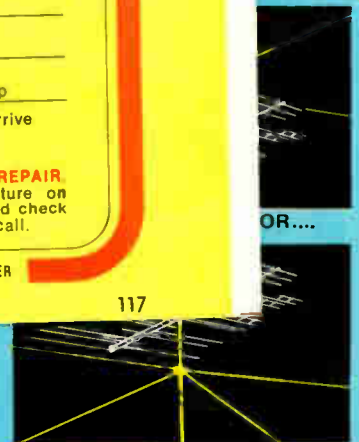
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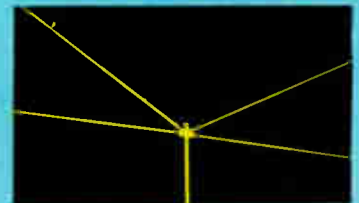
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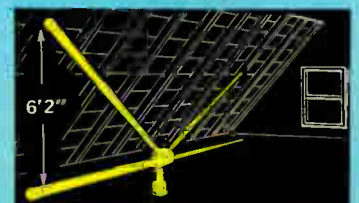
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## Bleedover

[continued]

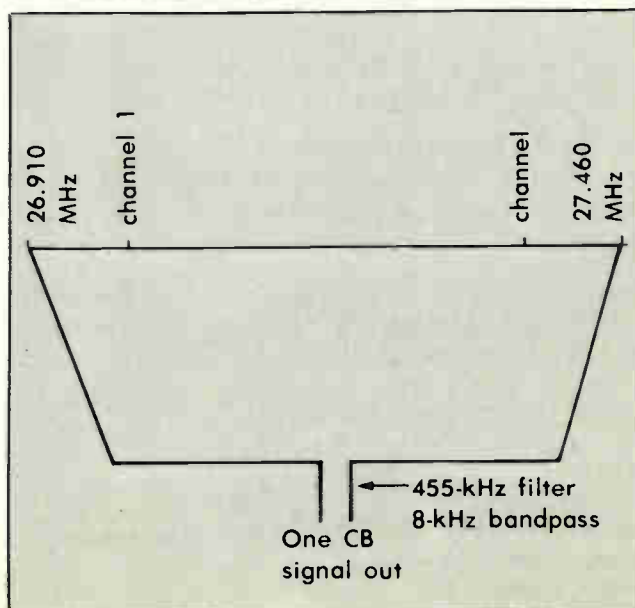
mirror images of each other and each contains the same information.

Don't blame the filter nor the receiver manufacturer. The bleedover problem is caused by the minute 10-kHz spacing of the CB channels, the use of linears and need for having a relatively non-selective, broadband front end in the receiver. Take a look at Figure 2 which shows how radio signals are funnelled to the filter. Assume that the receiver input will accept all signals between 26.910 MHz and 27.460 MHz and that the RF amplifier and mixer input circuits narrow down the front end bandpass to somewhat greater than 450 kHz — to pass all 40 channels, all of the in-band signals between 26.96 MHz and 27.41 MHz must be amplified almost equally well.

Assume that signals on all 40 CB channels are fed into the funnel simultaneously and that only a Channel 20 signal is wanted. The mouth of the funnel is more than 550 kHz wide and its output port is only 8-kHz wide. The 8 kHz filter bandwidth is required so that both AM sidebands will pass through it and to allow for distant transmitter and local receiver frequency error. The desired channel is not selected by the filter, but it offers strong opposition to non-selected channels.

In a CB transceiver, the receiver front end is intentionally broad-banded so it doesn't have to be retuned every time you select channels. When you turn the tuning dial of your AM or FM broadcast band radio or of a short wave receiver, you tune the receiver front end to the frequency of the station being received. This adds front end selectivity.

Now, look at Figure 3, a block diagram of a single-conversion CB receiver. There could be hundreds of signals at point 1, but only one is wanted at points 5 through 9. There are fewer signals at point 2 than at point 1 because of the tuned circuits of the RF amplifier and mixer input. If the receiver is set to Channel 10, for example, a strong signal even on



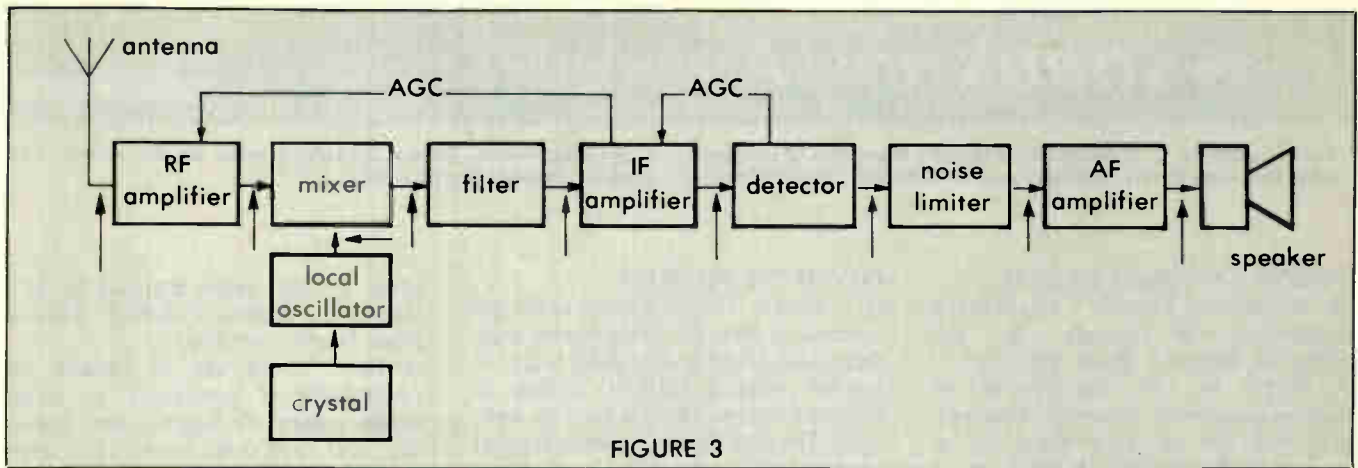


FIGURE 3

Channel 1 or 40 could overload the receiver front end and desensitize the receiver.

Assume for the moment that the receiver is set to Channel 9 (27.065-MHz) and that Channel 10 (27.075 MHz) is bleeding over. Also assume that a 455 kHz filter is used. The local oscillator generates a 26.610 MHz signal (point 3) as determined by the crystal. When a Channel 10 signal is intercepted at point 1, but there is no Channel 9 signal, the frequency of the translated carrier signal at points 4, 5 and 6 is 465 kHz (27.075 kHz minus 26.610 kHz) and its sidebands extend from 462 kHz to 468 kHz. If the filter attenuates signals at 465 kHz by 40 dB, it will pass the translated lower sideband (462-465 kHz) of a very strong Channel 10 signal. But, when a strong Channel 9 signal is present, you won't hear the Channel 10 signal.

Imagine the conglomeration of signals at point 4 when signals on all 40 channels are present at points 1 and 2. Fortunately, the filter attenuates all signals on all but adjacent channels by much more than 40 dB (100 times signal voltage) and adjacent channel signals by 40 dB.

It would be possible to almost completely eliminate adjacent channel bleedover by adding a filter for each channel at point 1, but the cost would be prohibitive. Each channel filter, which would have to be cut in as the channel selector is switched, would pass the selected channel and attenuate all others. It can be done, but the cost would be high.

The citizens band could be almost free of bleedover if linear amplifiers were not used and when base stations are not essentially almost next door to each other. **EB**

John Q

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Grant

# Questions and Answers

While we would like to, CB MAGAZINE can not reply to questions by mail, because of the volume received. The most interesting questions and their answers will be published as space permits. Send questions to CB MAGAZINE, Editorial Offices, 531 N. Ann Arbor, Oklahoma City, Okla. 73127.

## WISHES CANADIAN LICENSE

**Q.** Where and how do I apply for a Canadian CB license? (L. W. Osborne, Monroe, West Virginia)

**A.** Write to the Department of Communications, Ottawa, Ontario, and ask for an application for a license in the General Radio Service. If you plan only to visit Canada, ask for an application for a Tourist Radio Permit.

## SWR WON'T CHANGE

**Q.** I have two CB mobile units with slide-in mounts. If I have the SWR checked on set A in mount A, will it still be the same if I put set A in mount B and vice versa? Also, one unit is normally connected to twin antennas and the other to a single trunk mount antenna. (Gordon Middagh, KWN-3065, Buffalo, Minnesota)

**A.** If both antenna systems are tuned for minimum SWR and have the same impedance looking into the coax and if both sets are tuned to match into that impedance, they should be interchangeable. Even if there is some mismatch at the transceiver end of the coaxial cables, there should be very little loss of effective radiated power.

## PERMISSION REQUESTED TO REPRINT ARTICLE

**Q.** I would like to get permission from you folks to reprint any articles that we feel would be of advantage to our members. We will be publishing a bi-monthly paper for our members. I have been a subscriber to **CB MAGAZINE** for some time, enjoy it very much and have used it as a reference several times at our meetings. (I know quite a number of our members have become subscribers because of our recommending it.) I would appreciate your telling me how to get reprint permission. (Stan Adair, KWR-5635, president, Christian Alert International, Sacramento, California)

**A.** Blanket permission cannot be granted because of possible copyright problems. Some authors retain rights after their articles are published by us. To request permission to reprint a specific article, write Edward K. Minderman, Managing Editor, **CB MAGAZINE**, 531 North Ann Arbor, Oklahoma City, Oklahoma 73127.

