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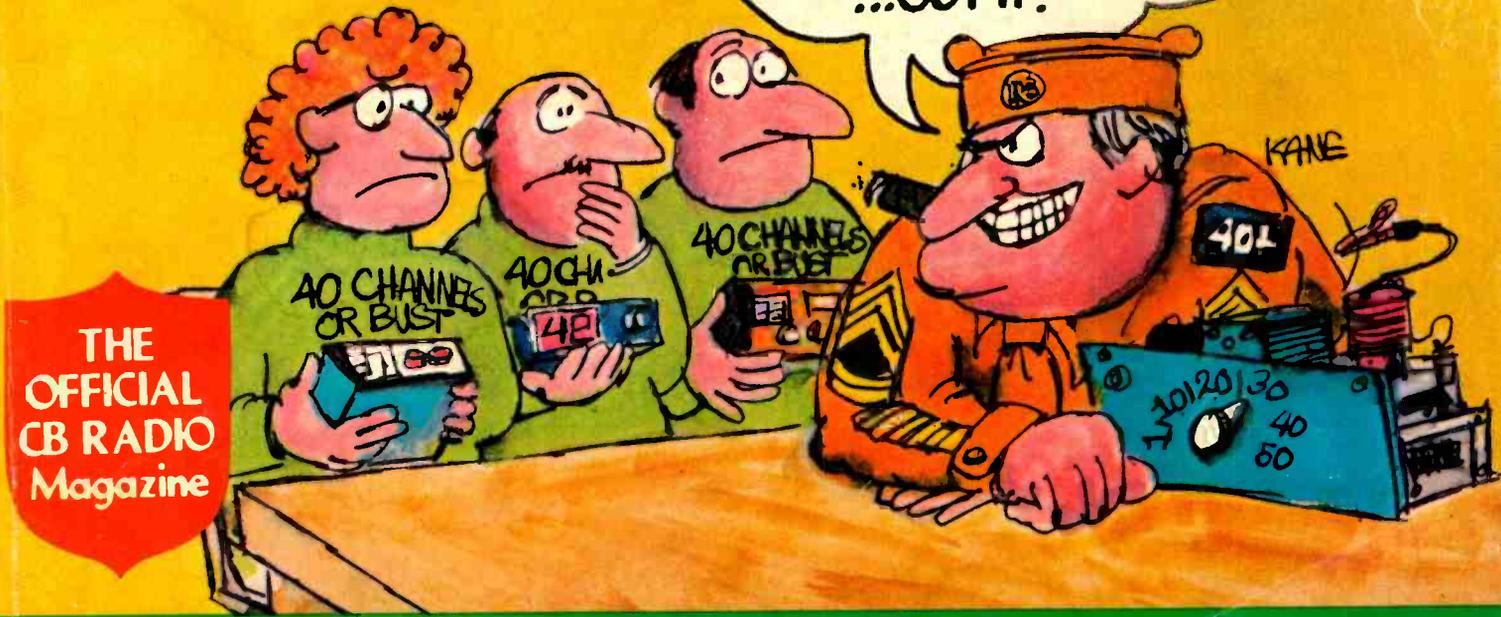
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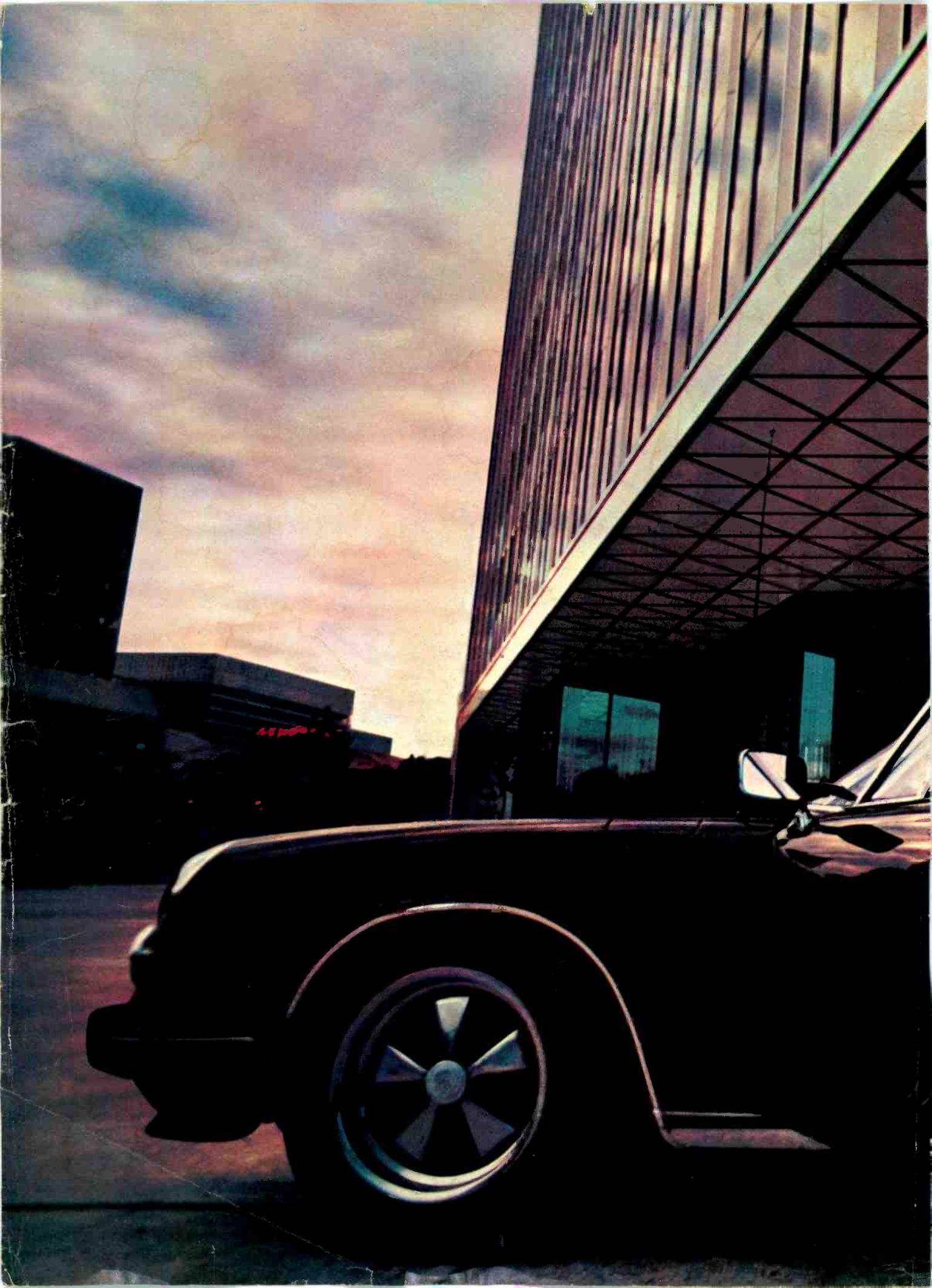
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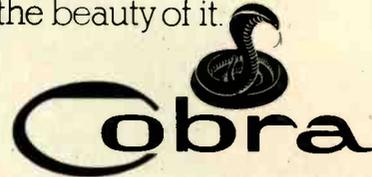
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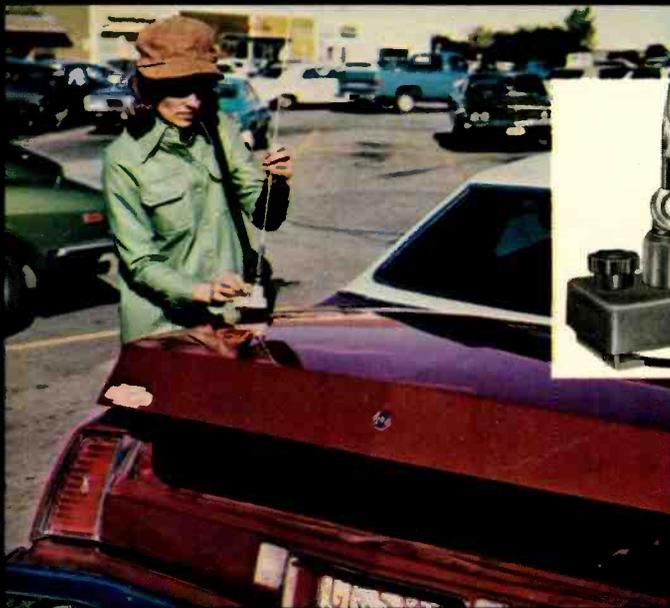


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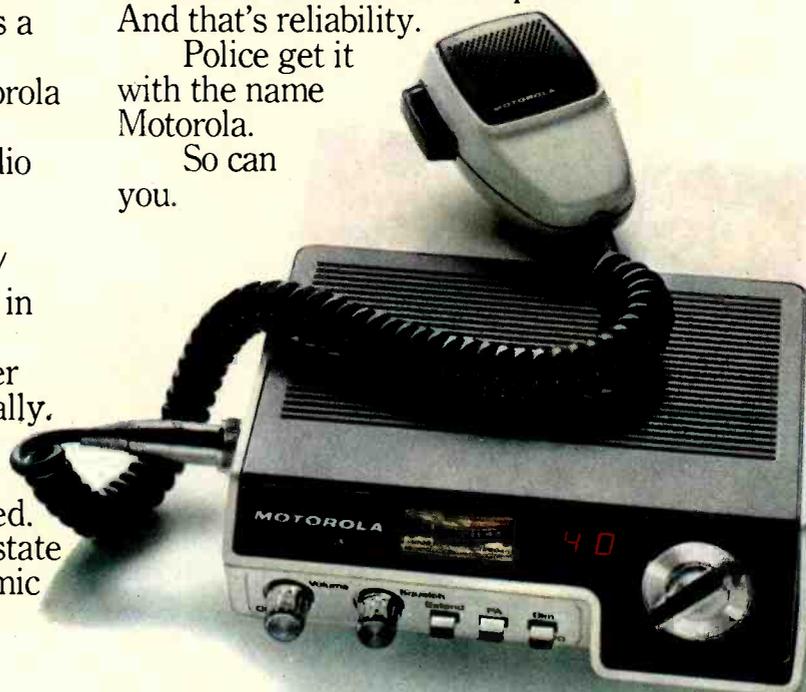
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America's Oldest & Largest CB Magazine

VOL. 17, NO. 4 APRIL, 1977

COVER STORY

The FCC is running many of the HF (hi frequency) operators off the air, or on to some of the "new" channels; some have attempted to "instruct" others to their ways — a tactic which has been met with mixed reactions. Cartoonist John Kane gives his version.

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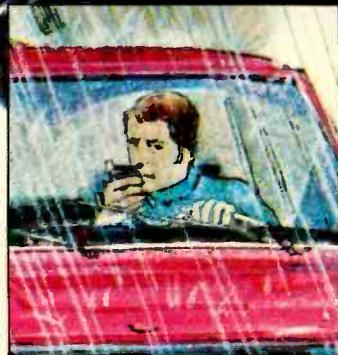
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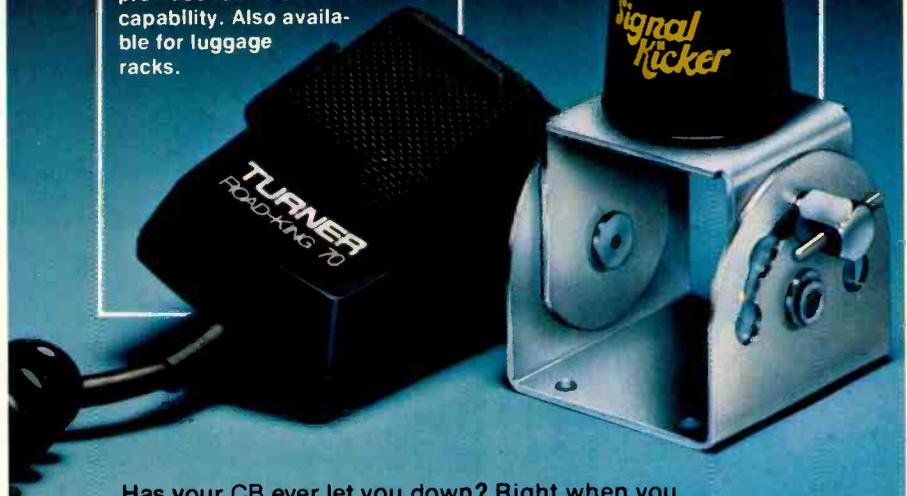
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New fold-down RV antenna provides full 40-channel capability. Also available for luggage racks.



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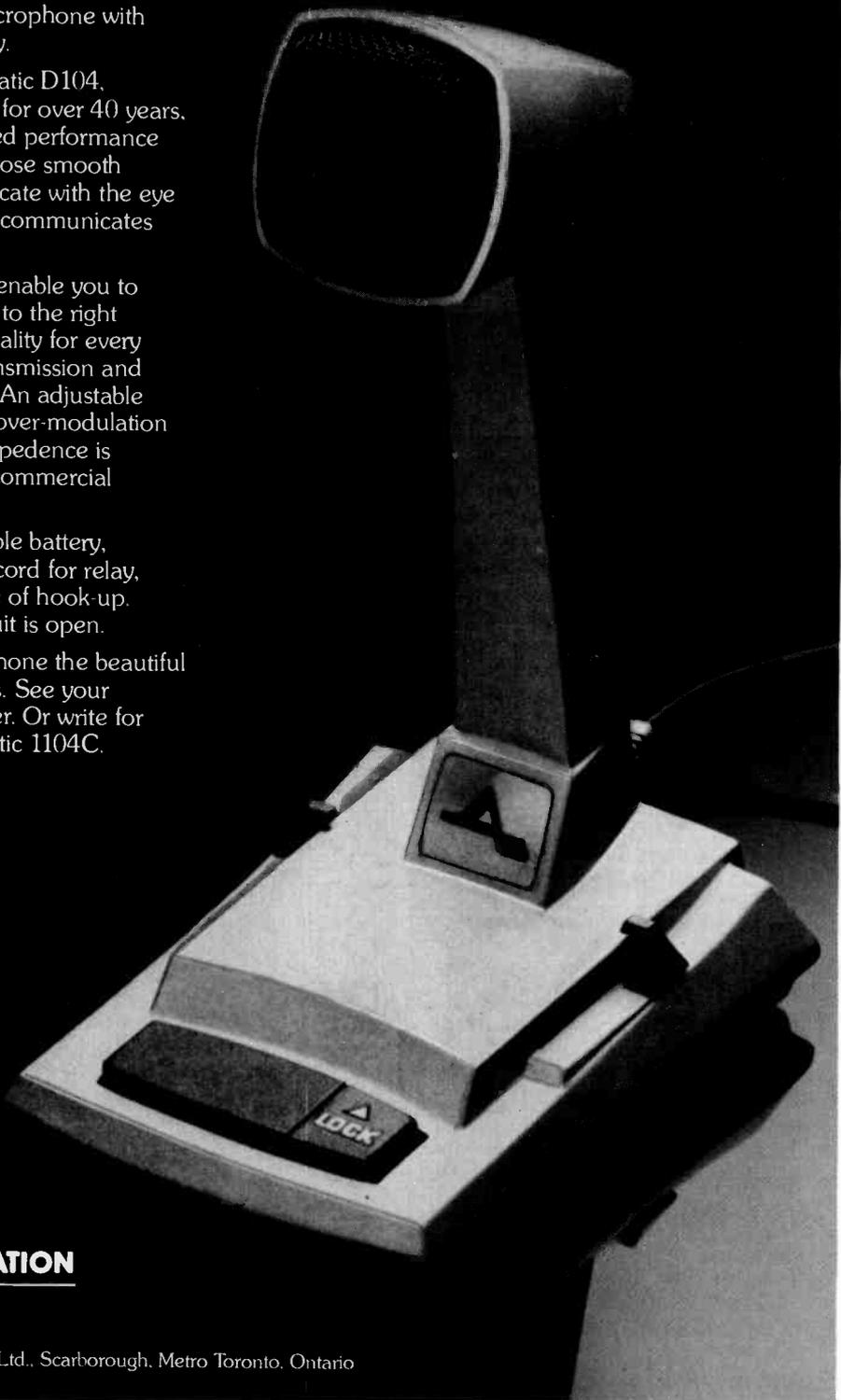
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FROM THE PUBLISHER

Your Opinion is Important!

During the next twelve months some 5 or 6 million new CBers will be joining the ranks. These newcomers to the service will buy approximately 8 or 9 million radios, and as many antennas and other accessories. What they buy will be important to you, because the signals radiated on the air will be directly related to the quality of the equipment used.

Because the CB business is a booming one, many new manufacturers have decided to try their hand at producing CB equipment which, they hope, will bring them substantial profits. At least 100 different brands are already on the market, and at least ten times that number in different models. Some of the new companies joining the industry are well known prestige companies with good marketing, good product, and good backup service facilities. But for every good company that's come into the industry this past year, there are two or three quick-buck importers who are in it for just the short haul. They'll sell their few thousand radios at "bargain" prices, and just as suddenly as they came into the market, they'll jump back out to look for other sales in watches, calculators, cameras, and the like. They're no asset to the industry because they offer no backup service; the product they make is cheap. That means cheap in price and probably cheaper in quality. The cheap radio is obviously no earthshaker out on the frequency.

It's been our experience that most new CBers have the good sense to contact more experienced operators before they make their first purchase. They'll ask old-timers what to buy, what features to look for, what price to pay, and where to shop. This is where your experience comes in. These people need good advice, and your prior exposure to CB makes you an ideal party to give it to 'em. Show them what the better brands of CB are, and tell them why they're better. Show them that low price alone doesn't make a CB set a bargain. Steer them to the models with more features and better quality. They'll love you for this information. Don't be bashful about offering your advice. They might be reticent about asking for it, so don't hesitate to volunteer. It's important to get new CBers headed in the right direction. The whole service will benefit in the long run.

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CB Newswire

YOUR CB NEWSPAPER

APRIL, 1977

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Dozens Hear 'He's Shooting At Me' As Ontario CB Radio Fan Helps Nab Raiders

Dozens of drivers listened to the drama on their Citizens' Band radios as a teenager chased two armed robbers at high speeds over gravel roads.

"He's shooting at me—he's shooting at me," they heard Rusty Bucket yell into his radio.

Rusty Bucket is the name by which CB'ers know 18-year-old Craig Rogers of Palgrave, Ont.

And Moonbeam Base is the only name Rogers knows for the Bolton man who relayed his frantic instructions to the provincial police on how they could join the chase.

Eight Ont. Provincial Police (OPP) cruisers eventually took over the chase from Rusty Bucket and arrested two men.

"If I didn't have a CB radio in my car, the robbers would probably have got away," said Rogers.

He was driving through Palgrave, a village of 400, 33 miles northwest of Toronto, when he saw two hooded men carrying rifles run out of the general store.

That was when 14-year-old Stanley Rogers decided to be more careful about the rides he accepts while hitchhiking home from school.

Stanley thought he had been lucky to be picked up by his older brother, until he found himself in a high-speed chase and dodging windshield glass spraying shotgun pellets.

"I wasn't sure just what I could do when I started following them," said his older brother.

"Then I remembered the radio, and Moonbeam Base, who has a radio in his home."

"I called Moonbeam and I was trying to convince him this was no joke, while driving along the highway at 85 miles an hour with one hand on the wheel and the other on the microphone," the older Rogers said.

"The robbers turned onto a sideroad and I was able to get close enough to

read the license plate, and we were going very fast.

"Finally, when Moonbeam Base believed me, all the other users got off the air and Moonbeam phoned the police and told them what was happening.

"The guys in the car ahead realized we were following them and the passenger leaned out his window and fired his shotgun at us, but luckily he missed," said the driver.

The brothers dove under the dashboard when they saw the shotgun pointed at them.

"We stopped for a moment when they shot at us. We stayed back out of range and followed their dust," said Rusty Bucket.

OPP cruisers were speeding to the scene and getting instructions on the gunmen's various direction changes from their dispatcher, who was getting instructions from Rusty Bucket through Moonbeam Base.

"The robbers' car went over a hill and before we went over it, they were coming back at us, and I thought 'They are coming back to shoot us up.' But there was a police car chasing them this time, and they went right past us," said Rogers.

The fleeing car was stopped by a roadblock.

Rusty Bucket got that name because of the condition of his previous car, which he owned when he became a CBer.

Rogers, whose older brother is a police officer, has applied to join Peel Regional Police force.

"The OPP senior officers investigating this case told me they would give me a very high recommendation for my application to the regional force," said Rogers.

There were no injuries to the elderly couple who own the store and turned over \$100 to the gunman.

Charged with armed robbery are Gordon Ferrier, 23, and Roy Wayne Chapman, 18.

CBers Rescue Victim

Loren Lowell Putney might not be alive today if it were not for the efforts of three radio buffs.

Putney, a resident of Bagdad Fla., experienced a reaction to medication. He pulled his car off U.S. Highway 90 at the Sunshine Grocery in Pea Ridge and radioed for help.

His call was heard by three Milton area youths who were driving nearby when the call went out.

"He was breathing hard, we thought he just got through running," said Tim Baxley, 16. But Tim said he and his companions—John Shower, 18, and Ken Ford, 13—soon realized the man was in trouble and they believed he was having a heart attack.

"We were in John's VW— it happened between Milton and Pea Ridge at a service station—and he got on the radio and wanted a Milton base. He said he was pulled over in a red car at a service station," Tim said.

"We were about three miles away—we were right in the middle of Pea Ridge. We went on up there . . . we thought at first it was a wreck or he'd been shot or something. We opened the door and he was laying on the floor board."

John gave the man heart massage, Tim said.

"He woke up and started kicking and Johnny had to hold him down until the ambulance arrived."

Milton Ambulance Service driver-attendant Jack Sloan said Putney's attack was brought on by a reaction to medication.

"He needed medical treatment," Sloan, an emergency medical technician, said.

"We got the call from the CBers—if it wasn't for them, we wouldn't have known what it was. The CBers went out and found him."

Sloan said Putney "probably would have" lived if he hadn't gotten help so soon, but there was no way to know for sure.

Putney was taken to Santa Rosa Hospital in Milton where he was treated and released about an hour after his admittance to the emergency room at 8 p.m.

Hospital personnel said everything was "10-4."



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MOVIE STARS VISIT STORE



Charles Napier, Candy Clark, and Bruce McGill, stars of the new movie *CITIZENS BAND*, display the film unit's logo T-shirt in the Radio Shack store in Marysville, Calif. The Paramount release was filming on locations in Marysville and nearby Yuba City. The front of the colorful shirt features the wearer's HANDLE. The \$2½-million color film will be released within the next few months. Charles Napier (left in the photo) is well known on the AM CB channels (we called him CHUCK before he went to *TINSELTOWN* and got famous) under the handle *OVERDRIVE*, and on the sideband channels as *55B-55*.

They Have Their Ears On

U.S. EARS (United States Emergency Assistance Radio System) is a new NATIONWIDE Channel 9 monitoring organization, NOT affiliated with REACT.

Members identify with the name of their state (such as Missouri State Emergency Radio) using the team call letters and their personal unit number as assigned.

They do not require a minimum amount of monitoring, specified hours for monitoring, or attendance at meetings. All participation is strictly voluntary.

Members receive a monitoring guide which includes extensive information on how to take calls, a bi-monthly newsletter, and a membership card. California residents receive localized emergency phone numbers and towing information.

Texas Police Tipoff Results In 3 Arrests

Frustration climaxed an early morning attempt to make off with a prophylactic vending machine from a local service station, according to police in Lubbock, Texas.

Caught in the act is the way lawmen described the arrests of three teenagers for allegedly burglarizing the men's restroom of a service station.

Justice of the Peace F. H. Bolen set \$1,000 bonds each for burglary of a building charges against Lloyd Reas Axcell, 18, and 17-year-old Donald Ray Axcell. Bond is recommended in the same amount for Russel Wayne Lassman, but has not been set.

The trio was arrested after members of the Citizen's Radio Crime Control Association notified police of a suspicious vehicle parked outside a Phillip's Service Station about 1:50 a.m.

Police and CRCCA members set up surveillance and reportedly saw two men get out of the vehicle, enter the building and exit "carrying something silver."

That "something silver" turned out to be a prophylactic vending machine, police said, which had been taken from the station's restroom.

Officers searched the suspects' vehicle and said they found the restroom key on the floorboard. Station owner George Pharr said the key disappeared last November according to police reports.

Membership is strictly on an INDIVIDUAL basis, however, teams may be organized and recognized by Headquarters. When a member moves, their membership is transferable to anywhere in the United States.

Interested CBers may write for information and a membership application to: U.S. EARS, Hdqtrs., P.O. Box 1956-A, San Jose CA, 95109. They MUST enclose a self-addressed, stamped envelope for a reply.

They are interested in increasing the availability of monitors on Channel 9 throughout the country.

If you desire further information, please write, or call 408-298-3277 (12 NOON-5 PM, weekdays, except Thursday.)

Oregon "CB Murder"

Thomas Duane Anderson, 21, was found guilty of murdering John Thomas McNicholas, 43, in Clackamas County Circuit Court.

Judge Patrick Gilroy, who heard the case without a jury, sentenced Anderson to life imprisonment. The defendant had waived his right to wait 48 hours for sentencing.

Anderson and a friend, Randy R. Larson, 20, were charged in the murder, which stemmed from an alleged dispute over a CB transmission. McNicholas' mutilated body was found in an abandoned quarry last April.

Last October, Larson also was found guilty of the murder McNicholas' throat had been cut twice; he had about 40 stab wounds on his body and head, had been hit on the back of the head by a hard blow and was castrated.

The alleged dispute among Anderson, Larson and McNicholas arose when Larson's girl friend said she was offended by some comments of McNicholas' over CB radio.

Testimony showed, Larson and Anderson confronted McNicholas and later robbed him. He allegedly was killed because the two were afraid he could identify them to police.

Anderson admitted hitting McNicholas on the head with a concrete block he had in the back of his pickup truck and helping Larson hide the body. He also admitted to taking McNicholas' wallet so identification of the body would be difficult.