## CONDO TVI PROBLEM

**Q.** I have a TVI problem I can't get around. I live in a two-story condominium of nine attached units. A master antenna (MATV) system in the attic serves 18 TVs (two in each unit). The MATV system uses regular unshielded TV wire (twinlead). Since I do not own the exterior of my condominium (only the interior), I may not put a base antenna on the roof, window ledge or on the ground. So I bought a five-foot tripod antenna and put it in my second floor bedroom. I installed a lowpass filter in the coax from my CB and a high-pass filter in the TV wire near my TV set. When I transmit, the picture and sound of all 18 TVs are wiped out. I assume the TV wire in my bedroom carries my signal to the master antenna which then relays it to all the other TVs. I've stopped transmitting voluntarily rather than risk being lynched. Would rewiring the master TV antenna system with coaxial cable solve my problem? I don't want to go to the expense of paying for rewiring unless there is a good chance of success. (Patti Ferris, KAOZ-9179, Bethel, Connecticut)

**A.** It could be that the TV antenna in the attic is picking up your CB signal. Or, as you assume, the twinlead cable in your room could be picking up your CB signal. Or both. If it is being picked up by the TV antenna, rewiring the system with coax would not solve the problem. What is obvious is that the master antenna system is distributing your CB signal to the 18 TV sets. Before going to the expense of rewiring with coax, get a qualified TV technician to try a top-grade high-pass filter at the point where the TV antenna download is connected to the input of the TV signal distributor, and one at the antenna terminals of one of your neighbor's TV sets. If this stops the TVI at that TV set, add filters at each of the affected TV sets. To be effective, the high-pass filters should be of the best quality. This is the kind of problem that is difficult to solve by mail. Even a competent technician at the scene might find it difficult. Good luck.

## NO LINEAR AMPS — PERIOD

**Q.** What does Uncle Charlie see as so evil in using linears in rural areas

after TV and radio stations go off? (James E. Sutphin, KYK-7736, Spruce Pine, North Carolina)

**A.** How would use of linears be controlled? If permitted in rural areas where TV signals are weak, the TVI problem would be compounded. If a CBer has a linear, how could you curb him from using it except at certain hours? The urge to use power is as great as the urge to drive at speeds above 55 mph.

## AIR-BORNE EARS WANTED

**Q.** As a student pilot I am looking for a good headset I could use in a plane with a mobile CB transceiver. Could you give me any information? (M. T. Maddus, Albertville, Alabama)

**A.** Both Telex and Superex make headsets that could be used for your purpose. Both brands are sold through the larger CB dealers. Telex and other brands of headsets are sold by avionics dealers at airports. When selecting a headset, make sure that the microphone and the earphone are both compatible with your transceiver.

## MODULATION NOT AFFECTED

**Q.** What effect will the increased harmonic suppression levels required for 40-channel CBs have on output power, modulation and overall performance? I have been told that modulation will be decreased somewhat. (R. C. Bayer, KIR-4888, Clay City, Illinois)

**A.** There should be no adverse effect. Harmonics are suppressed by using filters (low "insertion loss") and minimizing distortion. All CBs (including 23-channel) type-accepted after November 1974 have been required to contain a modulation limiter. So do the new 40-channel rigs.

## SCHEMATIC NEEDED

**Q.** Where can I get a schematic of the Lafayette Comstat 25B transceiver? I bought the rig used and did not get one with it. **CB MAGAZINE** has been a great help to me; please keep up the good work. (Paul Gregory, KSK-0878, Virden, Illinois)

**A.** You will find the schematic in Volume 33 of Sams Photofact CB Radio Series. If not available at a

local electronics parts distributor, you can order one by mail for \$3.95 from Howard W. Sams & Company, Inc., 5400 W. 63rd Street, Indianapolis, Indiana 46206. (Other CBers needing CB schematics may write Sams for an index of CB sets covered in the various volumes.)

#### WHICH CB BEST

**Q.** I would like to know which manufacturers assemble all or part of their products in America. Also which radios are best — the ones from Japan or the good old USA? (Roger H. Breece, KKH-7185, Centerville, Indiana)

**A.** E. F. Johnson, Browning, Motorola and Regency are among the companies that manufacture CBs in the USA. Hy-Gain has seven CB plants in Puerto Rico. In regard to which CBs are the best, you usually get what you pay for. Most will agree that BMW and Mercedes-Benz cars made in Germany are among the finest; so are Lincolns and Cadillacs. Both American and Japanese engineers are capable. A CB set that can pass the new rigid FCC tests has to be very good, regardless of where manufactured.

#### DOC, FCC SPECS SIMILAR

**Q.** I would like to know what are the differences between DOC and FCC approved CB sets. There must be quite a bit of difference if you can't buy one set in one country and use it in another. (Joseph Schlosser, Fort St. John, British Columbia)

**A.** DOC and FCC technical regulations are very similar, but type approval (Canada) and type-acceptance/certification (U.S.) testing and application procedures differ in some respects. When each approves products sold in their country, they can exercise greater control over what is acceptable.

#### WHAT DO CALL LETTERS MEAN

**Q.** I am a Canadian CBER and am not very experienced with FCC Rules. What is the reason for using "K" and then the two or three letters followed by four numerals in call signs? Thanks for the great magazine. (David (Klondic Kid), XM52-18648, Montreal, Canada)

**A.** So that stations can be identified by the country, the International Telecommunications Union has assigned prefixes to member nations. The U. S. has been assigned KAA-KZZ and WAA-WZZ. Broadcast station call letters start with "K" or "W." CB call signs start with "K." Since the FCC ran out of three-letter CB call signs, new CB call signs have four letters. The ITU has assigned XAA-XIZ to Mexico and XJA-XOZ to Canada. The XM in your call sign identifies it as Canadian. Also assigned to Canada is CFA-CKZ. Canadian broadcast station call letters start with "C."


#### NEEDS LOW-LOSS CABLE

**Q.** I found the book "What You Need To Know About CB Antennas" most enlightening. The section on the losses in dB of the different types of cables at 27-MHz is most interesting. I do not understand why the stores in our Rochester area only carry the RG-8 and RG-58 cables. They do not carry, nor have they heard of cables such as FH-4, FH-5 or Spiro-O-Line. I would be most interested in your supplying me with the sources of such cables. (Joseph E. Geary, Rochester, New York)

**A.** Very few consumer electronics outlets carry these low-loss cables. You might be able to get such cable from the RF Communications Division of Harris Corporation in Rochester since they sell commercial communications systems. The Antenna Specialists Co., 12435 Euclid, Cleveland, Ohio 44106 and Decibel Products, Inc., 3184 Quebec Street, Dallas, Texas 75247 are both distributors of Andrew heliax cable. Andrew does not sell directly to consumers.

#### RECEIVER PRE-AMP LEGAL

**Q.** I know that to boost the output by using a linear on a CB is illegal. Is it legal to boost the receiving power on a CB? If so, how is it hooked up to the radio? (Dynamite Kid, KGG-8190)

**A.** The use of a receiver preamplifier is legal. It connects between the transceiver antenna terminal and the coax leading to the antenna. There are several on the market, sold by CB dealers. 

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CB performance,  
know you're  
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# Setting Up A Base Station For Maximum Performance



A base station need not look like a technically complex radio. This one fits into the decor of a home. (Courtesy of Texas Instruments.)

If you're a mobile-only CBer and don't have a base station, you're not getting the most out of CB.

And, your CB license authorizes the use of more CB sets than you have, you don't have to apply for modification of your license to cover a new base station; your existing license will cover your new base station as well as your mobile units.

Once you have a base station, you can listen to the action on Channel 19. Avoid carrying on conversations on 19 however, so that channel will be available to moving vehicles. If you can help someone you hear on 19 by giving information or other assistance, respond on 19 and ask the caller to switch to another channel to continue your conversation.

You can also monitor Channel 9 for emergency calls and motorists information requests. When you can help, respond on 9 and again ask the caller to switch to another channel for exchanging information. In addition, you can communicate with mobile units and other base stations on any of the other channels.

## POWER CONVERTER

The cost of setting up a base station depends on what you want. An inexpensive way is to use one of your mobile transceivers as a base unit, powering

it from house current through an AC-to-DC power converter and connecting the CB set to an indoor or outdoor antenna.

A basic AC-to-DC power supply (AC adaptor) is a box (not necessarily black!) that has an AC power cord and two DC output binding posts or screw terminals to which the CB set's power cable is connected. If the CB set has a downward-facing speaker, the set will have to be placed on a stand with an

---

“... if you're a mobile-only CBer and don't have a base station, you're not getting the most out of CB radio . . . .”

---

opening for the sound to come out. Or, the set can be connected to an external speaker.

Since most CB sets have a downward-facing speaker, some power supplies are designed to serve as a stand for the CB set and contain a front-facing speaker connected to the CB set's external speaker jack.

Either type of power supply should be capable of delivering 13.8 volts DC at 2 amperes or more. Its voltage regulation

should be good so that output voltage will not rise significantly when the CB set is in the receive mode. In a car, the voltage fed to the transceiver can vary from 12.6 volts (9 percent less than the nominal 13.8 volts) when the alternator is delivering high charging current to the battery. Some power supplies contain a built-in voltage regulator. When regulation is  $\pm 5$  percent, voltage delivered to the CB set won't fall below 13.1 volts nor rise above 14.5 volts.

The DC output voltage should have a very low ripple content. Otherwise the ripple will modulate the signal with an AC hum when transmitting, and a hum will be heard in the speaker when receiving. A power supply contains a filter that reduces the ripple. Those that have a built-in automatic voltage regulator usually have low ripple since the regulator itself acts as an additional ripple filter.

The power supply should have a fuse or circuit breaker for overload protection. The better ones also contain an automatic current limiter that protects both the CB set and the power supply.

## BASE TRANSCIVER

Most CBers prefer a transceiver designed specifically for base station use. A CB set of this

[continued on page 68]

You would think that after 20 years  
*someone* could come up with a new concept  
in a base station microphone.

# Mura could



**...and Mura did!** The new Mura PRX-300Z represents the ultimate in CB base station microphone technology.

It was created for those who demand the finest in craftsmanship and performance... the base station operator.

With lighted finger-tip action controls, PRM® circuitry,\* electret condenser convenience and MikeMate™† capabilities, the 300Z introduces features never before utilized in a base station mike.

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Watch for it.

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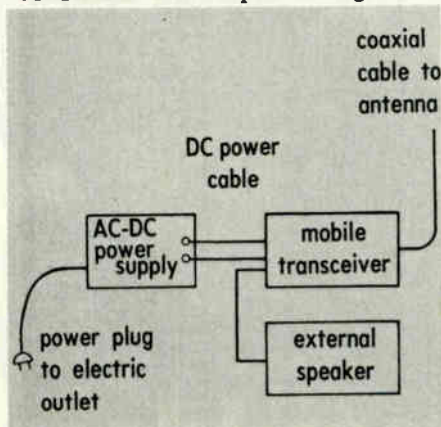
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# Setting Up A Base...

[continued]

type contains an AC-to-DC power supply. In most sets the power supply has an automatic voltage regulator that offsets power line voltage variations and maintains consistent DC output voltage.



Components of a base station using a mobile transceiver and an AC-to-DC power supply.

A base station transceiver usually has the same controls and indicators as a deluxe mobile unit while, in addition, some have a headphone jack. These available today are both attractive and convenient to operate.

Whether to get an AM-only or an AM/SSB base unit depends on your personal interests. If you simply want to communicate with others, an AM-only unit will suffice. On the other hand, if you want maximum range and are interested in CB radio as a diversion, you might be happier with a combination AM/SSB unit. When set in the AM mode, you can communicate with all CBers within range in that mode. And, when set in the LSB or USB mode (SSB) you can communicate with other sidebanders.

## INDOOR ANTENNA

If you have not set up a base station because your landlord, condominium association or local ordinance prohibits installation of an outdoor CB antenna, you might get adequate results with an indoor antenna. The simplest of all indoor CB antennas, of course, is a plug-in, loaded whip that plugs into the CB set's antenna receptacle. The CB set

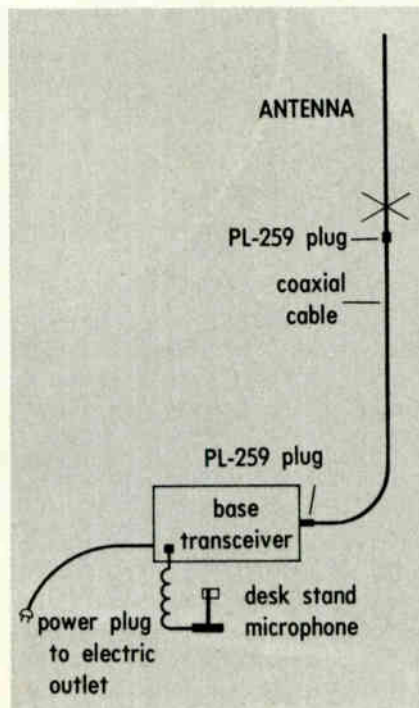
itself acts as a so-so ground plane. Such an antenna does not require a coaxial transmission line cable. All other types do.

A magnetic base mobile antenna placed on top of a metal filing cabinet or refrigerator that serves as a ground plane, often works quite well.

The "Shoestring" antenna is an indoor dipole with two wires and a tuning unit between them. The tuning unit is secured to a window by suction cups as are the far ends of the two wires.

The "Homing Pigeon" looks like a pole lamp. It is spring loaded and is held secure by the ceiling and floor.

The above antennas should work in a frame building, but not in a building with a steel frame or metal siding. In such buildings, the alternative is to use a marine type CB antenna that does not require a ground plane. These antennas are available in lengths from 30 inches to 18 feet. The base of such an antenna can be attached to a window sill and the antenna can protrude upward at an angle outside of the window.



Basic components of a CB base station

## OUTDOOR ANTENNA

You'll get much greater range if you install an outdoor antenna. If you live in a house with a peak roof, you can use a small tripod tower to support the antenna, you



An impressive base station transceiver with built-in SWR meter. (Courtesy of Dynascan Corporation.)

can use a TV antenna chimney mount bracket. And, if you have room in the yard, you might want to erect a self-standing or guyed tower that will support your antenna up to 60 feet above the ground (except in close proximity to an airport).

There is a wide choice of base antennas in various price ranges. For base-to-mobile communication you need an omnidirectional antenna that transmits and receives almost equally well in all directions. If you are interested in maximum range and mostly in base-to-base communication, you can use a beam antenna to squirt signals in one direction. By mounting the beam on an antenna rotator, you can turn the antenna to transmit and receive at maximum efficiency in any specific direction.

The basic omnidirectional base station antenna is the 1/4-wave ground plane. The 1/2-wave and 5/8-wave types are longer but have gain with respect to a 1/4-wave antenna. If this gain is 3.2 dB, for example, it will increase ERP (effective radiated power) from say 3 watts to 6.25 watts.

For maximum range, the antenna should be as high above the ground as feasible. Also, to minimize the possibility of causing interference to nearby TV sets, install the CB antenna higher or lower than nearby TV antennas and as far away from them as possible. Maximum vertical and horizontal separation will reduce chances of your causing TVI.



## COAXIAL CABLE

If you need less than 50 feet of coax to feed your base antenna, you can use RG-58 cable which is available at nearly all CB dealers. If you need more than 50 feet of coax, you should use RG-8 cable or even a lower loss cable. The loss when using RG-58 is 2 dB per 100 feet (20 percent power loss in 50 feet). You can use 100 feet of RG-8 for the same 20 percent loss. But if you use the new Andrew Heliac LDF4-50 cable, the loss is less than 4 percent in a 100-foot length. To buy Heliac or similar low-loss coax, you usually have to go to a commercial two-way radio dealer or service shop (usually listed in the Yellow Pages under "Radio Communication Equipment and Systems").

Never splice coax. Get the amount you need in one piece. When installing coax, be careful to avoid sharp bends and distorting the cross-section of the cable by clamping it too tightly to a supporting surface.

## ACCESSORIES

You might want to get a headset with a boom mike so you will be able to use your CB in greater privacy. Or, you might use a pair of headphones to block out sounds around you and a desk-stand mike you won't have to hold when talking over your base station.


If the base unit you plan to buy doesn't have a built-in SWR meter, you can buy one for less than \$20 and hook it up in the antenna system temporarily to check out the antenna system, or you can leave it hooked up permanently to serve as a continuous antenna checker. If SWR rises significantly, you will know that something has happened to the antenna system. Unlike a mobile antenna, you can seldom get at an installed base antenna to make adjustments. And if you try to adjust one on the ground before you install it, the adjustments will undoubtedly be off when the antenna is raised because of the difference in its environment. For this reason, base antennas are usually adjusted at the factory for optimum performance in a typical environment.

If you change from RG-58 coax to one of the low-loss types, expect the SWR to measure higher. More of the reflected power will reach the SWR meter because of the lower loss through the cable in the reverse direction. The greater the coax attenuation loss, the lower the SWR meter reading. A low SWR reading in such a case is not an indication that the antenna is getting more power.

(CB accessories for both base stations and mobile units will be

covered in depth in a future article.)

## BASE OPERATION

Operating a base station is easier than operating a mobile rig because you don't drive while talking . . . you can concentrate on CB. Because it is easier, there is a tendency among many base operators to talk on and on, hogging the channel. You can have more fun operating a base by keeping transmissions short and listening more and talking less. Ten-four? 



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# COMMANDER

CB Base Station and Mobile Antennas

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# Base Station Interference and Its Remedy

By Leo G. Sands, KBX-4065

Everyone has heard about interference caused "by" CB sets. Almost no one talks about interference "to" CB sets . . . except about bleedover and ignition noise. Because of the extremely high sensitivity of CB receivers, they are highly susceptible to noise and other interference.

When you unsquelch a CB set, you hear a rushing noise. This noise may include picked up electrical interference, but it is mainly "Johnson noise" (also known as thermal noise) that is generated within the receiver. Because of the very high gain (amplification) of a CB receiver, it amplifies the noise made by the movement of electrons at the receiver input. This noise is not a form of interference. When the receiver is unsquelched and a radio signal is intercepted, the background noise gets quieter, depending upon the strength of the radio signal.

Most CB sets are rated for sensitivity on the basis of the signal-plus-noise-to-noise ratio at

the receiver output. (This is abbreviated S+N/N.) Typically, the sensitivity of a CB receiver is 1 microvolt (or less) for 10 dB S+N/N. This means that the power level of the receiver's audio output signal, plus background noise, is 10 times greater than the noise alone. With 10 dB S+N/N, the wanted signal is well down in the noise. With a stronger input signal, the S+N/N gets much higher and the noise seems to disappear.

A strong, on-frequency signal can mask most external noise picked up by the antenna or fed into the receiver through the power line. Undoubtedly, you have noticed that when you tune an AM broadcast band radio to a weak station, there is noise in the background. And when you tune in a strong station, there is little, if any, noise. The noise in this case is electrical noise that is picked up and not generated in the receiver.