The defense had contended a knife Anderson said he owned was not sharp enough to have caused the death wound in the neck and that the defendant had not intended to kill McNicholas.

Ron Thom and Grant Mumpower, defense attorneys, also argued Anderson had only partial responsibility because of drug and alcohol addiction.

In finding Anderson guilty, Judge Gilroy said he found the evidence against Anderson overwhelming.

"I wish young people who think it's cool to drop out of school, drink, take drugs and avoid work could have sat through this trial," Gilroy said. "Because I believe this is the end product."

The trial had lasted eight days.

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Channel Ears

'Eyeballing' CB'ers

"This is Gunrunner here, what's your handle," is what's normally heard upon entering Harry Palladino's home.

A fully licensed home base operator, Mr. Palladino has been active for over a year in radio communications.

Now in retirement from his horticultural career, he is president of "Channel Ears Association," a group of Mass. CB enthusiasts that has grown from a nucleus of five individuals to an organization of 75.

"Eyeballing" a contact can be quite a thrill, Gunrunner explains, and this was basically how Channel Ears originated, from an interest to see the voices.

Encompassing towns of Wellesley, Newton, Needham, Dover, Natick and Framingham, Channel Ears has a set of bylaws and standards that each member must follow. Probably the most important rule is to practice politeness and common courtesy while modulating a channel.

The goal of Channel Ears is to create a better understanding of radio communication. The group, tied together

by the common bond of communication, is composed of people dedicated to helping others.

This fraternal-type organization holds jamborees or coffee breaks to eyeball and talk with other CB people. Various merchants sponsor these jamborees and donate prizes to be sold at the get-togethers. Proceeds go to charity.

In connection with Tape City a business on Route 9, a coffee break was recently sponsored, the benefits of which were to provide assistance to scholars attending Newton-Andover Theological School. Entrance fee for this jamboree was \$1.

If Gunrunner strikes you as an odd name for a president of an organization, his cohorts' handles are just as unique—"Cuttysark" of Natick is vice president, "Miss Muffet" of Natick is secretary, "Blue Skies" of Natick is treasurer, "Silver Supreme" of Framingham, "Butcher Boy" of Natick and "Budweiser King" of Natick are also executive officers. Executive officers meet bi-monthly while the entire organization congregates monthly.

During the Veteran's Day parade in town, Gunrunner, with the assistance of his CB gear, was able to direct traffic to avoid tie-ups.

Because Mr. Palladino was a Special Police Officer from 1940 to 1946, he

feels he knows the needs of Smokeys and can aid police in emergencies. There can be a mutual understanding between police and radio communicators.

Gunrunner often guides truckers that are unfamiliar with this locality, in from the highway.

From Gunrunners' home 20, he has expanded his scope of friends from his "Treetop base," even though he has never seen most of his CB contacts.

"We go to school to learn the English language and now we're back to codes and unusual language," Mr. Palladino stated.

According to Gunrunner, CB can be an outlet for introverted people, those with speech impediments and especially handicapped individuals. He mentioned a member of Channel Ears—"Ironsides"—who is confined to a wheelchair from muscular dystrophy. Since becoming aware of radio communication, Mr. Palladino said that "Ironsides" has found a new lease on life.

Mrs. Palladino enjoys CB modulating but does not feel it right to give Smokey reports, as this is the type of interference police get disturbed with.

A latent interest in communicating came alive when Mr. Palladino built a short-wave receiver.

San Diego CB'ers

Aid Police/Sheriff

A crime alert program aimed at enlisting CB operators was put into effect by Sheriff John Duffy and Police Chief Bill Kolender.

The Citizens Alert Program will allow all CB operators in the county to report suspicious activities over emergency channel 9 to special monitors, who will relay the information to law enforcement agencies throughout the area.

"It's pretty evident to Chief Kolender and myself that we won't ever have enough law enforcement officers," Duffy said. "We need a total-involvement program that includes the citizens."

Added Kolender: "If we can't enlist the aid of the public, we'll be in deeper trouble than we already are with crime."

The program was devised by the

Construction Industry Advancement Fund (CIAF), which will pay for the project. In July, the CIAF organized a similar program, the CB HELP Club, for licensed citizens band radio operators to lend assistance in reporting stranded motorists and disabled vehicles along area freeways.

Announcement of the crime alert program came at a joint news conference in Duffy's offices, and in addition to Kolender, included John Read, chairman of the CIAF board.

"We believe one of the greatest deterrents to crime is the fear of apprehension," Read said. "And we believe that when it is widely known that thousands of unmarked cars, equipped with CB radios, are out on our streets and highways, it will serve as an additional deterrent."

On behalf of his organization, Read presented Duffy and Kolender each with CB mobile units to be used by their respective law enforcement agencies. He said other radios would be

given to police departments in Carlsbad, Chula Vista, Coronado, El Cajon, Escondido, Imperial Beach, La Mesa, National City and Oceanside.

Duffy and Kolender said their units would be kept in an emergency control center.

In conjunction with the effort, Duffy's department produced a set of guidelines for participants in the crime alert program. Stressing that the CB operators are not to be actively involved in the apprehension of criminals, the guidelines tell members to skip using CB jargon and "use plain language" during emergencies.

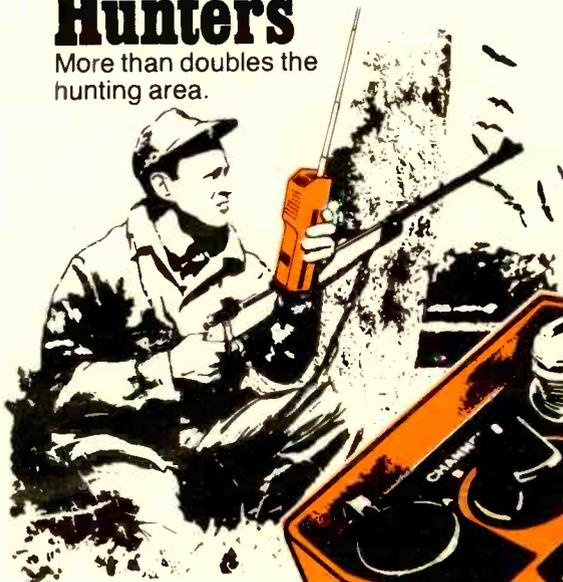
The guidelines warn CB operators not to break any laws in attempting to assist police, and not to report traffic violations that a police officer would usually have to witness for a citation to be issued, such as failure to yield or speeding.

There are 50,000 licensed CB operators and more than 100,000 CB sets in the San Diego area.

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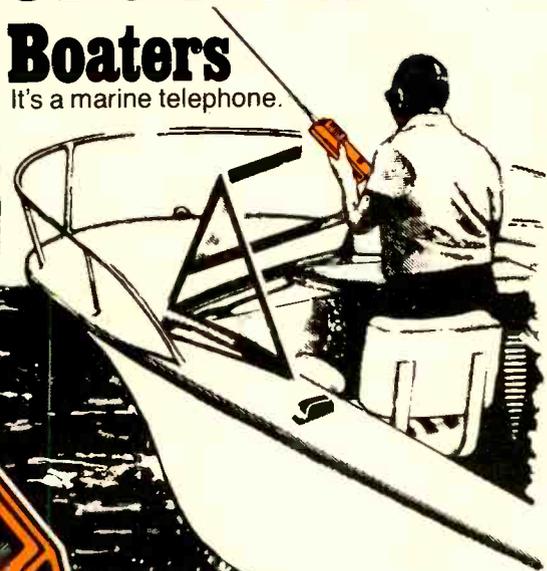
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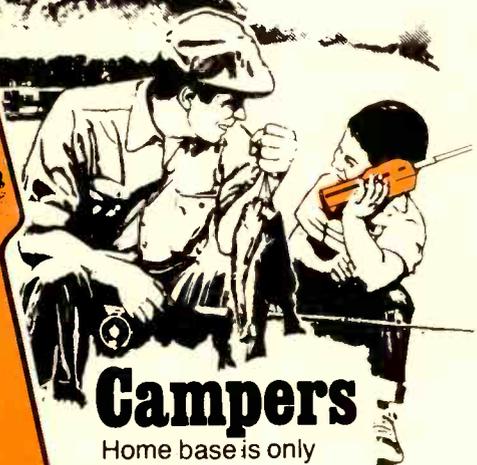
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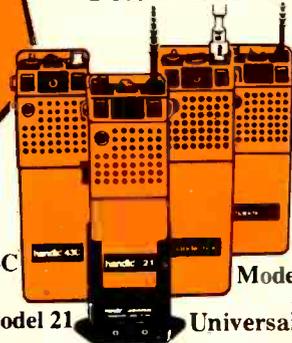


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CB Newswire

YOUR CB NEWSPAPER

APRIL, 1977

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Denver CB'ers Credited With Saving Man's Life

A team effort by several CB operators, unacquainted with each other except by voice, apparently saved the life of Godfrey Mead, 49.

Mead, whose CB tag is "Colorado Poor Boy," suffered a heart attack about 7:15 p.m. while driving his truck.

He stopped his truck and called "10-33!"

Bob (Happy Pappy) Moore, who operates a filling station heard him. Moore's wife immediately called Mrs. Delores Mead to tell her what happened.

Another CB operator, Sam (Filled Mouth) Grass, also heard the call for help. He notified the Flight for Life helicopter ambulance service. Mead was picked up and flown to Mercy Hospital, where his condition Monday was described as "good."

Throughout the two-hour emergency, Mrs. Mead said, Moore kept a radio channel clear for communications.

Still another CB operator, whom Mrs. Mead knows only as "Big Orange," stood watch over Mead's parked truck until Mead's boss, Bob Hart, came to pick it up.

Joker Gets Jail Term

It doesn't pay to use your CB radio for practical jokes.

That's what a 26-year-old man in St. Paul, Minn., found out.

He pleaded guilty to calling in a fake distress call on a CB radio.

He was sentenced to one year in prison.

However, U.S. District Judge Edward Devitt said at the sentencing that Bruce Schaaf will only have to serve four months in federal prison.

After that he can be placed on probation.

Devitt also ordered Schaaf to pay nearly \$1,300 for the expenses incurred by the Shakopee, Minn., police and fire departments and the Scott County sheriff's department as a result of the prank.

Shaaf pleaded guilty to turning in a false alarm.

He broadcast that an airplane with passengers on board had gone down and was sinking in the Minnesota River near Shakopee.

A six-hour fruitless search of the river, including the use of a helicopter, followed.

Connecticut Police Abandon CB Experiment

The Police Department in Wallingford, Conn., has discontinued its experiment with direct monitoring of CB conversations because the chatter outweighed the results.

The department had accepted CB receiving equipment from the Channel Masters CB Club so it could listen in on CB conversations in the area.

The CBers reasoned that if they saw an accident or something suspicious or in violation of the law they could notify the police directly over their radios.

According to Deputy Chief John Reynolds, the problem was that the police couldn't just tune in to bona fide complaints, while tuning out off the chit-chat that goes on. They had to leave it open for whatever came over the airwaves.

"It just wasn't worthwhile," Reynolds said.

So the \$300 radio that the Channel Masters donated to the department is now back with the club.

Pennsylvania Victim of Rare Bone Disease Gets Radio from CB Buddies

Gregory Smith, of Phoenixville, celebrated his 20th birthday to the delight of his parents and friends and the surprise of a number of doctors who have attended him since he was two years of age.

Gregory has a rare bone disease which was discovered when he broke a leg at the early age of two years and complications set in to reveal the malady, which is a brittleness of the bones that makes them usually susceptible to breaking and also to bowing.

Doctors at Children's Hospital, Philadelphia, performed three major operations on Gregory over the years placing

pins and supports within the bones but each time supports were rejected by body metabolism, Mrs. Smith reported.

Gregory, undaunted by his illness, is pursuing his education at the University of Pennsylvania in a computer training course under the auspices of the Pennsylvania Bureau of Vocational Rehabilitation district center in Rosemont.

He received his high school diploma from Phoenixville Area High School in 1975 in a program through Bell Telephone Co. The program is a leased telephone wire service between a student's home and school which provides direct student-teacher-class voice contact.

Last summer Gregory became interested in CB when he was introduced to the hobby by a neighbor who showed him the equipment and explained its use. He was immediately fascinated by the hobby but acquiring a set was financially out of the question for the Smith family.

Through the CB neighbor, Gregory's interest was made known to other CB members and the groups went to work to collect cash and also to present a CB unit to the youth.

Gregory's CB handle is "China Boy" which he took from earlier reference to him by doctors as the china baby.

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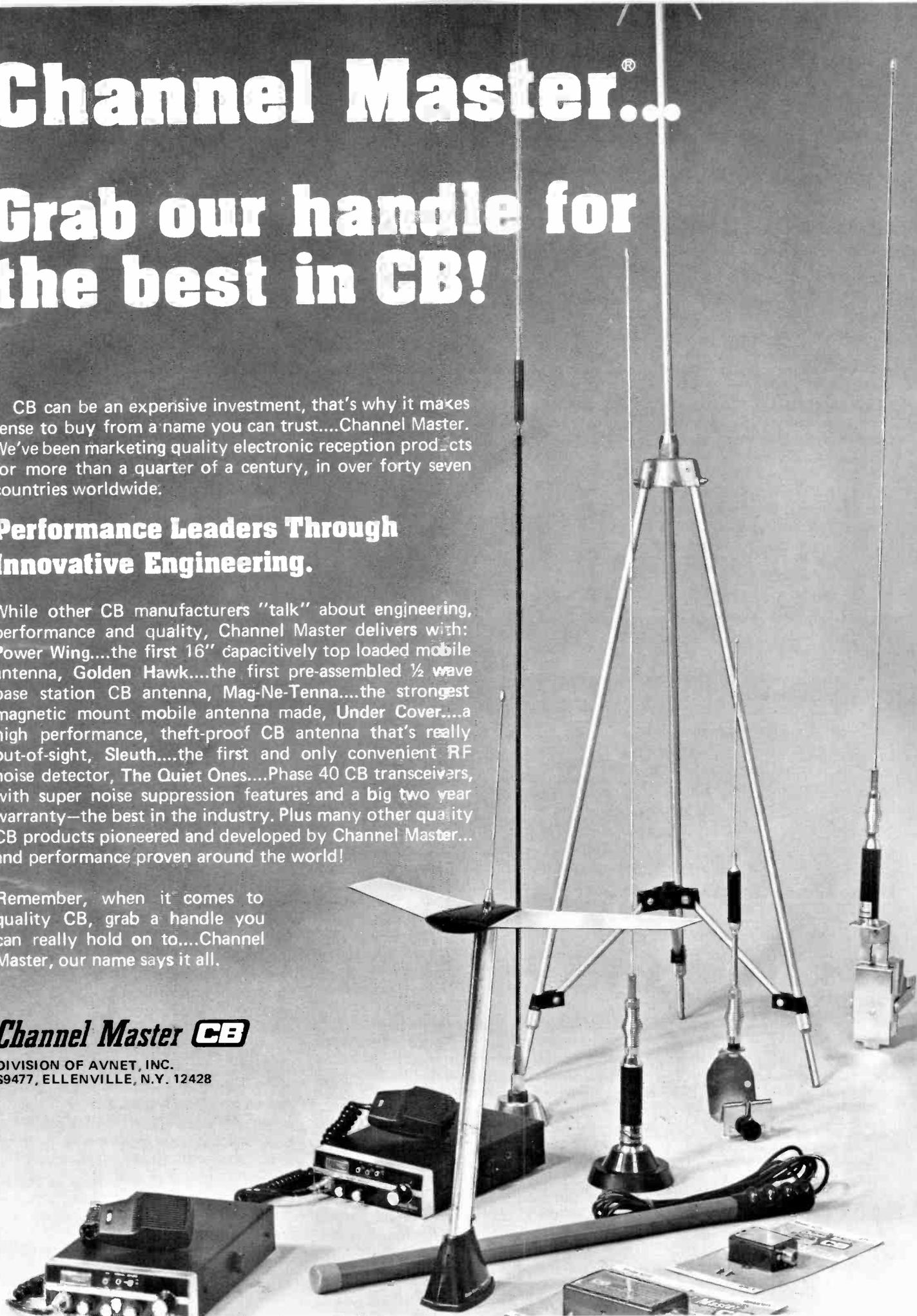
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CB Newswire

YOUR CB NEWSPAPER

APRIL, 1977

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Miss. Highway Patrol Goes CB!

James Finch, Commissioner of Public Safety in Mississippi, feels that truck drivers are "around the clock" mainstays of highway travel, who can be beneficial in accident prevention on his State's highways. As a result of Finch's respect for the trucker, he has endorsed the "TRUCKER-TROOPER" idea initiated by Jack Reed and Friends, Inc., of the "18 WHEELER" publication. The gold, black and white decals which read "TRUCKER-TROOPER COOPERATION AGAINST CRIME" has been placed on Mississippi Highway Patrol enforcement vehicles.



President of the Mississippi Trucking Association, Larry Kerr (at left) is shown here with Val Langston of Shipper's Express, and Mississippi Patrolman, Tom Macon, placing a truck-size "Trucker-Trooper Cooperation Against Crime" sticker on the first of many tractors of Shipper's Express of Jackson, Miss. Mr. Kerr is General Operations Manager of Shipper's Express.

The Commissioner said, "The trucking industry brings millions of dollars in revenue into Mississippi annually, and the truck drivers themselves play a large part in this multi-million dollar

trade. The Mississippi Highway Patrol considers truck drivers professionals and they are, without a doubt, the most experienced drivers on the highways."

Finch continued, "There has been a great deal of controversy associated with the Citizens Band Radios, and motorists relaying 'Smokey' reports. In our state, we have devised a method to make the CB work for us and this is where the trucker, who is always on the highway, comes in. We have what is known as the 'Mississippi Law Enforcement Citizens Radio Net' (LECR Net),



Ms. Shirley Walker is shown here with Patrolman Tom Macon, placing the "Trucker-Trooper Cooperation Against Crime" sticker on the first of 600 patrol cars of the Mississippi State Highway Safety Dept., at headquarters in Jackson, Mississippi. Each patrol car will display one of these stickers to indicate the patrolman's willingness to cooperate with truck drivers via C.B. radio.

in which we have designated Channel 23 on the CB as the emergency channel for the Mississippi Highway Patrol. Since initiating this program almost two years ago, many police departments, fire departments and sheriff's offices throughout the state monitor Channel 23. As a result of the widespread acceptance of the 'Emergency Channel,' citizens have instant contact with law enforcement and fire prevention related agencies. On numerous occasions," the Commissioner said, "truckers have been instrumental in assisting our officers by reporting hazardous situations. This information has been relayed to us by CB owners who are in trouble, and by CBers who come in contact with other motorists in trouble."

Commissioner Finch said, "Truckers who travel through Mississippi enroute to other destinations can be of benefit to us, by reporting emergency situations on Channel 23. Six primary occurrences are reported to us on this

channel: accidents, vehicles traveling the wrong way on the highway, drivers under the influence of alcohol or drugs, (drivers who are intoxicated), livestock on the highway, motorists who need assistance, and other hazards like objects on the road that would impair a lane of traffic, etc."

Finch explained that the Communications Bureau issues identification cards to persons desiring to become LECR members. "These persons," he said, "are assigned a number which they use for identifying themselves when reporting on Channel 23. All LECR members sign a pledge to respect 23 as an emergency channel and they use it only for that purpose."

The Commissioner discussed the 55 mile per hour speed law saying, "A number of motorists think there is no harm in driving over 55 mph, and think they should not be restricted to this speed. We, in law enforcement, had nothing to do with making the law, but we are sworn to enforce it and until it is changed (if it is changed), we will enforce it to the best of our ability, courteously and fairly. This means statewide and with everyone, whether the violator drives a truck or a Cadillac, and whether they have a CB Radio in their car or whether they do not."

Finch discussed some of the complaints received by the Mississippi Highway Patrol on truck drivers. "The most frequent callers complain about truckers tailgating and speeding. Our law states a truck shall not follow another vehicle closer than 300 feet except when attempting to pass. We realize this creates a problem on two-lane highways because the average driver cannot judge distance as well as truck drivers and traffic has a tendency to stack up, especially on hilly sections. However, we get some complimentary remarks about truck drivers too. They are the first to dim their headlights when meeting another vehicle as well as when approaching another vehicle from the rear. The majority of the time in our state, the professional truck driver knows the rules and regulations of the road and obeys them."

Finch added, "We welcome truckers into Mississippi and pledge courtesy, fairness and helpfulness in our dealings with them. We ask for their support and assistance on Channel 23."

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CB Newswire

YOUR CB NEWSPAPER

APRIL, 1977

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Hot CB Rig Proves Handy In Michigan

When Thomas Matthews called for help on his CB rig after his car burst into flames, his plea was heard by a Royal Oak police officer who relayed the message to firefighters.

Officer David A. Blanchard, who patrols streets and freeways in a car equipped with a CB, said the rescue was "a more dramatic use of the equipment, but not too much different from other daily uses."

Blanchard said he heard a call that a car was on fire over Channel 19—the mobile or "truckers" channel. He said he heard the location, called his station and the message was relayed to public safety officers near the scene.

Firefighters put out the fire within minutes.

"It was maybe two minutes faster than having somebody pull up at a phone booth and call," Blanchard said. "But I figured it may have saved the gas tank from exploding. That car was really burning."

Matthews said he had stopped on the service drive to make a bank deposit and noticed the flames coming from under his car after he left the bank deposit drop box.

He called for help over his CB.

Blanchard said he has been using a CB in his patrol car for about three months under an experimental program in the Royal Oak Traffic Safety Bureau.

To the truckers and other CB'ers who drive along the I-75 freeway through Royal Oak, Blanchard is known as "Little Brown Jug." His handle comes from the compact brown plain wrapper he drives.

"This is the first time I have used the CB for something like this, but I use it constantly for other things," he said.

"I get a lot of motorist assistance

calls and relay information to other departments from calls I get over the CB.

"Since I started using it on I-75, I must have written 45-50 violations and made three or four arrests from having other CBers call me and tell me to watch for somebody who was doing something wrong. They'll call and tell me, "Somebody's coming at you—get 'em.'"

Blanchard said he believes the program helps motorists gain appreciation for police patrols, especially on the freeways.

"Since we have had the CB, I think we have had more appreciation from motorists. I even get calls from truckers who say they're glad to see me out there on the freeways," he said.

Police Chief Virgil L. Scott of Royal Oak said he hopes to add five or six more CB radios soon to other Traffic Bureau cars. Blanchard's car is the only one currently equipped with a city-owned CB, although three other officers have equipped police cars with CBs they own themselves.

Denver Smokies Say CB Replaces \$80,000 Traffic Tower

After the State Highway Department spent more than \$80,000 to erect a traffic control tower in 1971, Denver police officials have decided to abandon the tower at the intersection of Interstates 70 and 25, concluding it was virtually useless.

A change of plan after construction and widespread use of CB forced officials to conclude the tower no longer served any purpose, according to Traffic Division Chief Robert Luby.

Luby said initial plans called for installation of a bank of television monitors in the tower to check all traffic throughout the area and dispatch wreckers and officers to accidents.

"The state decided to go a different route," Luby said, and the TV monitors weren't provided. Nor was it possible, he said, to allocate one of the department's radio channels solely for use in conjunction with the traffic tower.

State funds were directed instead to installation of sensors embedded in roads to monitor conditions and traffic flow, according to Stan Brown, a Highway Department spokesman.

Brown said that system, which lights up four overhead signs on I-25, I-70 and U.S. 36, has worked "with a varying degree of success." It cost taxpayers more than \$400,000.

"They can't anticipate every situation," Brown said, adding that the signs do help warn motorists of stalled traffic and poor road conditions.

Meanwhile, police officials discovered that monitoring CB radio channels provided a far better method of keeping an eye on traffic and accidents than the tower system.

"Our main concern is our response time to accidents and CB radios have surpassed the tower," Traffic Capt. Paul Mayerle said. Four CB radios have been installed in highway cars and "we've got two more coming," he said.

Both Luby and Mayerle defended the decision to build the tower, saying it had helped monitor traffic and establish the department's system for checking traffic.

But "progress is going to prevail," Mayerle said, noting the department got "four years of service" out of the

tower.

Luby agreed, saying the department got "many times our money's worth out of that tower."

After discussing alternatives for several months, police officials decided to turn over the tower—which hadn't been manned for six to eight months—to the Highway Department.

Highway Department officials, however, weren't sure just what they were going to do with it, who might want it and what conditions the federal government—owner of the land on which it sits—might place on a potential lease or sale of the property.

Mayerle was confident that, if the federal government doesn't have any objections, a buyer could be found.

In fact, he said he's already gotten a "feeler" or two on it from persons interested in buying or renting it.

One man said he would like to buy or lease the tower as a "weekend hideaway," Mayerle said.

"The guy was a CB bug and thought it would be a nice quiet place to monitor other CBers from."

Why buy GE CB? That's what Howard Cosell wanted to know.

"Finally, a company I've actually heard of is making CBs. (A subject, I freely acknowledge, I know little about.) But neither do a lot of people, so on behalf of everyone, I questioned General Electric. Their answers make it abundantly clear why GE is expert in CB."

COSELL: Give me one persuasive reason to buy GE CB versus another make.

GE: Performance. For instance, our new 40-channel models are as powerful as our 23's yet exceed FCC guide lines on interference.

COSELL: Another reason?

GE: Quality. All GE sets are made with specially designed heavy-duty parts. They continue to perform from 20 below zero to 120 above.

COSELL: Impressive. Does GE have any features I won't find in every brand on the shelf?

GE: Sure. For example: an antenna warning indicator that lets you know if you're not hooked up right or transmitting with enough power ... a channel priority feature that automatically and continuously monitors any channel you select...

a switchable noise suppressor...

COSELL: That's terrific. Now, what have you guys done to make sure your new 40-channel units don't turn out to be turkeys?

GE: Researched the devil out of them. With new products, GE's procedure is to place hundreds of units in a test market, then survey the owners and investigate any complaints. We tear down the entire set to find out what's wrong. Once we've isolated the problem we can eliminate it.