There is a difference between the strength of signals picked up by an AM broadcast band radio

and a CB set. The former is used for listening to broadcast stations with transmitters ranging in power from 250 to 50,000 watts, whereas a CB set is used for listening to transmitters delivering between 3 and 4 watts to the antenna.

When you set the squelch at its threshold, the Johnson noise is quieted but you will be able to hear static and manmade electrical interference. Then, when you intercept a CB signal, the noise interference may disappear since the receiver gain is automatically reduced by the AGC (automatic gain control) circuit. (The gain of an AM receiver is automatically reduced as the level of an intercepted signal increases, and vice versa.)

## IGNITION NOISE

The most common complaint about interference caused to a base station is ignition noise from nearby vehicles. Sometimes it is so strong as to block reception of any but the strongest CB signals.

[continued on page 72]

Figure 1. Hook-up of a power line filter to an appliance causing interference, or to a CB set to minimize conduction of interference into the set.

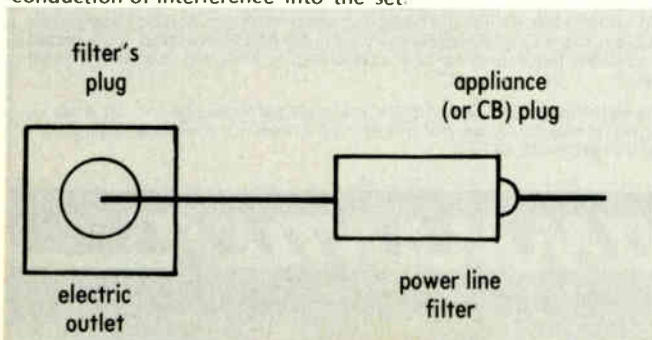
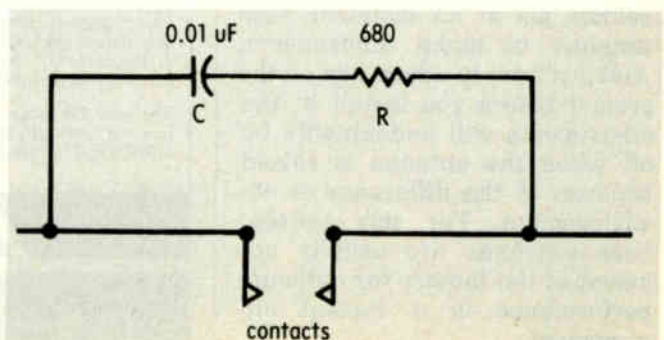


Figure 2. R-C filter for installation at thermostat or switch contacts.



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Also shown here are an antenna switch and a low pass filter, both built to be rugged and sensitive. There are lots more Siltronix accessories too. You can see them all at the better CB shops in your town. And if you don't see them on the shelf, ask.

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cation isn't just a lot of shoutpower. It requires a good match between your set and the accessories you buy. So take a look at what other serious CB'ers are buying. And why.

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that ultra low-loss coaxial cables and higher gain base antennas are available, the use of long transmission lines becomes feasible. [Information about Heliacx LDF cable is contained in Bulletin 1160 which is available from Andrew Corporation, 10500 West 153rd Street, Orland Park, Illinois 60462.]

When you do move your antenna, try to make sure that the new location is not noisier in some other respects. Avoid placing the antenna near electric power lines or a building where electrical machinery is located.

#### APPLIANCE NOISE

Your home may have one or more interference makers. Clicking sounds in your CB can be caused by switches, motor starters and other moving contacts. Whurp sounds are often caused by thermostats within an appliance or on the wall (furnace control). The worst offender among thermostats is the type used to control the water temperature in an aquarium.

The easiest way to minimize interference generated by a plug-in appliance is to install an in-line power line filter between the appliance power plug and the electric outlet, as shown in Figure 1. If this doesn't stop the noise, an RC filter may be required close to the thermostat contacts. As shown in Figure 2, such a filter can consist of an 0.01- $\mu$ F disc capacitor and a 1/2-watt 680-ohm resistor connected in series across the contacts. The same type of filter can be used across switch contacts.

The worst offender is the lamp dimmer that employs an SCR (silicon controlled rectifier). It causes a strong hash sound that is often conveyed through the power line to radio and TV sets throughout the house. The RC filter might or might not stop the noise. But it is worth trying.

#### POWER LINE FILTER

Interference can be conveyed through the power line into your base transceiver. Usually, a transceiver contains a very simple power line filter, but it may be ineffective for all types of interference. To play safe, it is a good idea to install a good power

line filter between the power plug of your CB set and the electric outlet. Filters for this purpose are sold by electronics parts distributors and some CB shops. Among the most well known brands are Cornell-Dubilier, Archer, Miller and Sprague.

#### STATIC

Natural static was a big problem during the early days of radio when broadcast stations had weak transmitters and were

often far away. Static is still a problem in areas where thunderstorms are prevalent. It is also a problem in warm, dry areas where static builds up. When your base antenna is within a charged electrical field, static noise can mar reception. This can be minimized by grounding the antenna support through the copper or aluminum wire connected by means of a ground clamp to a cold water pipe or to a

[continued next page]

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### UNWANTED RADIO SIGNALS

You can expect some bleedover regardless of what kind of base transceiver you use as long as some illegals continue to use linear amplifiers to burn their way through. And you can expect splatter occasionally when someone has his power mike gain set too high. These are problems that you may not be able to do anything about.

But, when you hear other than CB signals through your CB set, it could be the fault of your receiver or the result of some external condition. For example, if there are loose connections at a nearby TV antenna, the points at which secure electrical contact is not made can act as rectifiers (like diodes). The same is true of poor contact between metal sheets on the roof, two pipes touching, or a

loose fit between metal conduit and a switch box.

The point of poor contact, when acting as a rectifier, becomes an electronic mixer and/or harmonic generator. When the joint is fed two or more radio signals, intermodulation results. The cure is to find the points of poor contact and bond each such point with a copper wire or similar conductor.

At one location, a hum was heard in the speaker along with radio programs from nearby broadcast stations. A search revealed that two water pipes crossed and touched each other. When a piece of cardboard was placed between them to separate them, the interference and hum stopped. The permanent cure was to put a ground clamp on each pipe and to connect the ground clamps together to form an electrical bond, as shown in Figure 3.

At an another location, reception was marred by a myriad of radio signals at every channel setting. Using a portable

receiver to find the trouble spot, it was revealed that at a nearby construction site, there was a poor fit at the end of an electrical conduit where it terminated in a switch box. (Figure 4.) Tightening the fitting at the switch box stopped the interference.

### LEGAL 27-MHz INTERFERENCE

Diathermy machines and other RF heating devices are authorized to operate in the 27-MHz band. They use high power transmitters to generate heat. Although they do not have an antenna, they are known to radiate enough energy to interfere with CB reception. Complaints have been received from **CB MAGAZINE** readers about doctors using diathermy machines which interfere with CB operations within the same block. Don't expect relief through the FCC. A condition of your CB license is that you are not guaranteed protection from interference caused by legally operated RF devices within the 27-MHz band.

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And if you hear hoots and other unusual sounds on CB Channel 23, don't be surprised. That channel is shared with the Radio Control (R/C) Service and other services. Both non-voice and voice transmitters (except CB) may put out up to 30 watts on 27.255 MHz (CB Channel 23).

### TO MINIMIZE INTERFERENCE . . . .

Once you've minimized interference fed in through the power line by installing a "good" power line filter, you still have to consider the interference your antenna picks up. Although coaxial cable is not supposed to be able to pick up noise and radio signals, it can and does, particularly when there is a bad mismatch at the antenna. Cheap coax can pick up more undesired signals than better coax with superior shielding.

As stated before, don't put your antenna close to an interference source. To check out an antenna location, use your mobile if you can drive to the location. If you can't, use a walkie-talkie as an interference probe. Ⓢ

and (2) Directional or limited coverage antennas. The omnidirectional antenna as the name indicates, radiates in all directions of the compass. The

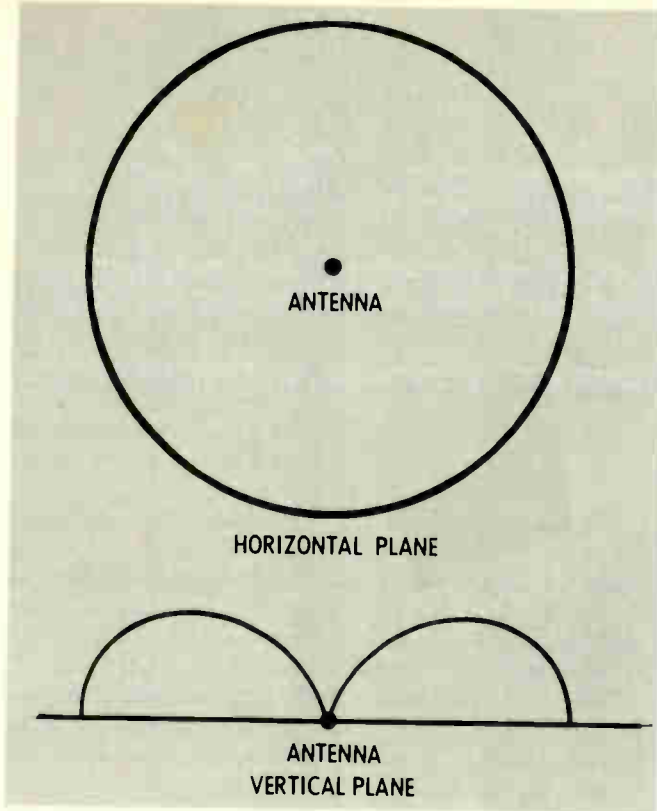


Figure 3. Desirable radiation pattern of a CB antenna.

radiation pattern of an omnidirectional antenna can be represented in the horizontal plane by a circle concentric with the point of radiation and in the vertical plane by a semisphere. In practical applications some of these effects are undesirable because signals are sent into directions where there is nobody to receive them, for example the vertical direction. This behavior is corrected by imposing some directional properties.

In the directional antennas as implied by its name, the radiation pattern covers a limited portion of the available space. This can be useful in sending signals in a specific direction, as for communication between base stations. Figure 2 shows the horizontal and vertical patterns of both types of antennas.

Practical CB antennas are a mixture of these two concepts. A mobile antenna has an omnidirectional horizontal pattern and a directional vertical pattern. Figure 3 shows the desirable combination. On the other hand, base stations could use a highly directional antenna, like a Yagi, to achieve the maximum concentration of radiated power into one direction.

#### ANTENNA GAIN

The second property is gain. The gain of an antenna is a relative measure of its behavior with respect to a standard reference.

Gain is usually defined as the ratio of the maximum radiation intensity produced by an an-

[continued on page 78]

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# How Antennas Work — A Basic Introduction

An antenna is a device which transmits and receives electromagnetic waves.

By The Professor

This is the first in a series of educational articles on the subject of antennas written by a distinguished professor of electrical engineering and a recognized authority in the field. He prefers to be known as "The Professor" and to keep his identity a secret. He writes much as he lectures . . . to the point and with a certain touch of Latin flavor.

**H**i Good Buddies! For a long time I have been asked questions by puzzled CBers about antennas — their importance, properties and effectiveness. What criteria shall we use for choosing the best antenna for a given use? As you understand this is a very difficult question to answer in a few paragraphs without some background information. That is why I want to talk to you about definitions, types, properties and applications.

Let's start first by defining antennas. An antenna is a device which transmits and receives electro-

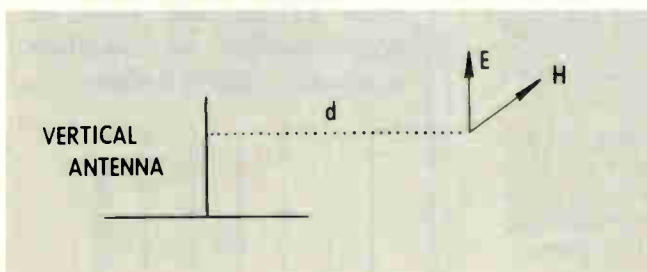


Figure 1. Electric field E and magnetic field H for vertically mounted antenna.

magnetic waves. The antenna acts as a transducer converting the electric energy generated by the transmitter into an electromagnetic field and electromagnetic energy into an electric signal when we receive.

In order to better understand how an antenna works it is important that we examine the behavior of a signal in free space. Signals in free space propagate in the form of waves. These waves are

electromagnetic in nature and consist of two fields of energy one electric, and the other magnetic. They are perpendicular to each other at any instant of time. Figure 1 shows the instantaneous configuration of these fields, represented as vectors at a distance "d" from a vertical antenna.

The electromagnetic wave propagates from the antenna into free space at the speed of light (186,280 miles per second), with intensity and frequency determined by the transmitter.

Now that we have defined the antenna and we are familiar with the kind of wave that we transmit or receive, we can study some properties of the antennas. The most important are: (1) Radiation Pattern; (2) Gain; (3) Polarization; (4) Impedance; and (5) Bandwidth.

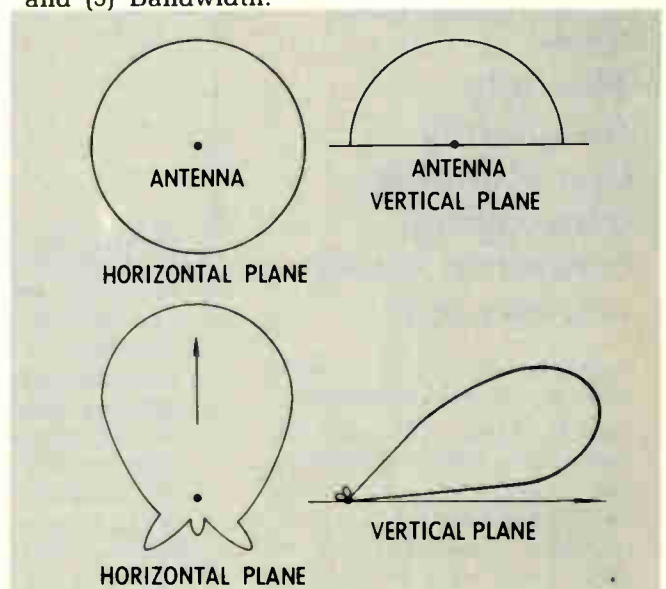


Figure 2. Omnidirectional (a), and directional (b) radiation patterns.

## RADIATION PATTERN

The radiation pattern of an antenna is the spatial, three-dimensional, distribution of the radiated electromagnetic energy. According to the radiation pattern, antennas are classified into two groups: (1) Omnidirectional or broadcast type antennas;

[continued next page]



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tenna with respect to the maximum radiation intensity produced by a reference antenna when excited by the same power input. The reference antenna is usually an isotropic radiator or a half-wave dipole. (Half-wave means the length of the antenna is equal to half the length of the transmitted electromagnetic wave.) A dipole is a basic antenna configuration. It consists of two wires fed by the transmitter at the half point.

Gain is very important. It is the parameter which sells an antenna and determines which one is better. Because of the importance of gain, I would like to spend a little more time on this subject. Gain, according to the definition, is a relative measure of the performance of an antenna. Therefore it has no units.

We can say that one antenna has more gain than another when both are compared with a reference antenna with the same power input and one delivers a stronger signal to a distant receiver. Therefore, we can say, for example, that antenna A delivers three times more power than antenna B, or if we want to compare electrical field intensities we will say that antenna A delivers a field 1.73 times stronger than antenna B. The reason for this 3 to 1.73 relation is that the power gain is equal to the square of the gain in field intensity. This is a well known relation between power and electric fields and you have to believe it. I am not going to develop a useless mathematical model to prove this principle.

Due to the inconvenience of working with large

power, fields and gains, electrical engineers and mathematicians have defined a model for measuring gains, the decibel of dB. This unit is still a relative nondimensional parameter. A power gain of 1,000,000 has a dB value of 60 dB, and nobody can deny that it is easier to handle a number like 60 than one like 1,000,000.

Now going back to earth, let's discuss dBs and their meaning a little more. When we will read or hear a value of dBs for a given antenna, we will know that we will deal with a power or field gain, and that it represents a ratio between the given antenna and a reference antenna. The most important thing to know is what that dB value means — what gain are they talking about, power or field,

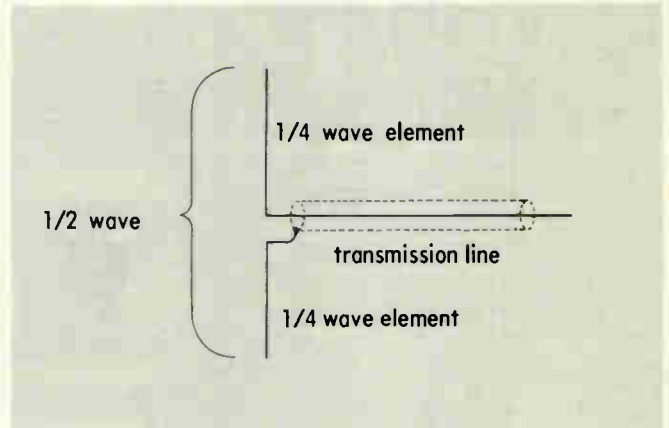


Figure 4. Half-wave dipole antenna

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and what is the reference antenna if we want to compare similar products and decide which is the best.

Regarding the meaning of dB we can use Table 1. As you can see 3 dB means two times more power, or 1.41 times stronger field. This table can also be read starting with relative power or field measurements. A reading of twice the power means 3 dB, and a reading of twice the field means 6 dB. This can be confusing. Try to read this paragraph again. The important fact is to use the values properly and know what they mean. The reference antenna, as I said earlier, can be a half-wave dipole or an isotropic source.

dB	Power Ratio	Field Ratio
0	1	1
0.5	1.12	1.06
1	1.26	1.12
1.5	1.41	1.19
2	1.58	1.26
3	2.00	1.41
4	2.51	1.58
5	3.16	1.78
6	3.98	2.00

Now that we understand what gain is, let's solve a very simple problem. Big Al asked me the other day how much more gain is required to increase his

range by 40 percent. To compute the answer we have to make the following assumptions.

Big Al's antenna, in this case, is the "reference antenna" and had a gain of 1.5 dB over a half-wave dipole. Increasingly the range requires increasing the field at a given point; this assumes isotropic attenuation in the area. To arrive at the answer, we can use the following approach:

$$G_f = 1.4E/E = 1.4$$

where —

$G_f$  = field gain ratio

$E$  = reference field

1.4 = desired field

Then by referring to Table 1, it can be seen that a 3 dB increase in gain is required. This can be obtained by using a better antenna or doubling the transmitter power. Since CB output power must not exceed 4 watts, range could be increased 40 percent by using an antenna with 4.5 dB gain over a half-wave dipole or 6.7 dB gain over an isotropic source.

### POLARIZATION

Polarization is the next property I would like to discuss. As I said, a signal in free space is electromagnetic in nature. This means that it has two components, one an electric, and the other a magnetic field. These two fields, when represented by vectors, are perpendicular to each other as was shown in Figure 1 and there is no component of either one in the other direction. This is a very

[continued on following page]



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critical point, because the antenna always radiates and receives signals in the same pattern.