COSELL: One last question. Do your designers ever think about the guy who'll be using your units?

GE: Absolutely! He's why we do all we can to make our numbers extra legible ... why we position our controls so they're easily reached ... why GE mikes are designed for either hand ... we even backlight our meters to improve readability.

COSELL: Where does Cosell come out after investigating the subject with my usual thoroughness? *GE. That's more than you can say about any other CB.*



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CB Newswire

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Arizona CB Super-Bargain! A \$300 Rig For \$84.88!

CBers spotting a CB radio advertising error, broadcast the word on their radios and forced Sears, Roebuck & Co. in Tucson, Ariz., to sell hundreds of \$300 radios for \$84.88, Sears officials said.

The advertisement, run in two daily newspapers last November; listed a certain radio model normally priced at \$99.95 on sale for \$84.88. But the radio pictured in the ad was another model, worth \$300.

The six radios at the store were sold in hours, Sears officials said, and customers began demanding to purchase more.

Store officials, who said customers were "screaming on the floor, loud abusive, offensive to our sales people," offered rain checks and when they ran out, took names of persons who wanted to buy the radios.

W. H. Rees, a Sears spokesman from Los Angeles, said the problem mushroomed after the ad appeared because many CB owners used their radios to broadcast the mistake to others.

"We had done far and above what we were obligated to do legally and ethically," Rees said. "It was obvious these people were coming in to rip us off, but we took the nastiness."

Sears received more radios to honor the rain checks, but Rees said that not more than one is being sold to a household.

"It was a tremendous number, that's all I can tell you," he said when asked how many radios were sold at the lower price. He said "many thousands of dollars" were lost.

"An ad in a paper is not a legal offer," Rees said. "Our general policy has been that when an obvious error occurs in an ad, we will not sell at that price."

Some CB buffs said they still were not satisfied with the handling of the situation.

Russians Jamming CB And Other Services With Mystery Signal

A super-powerful, mysterious radio signal, apparently emanating from the Soviet Union, has been disrupting communications throughout the world for months, sources on both sides of the Atlantic say.

So severe is the interference caused by the transmissions that it has disrupted CB, maritime, aeronautical, telecommunications and amateur radio operations to the point that certain channels have become virtually useless.

Since last Aug. 25, the Federal Communications Commission has written four complaints to the Ministry of Posts and Telecommunications in Moscow, but so far the FCC has not received an answer.

Precisely what is generating the mysterious signals, what type of intelligence—if any—they are carrying out, and what their purpose is are all unanswered questions, at least to the FCC.

What is certain, however, is that the FCC has several hundred complaints and that the transmissions are heard around the world.

Colin Thomas, for example, who is world-wide coordinator of interference reports for the International Amateur Radio Union, said that reports of interference from these transmissions have come from amateurs in Sweden, Norway, Germany, the United States and Australia.

"The source of the problem lies in the U.S.S.R.," Thomas said: "There are thought to be three transmitters involved, but the purpose of the transmissions, this we do not know."

Thomas said all of his interference reports are sent to the British Home Office, and he understands that complaints have been telegraphed to the Russians. But, as with the FCC complaints, there has been no answer.

In technical terms, the interference is being caused by an extremely wide-band signal that pulses 10 times a second. It has been heard on frequencies ranging from 6 to 28 MHz. The signals are 30 to 300 kilohertz wide and may last for 30 seconds to a half hour.

If such transmissions were heard on

ordinary broadcast frequencies (which they are not) with the same effect as on the shortwave frequencies, they would blot out everything from perhaps 540 to 840 MHz, or about a fifth of the entire broadcast band at one time.

So severe has the interference become—and so unresponsive have the Russians been to complaints from other countries—that the matter has been referred to the International Telecommunications Union (ITU) in Geneva.

Rene Fontaine, official spokesman for the ITU, said he was unaware of the entire matter but added the organization would not make public anything it might be doing. He said, too, the ITU has no power to enforce international radio treaties against interference, but simply tries to mediate such matters.

Nevertheless, another ITU source said that the organization does have a file on the mysterious transmissions. He said correspondence had been passed to the Russians through the ITU's International Frequency Regulation Board in connection with the matter.

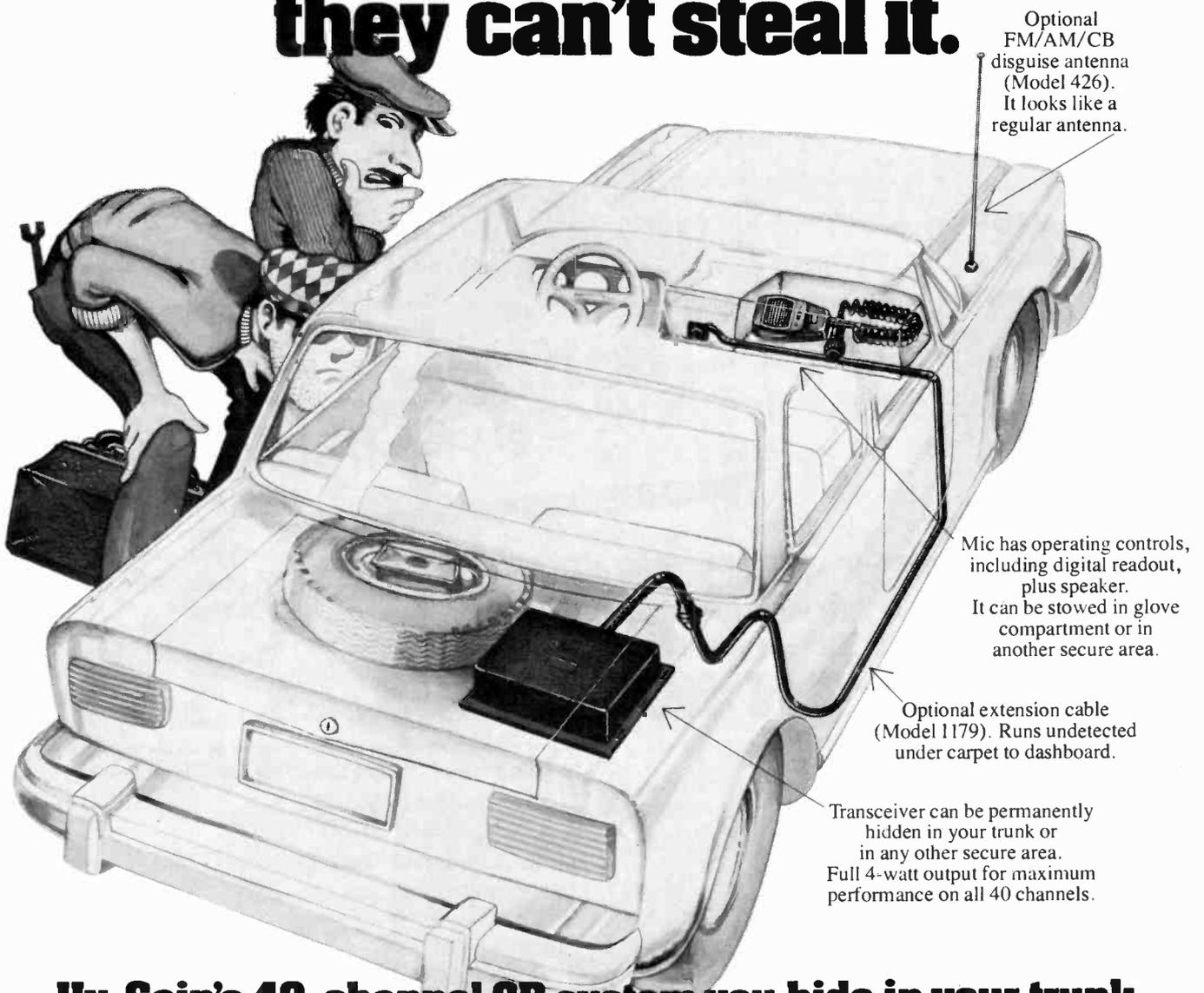
King T. Hall, chief watch officer at the FCC's monitoring branch, said the commission has been getting complaints almost daily since early July. He said complaints had come from basically every short-wave radio user.

Hall added: "This would include aviation people for air-ground communications . . . maritime users—ship-to-shore operators as well as shore-to-ship, ship-to-ship — overseas point-to-point fixed radio services" such as American Telephone & Telegraph Co. (AT&T), International Telephone & Telegraph Corp. and RC Global Communications Inc.

Although officials of all three companies said they knew nothing about such interference, a watch officer at the RCA ship-to-shore station in Chatham, Mass., said several channels were completely unusable because of the interference.

At the AT&T station at Manahawkin, N.J., an operator said the interference had been bothersome for some time, although he was uncertain of the source.

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Optional FM/AM/CB disguise antenna (Model 426). It looks like a regular antenna.

Mic has operating controls, including digital readout, plus speaker. It can be stowed in glove compartment or in another secure area.

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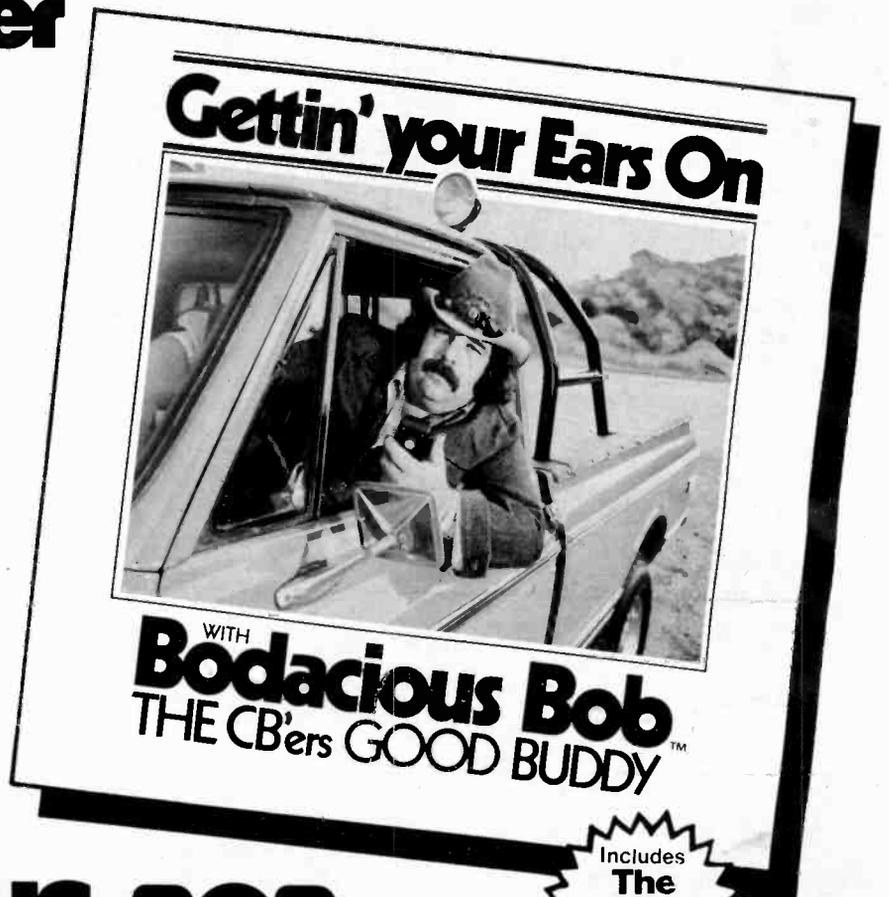
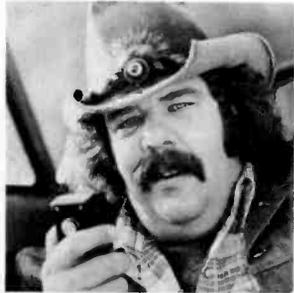
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API-S9

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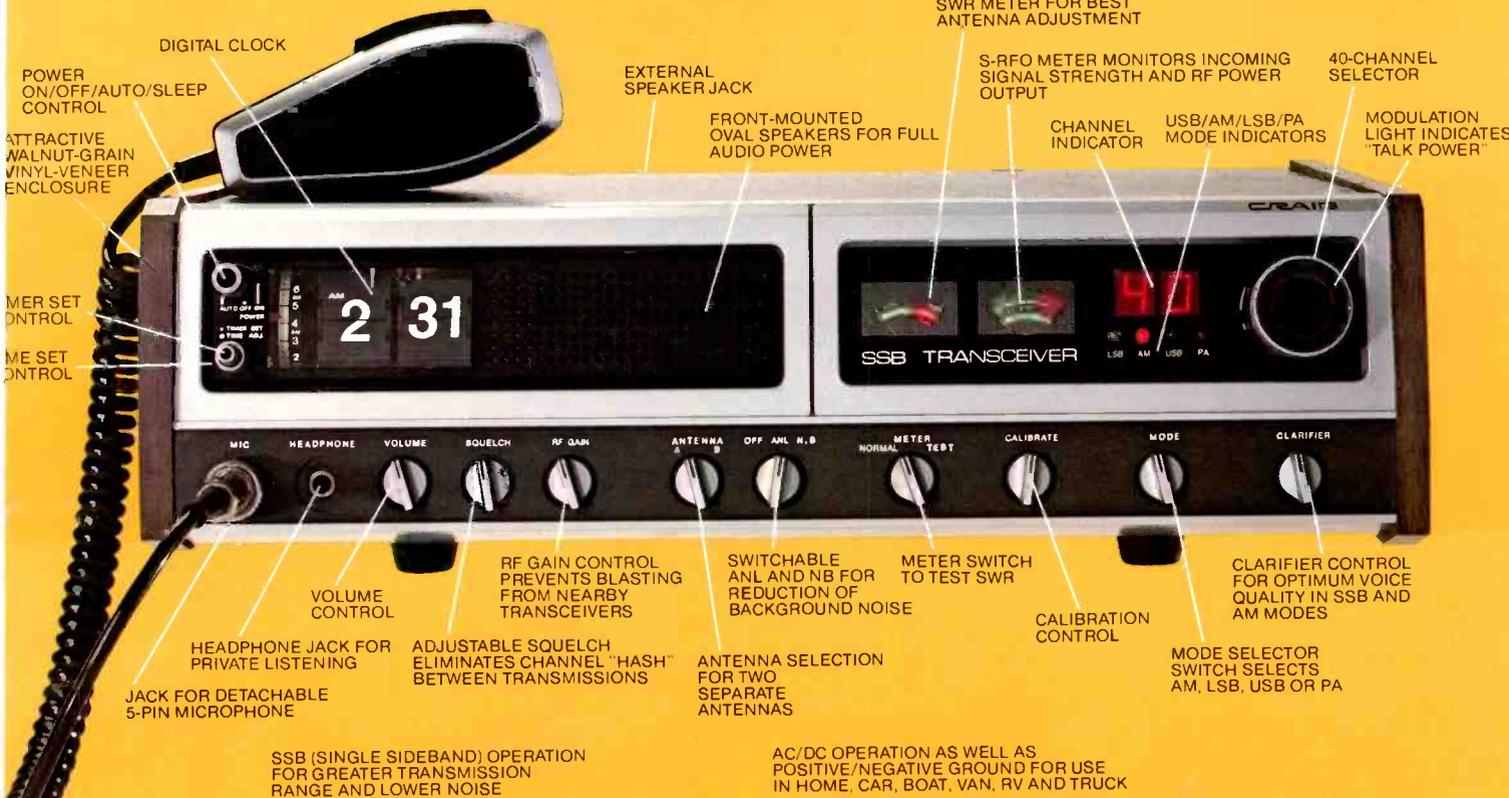
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The powerful Craig Model L231 Base Transceiver offers the beauty of component styling and the total performance of combined AM/SSB operation.

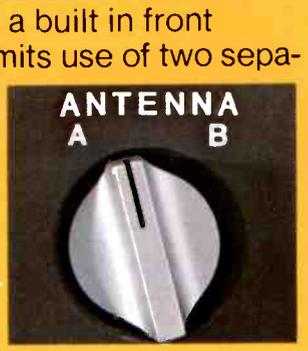
A control cluster on the right conveniently groups channel selection and indication, mode switch and voice clarifier. The selector knob also features a bright pulsating modulation ring for relative voice power indication.

An illuminated digital turn-on clock with alarm and sleep switch provides time of day and can be preset to automatically turn on the L231 transceiver to meet day or night operating schedules.



the back. Inputs allow use of both omni and beam antennas or use of a dummy load for test purposes.

The Model L231 features accurate PLL frequency synthesizer circuitry. Transceiver circuitry operates on both 120V or 12VDC for emergency use or location in camper, RV, or boat. Controls include RF gain, automatic noise limiting and noise blanking.



L131 40 Channel Deluxe AM/SSB CB Transceiver



GENERAL

Channels 40 (AM, USB, LSB)
Frequency range 26.965-27.405 MHz
Dimensions 8½" x 2¼" x 10¼"
Weight 4¾ lbs.

Transistors 36
Diodes 57
Positive or negative ground operation, 13.8 VDC
P.A. system output 3.5 watts

SPECIFICATIONS

Receiver: AM Section

Sensitivity .5 μ V for 10 dB (S+N)/N
Bandwidth \pm 2 kHz @ -6 dB
Adjacent channel rejection >60 dB @ \pm 10 kHz
Ceramic filter

Receiver: SSB Section

Sensitivity .18 μ V for 10 dB (S+N)/N
Bandwidth \pm 2 kHz @ -6 dB
Adjacent channel rejection >60 dB @ 10 kHz
Crystal lattice filter

Both AM & SSB Sections

Clarifier \pm 800 Hz
Noise Blanker RF parallel gate type
Squelch range .5 μ V to >250 μ V
Audio output 3.5 watts

Transmitter AM & SSB Sections

Output power SSB 12 watts P.E.P.
RF output AM 4 watts
Modulation capability 100%
Spurious attenuation 60 dB minimum
Output impedance 50 ohm
Frequency stability \pm 0.001%
Frequency tolerance \pm .005% from -30 C to +50 C

L231 40 Channel Base Station AM/SSB CB Transceiver



GENERAL

Channels 40 (AM, USB, LSB)
Frequency range 26.965-27.405 MHz
Dimensions 17½" x 5½" x 10½"
Weight 16.5 lbs.

Transistors 38
Diodes 56
120 VAC, 60 Hz (Clock and CB)
Positive or negative ground, 13.8 VDC (CB only)
P.A. system output 3.5 watts

SPECIFICATIONS

Receiver: AM Section

Sensitivity .5 μ V for 10 dB (S+N)/N
Bandwidth \pm 2 kHz @ -6 dB
Adjacent channel rejection >60 dB @ \pm 10 kHz
Ceramic filter

Receiver: SSB Section

Sensitivity .18 μ V for 10 dB (S+N)/N
Bandwidth \pm 2 kHz @ -6 dB
Adjacent channel rejection >60 dB @ \pm 10 kHz
Crystal lattice filter

Both AM & SSB Sections

Clarifier \pm 800 Hz
Noise Blanker RF Parallel gate type
Squelch range .5 μ V to >250 μ V
Audio output 3.5 watts

Transmitter AM & SSB Sections

Output power SSB 12 watts P.E.P.
RF output AM 4 watts
Modulation capability 100%
Spurious attenuation 60 dB minimum
Frequency tolerance \pm .005% from -30 C to +50 C
Output impedance 50 ohm

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CONFIDENTIAL

RIGHT now there are tens of thousands of CB operators transmitting on illegal frequencies, knowingly and in clear violation of a barrage of FCC regulations, despite the threat of stiff fines and jail sentences! And even though the FCC has been making frantic efforts to shut these stations down, their efforts seem only to have made this type of operation all the more attractive to the hordes of new operators now setting up shop on the illegal channels! It's been going on for years and yet, unless you personally know someone who is directly involved in it, chances are that at this point you may never have heard about it even if you've been in CB for several years!

I'm talking about operation on the so-called *high frequencies*, generally known as "HF," although some call them "*upstairs frequencies*." These are the frequencies which lie *above* the authorized band of CB channels. They abound with stations and perhaps 1 CB'er out of every 300 is an HF operator; that may not sound like much until you compute a total based upon a CB population of 20-million in the U.S. alone!

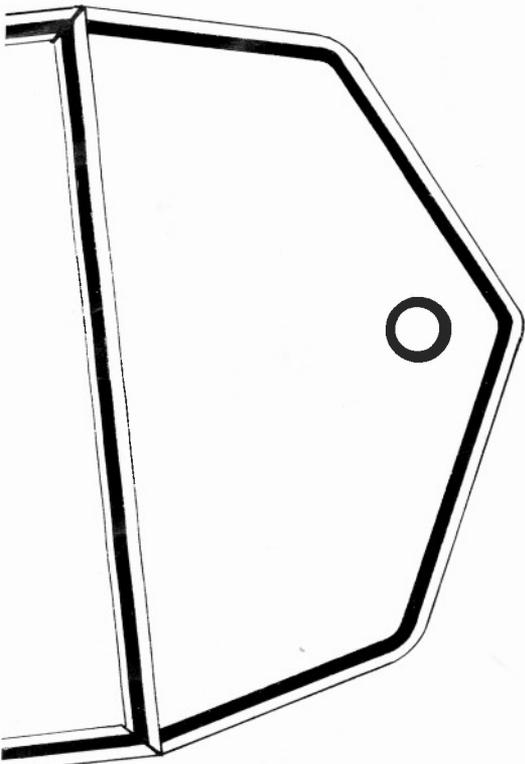
It seems however that HF is the slightly unexplainable and awkward child that gets hurriedly shoved into the closet when company comes to call. For years it's been taboo to speak of it in polite circles. Those operating there were publicity shy, not wishing to draw

undue attention to the unauthorized practice, and some of those *not* operating there have a great fear of even mentioning the fact that there are any abuses or unauthorized aspects of CB radio—feeling that if the public has such information then the situation will be made worse!

This latter position is unfortunate, it shows an attempt to try to come to an understanding of CB in very 1-dimensional terms. And even if it concerns something undesirable, the hope that by ignoring it and pretending it doesn't exist will make it go away. And, on the other hand, perhaps, whatever the offending topic is, it might not seem *quite* as much of a disaster once you have sought out information about whatever it is that's bugging you.

Specifically, in connection with HF, the few casual mentions it has had in CB RADIO/S9 over the past few years have been the incentive for a small flurry of absolutely hysterical letters reading me the riot act and demanding that I immediately "stop suggesting to readers that they operate illegally!"

So, if you are a person who looks at CB through rose colored glasses, a reader who foamed at the mouth and stomped on the floor when I recently suggested that Channel 9 was being abused and might require re-evaluation to decide if it was a concept



Tomcat's **CONFIDENTIAL** CB Report on "Secret CB"

Everybody's Afraid to
Talk **ABOUT** "HF,"
But Many Are Talking **On** It!

which was workable or a waste of time—well, if that describes you, maybe you'd better take a spoon of *Pepto Bismol* before you read further, because here I go again!

The majority of my readers, however, should find it interesting to learn about an activity which has attracted tens of thousands of AM and sideband CB operators despite the fact that it's so *blatantly* against FCC regulations! As a person who seeks to gain as much knowledge as possible about the factors which bear upon CB operation, you are entitled to have *all* of the facts. My presenting this information doesn't mean that I'm trying to promote or suggest unauthorized HF operation, glorify it, or proselytize for it—I am meeting my responsibility as the Editor of a publication which (since 1962) has always told it to CB'ers *the way it is!*

WHAT'S IT ALL ABOUT?

As I had mentioned, HF operation is illegal CB communication on unauthorized "channels" lying adjacent to and above the authorized CB channels. This is a segment of frequencies which lies between CB Channel 40 (27.405 MHz) and the low frequency edge of the 10 Meter Ham Band (28.000 MHz).

In the days when there were only 23 CB channels, with the CB band ending at Channel 23, the so-called

HF band started at 27.265 (now authorized as Channel 26, known then as "Channel 23A"), which was a frequency the FCC had authorized for use by business and industrial (and other) licensees. But some CB'ers decided it was *fair game* for their use. The frequency was heavily populated by AM CB stations, who were also using the next adjacent 5 "channels" upwards in frequency to 27.315 (now Channel 31.) Above that frequency, HF channels were occupied by sideband operators, who picked it up at 27.325 (now Channel 32) and headed northward in frequency.

CONFUSION COMPOUNDED

With the implementation of the new 40-channel CB service there followed some confusion, this was because of a lack of solid leadership in the ranks of *upstairs* enthusiasts. A single unified position could not be agreed upon, although I would say that the majority did *not* eagerly look forward to the prospect of many "new" stations being dumped onto channels which were once the "private" domain of HF operators, and where they could exercise some control over who would and wouldn't be permitted to be a part of the *upstairs* clique.

Some HF people took the attitude of declaring a victory in their hopes for HF channels to be legalized

for their own exclusive use—keeping their fingers crossed that they might be able to bluff trespassers off the channels with this approach. Others decided to make a stand to continue using the same frequencies (Channels 32 thru 40), *plus* additional frequencies out of the band, as before as if nothing had happened insofar as a portion of the band being opened for public use—maybe those new stations thinking to operate here would either join the fold or else operate below Channel 32! There were many others who wanted *none* of it and simply shifted *all* of their communications *further upstairs*, commencing 100 kHz higher at 27.425.

Some non-HF Sidebanders have reported a few cases of friction above Channel 32, especially in cases where HF operators have attempted to *lecture* Sidebanders on suggested methods for HF-type operation on these channels. Most Sidebanders seem to have concentrated their operations between Channels 36 and 40. Some Sidebanders have sent petitions to the FCC asking that certain of the new channels be set aside for *all* Sidebanders, meanwhile many HF operators are asking that special *new* channels be created for *their* purposes.

At this point, one form or another of Sideband operations seem to be taking place from Channel 32 and on other higher channels. This has caused no small amount of indigestion in AM HF circles where (in the old 23-channel days) these operators had 6 HF frequencies "to themselves." The way things appear to be shaping up now, AM HF'ers might be shaved down to only one *exclusive* frequency—or perhaps *none at all!* The one possible channel they have left is 27.415 which seems to be earning the title "Channel 41" amongst its devotees.

ARE HF CHANNELS UP FOR GRABS?