This is what happens. Polarization is very important. By convention, the polarization of an antenna is referred to as the direction of the electric field and is designated horizontal or vertical according to its position with respect to the ground plane. A vertical whip antenna will generate a vertical electric field and hence will transmit and receive vertically polarized signals. Horizontal polarization is rarely used by CB stations and then only for point-to-point work between two or more base stations.

### IMPEDANCE

The impedance of an antenna is another of the fundamental properties that every CBER should know. From an electric viewpoint, the impedance of any device is the relationship between voltage and applied current. I am not going to discuss that, but I will try to analyze the importance and the advantage of a good impedance match.

Let me take a very simple analogy. Assume a 1" water pipe feeds a 2" valve. What happens? The pressure after the valve drops because of the mismatch. On the other hand if the feed is from a 2" pipe to a 1" valve, a similar phenomenon takes place. With antennas we have the same effect. The feeder pipe is a coaxial cable and the valve is the antenna. If there is not a perfect match we lose power. We cannot achieve the maximum transfer of power from the source (transmitter) to the load (antenna). If this happens, we lose power in the 50-

ohm coaxial cable that feeds the antenna. This mismatch between source and load is characterized by a standing wave ratio (SWR) greater than one, which is the optimal for a perfect match. A perfect match cannot be obtained due to electrical and mechanical constraints. Practical antennas have SWR around 1.5.

### BANDWIDTH

Let me discuss now the last property, bandwidth. The bandwidth of an antenna refers to the band of frequencies that can be radiated or received by the device without changing its characteristics. The objective of an antenna is directing or receiving a signal of a given frequency to, or from, a specific point. A change of frequency will direct the desired signal to another point because the radiation pattern changes with frequency. Under this constraint, a good definition could be stated as follows: The bandwidth of an antenna is that range of frequencies for which the device delivers the desired signals to all of the required locations. In CB use, the antenna must cover all the frequencies within the band. As you know they extend from 29.96 to 27.41 MHz. This is a bandwidth of 450 kHz. Fortunately this is not a great strain for most of the practical CB antennas.

O.K. Good Buddies, I have finished with the basics, a short and simple introduction. Next time I will talk to you about specific problems with CB antennas, different types available, their properties and how to select the right antenna for each use.



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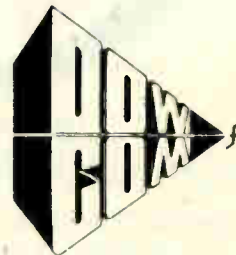
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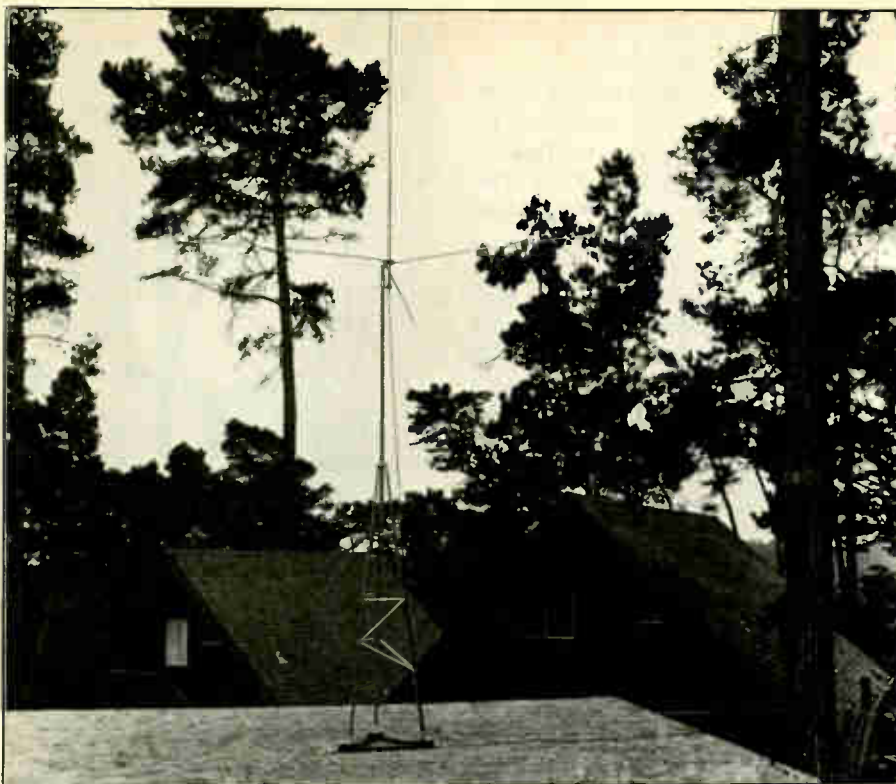
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The tripod tower should be guyed when mounted on a flat roof, as in this view; insulators inserted in the guywires prevent resonance at the 27-MHz frequency (Photo by Roger Hardy)

# Installing A Rooftop CB Antenna

Base station antenna installation has always been an insurmountable problem for many CBers. Here's one quick, easy and SAFE way to do it.

By Cyril C. Miller, KQO-0138

"How can I support my base station antenna?" is a question asked by many CBers. The answer depends on the location of the base station, the type of building in which it is located and on local ordinances. Often a chimney, vent, eave or roof mount to support a TV antenna will suffice. Much depends on the length and weight of the CB antenna. Usually a good quality tubular mast will prove adequate. A sturdier type support is the tripod tower, designed for use on a flat, or a gabled roof. We installed such a mount at a test location in California; it was

found to be both simple to erect and satisfactory in use.

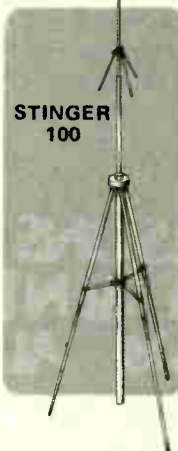
The mount we installed was a South River Model HDT-10KD, which is a self-supporting 10-foot tall, heavy duty polished tubular steel tripod tower. It arrived 90% pre-assembled in a shipping carton approximately 5" x 15" x 60." An upper section was completely assembled and folded for compact shipping. Three lower assemblies consisted of legs with bracing and step members attached and an envelope containing six hex-head lag screws. Three bolt and washer assem-

[continued next page]

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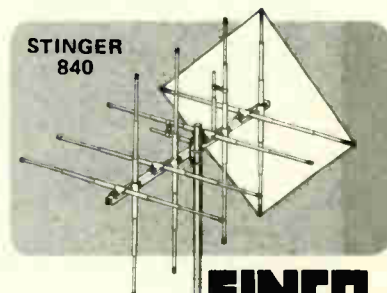


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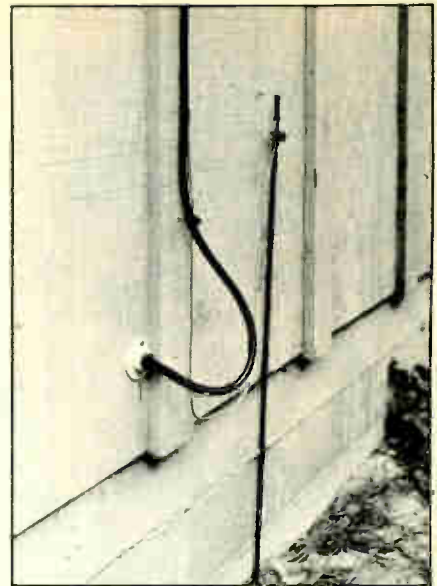
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blies were included to complete the tower and three 'pitch' patches to seal out moisture when the tower was fastened to the roof by the lag screws.

Assembly of the tower was simple and was completed in a few minutes. One side of the top portion contains welded tubular members which form a sturdy ladder for climbing to the top when the tower is in place. The tower was placed on the ground, welded rungs down. The third leg of the upper section was fastened to the ladder portion with two swing lock mast sockets. When this section was completed the

tripod configuration of the tower was established.

The three leg assemblies were attached to the top section by inserting these in matching sockets identified by colors, (red to red, blue to blue, etc.), and secured with three bolts and washers from the hardware envelope. The lower bracing and one step members were already fastened at one end to the lower legs; the free ends were next attached to the structure by swinging them out and bolting them in place, again matching colors. The tower was now completely assembled.



The coaxial download from antenna to the transceiver should have a 'drip loop' where it enters the building. A ground wire from the antenna tower to grounding rod dispels static electricity interference. (Photo by Roger Hardy)

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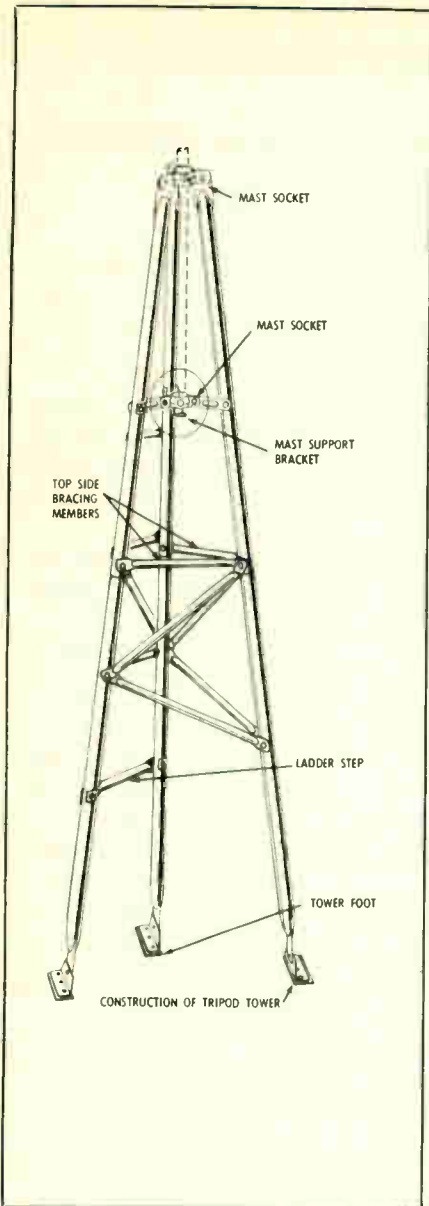
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A center mast on which the antenna is to be mounted is not furnished with the tower kit and must be provided separately. On our installation we purchased a 10-foot length of 1-1/2-inch diameter steel electrical conduit for this purpose. This was assembled in the tower while it was still lying on the ground by passing it through the mast sockets. Each of these has three clamping bolts used to hold the mast in its fully extended position after the tower has been erected.

Clear instructions for erecting and attaching the tower to a pitched roof are included. These include suggestions for locating the rafters and for fastening the tower to the roof surfaces with or without locating the rafters. The completed tower has been engineered to coincide with normal 16-inch spacing of the rafters. If the tower is bolted to the roof, no guy wires will be required.

Our test location has a flat roof and plan to move the tower to a new location in the near future made it important to mount the tower differently. A triangular base of two-by-fours was constructed for the tower to rest on. An upper and lower set of guy wires with turnbuckle adjustment was fabricated. Each of these included an insulator in the



Construction and assembly details of the tripod tower.

center so guys would not be resonant at the 27-MHz frequency.

Although the manufacturer recommends that the installation be made by two men, this is accomplished quite easily by one. The tower was lifted to the roof and placed on the wooden base. The guy wires were attached and tightened by adjusting the turnbuckles.

The antenna used in this installation was a Radio Shack 5/8 wavelength ground plane type (Part No. 21-1133). Climbing the built-in ladder to mount the antenna was easy and the tower remained steady. The antenna was raised and bolted to the mast with the mast in the lowest position. (This is the hardest part of the installation to be ac-

complished by one man). A length of RG-8/U coaxial cable with its PL-259 plug on the upper end was fastened to the mating antenna receptacle.

The mast was then raised (with the antenna in position) an additional eight feet at which point a clever mast support, provided with the tower, automatically dropped in place at the base of the mast supporting the structure, while the six mast clamping screws were firmly set.

The RG-8/U antenna lead was taped to the tower and to the ground lead so that it would not swing in the wind. This lead was brought into the laboratory through a Radio Shack "wall-thru" tube. This made a water tight installation and allowed the lead to be brought through the wall without cutting it. A PL-259 plug was soldered to the transceiver end of the cable and attached to the CB transceiver. As to the dimensions of the particular installation, the tower is 10 feet, the mast 8 feet and the antenna approximately 20 feet, placing the top of the antenna approximately 38 feet above the roof, but within the 60-foot FCC antenna height limit.

The tower is manufactured by South River Metal Products Company Inc., South River, New Jersey 08882.

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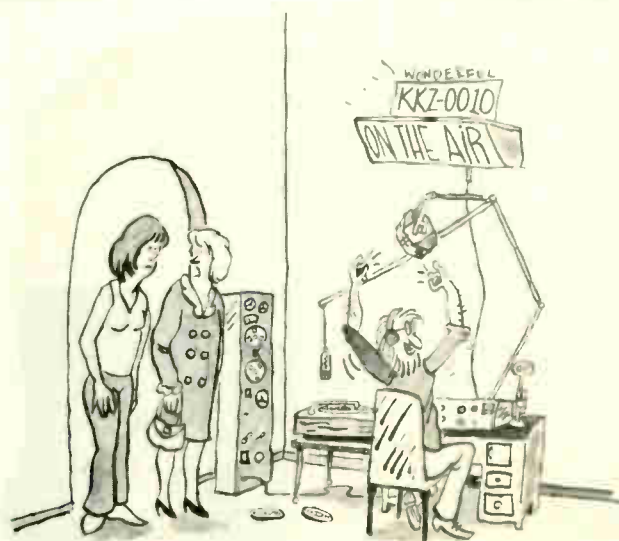
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**Power Line Interference  
And How To Trace Its Source**

By Yvonne Trout, KIS-8797

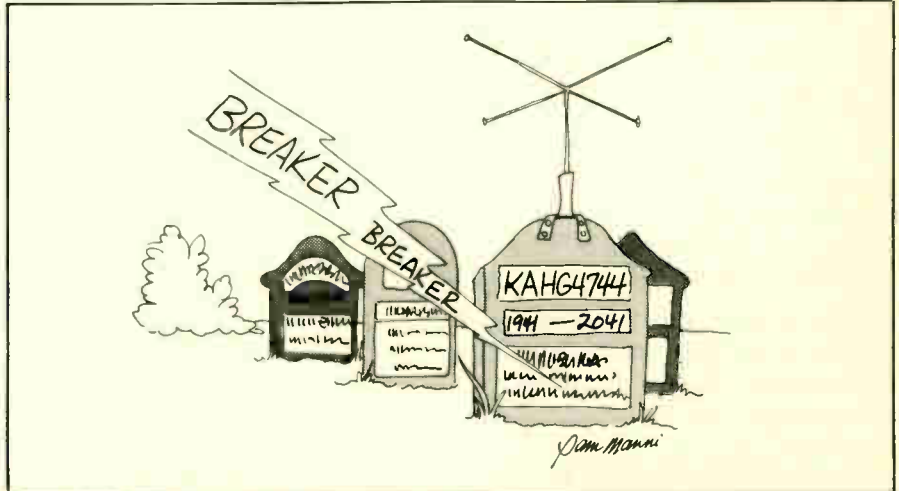
I was plagued off and on for over a year with power line interference. I'm a REACT monitor and the interference was often so loud I couldn't take calls. It was worst on my west beam. The power company's operations man worked on the transformers near me several times.

I began checking with other bases and found interference to them varied with distance from me. Bases within four or five miles heard it, but bases over ten miles away didn't hear it. The power company's communications man said electrical interference only radiates about six miles.

The FCC said if I found it, I only had to tell the power company where it was and they would fix it right away because they were losing power.

I took extensive notes over a long period of time, and by getting S-meter readings from bases who heard it, I knew it was about one to two miles WNW of me. One day it gave me 35 dB on my west beam at 4:00 AM.

I called a couple of bases to cover for me and went mobile. The buzz affects the mobile when close to it. I found it in about two hours of driving around and traced the line — there was a loud buzz from a certain point on a major highway for about a mile to a specific building in an industrial park. When I gave the power company's communications man the exact route of the offending line, they fixed it right away. They're good at fixing, but not too good at finding.



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# Antenna System Maintenance — An Important Part of Good CBing

By Frank Bates, KDC-0320,  
West Valley Electronics Services,  
San Jose, California

**B**ase station antennas, feedlines and connectors should be checked at least annually to maintain peak efficiency of the system. Every few years it may even be advisable to disassemble the antenna, deoxidize it where the elements join and reassemble it. Coax connectors can also oxidize (tarnish), but usually it is better to replace the whole feedline, including new connectors.

The useful life of premium coax is about five years. Most coax commonly used by CBers is only good for a year or two, however. The difficulties encountered are (1) moisture absorbed by the dielectric (foam is especially susceptible to this and (2) contamination of the dielectric by migration of impurities from the shield and outer sheath. The cheaper the coax the more severe and rapid the problem, as a general rule. Increased line losses are not readily apparent in a typical CB station, except perhaps by the fact that the SWR is closer to 1:1 than it was last year. This apparent improvement results simply because the reflected power is doubly attenuated by the line, while the forward power is the same. So, if your feedline is more than a year or two old, you should consider replacing it. 

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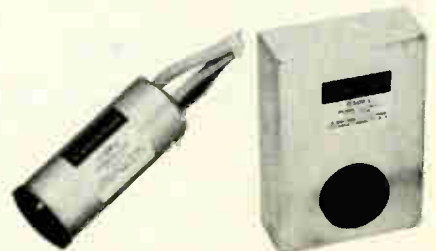
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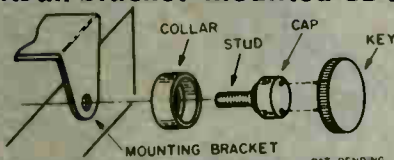
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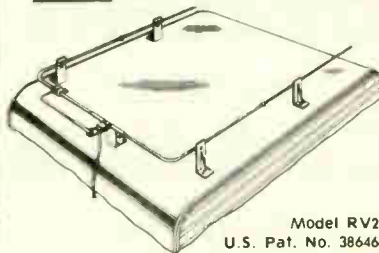
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#### MAPS

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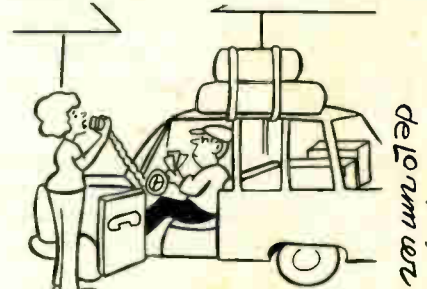
Beaver lovers (or loving beavers) perceive the power of the pelt with the hilarious Book of Beaver and Beaver Pettin Pelt. Makes a great gift too! Send \$3.00 **BILOXI BEAVER CO.**, P.O. Box 1020, Biloxi, MS 39533.