The FCC had established what it was felt was an orderly arrangement of frequencies in this portion of the radio spectrum—and they assigned these frequencies to business and industrial communications; a number

of frequencies here are also claimed by military and other federal agencies.

When CB operations began spilling over into these bands there was, at first, some disbelief—quickly followed by utter shock and horror—and then angry shouts from those who feared or experienced HF CB interference.

The invasion was *so* total and numbing that illegal transmissions in the HF band far outnumbered the authorized ones—and, well the CB *boom* was upon us anyway and CB *did* need more frequencies, plus the fact that the FCC was hard pressed to adequately police all of the HF frequencies. These factors must have played a part in the FCC's decision in 1975 to take a 150 kHz section of the HF band away from business and industrial users and turn it into CB Channels 26 through 40. Business and industrial users who had been authorized for operation on those frequencies were given 3 years to get out—and those who remained on other HF frequencies not re-allocated for CB uses were left to fend for themselves—or else see the handwriting on the wall and abandon the frequencies for 150 MHz band systems, or UHF!

It's not that HF'ers are deliberately trying to go out of their way to jam authorized communications, in fact they will gladly move off of a frequency if they learn that an authorized user is experiencing any interference. When asked about interference to authorized communications, many HF operators will point that out, and they may also tell you that "authorized users operate only on *even numbered* frequencies, while HF'ers avoid causing interference by sticking to only *odd numbered* frequencies, such as 27.415, 27.325, 27.485, 27.575, etc."

This well-intentioned gesture reflects a lack of information on the part of HF'ers; here's why: Out of the entire almost-600 kHz chunk of HF space there are presently *only* 6 FCC authorized business/industrial frequencies remaining—27.430, 27.450, 27.470, 27.490, 27.510, and 27.530. While it is true that these fre-

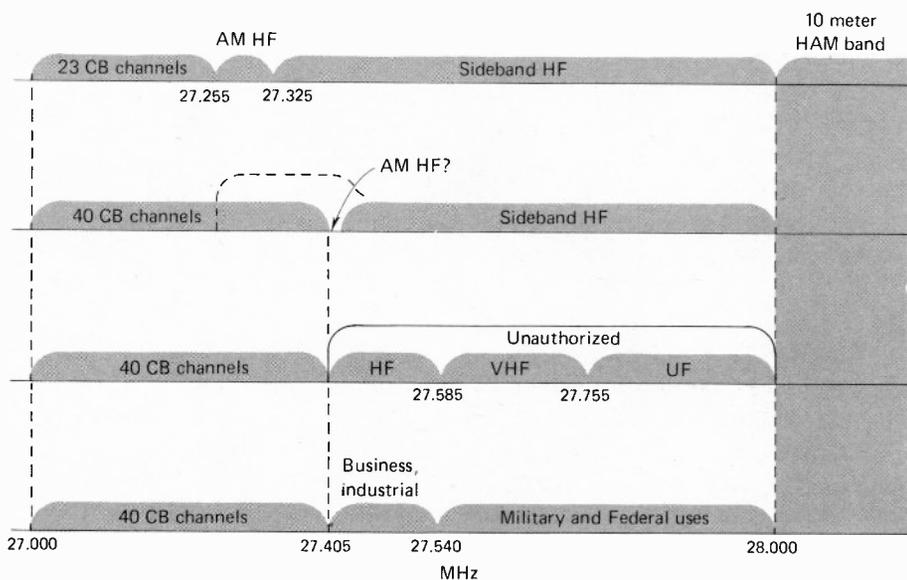
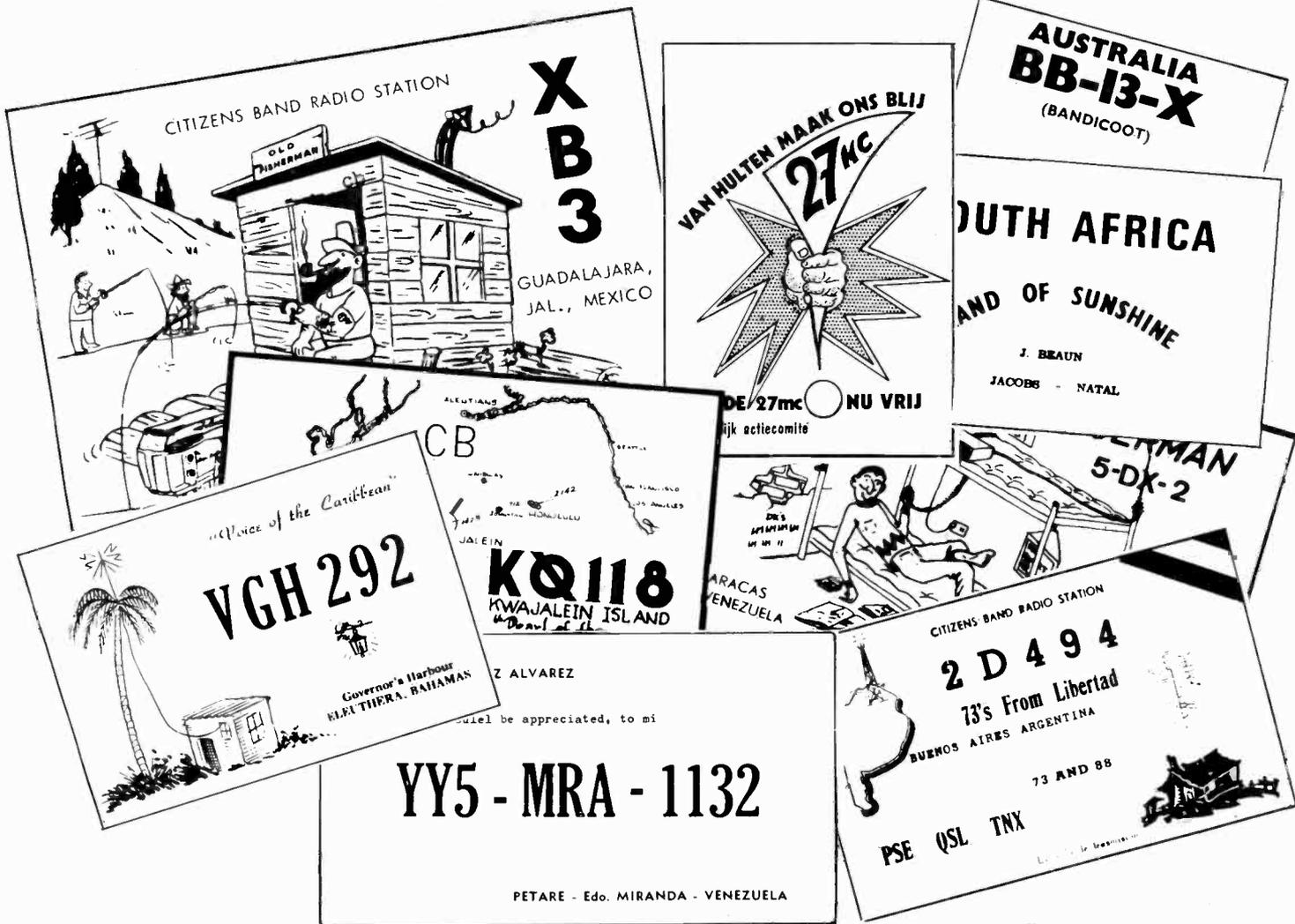


Fig. 1A—Here's how HF was set up in the old 23 channel days.

Fig. 1B—Under the new 40 channel system, HF seems to be setting itself up in this manner.

Fig. 1C—While the segment of the spectrum between 27.405 MHz (CB Channel 40) and 28 MHz (low frequency end of the 10 Meter Ham band) is generally known as "HF," those who operate there recognize three main subdivisions, HF, VHF, and UF.

Fig. 1D—Just for the record, here's how the FCC shows this portion of the spectrum in its records.



A random sampling of the rare wallpaper adorning the walls of many HF radio rooms, although cards from U.S. and Canadian stations are more common. These cards courtesy Stan, an operator in Kentucky.

frequencies are usually avoided by many HF'ers (except for CW-code-fans who hang out between 27.500 and 27.520), there are many overseas industrial stations authorized for operation on the *odd numbered* frequencies. When the band opens for skip, unauthorized HF communications can be heard overseas—same as regular CB. This has also encouraged thousands of overseas HF "CB" operators to commence operation, even in countries where CB itself isn't authorized on *any* frequency! Some foreign governments claim that authorized CB transmissions from the U.S. jam their local communications—and that makes them all the more angry about unauthorized HF operations.

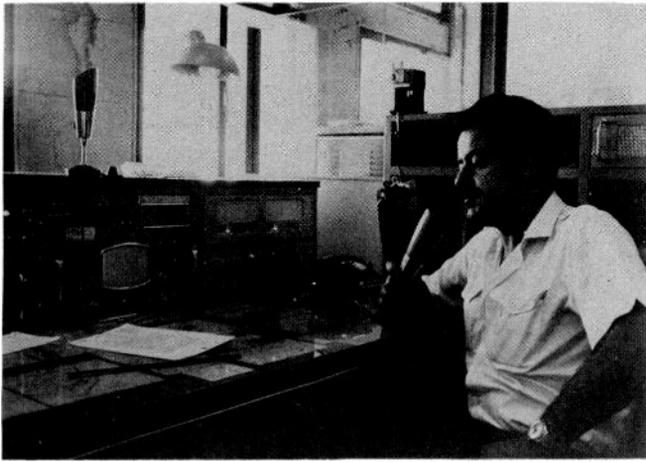
Furthermore, starting at 27.540 MHz and continuing right on up to the lower edge of the Ham band at 28.000 MHz, there is a band reserved exclusively for U.S. Government communications. Within this band 18 military communications frequencies have been established every 25 kHz commencing at 27.550—that means *half* of those military channels are "shared" with HF operators who somehow *think* that they are using "open" frequencies! There are other frequencies here too, such as 27.585 which is actively used by several federal agencies. The U.S. Coast Guard is on 27.980—and the FCC itself uses 27.575! So even "safe" frequencies aren't really *that* free of possible interference from HF operations!

SUBDIVIDED TERRITORIES

While the casual observer might consider *all* of these frequencies to be simply "HF," the inhabitants of these regions see within this band a delineation of several definite sub-bands.

The average HF fan sets an arbitrary cut-off frequency at 27.585—and operations between 27.595 and 27.755 are considered to be "VHF," which is the stomping ground for a smaller but equally enthusiastic group. Some operators function in both groups, but mostly they are 2 separate (but friendly) camps. One sour note—within the HF movement there is some childish bickering and in-fighting which resulted when a recently formed group of HF operators seemed to be gaining in popularity on an older organization. The older group is in a snit about it; has taken a few poorly chosen positions which have only made them look all the worse.

Well, one thing almost all *upstairs* operators do agree upon is a mutual dislike for yet another group—one involved in so-called "UF" activities, that is, operations between 27.765 and 28.000 MHz. The general consensus amongst HF and VHF folks is that the UF people are treading upon the edges of the *sacred* 10 Meter Ham band; it is claimed that some of the UF people have even been known to slip over into that



Stations from all over the world can be heard operating on HF channels—it's a phenomenon which has attracted some 60,000 enthusiasts—although clearly against communications regulations.

band from time to time, and with a minimum of remorse! In this article I am (*perhaps* unfairly) lumping all *upstairs* operators under the single title "HF'ers" for the sake of convenience and because they are the largest of the enthusiast groups.

By logic which is not particularly clear to me at this point, a great many HF'ers become enraged at any who would pose a threat to the integrity of the 10 Meter Ham band, however being coldly indifferent to (or perhaps ignorant of) possible interference problems they may be causing overseas industrial or U.S. federal and military communications operations. Insofar as those who would invade the 10 Meter Ham band, the *Americal Radio Relay League* (ARRL)—an outfit traditionally unfriendly towards CB Radio—has already had waves of nausea concerning these events. In 1976 they asked their members to turn in CB'ers monitored in the 10 Meter Ham band!

In the frame of reference of the FCC, operations on *any* unauthorized frequencies are equally upsetting. They have viewed all of this with a beady eye, having commented with alarm on HF as far back as 1971, *long* before the CB *boom*. At that time they circulated a private report to their monitoring stations which cried out upon HF operations in the U.S., and mentioned that HF was also active in Canada, Australia, Columbia, Finland, Mexico, Peru, Guatemala, and the Fiji Islands. The report said, in part, "The sheer magnitude of the number of violators . . . when coupled with inadequate manpower to timely cope with the problem, makes the CB'ers noncompliance an unprecedented challenge to Commission authority. The significance of the challenge is compounded when viewed in the light of the fact that once entrenched in new areas of operation, the dislodging process could be a monumental endeavor." (The entire report was published in our March '72 issue.)

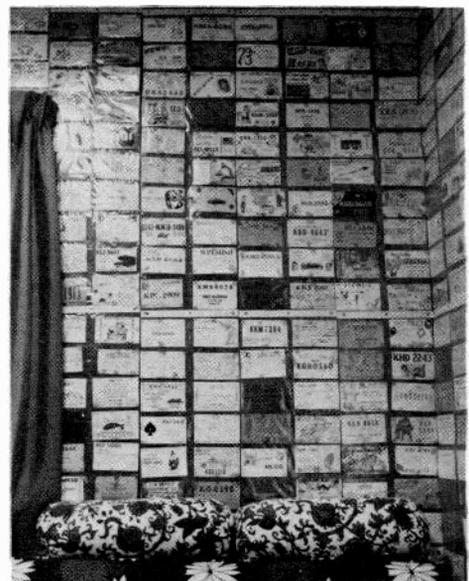
A RAY OF HOPE?

In 1974 the FCC had a possible solution. The idea was to establish authorized HF channels between

27.310 through 27.505 MHz—this would have placed sideband channels (USB only) in action, however they were to be used for communications between units of the same licensee only. The FCC at that time also looked towards the day (they estimated 5 years) when *all* CB would exclusively be on sideband. The HF channel scheme eventually fizzled, although many FCC people still figure that CB will eventually become an all-sideband service.

The FCC brass decided then to apply pressure on their monitoring stations to increase policing of these frequencies—an action which has been directed against AM and sideband HF operators alike. Raids have been staged in Baltimore, Newark, Birmingham, Des Moines, and other areas. HF'ers who were busted in those raids faced seizure of their equipment by federal marshals with search warrants, chanced FCC fines which provide penalties of up to \$500 per day *per offense*, a \$10,000 fine for using unlicensed equipment, and a possible year in jail! In some cases the siezed equipment is kept by the government in lieu of the fines imposed (with the agreement of the HF'ers who were caught). Yet, despite these efforts, the overall picture has neither diminished the enthusiasm or interest in HF operation, nor has it stemmed the flow of additional users of these frequencies. While localized areas do simmer down after the raids, such effects are neither widespread nor have more than temporary impact.

And even while HF enthusiasts are now pressing the FCC for sanction of their activities (3 groups have contacted CB RADIO/S9 seeking support), the HF frequencies are still buzzing away with national and international communications—AM, sideband, and code! Base and mobile! Some HF operators display thousands of QSL cards (wallpaper) to attest to the fact that there is no shortage of local and foreign stations with which to communicate!



Many HF operators boast huge collections of wallpaper to attest to the popularity of these off-limits frequencies, despite FCC efforts to clear them of unauthorized operation.



The linear amplifier is one of the standard tools of the CB'er who seeks to extend communications range, but it is an illegal device on CB channels, and is no more legal and no less popular on the HF channels—it's one more thing an operator can get fined for using.

EQUIPMENT

Most CB equipment can be modified for operation on HF frequencies by someone with a working knowledge of communications circuitry. A great many of those operating *upstairs* have "capabilities," or gear which operates on regular CB channels *plus* HF. Some have even added linear amplifiers to boost their power output, although "illegal" linears are also a part of operations on authorized CB channels.

Some HF enthusiasts don't bother with modified CB gear, they use classy equipment originally designed for other radio services—often with *mucho* power.

Fact of the matter is that the average serious HF operator has a lot of greenstamps invested in highly sophisticated communications equipment. The average individual station price of those operators busted by the FCC in the Baltimore raid was almost \$3,500! And there is a thriving market for this equipment!

SO WHAT'S THE BIG ATTRACTION THERE?

One of the most often asked questions is, "Since these



About 20% of those operating on the HF channels are licensed in the Amateur Radio Service.

frequencies are so clearly unauthorized, why would anybody want to operate there—risking fines, federal hassles, loss of equipment?" This is an especially interesting question since it seems that almost 5% of those operating on HF have General Class (or higher) Ham licenses—they could legally operate "just up the street" on the 10 Meter Ham band! Another 5% of the inhabitants of HF have Novice Class Ham tickets. If any of these operators were caught during an FCC bust they would have a lot to worry about in regard to the continuation of their Ham privileges.

So, it might be observed that about 10% of those on HF already have equipment which is capable of operation on those frequencies—certainly an incentive, especially in view of the fact that there is more activity on HF than there is on the 10 Meter Ham band. Then there is also a certain boost some people get out of doing something outside of regulations—like deliberately driving over the posted speed limit. This theory includes the concept that "after all, nobody is really getting hurt by HF operation and the only reason it's against regulations is because of the stubborn and arbitrary attitude of the FCC."

Anyway, even if about 10% of the HF fans are Hams, 90% are still basically CB operators—people who had to go out of their way to make an effort to communicate on these channels. Some estimates claim that (worldwide) there are more than 70,000 AM and sideband HF operators today. There must be *something* which has brought them to that status!

The thought of a frequency band primarily inhabited by some 70,000 well, let's come right out and use *the word—bootleggers*, conjures up an instant image of frightful communications pandemonium, of wild-eyed rule violators hell-bent on taunting and playing *chicken* with the FCC monitors while walking all over each others' transmissions. Fact is, however, that by actually listening to the operations on the HF channels one gets a *totally* different impression, for the frequencies are self-policed and are utilized with a deliberate effort to insure courtesy and establish maximum effective professional sounding communications. And while, as



Some 80% of HF enthusiasts are primarily CB operators—they come from the ranks of AM and sideband.

I had mentioned, there are those few operators on HF who might get their jollies out of skirting FCC regulations, most HF operators would much prefer to be operating within the sanction of Uncle Charlie, with *full* permission, and without the threat of fines, jail, etc. No, they really *don't* dig being classified as *bootleggers, pirates, bandits, and outlaws!* In the petitions the HF'ers are sending to the FCC they are asking the FCC to establish sideband-only HF communications in a new *Special Radio Service* to be created from 27.505 through 27.900—which would mean the cancellation of most of the government band. Hundreds of petitions have been sent to the FCC on this!

THE BEAT GOES ON

And yet, still they are presently enduring hardships—exercising *squatters* rights. Their reasons are complex and far-reaching. In fact, I'm going to present here a letter (one of many) I recently received from an HF operator. This fellow in particular is a sideband operator, but his views represent a typical cross-section of letters received from sideband and AM HF enthusiasts. You may agree or disagree with him, but bear in mind

that HF operators such as the writer of the letter are now becoming more vocal, they are making a stand with the FCC, and whatever is the outcome of their plight, certainly it will have some bearing upon *all* CB operators and operations. As a member of the CB scene, it is your duty to gather as much knowledge as possible in order for you to understand this drama as it unfolds.

MEANWHILE, BACK AT UNCLE CHARLIE'S

Whether or not the FCC will ever actually look with favor upon the HF operators is open to speculation—whatever they decide, it doesn't appear that all HF (and VHF, etc.) fans are about to voluntarily pack up their gear and call it quits on these frequencies, and more than 6 years of effort by the FCC hasn't been able to pry or scare them off.

Getting FCC official opinions isn't easy—outwardly the official position is that HF operators are violating *this* many rules and regulations and must immediately vacate the frequencies. There are a few insiders who will venture some *private* opinions off the cuff, however.

For instance, one opinion heard claims that "they're bargaining for these frequencies while holding them

SOME THOUGHTS FROM AN "HF" OPERATOR

Editor:

I write to you concerning the interests of serious HF operators. I believe these views are fairly accurate in respect to the views held by thousands of operators across the country, especially those on sideband. I wish, however, to express that they are my own and are subject to the limitations of an individual viewpoint.

The topic is the operation of an 11 Meter Station for pleasure and enrichment (specifically in the area of technical knowledge and electronic application). As you are aware, there is currently considerable interest in those operators who are pursuing their hobby outside the allotted frequency spectrum of the CB service. Much has been said in terms of pro and con.

After extensive discussion and monitoring on the assigned CB channels, the 10 Meter Ham Band, and elsewhere, I have come to conclusion that it is in the so-called HF portion of the CB spectrum that I have met with the best operators and nicest bunch of people using communications equipment. It is here, with those operators using sideband most specifically, that one can copy country-wide round-table discussions, conversations regarding communications equipment and its various applications, as well as those who are primarily interested mainly in making friends as far as their signals will carry their voices. These operators are for the most part friendly, courteous, efficient, and (worst of all) illegal.

I realize that irony has come to be one of our most abundant resources. The FCC's outlook and condemnation of these

operators is the epitome of irony to the same degree or directly proportionate to the epitome of these operators being what CB was all about in the first place.

The irony lies in that the FCC is punishing these operators, who were forced off unpoliced or ineffectively unpoliced frequencies that contain millions of stations which have little more interest in communicating than sending messages any more interesting than "What's yer 20?" or "Howboutcha Channel Master?" or "Wall to wall and treetop tall" or "C'mon back and pour dat signal over me!" *And much worse!* Those who could not find enjoyment in this were pushed to bootleg frequencies where, even though operation is illegal, they might relax while conversing with other informed and interested individuals who are not satisfied to remain exposed to the irresponsible operation which typifies CB in so many parts of the country on the authorized Citizens Band channels.

Don't take me wrong and believe that I am saying that *everybody* who operates a CB rig is irresponsible, or cannot communicate in any language but CB-lingo—but much of what one witnesses does indicate that there's an abundance of such operators who seem to pervade the channels to the extent that it's tough for anybody else to get a word in edgewise. Similarly, there are always those few who take delight in throwing carriers, cursing, making suggestive remarks, stepping on others, playing music, and the like.

So it was *those* operators who drove many others off the allocated channels and on to the unauthorized frequencies, and in my opinion the FCC should give

serious consideration to making some provisions to legitimize operations on these presently unauthorized frequencies. Perhaps offering a written exam on various knowledge necessary to operate a transceiver on these frequencies efficiently and effectively, and in doing so, offer power ratings of 75 to 200 watts, with modes of operation to include AM, SSB, and CW. Others have suggested granting 10 Meter phone rights to those with Novice Class ham licenses.

The approach I suggest, however, would be in step with an avid group of CB operators who would very much like to be "legal" and still retain the ability to have fully enjoyable communications. It would fill the gap and be a stepping stone between CB and Ham radio.

Because those people who are operating on these frequencies are already performing a lot of their own self-policing (based upon the standards which they have set for themselves), it is my contention that they would continue this practice.

So it is that, *yes*, these operators are illegal, but the pleasure of operation when weighed against the real or imagined harm it causes anyone and the risk of possible punishment for such activity makes it come out on top for many operators—and many will remain on these frequencies. Even with the 17 new channels, there is still a need for a place for those who operate on out-of-the-band frequencies, for none of the operations on authorized channels duplicate that which is to be found there.

Gene,
Missouri

hostage, close to 600 kHz, it's unheard of. Some of these frequencies are set aside for national defense and emergency services and it's a question of priorities; they should have sent in their petitions *before* they started using the frequencies."

Someone else added, "While I might be able to appreciate some of the gripes they have about the authorized channels being a jumble, it still doesn't justify in reacting to the situation by simply invading the closest alternate frequencies they could find."

There are some other possible ramifications of the matter. For example, when the 17 new channels were given over to CB, a good many *upstairs* operators moved *further upstairs*, placing the main thrust of their activities *out of the way* of the authorized channels. There's more *upstairs* activity now above 27.505 than ever before in the pre-40 channel era.

While the FCC had originally considered expanding CB up to about 27.495, they finally settled upon an upper frequency limit of 27.405 (Channel 40) because they felt that current design standards did not meet their technical requirements relating to intermodulation problems. But this is a relatively minor problem to lick and it will probably be solved by the time the 40 channels are overflowing and require expansion. So the next logical chunk of frequency space to be (re)considered would be from 27.405 through 27.495, thus creating a total of 49 channels. This would place the top CB channel near the lower edge of the government band, and to accomplish this all the FCC would have to do would be toss out a few (now) infrequently used business/industrial frequencies—and the FCC has shown their previous ability to do this as necessary.

Such action would create 9 more CB channels—Channels 41 through 49. However, based upon what happened when they opened up Channels 26 through 40, the HF crowd's exodus to yet *higher* frequencies, above Channel 49, would then concentrate these stations into the band reserved for federal and military communications, to say nothing of causing predictable heartache in the hallowed halls of the ARRL which apparently is having grim fantasies of swarms of CB'ers peering at the 10 Meter Ham band in a manner not dissimilar from a tribe of cannibals viewing a missionary. In fact, this is suspected of being the motive for several recent halting and half-hearted attempts by the *League* at extending feeble lines of "friendship" to CB'ers after so many years of less-than-pleasant attitudes. *Close the doors, they're comin' in the windows!* They're scared!

Not that the FCC is sitting around itching to create CB Channels 41 through 49. However, *if* and when the time and need does come for additional channel space, there will be those who *will* squawk about it—citing the need to let the *buffer-zone* remain to help keep the HF'ers out of the military/federal band and also at arm's length from the 10 Meter Ham band!

But several insiders to whom I have spoken feel that even *if* there were to be more CB channels, they would more than likely be opened for *all* operators and

not handed over on a silver platter to any single limited interest group, although the idea of setting up exclusive sideband channels is still kicking around. In any event, the activity of the HF operators will bear upon any possible expansion of 27 MHz frequency space for CB!

And yet, it would be unfair to condemn or quickly dismiss the HF'ers and their aims with a simple snap of the fingers; it's too complex a matter for such a convenient expediency. As a matter of fact, if you've ever taken the trouble to listen in on the HF frequencies you might well feel that the type of thing which they have going for themselves is enjoyable and rewarding—and something which could not take place on regular CB channels, or even on the 2 Meter Ham band (which some people like to use as a comparison). Some HF'ers, to be sure, lay the inspiration for the existence of HF squarely in the lap of the FCC itself, claiming that if the FCC's CB rules were adequate to meet the needs of the users, if the authorized channels were policed and managed properly, and if there were some control over who could qualify for a CB license or ownership of CB gear—then there wouldn't have been any need for HF'ers to have sought out their oasis on forbidden frequencies! No, these are serious and dedicated communicators who are *far* from the rowdy and lawless, irresponsible, *pirates* which they are often characterized as being.

Of course, the question has been raised as to what and who is *truly* legal these days. One HF operator recently observed that "legal" is "like being pregnant, either you *are*, or you're *not* . . . *no* half-way cases, are there?" Another HF fan, commenting on the "illegal" status of HF suggested taking a listen on any *authorized* CB channel before passing a negative judgment on "illegal" HF operators—she observed "*no one is really legal.*"

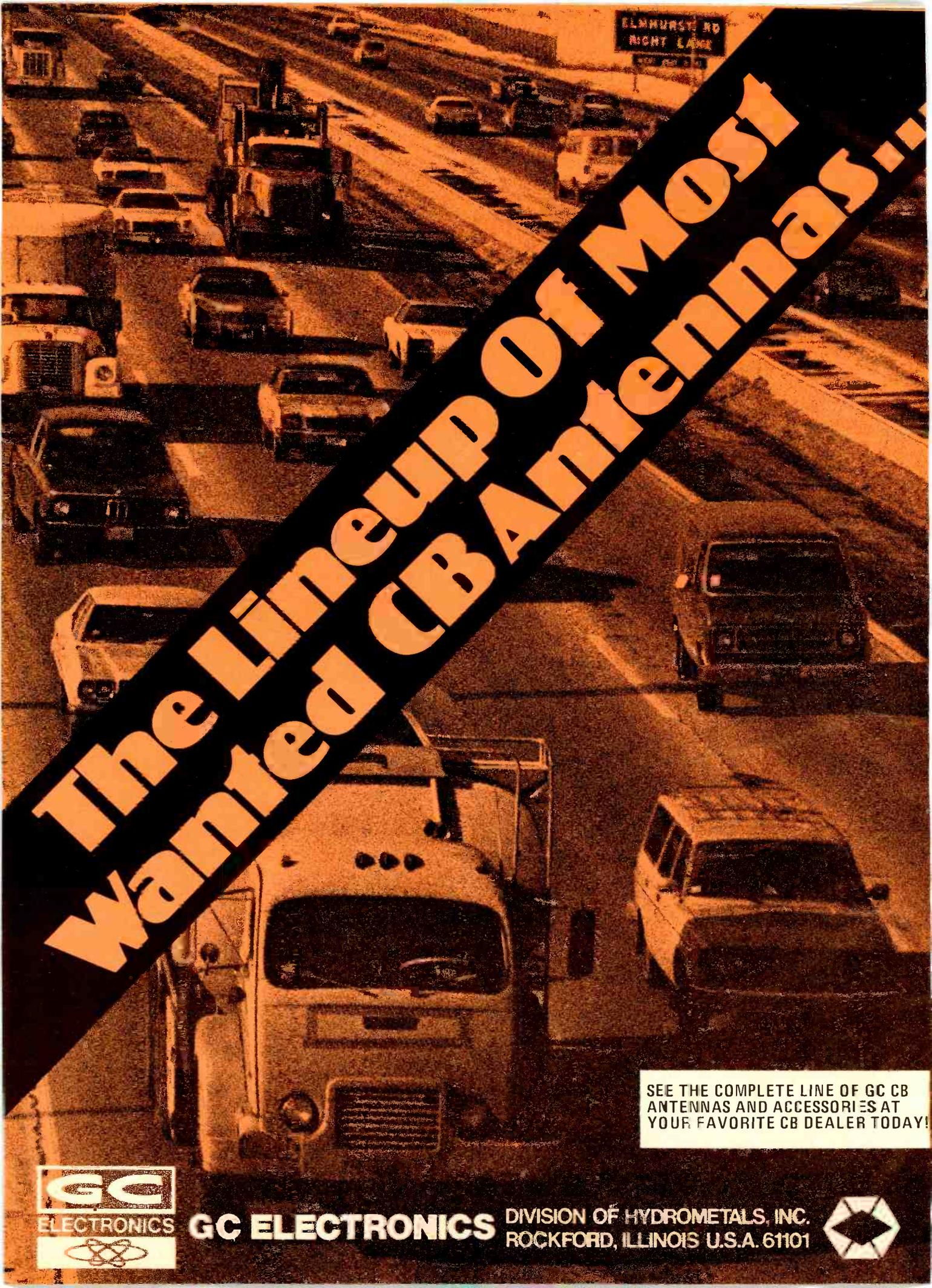
The question then is, is there a place for these communicators—if so, where, how?

WHAT'S YOUR THING?

Hey, if you've got some thoughts on all of this, why not send them along to me? If I receive a sufficient number of interesting comments by April 29th, I'll share them with my readers. No anonymous letters, please—I *won't* publish last names and addresses anyway, but do want you to include the info if you write, also include your Handle or other identification. Send to Tomcat, c/o CB RADIO/S9 MAGAZINE, 14 Vanderverter Ave., Pt. Washington, N.Y. 11050.

CONCLUSION

The HF story is *far* from over—perhaps it's only just now really warming up! Anyway, there's a *situation* bubbling away on those *upstairs* frequencies. Oh, did I forget to mention that there are *some out-of-band* operators who don't give a hoot about what happens *upstairs*? Yup, they're too busy operating *downstairs*, on the frequencies *below* CB Channel 1—but that's *another* story! *Ooops!* Quick, Jeeves, the *Pepto Bismoll!*



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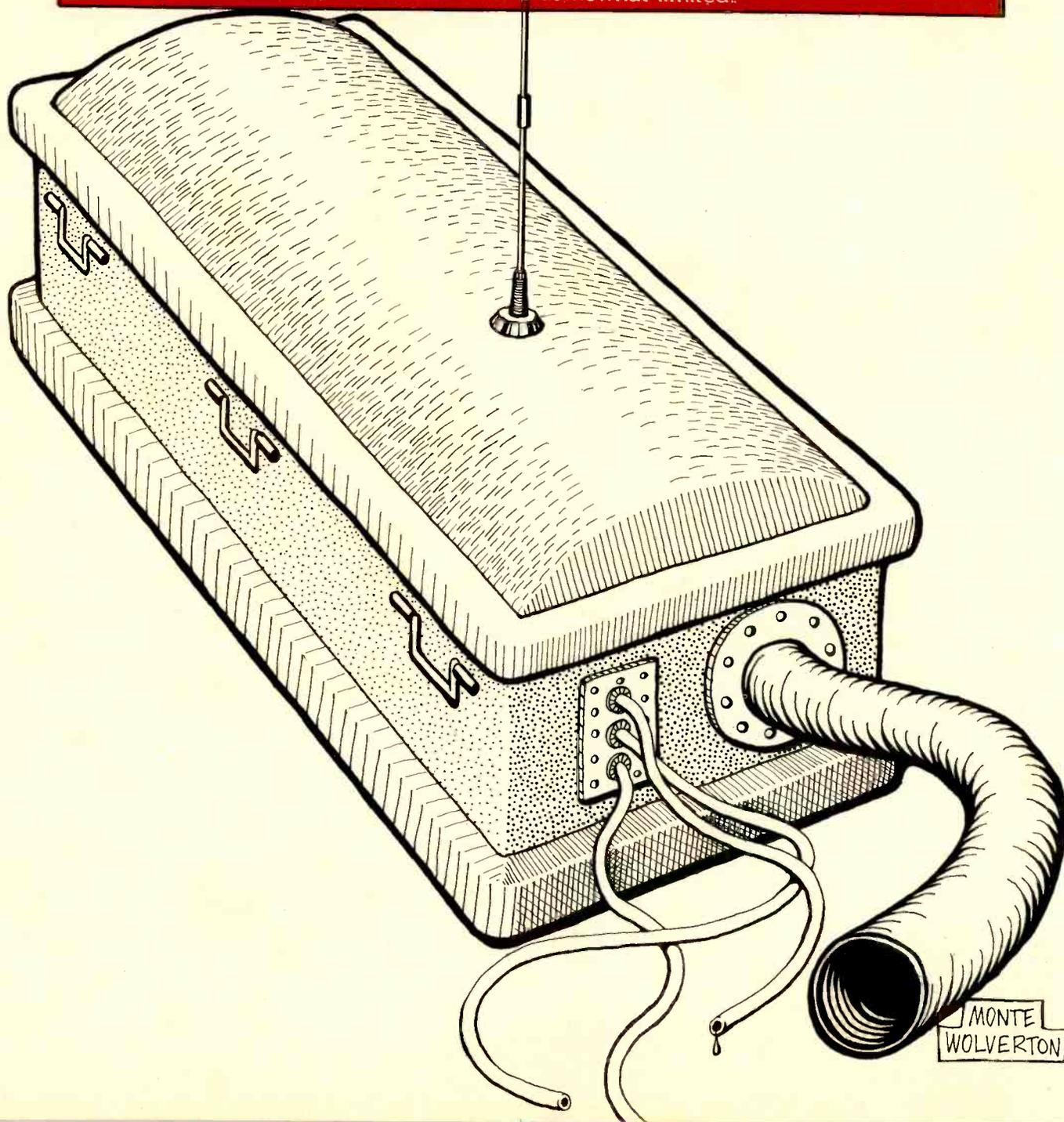
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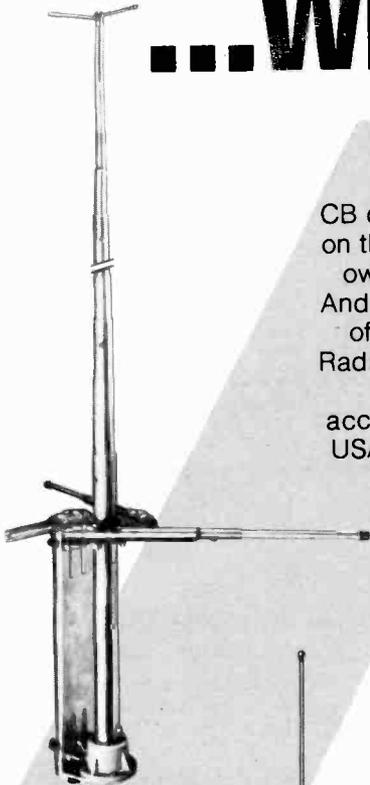
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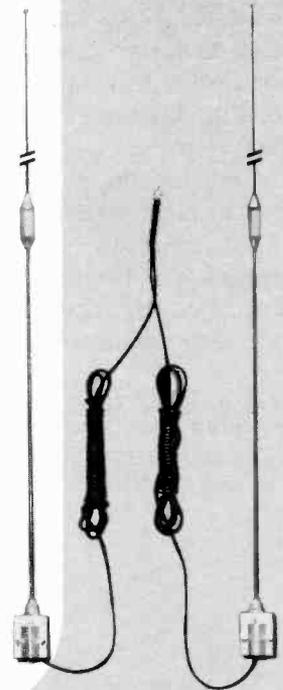
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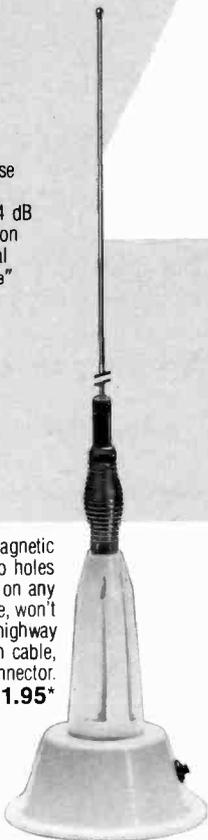


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Kick the "Flop Jamboree" Habit

by Gary Deckelnick (Baby Bull KCS 0994)

OKAY, you have your CB radio and you even talk a lot on the air. It wasn't too hard getting started. You asked for a radio check or maybe that old standby, a 1036. That got you talking to someone and, more important, it got someone to answer.

But now you have been using your set for a while and all of a sudden, it's not enough. Who is that cute sounding YL using the handle Hot Legs? Is that guy called Supersport really a super athlete or a fat, old man reliving his dreams on the radio? The time has come to meet your goodbuddies.

That, however, is easier said than done. Sure, you may crack a brown bottle with one or two friends on occasion. But if you are the average CBER, you have made many more friends than that.

Turning the tables: Patrolman Uku Mannikus is locked in jail by Errol Bowman at Breakers 12 jamboree.



There is only one answer to the problem and that is to attend a CB jamboree. Wait a minute, you protest. Attending those three day sessions is expensive and there are none near your home.

Right?

Wrong! Or, at least, the answer should be wrong. If there isn't a jamboree near you by now, there will be soon. Everyone, from radio clubs to Veterans of Foreign War posts are sponsoring them.

And you can, too. But plan it properly. A poorly planned jamboree means others may have fun, but not the sponsors. The sponsors will lose money, and if they squabble among themselves while trying to assess blame, even friends.

That's why you are reading this story now, in the

June Caravello, center, and daughter Sherrie, 14, make plaques with handles and call letters.



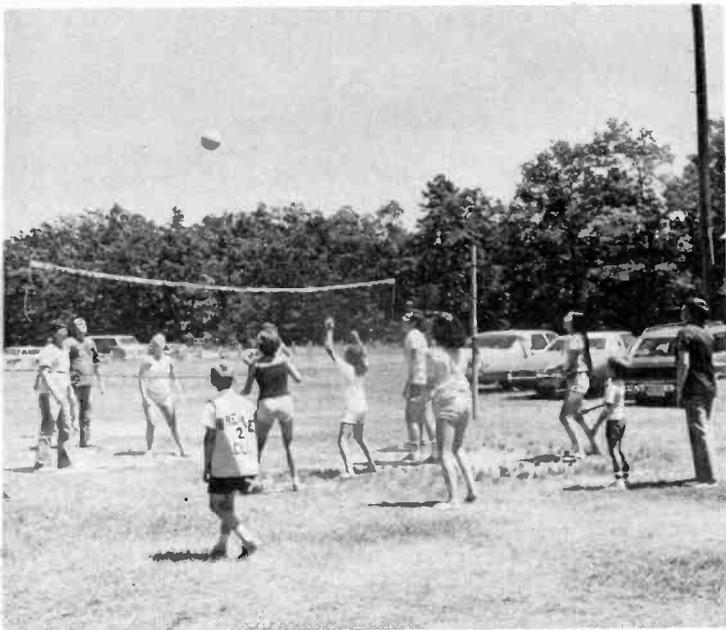
April edition of S9. If you have purchased your copy early or received it in the mail, you may well be reading this on a blustery March Day.

More than likely, your mind is anywhere but on jamborees. You may be thinking of that cozy fire at home, or whether you car can move through the still snow-covered roads of Maine and Montana. A jamboree? That's a summer event.

Lesson number one is simply this. If you are planning you're first jamboree, begin planning it now. Or else, forget it.

That's the advice of several persons who have successfully planned day-long picnics, coffeekbreaks, jamborees—call them what you will—that are open to all Cbers, not just club members.

"This is the third one we have had," said Little Red, whose real name is Paul Ling and who is the president of the Breakers 12 club of Brick Township,



Adults playing volleyball at Breakers 12 club jamboree.

N.J. "Now, I can do it in just two months because we do everything pretty much the same way."

Ken Eith, the president of the Brick Township Veterans of Foreign Wars, sponsored a jamboree about a month ahead of Breakers 12. Eith, undertaking the venture for the first time, had an artistic success. But he had a financial failure.

"Part of the problem was time," he said. "I started this six months ahead of time but then I was sick and out two months. No one picked it up and we were short of time. We didn't get everything done."

Time is necessary to do two things: the first is to arrange for the various things Cbers want at jamborees and the second is to let Cbers know you have them.

It takes at least three months to publicize the event and four makes it safe. And it cannot be publicized until all arrangements are made.

... Use S9 READER SERVICE.



Lorraine Henriques dances with her father, John Rezanka.

A few years ago, when single-day jamborees were still somewhat uncommon, it took relatively little to attract hobbyists. Some refreshments, music and equipment displays were all that was needed.

Times have changed. Every jamboree has those things now. They also have trophies for the oldest licensed Cber and the clubs that come the longest distance and with the most members.

Those were the essential items when jamboree sponsors had only to convince Cbers to attend a jamboree. The chances were excellent the jamboree in question was the only one in the area.

Now that almost every organization is willing to risk its time and money sponsoring a jamboree, the question of competition enters the picture. The Cber must be convinced not only to attend a jamboree but your jamboree.

"We offer a raffle where people can win all kinds of CB equipment," said Ling. "The tickets are cheap and there are enough prizes so that many people can win."

The prizes offered by Breakers 12 cost \$1,700 and that does not include a special raffle for an \$800 deluxe, SSB base station. It sounds expensive but it's not.

The base station was sold in a separate raffle with only 1,500 tickets (at \$1 each) in the pool. By work-

The long food bar at Breakers 12 jamboree.





Paul Ling, the president of Breakers 12, surveys trophies and prizes. His handle, naturally, is Little Red.

ing through a club member who also was a CB dealer—and almost every club has a working relationship with a dealer—Breakers 12 was able to purchase the radio wholesale.

And it was the only piece of equipment for which the club paid. Everything else was donated.

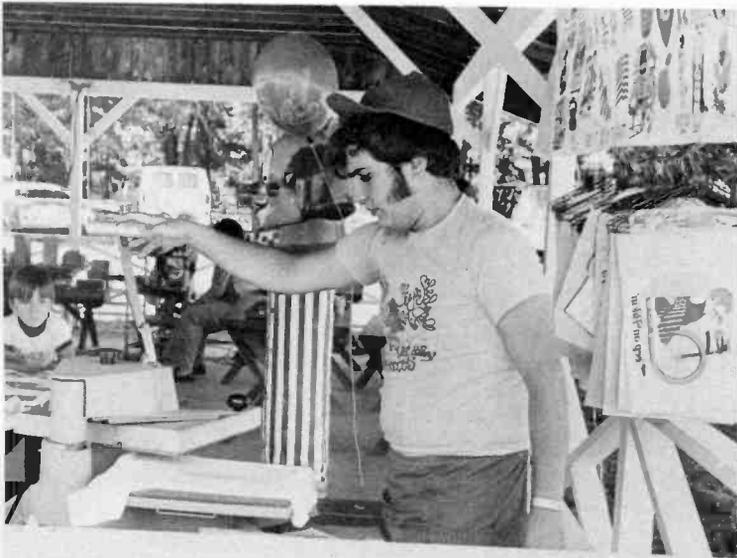
“We went to the stores selling CB equipment,” said Ling. “Almost everybody was willing to help. We just wrote a very nice letter explaining what we are and what we do for the community. The people were glad to help.”

Like most CB clubs, Breakers 12 is more than just socially oriented. It’s a community service club, helping police control traffic at parades and municipal events and offering its help to other organizations that need communications for their events.

Of course, not all the goodies were sold by the raffle. Many were given as doorprizes. The admission tickets had stubs that were thrown into a barrel. That offers the prospect of something for nothing. A guest buys a ticket that pays for his food and drink and may win a valuable CB accessory.

After you have decided what to have, the next step is to select a location. Remember, it’s a day-long event

Harry Siegel, Lakewood, selling T-shirts. With each shirt, a customer selects a transfer that Harry irons immediately. Many transfers are related to CBing.



and babysitting fees are expensive. Adult CBers will be bringing the kiddies. Every club welcomes children but what is important is how they plan for them.

“I went to a jamboree once and it was just awful,” said the Green Beret from Portland, Oregon. “They welcomed kids but the only provision for them was soda instead of beer.

“Everything at the jamboree was radio-oriented. A CB radio will only hold the attention of an 8-year-old for so long. Then it’s ‘Daddy, I want to go home, time.’”

Daddy, like every daddy who has been nagged often enough, went home. And he didn’t return to that jamboree again.

He also has a popular jail, an idea suggested by club member Errol Bowman, the Calico of Cookeville, Tenn. When Bowman moved to Tom’s River, N.J., he brought the idea with him. For 25 cents, anyone can jail someone for five minutes. Bail is 50 cents and a day-long,



A CB radio display by Sword’s electronics. The company came to both the VFW and Breakers 12 jamborees.

Get-Out-Of-Jail-Free card costs \$1.

Ling’s picnic is held at the same spot every year. There are swing sets and other gym equipment for the youngsters and volley ball equipment for older children and adults.

“It takes about \$10 worth of wood and chicken wire to build it and you get that back in a few minutes,” said Bowman. “Wives jail their husbands; husbands jail their wives and they both jail their kids.”

Most CBers also enjoy jailing Smokies and there should be one at every jamboree. In some localities, it’s required. Even if it isn’t, however, hire an off-duty policeman and advertise his presence in flyers you print to publicize the jamboree.

It means a lot to CBers driving to a jamboree with mobiles in their cars to know the parking lot will be protected and their CB set will be in their car when it’s time to leave.

If possible, select a location that has an alcohol license. That means beer can be purchased by the keg. That's a lot cheaper than buying it by the can or bottle. And the club only has to pay for the beer that actually is consumed.

It's no fun to overbuy and have 30 cases of beer left at the end of the day. And it's even less fun to run out of beer at 3:30 p.m. on a 95 degree August day.

In addition to the special events, be sure to cater to the CBers themselves. Give dealers plenty of advance notice and invite them to participate. Keep the space fee low or, better yet, offer it free.

"We once made a bad mistake with dealers," says San Francisco's Mashed Potato. "We thought we could charge a lot for them to set up because we had just the kind of audience they like.

"You can do that at the professional things, the weekend jobs that draw thousands and thousands of people. But not at ours. We don't draw that much and they don't really sell. They come as a courtesy. But we need them to attract other CBers."

Finally, plan realistically. Eith made a mistake by planning for 1,000 persons. His jamboree, although it was well organized, drew less than half of that.

Ling plans for about 450 and he offers advance ticket sales. When sales reach 450, he either orders more provisions or cuts off sales.

"We don't want it big enough so it gets out of hand anyway," he says. "And by planning only for 450 at first, we know we cannot lose too much."

With all the arrangements made, the next thing is publicity. CBers read CB magazines like S9. As a service to its readers S9 offers a calendar and will include your jamboree for free. But the notice must arrive at least 12 weeks in advance. Magazines are printed ahead of time and the dates are not flexible. It's another reason for advance planning.

Your local newspaper may have a CB column. If it does not, it may publicize the event in its news columns.

How about other clubs? Do you have addresses? Then send flyers. And don't forget the radio itself. Talk about your jamboree but remember the FCC rule against selling anything.

That means simply this: Do not try to sell tickets to your jamboree on the air. It's illegal.

With proper planning, the worst your jamboree could do is break even. And breaking even is more than sufficient for a day planned as a good time for everyone, even club members.

(By the way, don't forget club members. Arrange work shifts so they, too, can have some fun or they won't be so willing to pitch in next year).

If you are lucky enough to make a profit, well, that's even more profitable.