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# CB Happenings

Event sponsors are urged to mail notices 90 days in advance to **CB MAGAZINE**, Editorial Offices, 531 N. Ann Arbor, Oklahoma City, OK 73127. Please state: 1-Dates, times of event. 2-Type of event. 3-Sponsor's name. 4-Location and directions. 5-Attractions, prizes, etc. 6-Admission charge, if any. 7-Whom to contact for details: Name, address, phone.

**October 16, MISSOURI.** Event: 3rd Annual Coffee Break. **Sponsor:** Long Branch Town & Country CB Club. **Place:** Floral Hall, Macon County Fairgrounds Park, Macon, Missouri. Monitor Channel 15. **Time:** 10 a.m. to 4 p.m. **Events:** Prizes, Trophies, Entertainment, Refreshments. **Admission:** \$1. **For more information,** write: Floyd Smith, Macon, MO 63552. Or, call 816/385-3268.

**October 23-22-23, ITALY.** Event: Third National FIR-CB Congress. **Sponsor:** Federazione Italiana Ricetrasmisisoni Citizens Band. **Place:** Teatro Novelli, Via Cappellini, 3 Rimini, Italy. **For hotel reservations and more information,** contact the sponsor at Via Giuseppe Frua, 19, 20146 Milano, Italy.

**October 24-28, OHIO.** Event: Broadcast of TV show "Give Me A Break." **Time:** 5:50 a.m. on each of the five days commencing October 24. This show about CB radio will be broadcast over Channel 3 (WKYC) in Cleveland.

**October 29-30, FLORIDA.** Event: 7th Annual Jamboree. **Sponsor:** Bikini City CB Radio Club, Inc. **Place:** National Guard Armory, Fiske Boulevard, Cocoa, Florida. **Events:**

Prizes, Entertainment, Refreshments, Saturday night dance. **For more information,** write: Bikini City CB Radio Club, Inc., P.O. Box 3705, Cocoa, Florida 32922.

**October 30, OHIO.** Event: Coffee Break. **Sponsor:** Killbuck Valley Radio Club. **Place:** Triway High School, Shreve, Ohio. Monitor Channel 15. **Time:** 10 a.m. to 6 p.m. **Events:** Prizes, Trophies, Entertainment, Refreshments. Benefit handicapped children of Wayne & Holmes County. **For more information,** write: Garnet Plaster, Route 2, Shreve, Ohio 44676.

**November 6, OHIO.** Event: Harvest Moon Jamboree. **Sponsor:** Fighting Eagles CB Club, Inc. **Place:** Blue Moon Ballroom, U.S. Route 42 South and Ledbetter Road, Xenia, Ohio. **Time:** 10 a.m. to 4 p.m. **Events:** Prizes, Trophies, Entertainment. **For more information,** write: Stargazer, P.O. Box 363, Xenia, Ohio 45385.


**November 6, ILLINOIS.** Event: Annual Coffee Break. **Sponsor:** Land of Lincoln CBers. **Place:** Canton Jr. High School, Canton, Illinois. Monitor Channel 19. **Time:** 11 a.m. to 5 p.m. **Events:** Prizes, Trophies, Exhibits. **For more information,** write: James Helle, 54 W. Locust, Canton, Illinois 61520. Or, call 309/647-3360.

**November 12-13, KENTUCKY.** Event: 3rd Annual Jamboree. **Sponsor:** Tri-State Citizens Radio Club. **Place:** Owensboro Sportscenter, Owensboro, Kentucky. Monitor Channel 2. **Events:** Prizes, Trophies, Camping. **For more information,** write: Tri-State CB Radio Club, P.O. Box 982, Owensboro, Kentucky 42301.

**November 12-13, FLORIDA.** Event: Jamboree. **Sponsor:** Fort Walton Emergency Radio Corp., Inc. **Place:** Shrine Fairgrounds, Beal Parkway, Fort Walton Beach, Florida. **Time:** November 12 — 12 p.m. to 6 p.m. November 13 — 10 a.m. to 6 p.m. **Events:** Prizes, Trophies, Contests, Saturday night dance. Part of proceeds to go to School of Hope for retarded children. **For more information,** write: Fort Walton Emergency Radio Club, Inc., P.O. Box 201, Fort Walton Beach, Florida 32548.

**November 19, VIRGINIA.** Event: Jamboree. **Sponsor:** Franklin County CB Club. **Place:** National Guard Armory, Rocky Mount, Virginia. **Events:** Prizes. **For more information,** write: Franklin County CB Club, P.O. Box 224, Rocky Mount, Virginia 24151.

**November 19-20, ALABAMA.** Event: 6th Annual Jamboree. **Sponsor:** Alabama Citizens Band Association. **Place:** Hartselle Civic Center, Hartselle, Alabama. Monitor Channel 12. **Time:** November 19 — 10 a.m. to 5 p.m., November 20 — 9:30 a.m. to 3 p.m. **Events:** Prizes, Trophies, Entertainment, Saturday night dance. **For more information,** write: Alabama CB Association, Inc., Rt. 1 Box 102, Rogersville, Alabama 35652. Or, call 205/247-0374.

**January 17-21, BRAZIL.** Event: Mundial CB Congress. **Place:** Sao Paulo. No other information available at press time. 

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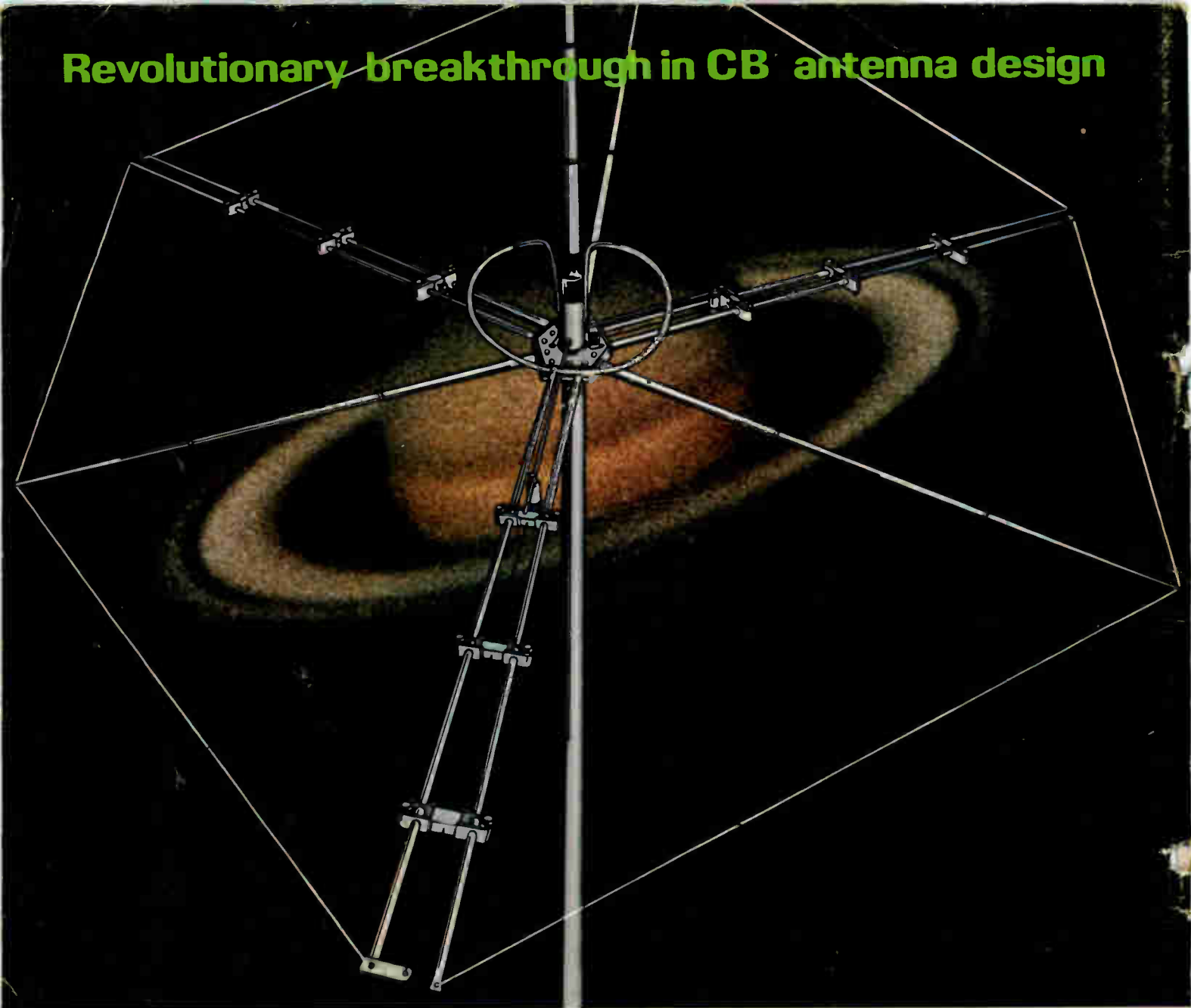


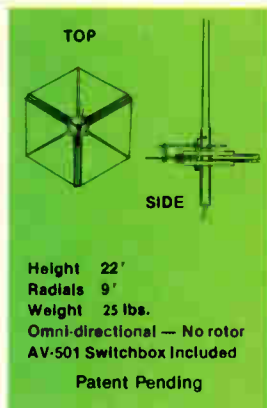
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The P.D.L. and Moonraker made dual polarity famous as the only antennas to have during the last sun spot cycle, and this time around any serious C.B.'er will want to have the "Saturn."

In fact, having a "Saturn" and a "P.D.L." or "Moonraker" will put you in the elite group of C.B.'ers who "always seem to get out better."

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