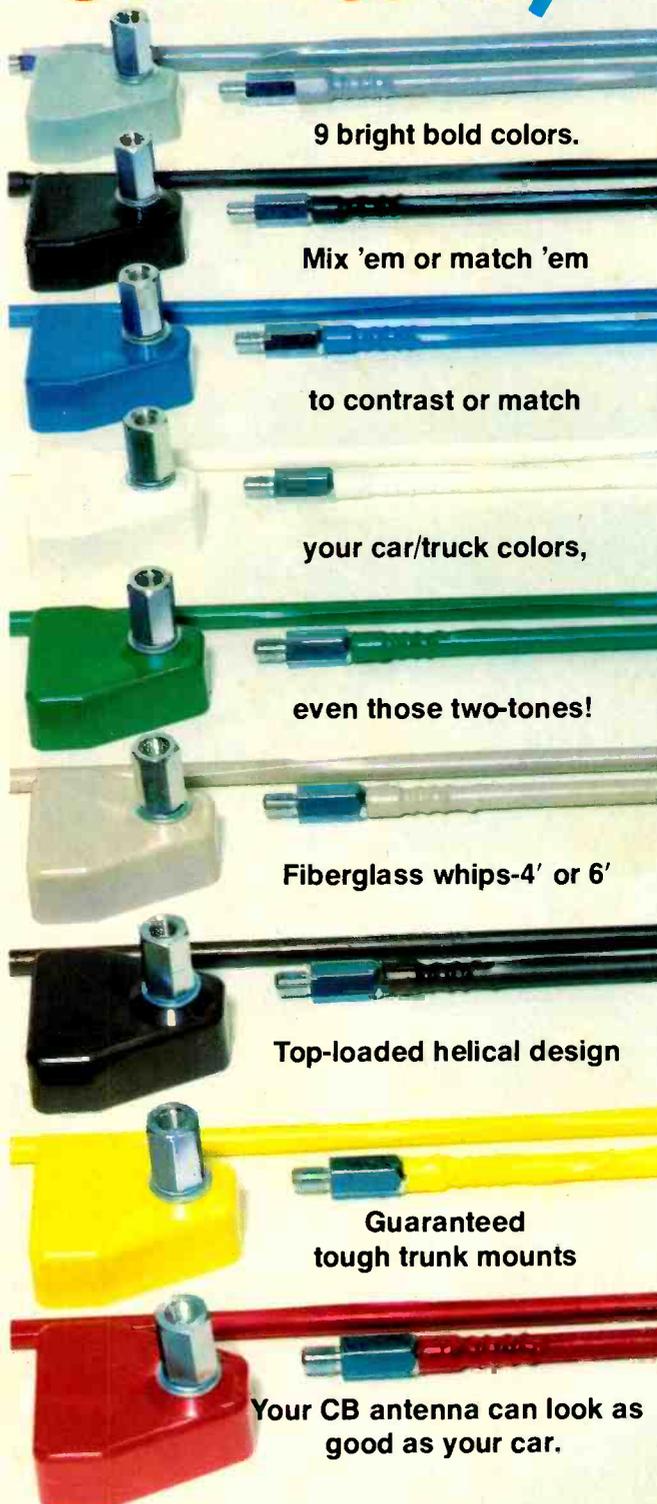
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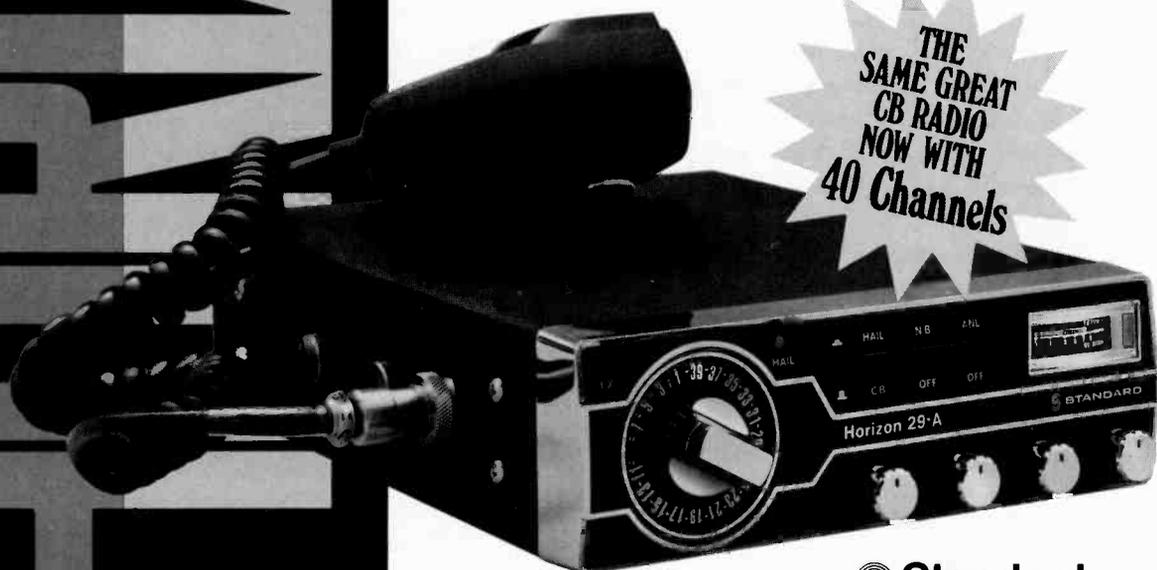
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Get the facts about the **Horizon 29-A**, the impressive new 40 channel CB from Standard. **Horizon 29-A** Full 40 channel operation from an innovative "Phase-Lock-Loop" frequency system. **Horizon 29-A** The CB radio with "Hear Power" receiver performance. **Horizon 29-A** Speaks with maximum legal power output. **Horizon 29-A** Special 10 watts of audio power adds fantastic "kick" to outside speaker. **Horizon 29-A** Microphone in-the-mike gain control for convenient modulation adjustment. **Horizon 29-A** Remarkable "on frequency" stability even at extreme temperatures. **Horizon 29-A** Outstanding receiver selectivity/sensitivity with range extending image rejection. **Horizon 29-A** All solid state for reliable performance. **Horizon 29-A** Positive or negative ground. **Horizon 29-A** Switchable Automatic Noise Limiter and Noise Blanker. Use both simultaneously.

THE GREAT
CB RADIO
NOW WITH
40 Channels

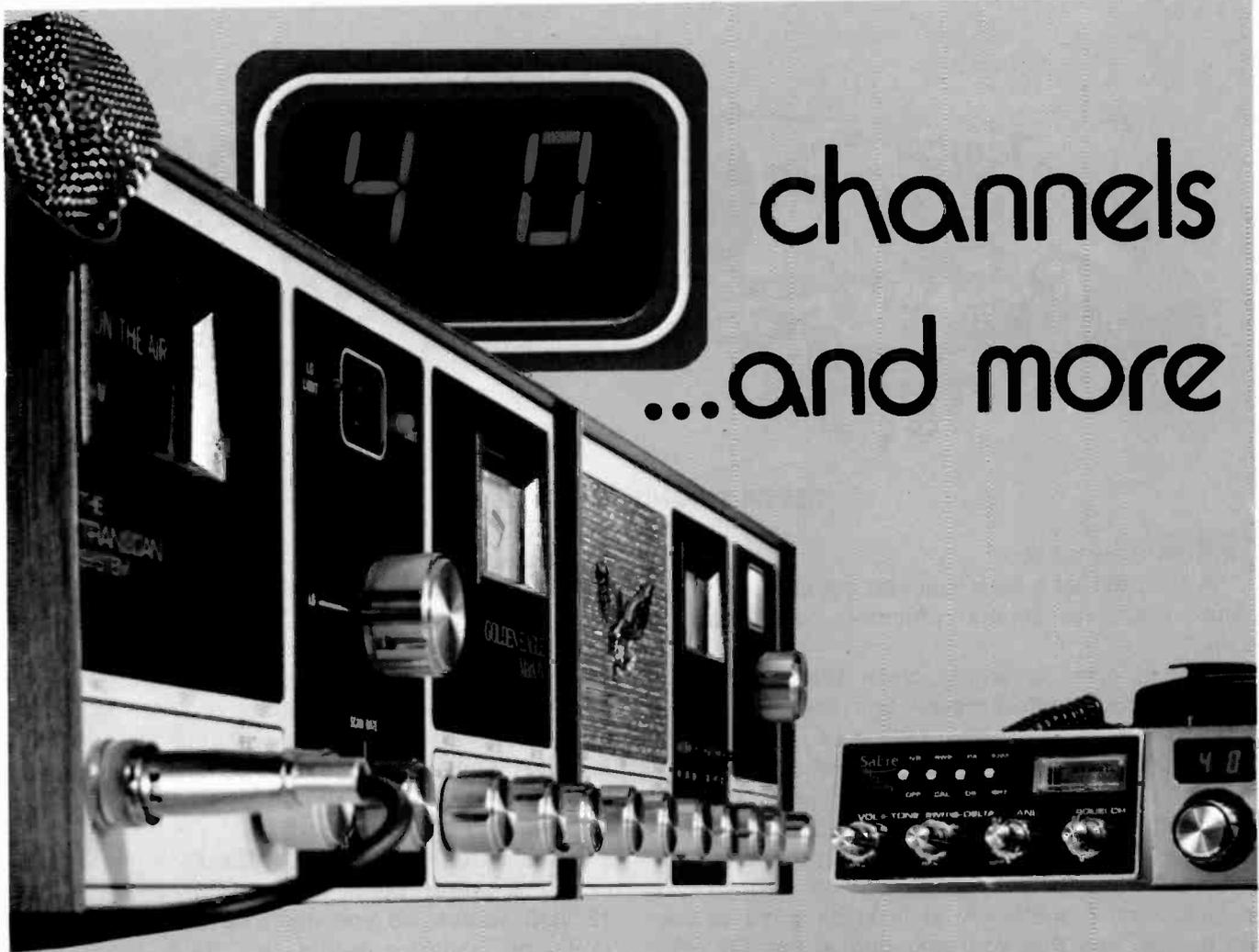


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This device has not been approved by the FCC. This device is not and may not be offered for sale or lease or sold or leased until the approval of the FCC has been obtained.

For Information About Our Advertisers . .



channels ...and more

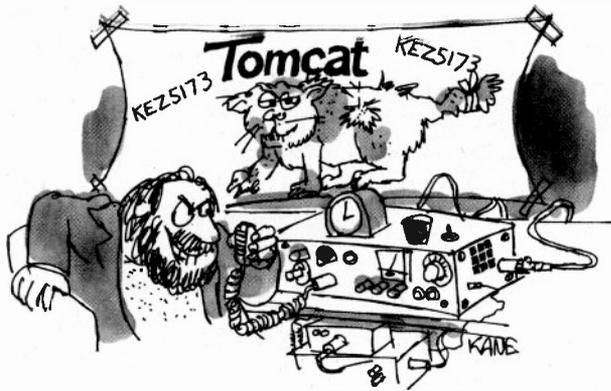
Browning is proud to be among the first to bring you 40-channel mobiles and base stations. Beyond their 40-channel capability, these new radios embody electronic innovations specifically designed to make your CB hours more pleasurable and rewarding. In the new Sabre, you'll find phase-lock loop circuitry (PLL) and LED digital readout — in the new Golden Eagle Mark IV are Browning engineering advances such as a revolutionary "Transcan System" which **lets you turn a knob and electronically sweep all transmit frequencies!**

If you're serious about CB, discover what Browning performance and quality are all about — you'll soon understand why CBers have relied upon the name Browning since Citizens Band began almost two decades ago.

Write for illustrated literature and specifications or see Browning's entire line of products at your nearby CB specialty store.

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TOMCAT'S Product Reports

THE DX MAGNUS MIKE PREAMP

"HOW'S my audio?"

"Yeah, clear as a bell—but you got stepped on—wanna switch to another channel—can't hear ya at all."

So what good is crystal clear audio if nobody can hear you? Unfortunately this seems to be a problem which faces more than a few CB'ers. Especially painful when that's the first signal report you got after plunking down lotsa greenstamps for that new *super rig*—the one everybody told you would *sound like a million bucks*. Forget the million bucks—at this point you would be happy if it sounded like 5 watts—or at least as good as the old rig you had that you unloaded at the CB jamboree for \$15!

Well, all isn't lost—in fact, with very little effort you can get something called *DX-MAGNUS* and end the problem in short order. This gizmo will take the output from any CB microphone and fix it up to *fully* modulate CB rigs insufficient preamplification to provide you with full modulation. No more will you have to be faked out by the kid with the walkie-talkie down the block—now you can regain your status as a major factor in community CB matters. And you can use the *DX-MAGNUS* in your mobile or your base!

And one of the nice things about the *DX-MAGNUS* is that it will work with just about any CB rig, including rigs having high or low impedance dynamic, ceramic, or crystal mikes. A front panel meter and level control permits you to tune the *DX-MAGNUS* to the best setting for the combination of voice/mike/rig to make you sound as good as gold.

Another good feature is that the output of the *DX-MAGNUS* is so easily wired into so many different CB rigs, regardless of whether or not they have relay or electronic switching, or even some of the freaky new "special" switching circuits which don't comfortably fit into either of these two categories. The book supplied with the *DX-MAGNUS* contains highly detailed instructions for connecting this thing to virtually all of the current batch of CB rigs.

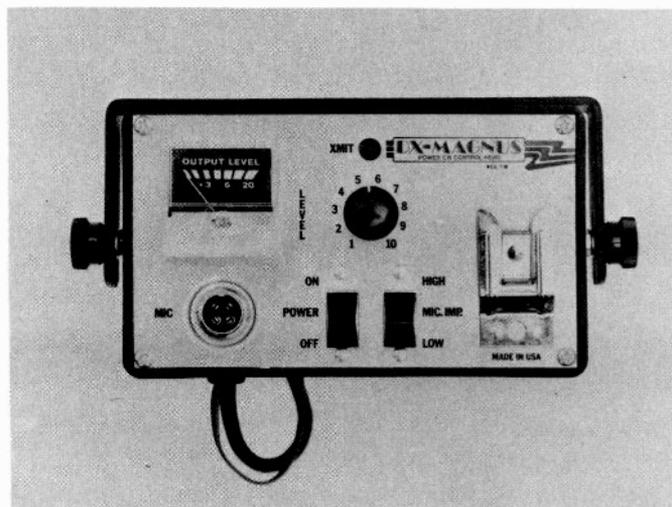
If you're running the *DX-MAGNUS* in your mobile unit, the power connections simply hook to any 12 VDC source, so you don't have to worry about replacing batteries within this thing since there aren't any. For use at a base station, get your power from any filtered 12 volt source.

Some of the other convenient things about the *DX-MAGNUS* include the flexible mounting bracket which permits installation on the top of the dash, below the dash, or in a number of positions on the face of the dash. It has a red *transmit* light, a mike clip, and a diode to protect the incoming power circuit from incorrectly connected wires (if you hook the think up *sideways* you won't pop any of the semiconductors—although the instructions are

so detailed that you'd have to go out of your way to botch the hookup).

For those of you who are into statistics, the frequency response is 300 to 3,000 Hz, the voltage gain is 26 DB.

I found the hookup to be minimal—you'll have to remove the plug from your mike and replace it with the plug provided with the *DX-MAGNUS*; then you'll have to connect your old mike con-



nector to the output of the DX-MAGNUS. Other than the power connection, that's all there is to it.

I found that the DX-MAGNUS got put a bit of hair on the chest of a rig with which I had been moderately dissatisfied; the old familiar complaint—I sounded clear as a bell but nobody could copy me through the other locals. Well, with a bit of *punch* in the audio of the rig to bring it up to the full authorized modulation level I found that I didn't have to sit there humbly waiting to use the channel when everybody else with a decent signal had elbowed in ahead of me.

So, if you've got that *old familiar complaint*, I think you might investigate the possibilities of the DX-MAGNUS. I liked it.

It's manufactured by Global Electronics Inc., 1805 East 5th St., North Little Rock, AR 72119.

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Your Help Is Needed!

The Associated Humane Societies, in an effort to prevent the needless suffering of animals injured on the roads, is trying to reach CBers. A statewide network would be formed to set up emergency service whereby injured dogs, cats and wildlife can be saved from an agonizing death on the roads when there is no one available to pick them up. If you care about animals, won't you please help? For further information on this volunteer animal ambulance corps, please write **Roseann Trezza, Asst. Director, the Associated Humane Societies, 124 Evergreen Ave., Newark, NJ 07114** or the Society's **Monmouth County Branch located at 2960 Shafto Rd., New Shrewsbury, NJ 07724.**

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- Exclusive automatic noise limiter circuit
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Kris 40 Channel CB personal communications systems are here. They have everything you've waited for, and more. KRIS XL40, dollar-for-feature the best buy for '77: switchable ANL, CB/PA, internal/external speaker switching, dual-functioning S/Rf meter and the exclusive Kris S-Meter jack for larger extension meter. KRIS XL45, with the valuable and convenient "talk back" intercom — great for RV's; and digital LED readout, 3-position noise control, CB/PA, internal/external speaker switching, delta tune and a dual-function S/Rf meter. Brighten up your dash with our top-of-the-line KRIS XL50, illuminated S-Meter, Power Meter, Modulation Meter, "Receive" and

"Transmit" lights, "talk back" intercom, delta tune, noise blanking, tone control, PA/CB, internal/external speaker switching. KRIS 40 CHANNEL CB's . . . everything you've waited for, and more. See your KRIS Dealer today for a free demonstration. FCC Type Accepted.

Performance Never Looked So Good!

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Cedarburg, Wisconsin



XL50

XL45

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OUTSIDE ANTENNA NOT PERMITTED?

here's your answer!

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"HOMING PIGEON"

PATENT APPLIED FOR By New-Tronics Corp.



"the home of originals"

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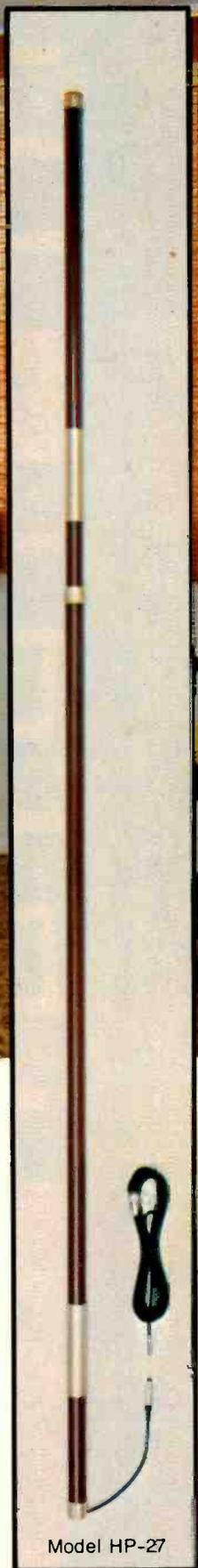
AVAILABLE FROM ALL DISTRIBUTORS WHO RECOGNIZE THE BEST!

The "Homing Pigeon" is your antenna answer to operating CB from any location, condominium, office, home, apartment, motel etc. No installation required; antenna is supported between floor and ceiling like a pole lamp. Communications range is equal or superior to better mobile installations. The "Homing Pigeon" incorporates a unique method of easily and quickly adjusting SWR. One setting covers all channels for outstanding performance with any 23 or 40 channel CB radio, AM or SSB. Antenna is supplied complete with 17' coax, connectors attached, ready to use. Model HP-27.

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AVAILABLE IN CANADA FROM
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Model HP-27

CB Jamboree

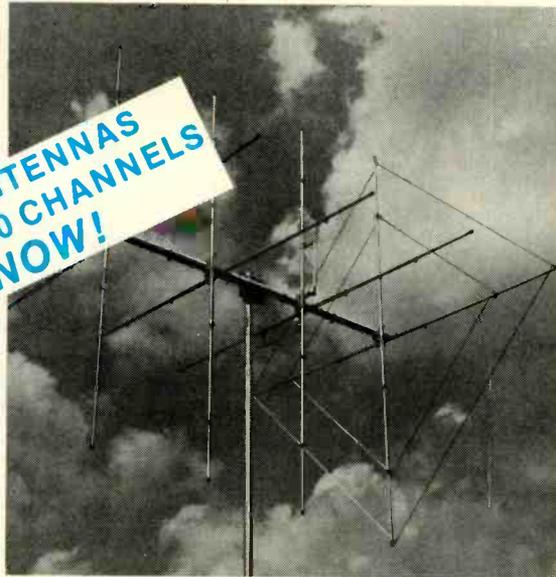
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COVER 40 CHANNELS
NOW!



EXTRACT YOUR SIGNAL from the crowded confusion of today's CB channels.

Superfire's engineering features horizontal, vertical or axial polarization and a big **12.5 dB** gain to beam your signal through, under all conditions. Exclusive twin loop reflector reduces "back door" interference up to 30 dB for higher quality communications.

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PLUS these exciting Power base Beams

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See your local dealer today! . . . or write for free catalog C-9 listing all mobile and base antennas.



P.O. BOX 4680, MANCHESTER, N.H. 03108

COMING EVENTS!

If you wish your Jamboree or Coffee Break listed in this column, the information must be sent to S9 at least 4 months in advance.

APRIL

Grand Rapids, Michigan, Third Annual Swap & Shop at the Northeast Jr. High School. Saturday April 2, at school cafeteria, 1400 Fuller Ave., N.E. For information contact Grand Rapids React, P.O. Box 2402, Grand Rapids, Michigan 49509.

Lake Charles, La. Third Annual Jamboree, April 2 & 3rd at Habibe Shrine Temple on Pack Road off Old Hwy 171. For more information contact Charles Chaparral, 1630 Watkins, Lake Charles, La. 70601, 318/436-6213.

Texarkana, Texas. Twice As Nice 2nd Annual CB Jamboree, April 2-3, Four States Fairgrounds. Sponsored by Twin Cities CB Club. For more information contact Chairman Bennie Cornelius, Rt. 2, Box 347, Texarkana, Texas 75501.

Lake Jackson, Texas Jamboree, April 3, Lake Jackson Farms Pavillion, Highway 332. For more info contact John Stanford, Sr., P.O. Box 186, Lake Jackson, Texas 77566, phone 713/265-4005.

Hopkinsville, Kentucky, 7th Annual Coffee Break, April 3, Western Kentucky Fair Grounds Convention Center. Monitor Channel 11-KIZ-1934. For more information contact Hopkinsville CB Club & React, P.O. Box 112, Hopkinsville, Ky. 42240.

Milford, Illinois, Fourth Annual "Spring-time" Coffee Break, April 3, Milford Grade School, Ill. State Route 1. For more information contact: Faye M. Thomas, 208 S. Grand St., Milford, Ill. 60953.

Lackawana, New York, April 30th, Annual Jamboree, at Col. John B. Weber Post No. 898, 2909 S. Park Ave., Rt. 62, 1/2 mile South of Ridge Rd. Erie County Hawks, Inc., Monitor Ch. 10, KEK-0787, call 675-0517. Chr. William Baker.

Adrian, Michigan, Coffee Break & Dance. KFM 0900 Lenawee Co. REACT. April 16th at Adrian Armory, 230 W. Maumee Street. For information, Steven McGee, 1109 E. Butler St., Adrian, Mich. 49221.

(continued on page 55)

The Sonar FS-2340 CB base station is, perhaps, the world's only limited-edition citizens band radio. We build fewer than 10,000 of these extraordinary pieces of professional communications equipment each year.

That's because each unit is painstakingly assembled by our highly-skilled technicians to the most exacting specifications in the industry. With the same hand-crafted care and attention for which Sonar has been famous, for over thirty-five years.

Only the finest available compon-

ents go into the 2340's sophisticated circuitry.

The 2340 can field even the weakest signal. It will zero-in on any of its forty channels with unparalleled reception. Without adjacent-channel spill-over

Its extremely high audio output will come through loud and clear in even the most noisy environments.

And its unique 12-tube design makes it the most rugged, long-lasting CB radio on the market (in fact, 99% of all Sonar FS-model CB's sold since

1964 are still on the air today.)

Which is why so many discriminating CB'ers throughout the country use Sonar CB's as their base stations.

To learn more about this exceptional citizens band radio, contact your professional communications dealer. Or write us directly.

Like the finest automobile, you can expect to pay more for the opportunity of owning a Sonar FS-2340.

But it's a small price to pay for what is, quite possibly, the best CB radio the world will ever know.

SONAR MAKES ITS CB RADIOS LIKE ROLLS ROYCE MAKES ITS CARS.



Sonar Radio Corporation, 73 Wortman Ave., Brooklyn, New York 11207, (212) 649-8000

Rig
your
rig
right.

Plug in with Amphenol® interconnections.

You laid out good money for that rig. So don't skimp on the interconnections. Do it right. Get Amphenol products. The quality links from antenna to set, from mike to set—and everything in-between. All are rated for maximum legal CB power, many for ham kilowatt. Look for them at your dealer. (See opposite page).

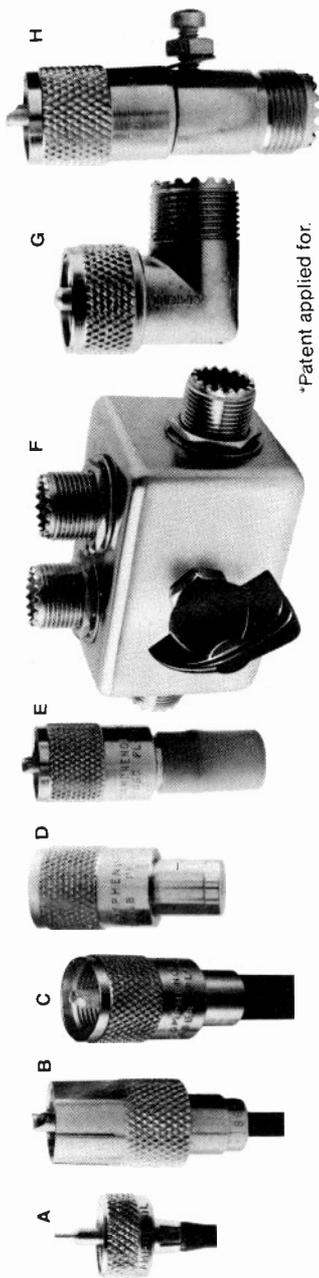


The right
idea at the
right time.

AMPHENOL Connector Systems

**BUNKER
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*Patent applied for.

There's more. Including Amphenol angle adapters (G), lightning arrestors (H), cable assemblies, alternator filters, receptacles, etc. Ask your dealer for your free copy "The How To's of Interconnection."

AMPHENOL Connector Systems[®]
BUNKER RAMO

- A. **Amphenol FCP* connectors.** Install your antenna quick and easy. No special tools. No soldering. A knife and pliers do the job. No separate reducing adapter to buy, either.
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- C. **Amphenol 83-ISP connectors.** The standard PL-259 of the industry.
- D. **Amphenol dummy loads.** Terminate your rig in 52-ohm load for adjustment and repairs. Ideal for all CB and QRP ham rigs. Prevent unlawful transmissions when tuning or testing.
- E. **Amphenol power output indicators.** Show transmitter performance carrier balance and modulation. For CB and ham HF QRP rigs.
- F. **Amphenol 2-way and 3-way antenna switches.** For maximum operating convenience and no lost contacts while fumbling with connectors. Metal case for maximum shielding, better impedance match.

COMING EVENTS

(continued)

Greenfield, Indiana, 5 Watters Jamboree, April 17, Greenfield Fairgrounds, 4-H Building. For more information contact, Al Simpson R.R. 1, Box 317A, Reelsville, IN 46171. (317) 672-8367.

Bronx, New York, Super CB Jamboree, April 17th, Desert Inn, 30-80 White-stone Pkwy. Contact: American CB Radio Club Inc., P.O. Box 321, Bronx, New York 10469.

Greenville, Ohio, the Midwestern Eleven Meter Emergency Service will hold its 12th Annual Citizens Band Jamboree on April 17 in the Coliseum at Darke County Fairgrounds. For more information write P.O. Box 410, Greenville, Ohio 45331.

Brattleboro, Vermont, Coffee Break. April 23, American Legion Home. Sponsored by State-Line Border Breakers CBers Club. Benefit RESCUE, INC., a non-profit emergency service. For more information contact Leo Thomas, Wood-lawn Lane, Hinsdale, NH. 03451.

Manitowoc, Wisconsin, Coffee Break-Dinner & Dance, April 30, Club Bil Mar, Hwy. 141, sponsored by West of the Lake CB, P.O. Box 163, Manitowoc, WI 54220.

MAY

Johnson City, New York, Annual Coffee Break, May 1st Lutheran Fellowship Center. Exit 71 N. from Rt. 17, North Stella Ireland Rd. #3, .8 mile. For information: Susquehanna Valley CB Club Inc., Box 364, Vestal, N.Y. 13859.

Columbus, Indiana, Jamboree, May 7 & 8th, Barthomeu Country 4H Fairgrounds, Junction US 31A South and State Rt. 58. Sponsored by Town & Country Citizens Band Radio Club Inc. Contact Floyd Whitehead 1-812-372-3524.

Bronx, New York, Super CB Jamboree, May 15th Desert Inn, 30-80 White-stone Parkway. Contact: American CB Radio Club Inc., P.O. Box 321, Bronx, N.Y. 10469.

Church Hill, Tenn., Second Annual Jamboree of Patriots Communication Club Inc. May 20-22. Seven miles north of Kingsport on Highway 11-W. For more information write Patriots Communications Club, P.O. Box 142, Church Hill, Tenn. 37642.

Halifax, Pennsylvania, 3rd Annual Peter's Mt. CB Coffee Break, May 22, Halifax Area Park. For more info contact Larry Troutman, President, RD #2, Halifax PA 17032.

Florence, Alabama, Jamboree and Coffee Break. May 28 & 29th, Tri-Cities CB Club at Florence-Lauderdale County Coliseum, 702 East Spring St. Con-

tact: James Stough, c/o Tri-Cities CB Club, P.O. Box 2281, Florence, Ala. 35630.

Madison, Illinois, 1st Annual Break of Flipper-Tail CB Club. May 29th, K roation Home, 1000 Madison Avenue (Route 3). For more information write: Bill Skinner, President Flipper-Tail CB Club, P.O. Box 1205, Granite City, Illinois 62040.

JUNE

Ottumwa, Iowa, 2nd Annual Armadillo Flats National Jamboree, June 3rd-5th, Ottumwa Coliseum. Hosted by Armadillo Flats Iowa. For more information contact Armadillo Flats, Inc., P.O. Box 313, Oskaloosa, IA.

Great Bend, Kansas, Jamboree, June 4-5. Sponsored by Kansas Flatlanders C.B. Club. For more information contact Bob Shanks, The Budman, 1209 8th, 792-2209 or Box 114, Great Bend, Kansas 67530.

Wichita, Kansas, 3rd Annual Good Guys Jamboree. June 17-19th, Cotillion Ballroom, 11120 W. Highway 54. For more information contact: William Webber, Chairman, P.O. Box 1694, Wichita, Kansas 67201.

Munice, Indiana, June 25 & 26th. 1st Annual Magic City Modulators Jamboree and Coffee Break, Delaware County Fairgrounds. For information contact Gloria King, 406 E. 3rd St., Munice, Ind. Phone 289-8701.

Newton Falls, Ohio, First Annual Jamboree of Ohio Community Center, June 25-26. Sponsored by the Blue Knights International Sidebanders Ass'n. For more info write Blue Knights SSB, P.O. Box 126, Niles, Ohio 44446.

JULY

Beatrice, Nebraska, NEB Sidebanders Club 1st Annual Jamboree, July 2-4 at Gage County Fairgrounds. For more information contact: NEB Club, Box 81, Holmesville, Neb. 68357.

Whitney Point, New York, Electronic Show and CB Jamboree, July 8-10th, Whitney Point Fairgrounds, Rt. 11, Exit 81. For more information: International Order of Chiefs and Squaws QSL Club, P. O. Box 25, Binghamton, New York 13903. (607) 722-3536 or 772-8860.

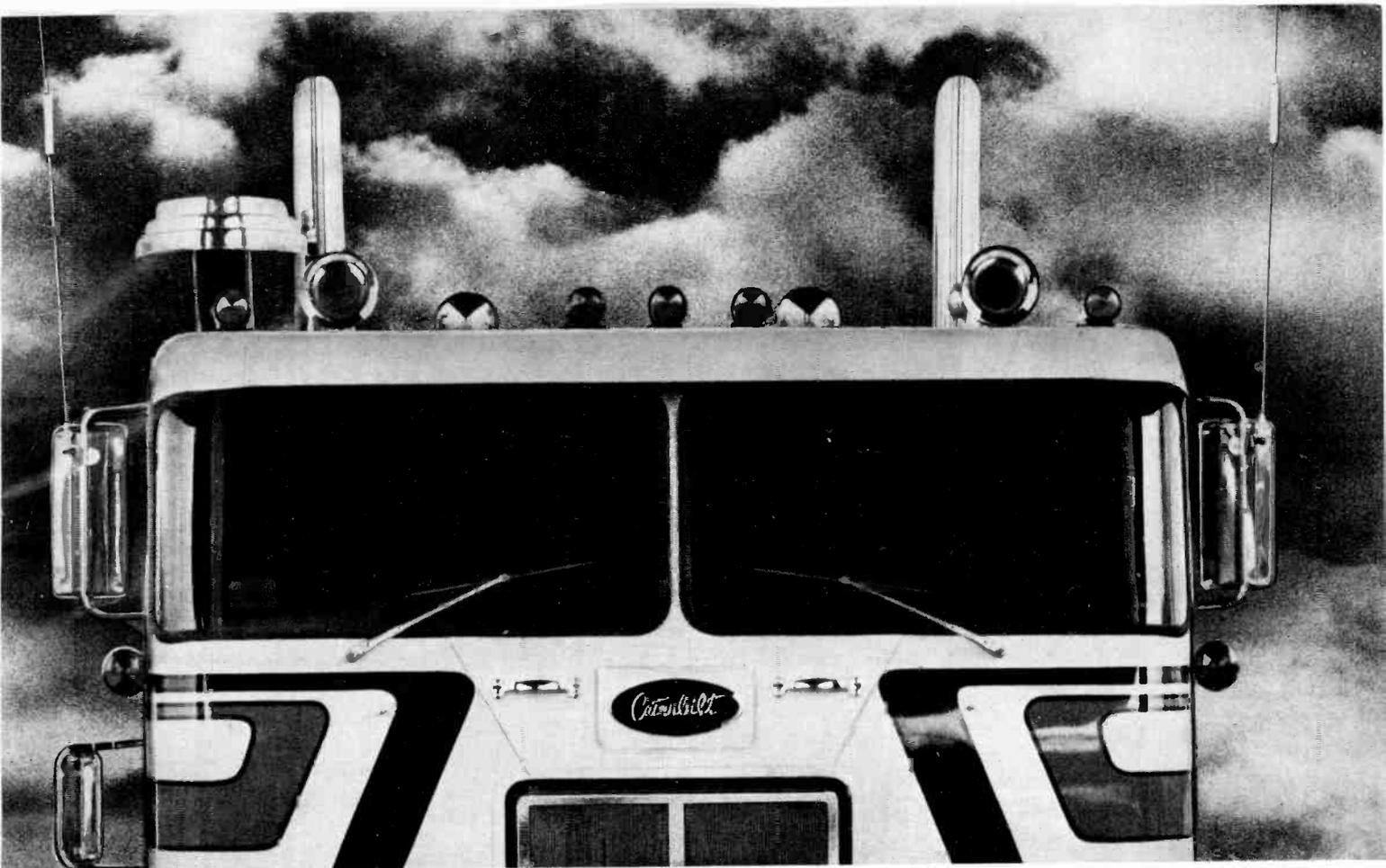
Bristol, Ind. Jamboree, July 16-17, Eby's Pines, Rt. 2. Junction U.S. 131 & Interstate 80-90. Contact Chairman, R. M. Shipman, P.O. Box 7092, Toledo, Ohio 43615.

Jacksonville Beach, Florida, July 16 & 17th, Jacksonville Beach Coliseum. 4th Annual Voice of the Beaches Jamboree. For information: Bill Jackson, P.O. Box 50906, Jacksonville Beach, Fla. 32250 or 904-285-2937.



**"FROM TWIN MAMAS
TO LUNCH BOXES, WE HAVE
HARDWARE
FOR EVERY APPLE."**





Loosely translated, that's CB talk for: "Sparkomatic has CB twin trucker antennas, CB base station antennas, CB instant mount antennas like magnet mount and clip ons, CB motorized and manually operated disappearing antennas, CB indoor and outdoor public address speakers, CB external speakers with tone purifiers, CB external speakers without tone purifiers and CB converters.

Not to mention, a complete line of 40 channel in-dash and under-dash mobile transceivers and base station units. Including 40 channel transceivers with memory control buttons, digital readouts and other up-to-the-minute innovations."

In other words, Sparkomatic has the very best CB equipment. And enough CB equipment to meet the needs of every CB'er.



SPARKOMATIC



ON THE COUNTERS



40-CHANNEL BASE STATION WITH PHASE-LOCK-LOOP

The Hy-Gain VII (3087A) is a compact, solid state base station radio that transmits and receives on all 40 channels. It features advanced Phase-Lock-Loop circuitry and built-in ANL (automatic noise limiter) for surprisingly quiet operation.

There's also built-in microphone preamp, lighted S/R/F meter and top mounted speaker for strong up-front sound. A high quality push-to-talk microphone and jacks on the back for external speakers.

The 3087A has a full 4 watts RF output, the legal maximum on AM. Plus fine sensitivity (0.7 uV at 10 db (S+N)/N). And it's all enclosed in simulated walnut wood grain side paneling with unique lay-down cabinet styling. So all the controls are easy to see and easy to use.

Packed with sophisticated features of many higher priced models, it will be available at \$209.95 manufacturer's suggested retail price. Mark number D07 on Reader Service Card.

MESSENGER 191

The E. F. Johnson Company recently announced the availability of the Messenger 191 23-channel CB mobile radio with phase lock loop circuitry. The new



model features an exclusive Johnson "X300D" IC chip that provides digital synthesis circuitry of a type not available in any other CB radio. It is a forerunner of an entire family of radios with PLL circuitry to be offered when 40-channel service is permitted.

"Johnson's exclusive X300D chip provides precision frequency control for every one of the present 23 CB channels and will be used in other model radios when 40-channel service becomes available. Additionally, the advantages of the X300D chip, which has well over 300 discrete components, are its long term frequency stability and its reliability," explained Gerry Mills, Johnson's Vice President of Marketing.

In addition to its X300D control circuit with phase lock loop, the new Messenger 191 offers all of the automatic performance features, including built-in electronic speech compression, that have become the hallmark of Johnson CB radios. The new radio also features a bright red bar-graph LED meter (another Johnson first) which allows the user to check the unit's received signal strength or relative transmitter power output at a glance.

The Messenger 191 radio is backed by a full one-year parts and labor warranty and by the company's country-wide network of more than 1000 Authorized Service Centers.

For further information contact: The E. F. Johnson Company, Waseca, Minnesota 56093, or mark number D18 on Reader Service Card.

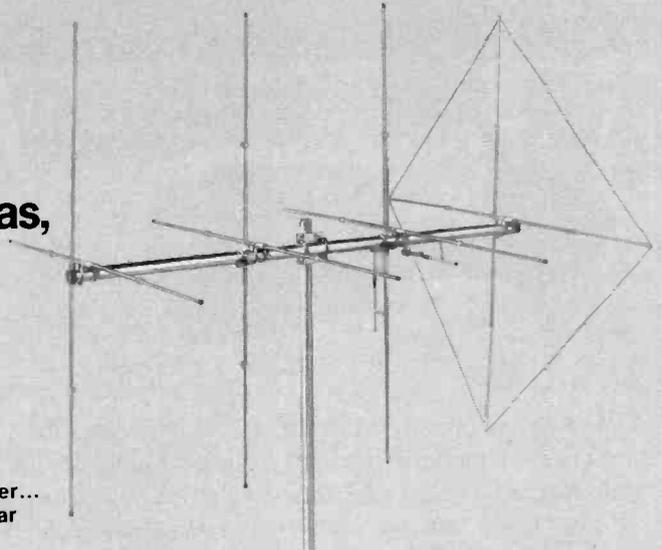
DIGITAL READOUT MOBILE CB TRANSCEIVER

The Royce Model 1-662 incorporates THE WIRELESS chassis—Royce's revolutionary innovation in citizens band radio design. THE WIRELESS is a manu-

A ONE SOURCE SYSTEM

With Wilson Antennas, Towers, Rotors

A Star In the Sky...
To Deliver your Thunder...
8 Element Shooting Star



An industry first from Wilson, known for almost a decade for excellence in CB Antennas and Amateur Equipment: a complete system to put your thunder where it counts.

For the Buyer who insists on the best for less, is the Wilson Line of base and mobile antennas, crank-up towers, and directional rotors.

With Dual Parasitic Excitation, the size of your antenna is increased electrically. Wilson's unique design, using DPE, combines the best advantage of the Yagi Antenna with the best of the Quad unit. Thus you get more power out the front door...up to effective power level 60 times the power of the transceiver itself; with less interference..

40 channel capacity...All Wilson antennas provide the famous 2,000 watts handling capacity, adjustable gamma match, lowest SWR, heavy wall aircraft aluminum tubing, no holes drilled in elements, solid fiberglass reflector arms, and on and on.

Our crank up towers are unique too! Up to 64 feet high, allows access to antenna and rotor from ground or roof; available in free standing or guyed models; one man raising fixture options, you name it we've got it. Features include galvanized steel tubing, tested to handle 10 sq. ft. of antenna at 50 mph wind, and the 800 lb. winch is easy to raise and has lockable security feature; great looking for the ecology minded, and the price makes it easy to buy.

Rotors Too! They'll easily turn the biggest antennas...for pinpoint accuracy...capable of handling antennas with wind load areas up to 25 sq. ft., with a braking system four times that of other rotors on the market.

For a complete catalog of these Wilson products: C.B. Antennas, Crank-Up Towers, Rotors,



WR1000



WR500

See your local dealer, or write:



Wilson Electronics Corp.

4288 S. Polaris Avenue, Las Vegas, Nevada 89103



facturing procedure utilizing automated assembly of modules on modern production lines. Each module is automatically tuned and tested to strict computer programs. There are no wires connecting modules. Not one point on the modules or chassis is soldered by hand. And, each circuit module is mated to the master board by precision assembly techniques.

The Model 1-662 features: Vol-U-Mike, that allows adjustment of receiver volume level from microphone or front panel; digital readout dial system for channel selection in bright L.E.D. numerals with pushbutton bright/dim switch; Gyro-Lock (PSS)—23 channel operation; large 1½" x ¾" S/RF meter; exclusive IC audio stage with 6 watts RMS; amplified AGC circuit; three ceramic filters; dual conversion receiver plus tuned RF stage; metal case RF output transistor; positive or negative ground operation for any vehicle, with plug-in cord; relay switching; L.E.D. transmit light AMC circuit; fully variable squelch control; large 3" speaker; pushbutton ANL and PA/CB switches; continuous RF gain control and fine tuning; accessory jacks for external speaker; P.A. system, antenna, DC power cord; and a rugged, scuff-resistant vinyl-clad metal cabinet.

For more information, contact Royce Electronics Corporation, 1746 Levee Road, North Kansas City, Missouri 64116, or mark number D09 on Reader Service Card.

40-CHANNEL AM BASE STATION

President Electronic's new 40-channel AM base station is the Zachary T.

It features a new automatic speech compression circuit for consistent high level modulation and PLL circuitry for better on-frequency response than a conventional synthesizer, selectivity is rated at -65 db.

Controls include volume, squelch, ANL switch with manual override, S/RF meter, RF gain, mike gain and PA/CB switch.

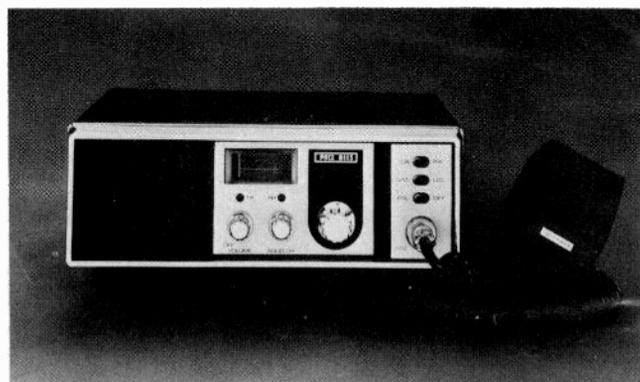
Back panel jacks provide for both AC and DC power input, antenna, PA and external speaker, ear-phone and mike jacks are located on the front panel.

Zachary T, like all the President CB's, has a lighted digital channel display for easy reading.



The unit is 4¾"H x 13½"L and weighs 11 lbs.

Zachary T is backed by a limited 1-year warranty covering both parts and labor. The suggested retail price is \$249.95. Complete details on the new Zachary, T are available by writing to President Electronics Inc., 16691 Hale Ave., Irvine, Ca. 92714, or mark number D01 on Reader Service Card.



PACE ANNOUNCES TWO DUAL FUNCTION CB RADIOS

PACE announced two 40-channel Citizens Band (CB) radios that will double as either mobile or base station transceivers.

The PACE 8110 and 8115 allow operation on AC or DC power, enabling them to function on house current, as well as 12-volt, vehicle electrical systems.

These dual purpose CB units will offer: transmit indicator light to enable the user to determine when he is "on-the-air," receive light to indicate incoming transmissions, S/RF meter to monitor incoming signal strength and relative power output, and automatic noise limiter switch to reduce extraneous background noise. The PACE 8115 will also feature a RF gain control and L.E.D. digital channel display. Mark number D06 on Reader Service Card.

ALL AROUND RIG

An in-dash CB transceiver with AM/FM/MPX radio has been introduced by Arthur Fulmer, Memphis, Tennessee.

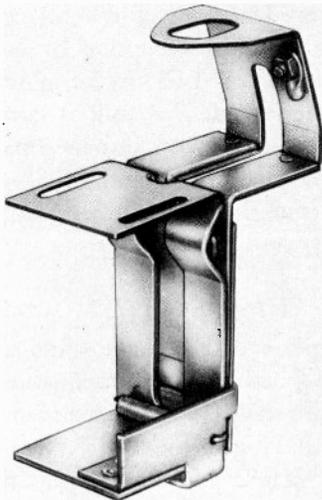
The unit, model 16-8200, allows the operator to monitor CB calls while listening to AM or FM radio. CB calls are received only through left channel speakers on driver side.

Features include 23-channel operation, phase lock



loop circuitry, antenna safety circuit, variable delta tuning, illustrated-window channel indicator, ANL, squelch, transmit and receive lights, illuminated S/R/F meter, push-button radio, balance and fader controls, local-distant switch, AM-FM sidebar, electric antenna activator and 12-month warranty. Model 16-8200 has adjustable shafts and includes universal faceplate and rubber trim gasket. The suggested list price is \$329.95. Specifications: CB Receiver: Sensitivity less than 1uV @ 10 dB S/N; Selectivity -40 dB @ ± 10 kHz. CB Transmitter: RF power out 4 watts; Modulation 100%; Frequency stability less than .005%. Radio Sensitivity 6 uV; MPX separation 20 dB; Output power 4 watts (RMS) per channel; Output impedance 4 ohms. General: Power source 13.8 volts DC negative ground; Dimensions 7½" W x 3" H x 8" D.

For more information contact, Arthur Fulmer, Attn: Dennis Stancik, P.O. Box 177, Memphis, Tennessee 38101, or mark number D15 on Reader Service Card.



HIDE-A-WAY TRUNK MOUNT

Valor Enterprises, Inc. has added to their line of CB accessories, the Model 403 Hide-A-Way Trunk Mount.

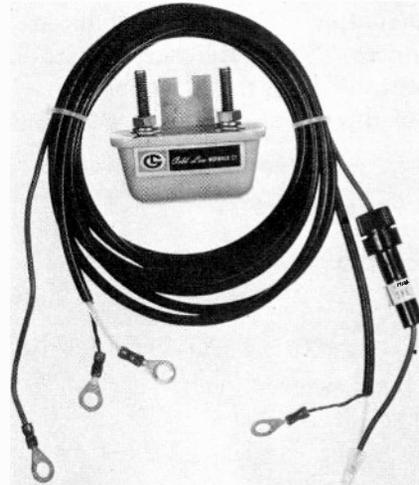
The Hide-A-Way Trunk Mount attaches to the inside of the trunk so that no holes are visible.

Valor's Model 403 sports a new design featuring a spring lock to hold your antenna secure in the up or down position. All exposed surfaces of the new Model

403 Hide-A-Way Trunk Mount are chrome plated, and full use of your trunk is maintained when the antenna is in the down position.

The Model 403 adapts for use with either base loaded or standard ¾-24 antennas.

For further information and specifications contact: Valor Enterprises, Inc., 185 West Hamilton Street, West Milton, Ohio 45383, or mark number D20 on Reader Service Card.



NOISE FILTERING HOOKUP HARNESS

A noise Filtering Hookup Harness (the No. 1106) for the two-way communications market has been introduced by Gold Line Connector.

A Gold Line spokesman commented that noise that affects CB and other two-way communications sets is generated from various sources in your automobile and is picked up by either the radio antenna or the vehicle wiring that supplies power to the communications equipment.

The primary function of the unique 1106 is to reduce the noise picked up by the wiring. Double-barrelled filtering action is supplied by heavy-duty coaxial cable for the power pickup which shields against unwanted noise and a ferro-magnetic filter that further reduces any remaining interference. The 1106 also has an in-line power fuse for the additional plus of set protection.

For further details, contact: Charles Brainard, Gold Line Connector, Inc., P.O. Box 893, East Norwalk, CT 06855, or mark number D27 on Reader Service Card.

CB OPERATION WITH DEAD BATTERY AND DOUBLE POWER

Sound impossible? Not so! Its easy with the GBP-X2ME Mobile Power Booster and Emergency Power Supply. In response to numerous requests, Glatzer Industries Corp. has developed a mobile version of their famous GBP-X2 Home 20 Power Booster. And, the GBP-X2ME has an important bonus feature . . . a

built-in emergency nickel cadmium battery pack. This rechargeable battery is normally on trickle charge, but when you are in trouble and need help fast (stranded in the boondocks with a dead battery in the middle of winter), remove the safety latch and flip the switch to emergency power. Instantly your CB will come alive and you will be able to transmit and receive for about two hours.

Under normal conditions the GBP-X2ME acts very much like its big brother, the GBP-X2. When you transmit the supply senses the fact that you need more power and provides 15.6V, which just about doubles your power output (legally). A built-in TVI filter actually reduces TV interference, caused by the increased power, by more than 100 times.

As if all of this is not enough in one small package,



there is even a super deluxe version, the GBP-X2ME/AC which, in addition to everything else, is the first four-way power supply ever made available for the CB market. It has a built-in 117 volt AC power supply so you can take it and your rig out of the car and operate in your Home 20, a motel room, a friend's home, etc. In fact, you can even take it where there is no power (the middle of the woods, a canoe, etc.) and operate off the emergency rechargeable power pack. You can plug it in to any convenient AC outlet and operate your rig and recharge your batteries. When you are operating normally in your car, you can use the boost feature and just about double your power output while simultaneously recharging your emergency batteries.

The people at Glatzer Industries think they have covered all possibilities. A safety latch prevents accidental switching to the emergency mode and running down the batteries. Both your car wiring and, most importantly, your CB rig are protected from damage, not by a current limiting circuit that can fail just like any circuit, but by the most proven, reliable protective circuitry used in the electronics industry, a fast acting common fuse.

So, if you want the ultimate supply, one that boosts your power in the car, gives you two hours of emer-

gency operation when the power fails (in your car OR in your house), and can operate on AC as well, then you need the GBP-X2ME/AC for your mobile rig. Works with all mobile sets, AM, SSB, 23 or 40 channels. Available now from Glatzer Industries Corp., 268 Huguenot Street, New Rochelle, New York 10801, or mark number D31 on Reader Service Card.



CB CONVERTER

A new Citizens Band Converter which enables any user to convert their AM or AM/FM radio to a 40 channel CB receiver is introduced for 1977 by Sparkomatic Corporation, one of the leading creators/designers/manufacturers in the automotive after-market industry.

Retailing for approximately \$39.95, CB-11's many features include: its adaptability to any standard AM radio antenna; the 40 channel illuminated selector knob which permits instant channel selection; the AM/CB switch which works for either AM or CB reception; fine tuning control ensuring optimum clarity of any received signal; noise silencer which reduces static interference for clearer signal reception; sensitivity control adjusting for best reception of weak and strong signals; the red "pilot" LED which glows when the CB Converter is activated. The unit is compact, easily installed under the dash with all necessary parts included for quick easy installation and, it fits all cars, boats, campers and trucks. Mark number D32 on Reader Service Card.

"HANDS FREE" MOBILE

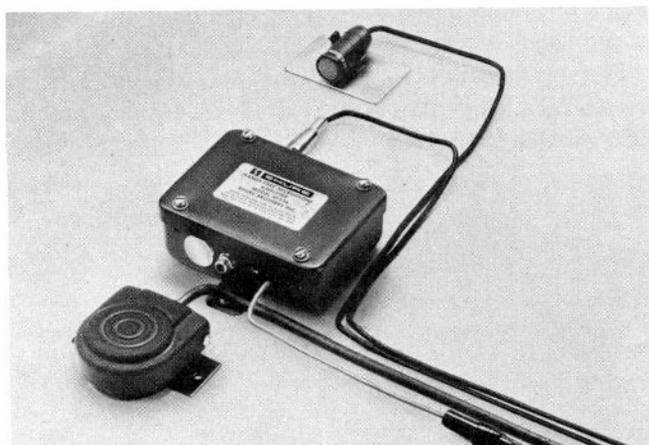
Shure Brothers Inc., Evanston, Illinois, has announced a "hands free" mobile communications system that provides clear, reliable vocal transmissions without the operator ever having to touch the microphone.

Called the HF52 Mobile Communications Microphone, the new Shure system consists of a tiny dynamic microphone, an amplifier with adjustable gain, and a heavy-duty corrosion-proof footswitch. The HF52 system operates from any standard 12-volt negative ground vehicle battery system, is easily and quickly installed, and can be connected with most inputs designed for high impedance, dynamic, Controlled Magnetic, carbon or transistorized microphones.

The system's miniature microphone may be mounted on a vehicle's sun visor, dashboard, or steering wheel column. For maximum vocal intelligibility, the micro-

phone has an optimized frequency range of 200 to 5,000 Hz. When used within 46 cm (18 inches) of the voice source, it provides the same output as a "close-talked", hand-held communications microphone.

To operate the system, the user steps on the foot-switch installed on the vehicle's floorboard. The foot-switch keys the transmitter without disturbing the operator's driving. The transmitter remains on until the operator releases the footswitch. Mark number D33 on Reader Service Card.

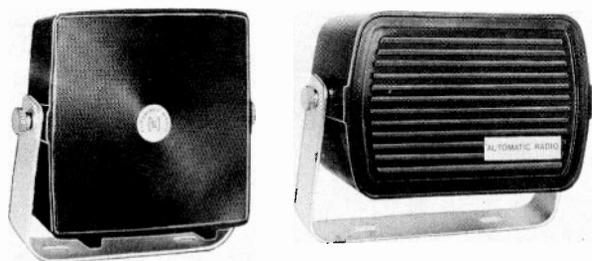


The entire Shure HF52 system is designed to withstand extremes in temperature and humidity as well as mechanical shock and vibration of the toughest driving conditions.

Supplied with the Shure HF52 system are a mounting clip and bracket, all necessary connecting cables, cable clamps, clips, and ties.

User net price of the Shure HF52 Mobile Voice Pickup System is \$99.60.

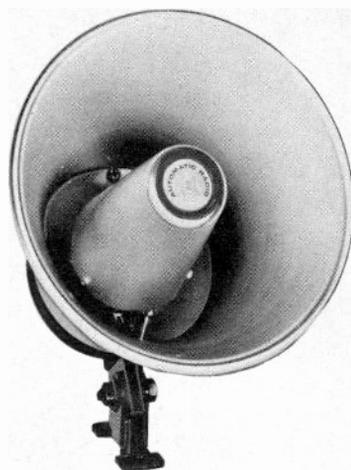
For additional information, contact: Shure Brothers Inc., 222 Hartrey Avenue, Evanston, Illinois 60204, or mark number D11 on Reader Service Card.



LINE OF CB SPEAKERS

Automatic Radio, announces the introduction of its new line of speakers specifically designed for use with CB radios.

MODEL FSC-2101 is a 4" x 6" CB extension speaker with high-quality voice reproduction. It utilizes a 360° swivel bracket for easy installation at any angle. The durable ABS case withstands sunlight. Unit is complete with 8 foot cable, connector and hardware, has 8 ohm impedance and a suggested list price of \$9.95.



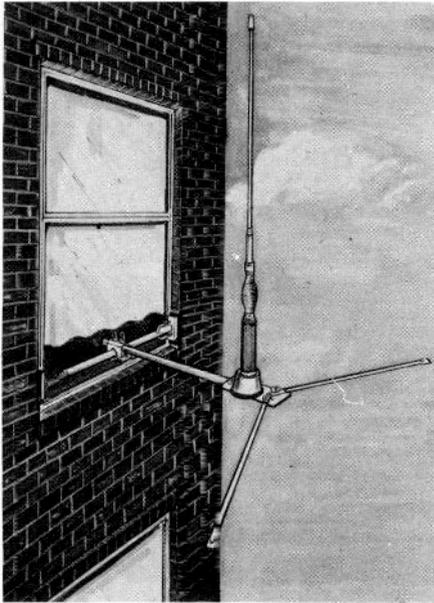
MODEL TSC-2102 is a 5" round CB extension speaker, housed in a high-impact plastic case. It features a 360° swivel bracket and slim-line design for convenient installation even in cramped areas. It is complete with 8 foot cable, connector and mounting hardware, with 8 ohm impedance and a suggested retail price of \$7.95.

MODEL PAS-2103 is an all-weather indoor/outdoor PA horn of top-quality construction. It features a swivel mounting bracket, 5" diameter horn and 8 ohm impedance. It is complete with hardware, cable and connector, and is completely weatherproof for installation under hood or vehicle exterior. Suggested list price is \$16.95. Mark number D34 on Reader Service Card.

CB WINDOW ANTENNA MOUNT

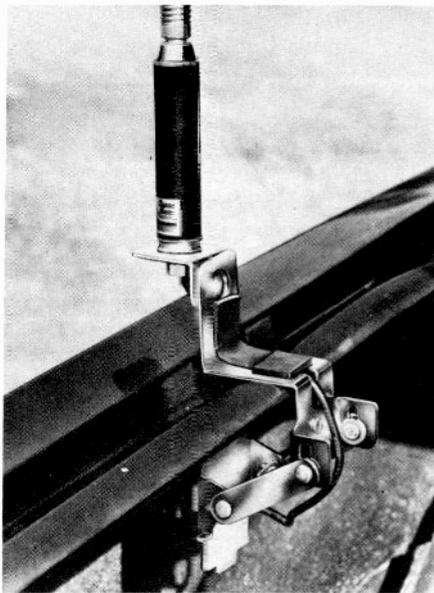
A CB window antenna mount introduced by RMS Electronics, Inc., Bronx, N.Y. 10462, is for use in buildings where outdoor roof-top antennas are prohibited. The window mount accommodates any mobile CB antenna. Assembly and installation is simple. An adjustable window extension fits windows up to 42" wide. Additional extensions are available for larger windows. The unique window mount features ground plane elements that are similar to larger base station CB antennas. The mount is self grounding. The mount has sturdy, heavy duty all aluminum weather-proof elements, steel mounting bracket and hardware. Complete, easy to understand instructions are included. The window mount, model CBWM-50 does not include a CB antenna. List price is \$12.95 in a regular shipping carton and \$13.95 skin packed on a peg-hang card. Model WEX-1 is a window extension up to 18" for use with the CB window mount. List price is \$3.25. Model WEX-2, an extension up to 30", has a list price of \$3.95.

According to RMS, the window mount opens up fresh business opportunities for dealers and distributors in metropolitan and suburban areas where many CB'ers are unable to enjoy their communications at home



because of housing regulations of private high rise apartment buildings, cooperatives, condominiums, and government housing. The new mount is also economical, since the CB'ers can use any mobile antenna.

Contact RMS Electronics, 50 Antin Pl., Bronx, NY 10462, or mark number D35 on Reader Service Card.



"UNDER COVER" CB ANTENNAS

Channel Master has introduced a line of full-sized, 40 channel coil-loaded whip antennas that can be conveniently flipped down and hidden in the automobile trunk when not in use.

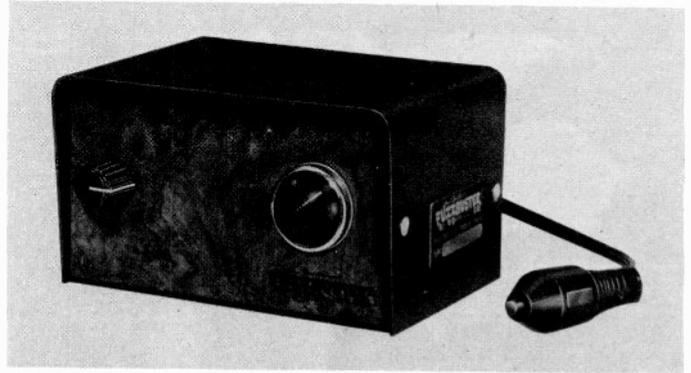
By not signalling the presence of CB equipment, the new Under Cover antennas sharply reduce the danger of theft, without sacrificing performance.

Base-loaded and center-loaded models are available, mounted on a specially designed, heavy gauge Under Cover bracket that is fastened to the lip of the trunk. The two-way bracket enables the CBer to mount the antenna in a perfectly vertical position,

regardless of the slope of the car's rear deck, and also allows the antenna to be folded down into the trunk, completely out of sight. No tell-tale sign is visible, not even a trace of hardware. Within the trunk, the bracket keeps the antenna suspended horizontally, so that it does not interfere with the storage of luggage or baggage.

The rugged, triple-chrome plated bracket serves as a self-grounding base. It fits most domestic and foreign cars, and may be purchased separately, for use with the CBer's existing antenna. The models in the line include single and dual base- and center-load antennas, as well as the bracket only.

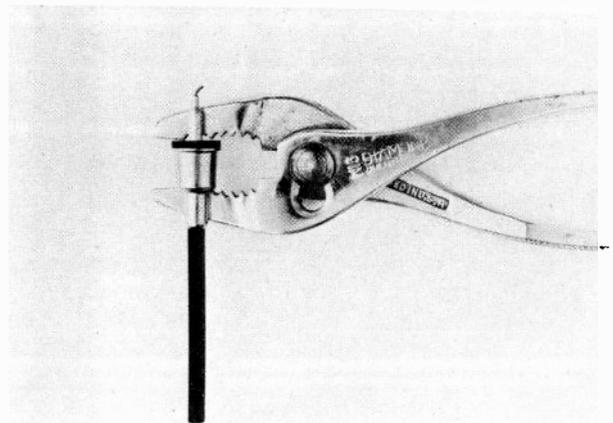
For information contact Channel Master Div. of Avnet, Inc., Ellenville, New York 12428, or mark number D30 on Reader Service Card.



RADAR MONITOR PUTS ON A PRETTY FACE

The Fuzzbuster is now a style leader.

The Fuzzbuster police radar monitor has a new, wood-grained face, according to Electrolert, Inc., of Troy Ohio. Behind the pretty face, however, the same high-quality electronics continue to make the Fuzzbuster a trusted name on the highway. Mark number D36 on Reader Service Card.



PLIER APPLIED COAXIAL CONNECTOR

Now you can save time and money by making your own repairs to your citizen's band radio equipment with the Plier Applied Coaxial Connector UHF Series Plug. It's easy to use. You can install it with an ordinary pair of pliers—no special tooling is needed.

You save time and costly repairs and you get reliable,

consistent connections every time. This connector is the same type of connector that was applied at the factory but you can install it yourself quickly and easily without soldering.

For more information, write AMP Special Industries, Valley Forge, PA, or mark number D37 on Reader Service Card.



DISGUISE ANTENNA

An improved version of the very popular CB-AM/FM disguise antenna, the Antenna Specialists MS264 has been redesigned to operate on all 40 channels with 35% more signal strength than previous versions.

Years of experience making disguise antennas for law enforcement agencies has helped us build an antenna with top-notch combination performance that completely hides the existence of a CB system in your car.

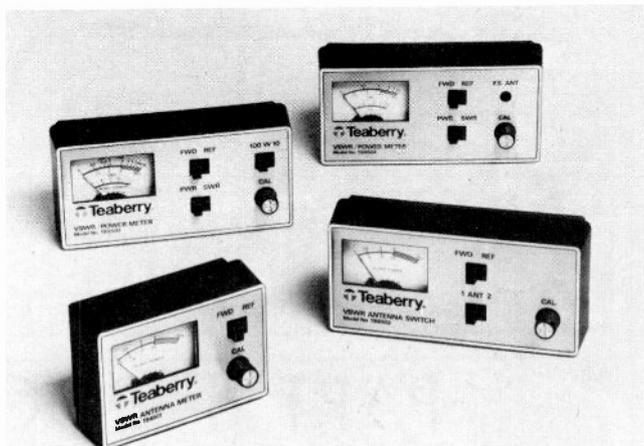
This is possible because of the absence of any coil on, in or near the antenna. The MS264 does away with coils entirely and uses instead a new A/S three-band coupler (U.S. Patent #3725942) that gives 40 dB rejection of 27 MHz signals at the AM/FM receiver. In addition, the CB circuit is DC grounded for quiet reception on CB.

The MS264 fits the standard 15/16" hole that AM/FM antennas use on most cars. A special adapter is included that lets you fit the antenna into mounting holes that range from 15/16" to 1 1/4" for non-standard situations.

Only one cable passes through the firewall—the same as a regular AM/FM antenna—for easy installation. The MS264 includes all wiring and connectors necessary for cowl mounting. Mark number D38 on Reader Service Card.

LINE OF TEST METERS

A new product line of test equipment, including a SWR "Mini" meter, 2-function and 3-function meters, and an antenna switch, has been announced by Teaberry Electronics Corporation, a major producer of Citizens band radios. According to a Teaberry spokesman, the new line of accessories has been developed



to exceptionally high specifications and provides a natural complement to their full line of CB radios.

The new line of meters was described as sturdy and completely portable for mobile or bench application. Insertion loss is negligible, and they may be left in-line as a constant monitor. Standing wave ratio is obtained directly from easy-to-read 2-color meters, with no complicated charts to interpret.

Among other features common to all four accessories are SWR readings from 1.1 to 3:1, meter accuracy of 10% of full scale, 50-ohm impedance, and 150 micro-amp meter sensitivity. All have a frequency range of 2-50 MHz and are specially calibrated for 26-28 MHz, the frequency range of the new 40-channel CB radios. All use standard SO-239 connectors.

Model TB6501 "Mini" meter delivers quick, accurate measurement of antenna system SWR and adjustment of CB antennas for maximum power absorption. It has a "forward-reflected" energy directional switch for meter calibration "set" adjustment. Just 4" wide by 3" high by 1 1/2" deep and weighing only 9 ounces, the "Mini" meter has a suggested list price of \$15.95.

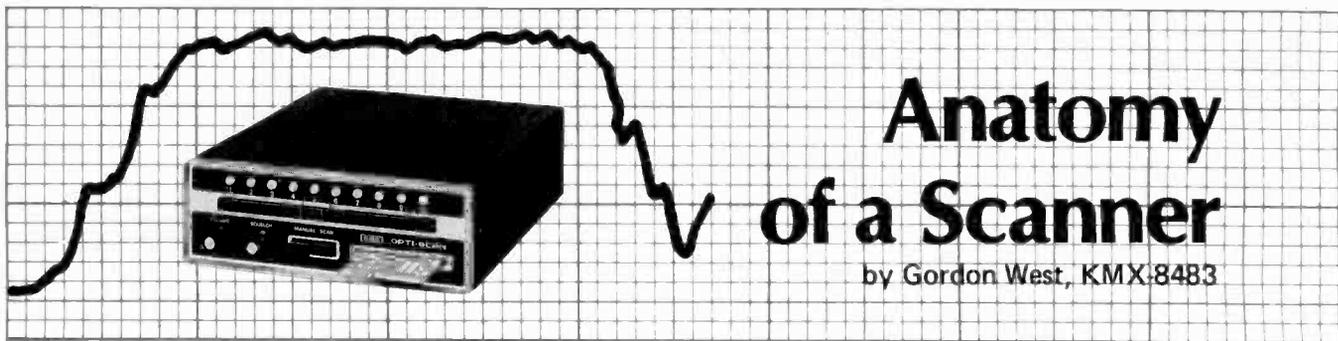
A new VSWR antenna switch, Model TB6502, features a two-position switch to change from one antenna to another; from a beam to an omnidirectional antenna to check SWR without having to change leads. The compact switch measures 6" wide by 3" high by 1 1/2" deep and weighs 10 ounces. Suggested retail price is \$19.95.

Model TB6503 is a dual-function SWR meter and 10 Watt/100 Watt power meter. It boasts a dual-range wattmeter with front-panel selection of 0-10 watts or 0-100 watts. True RF power output is read directly, as is SWR. This model is the same size and weight as Model TB6502, and carries a suggested retail price of \$23.95.

The new 3-function accessory, Model TB6504, is a combination SWR/Power/Field Strength meter. It connects in the antenna line to measure all three of these important functions for efficient operation. This model is the same size and weight as Model TB6502. Suggested list price is \$25.95.

Contact Teaberry Electronics, 6330 Castleplace Dr., Indianapolis, IN 46250, or mark number D04 on Reader Service Card.

(continued on page 122)



Anatomy of a Scanner

by Gordon West, KMX-8483

PART 5 : POCKET SCANNERS

SCANNER enthusiasts may now take their monitoring capabilities with them everywhere they go by using small pocket scanners. The pocket scanner is a relatively new breed of scanner monitor receiver—it wasn't until the last few years that scanner monitors of a pocket size variety really became available at a reasonable price tag for the serious monitoring enthusiasts—or for the professional that needs portability of scanner reception.

Today's pocket scanners are slightly larger than a pack of cigarettes, and fit nicely on the belt. Out of the many varieties of pocket scanners available, there is a pocket scanner to cover either low band, high-band, or the UHF band of frequencies. There are even some scanners that will tune in both bands—combination of low-band and high-band, high-band and UHF, and a few even give you the option of monitoring both the low-band and UHF band in one complete tiny package. There appears to be no compact scanner monitor receivers of a portable package that will take in all three bands in one unit—the Tri-Band pocket scanner has still yet to be developed, and with the many different public service agencies on the

many different bands, we can't wait to see it. As of right now, keep looking—and if you find a Tri-Band pocket scanner before I do, be sure and drop me a note and let me know!

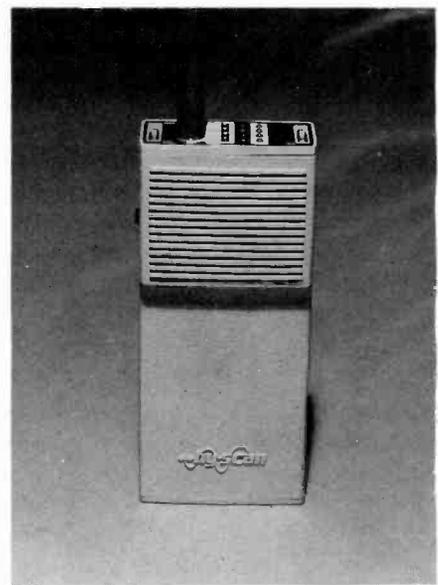
The typical size for a pocket scanner is 6½" L x 3" W x 1½" D. The majority come with a belt-clip securely fastened to the scanner back so that the unit may conveniently be clipped over the belt for ease of listening. Let's take a run-down of the many features a pocket scanner has, and examine some of those exceptional features that offer a great deal of versatility for portable personal monitoring.

VOLUME AND SQUELCH: Yes, every pocket scanner has these two controls, but the important one to take a listen to is the volume control. Most pocket scanners yield about a half a watt of audio output—five-hundred milliwatts—which is usually just ample to be heard when the unit is worn on the belt. However, if you are going to be in large crowds, or be wearing a jacket over your belt, chances are that you might have a hard time hearing all of the in-coming calls on your pocket scanner. If you need a good loud scanner, look for a higher figure than five-hun-

dred milliwatts output of audio. Take a listen for yourself and see which one is best heard over noisy conditions. Some scanners employ a special type of speaker that radiates the sound upward—making it easier for you to monitor the scanner when it is being worn on your belt. Almost every scanner has a different sound of audio output—check it out before you make your purchase.

SCAN/MANUAL SWITCH: This handy switch, found on the majority of scanners, allows the unit to either scan all of its four channels, or to hold any one of the four channels you select. By placing the switch in the manual position, you may advance the scanner reception from one channel to the next channel manually—or by simply not touching the switch, the unit will receive on the channel that is indicated by the Light Emitting Diode. However, if you wish to monitor all four channels for in-coming calls, leave the switch in the scan position and it will merely scan away at all of those channels waiting for an in-coming call.

LOCK OUT SWITCHES: If you were to place a weather frequency in your scanner, and leave the "Scan/Manual" switch in the scan mode, it



For Spare Time Income, Your Own Business or a Career... LEARN TO SERVICE COMMUNICATIONS/CB EQUIPMENT...THE NRI WAY

Career opportunities are opening up fast for the man trained in communications.

The field of communications is bursting out all over. In Citizens Band alone, class "D" licenses grew from 1 to over 2.6 million in 1975, and the FCC projects about 15 million U.S. CB'ers by 1979. That means countless careers in design, installation and



Commercial, and Amateur communications: a digitally-synthesized 400-channel VHF transceiver and AC power supply. This 2-meter transceiver gives you "Power-On" training. Then we help you get your FCC Amateur License with special instructions so you can go on the air.

The complete program includes 48 lessons, 9 special reference texts, and 10 training kits. Also included are: your own electronics Discovery Lab, a new Antenna Applications Lab, an Optical Transmission System, CMOS Digital Frequency Counter, and TVOM. The course covers AM and FM Transmission Systems; Radar Principles; Marine, Aircraft, and Digital Electronics; and Mobile Communications. You must earn your first class radio telephone FCC license or you get your money back.

CB Specialist Course now available

NRI now offers a special course in CB Servicing. You get 37 lessons, 8 reference texts, your own CB Transceiver, AC power supply and multimeter . . . for hands-on training. Also included are 14 coaching units to make it easy to get your commercial radio telephone FCC license—enabling you to test, install and service communications equipment.



maintenance. Start training now, the NRI way, to get your FCC license and qualify for one of these openings.

Learn on your own 400-channel, digitally-synthesized VHF Transceiver.

The NRI Complete Communications Course teaches you to service and adjust all types of two-way radio equipment (including CB), using the one unit that is best equipped to train you for CB,

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Join the Dash to In-Dash CB

Medallion—a Division of Midland International, makers of America's best-selling CB radios—has put together a great new family of In-Dash CB-AM/FM Stereo Combos—both 40 channel and 23 channel. They're compact, high-performance, sharp looking and about as theftproof as your speedometer. They're great ideas... that's why you, and your car, deserve one.

Every Medallion in-dash model combines superior AM and FM/MPX sound with a maximum 4-watt power CB transceiver. 40-channel Model 63-030 even has a new modular design and remote pushbutton channel change right on the mic. All controls stay up front, in-dash, in reach.

If you're in the market for in-dash CB and full-featured AM/FM stereo sound, don't settle for just any unit... give your car Midland International's Medallion In-Dash.

medallion
AUTOMOTIVE PRODUCTS
Division of Midland International Corporation
P. O. Box 1903 Kansas City, Mo. 64141
Phone: (913) 384-4200

would only make one complete scan before it would lock up on that weather station. Most of today's scanners have at least one lock-out switch to place continuously broadcasting services on. This allows you, at the flick of that switch, to automatically disconnect that particular frequency from the scan mode—and it will automatically skip over that channel. On most scanners, it is found in position "4." That's where you would want to put the weather crystal or other crystals that have a lot of frequency on the channel. Some of the latest scanners out now have lock-out switches on all four positions of monitoring, in these may come in quite handy in allowing you to lock-out any one—or any series of four channels. These lock-out switches are generally very small ones so you don't inadvertently flick the wrong switch when the unit is worn on your belt.



ANTENNA AND EAR-PHONE JACKS: For noisy listening, that ear-phone jack may come in quite handy. By plugging in an ear-phone, or a miniature speaker, you can then bring the audio up to a point near your ear. Since wearing an ear-phone is not the most appealing thing in the world, I have seen many professional pocket scanner users purchase inexpensive lapel miniature speakers, and this miniature speaker *afix* to one's jacket lapel makes for easy monitoring in noisy environments. If you are attempting to receive weak stations, possibly the built-in antenna—either a rubber one or a telescopic one—may be inadequate. By plugging in an external antenna, the reception range of your pocket scanner will be immensely improved. However, take a look at that jack, and ensure that you have the proper connection from your external



monitor antenna. It usually takes a miniature plug to make that connection.

CHANNEL READ-OUT: Almost all pocket scanners used low current consuming Light Emitting Diodes for the channel read-out—and these are quite visible in the shade or at night as they blink by. However, in the daytime, you'll probably need to cup your hand over the read-out display to actually see which channel you are monitoring.

BATTERIES AND CHARGES: Almost all of today's pocket scanners operate off of four double A pin-light batteries. These are easily obtainable, and the scanner may be powered for several days continuously before the batteries become worn out. At that point, you either buy a new set of 4 double-A cell pin lights and place them in the scanner, or if the scanner is equipped with Ni-Cad Batteries, it may be dropped into a charger. Double A Cell Ni-Cads are readily available, but not all scanners allow for these batteries to be charged. Check over those specifications.

There are several varieties of pocket scanner chargers—most sit on a tabletop, and the scanner simply drops in the charger to receive an over-night charge of its Ni-Cad batteries. Some chargers plug into the wall and then a separate plug plugs into the scanner. These are generally less expensive, but do charge the scanner up well.

A new innovative way is the charger that is built into a mobile unit adapter—allowing you to not only charge the scanner when it is operated in your moving vehicle, but also this scanner mobile adaptor amplifies the audio output, and allows for an external antenna to be plugged into the adaptor, and then the adaptor makes the antenna connection on the pocket scanner when it is inserted in the opening. This is a

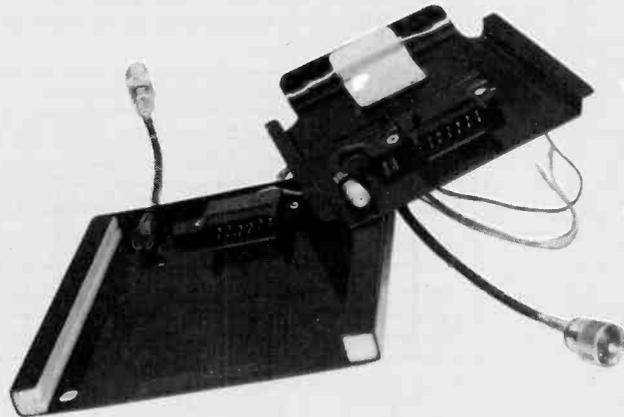
handy way to keep your scanner always charged, and allow for listening either in your mobile unit while traveling down the road, or on your belt when you're outside of the vehicle.

CRYSTALS VERSUS TUNEABLES: Traditionally, pocket scanners have been crystal controlled. Most pocket scanners employ the exact same type of crystal that work in their big brother mobile scanners or base station scanners. Some pocket scanners take a unique crystal, and its best for you to check ahead of time to insure that the unit you select will use common crystals available from your scanner supplier. Crystals assure "on target" frequency reception—but only if you purchase top quality crystals. This especially holds true for UHF reception—mine bargain crystals will lead to many unhappy hours of off-channel monitoring of UHF frequencies. Make sure—especially when selecting a UHF scanner—you use the highest grade crystal available for that scanner—one that's recommended by the scanner manufacturer.

Pocket scanners with individual tuners have recently been introduced on the market. They are generally larger in size, and have small tuning knobs or tuning screws for adjusting the frequency of each channel. Although this type of pocket scanner will never need



a crystal, it does have one serious drawback—these variable tuners on each channel are inherently less selective than a quartz crystal. This means that you will have better selectivity and greater adjacent channel rejection on a crystal scanner, than you would of a tunable scanner. However, if you operate your pocket scanner in an area of little signal traffic, possibly the tuner scanner will be just the answer for you



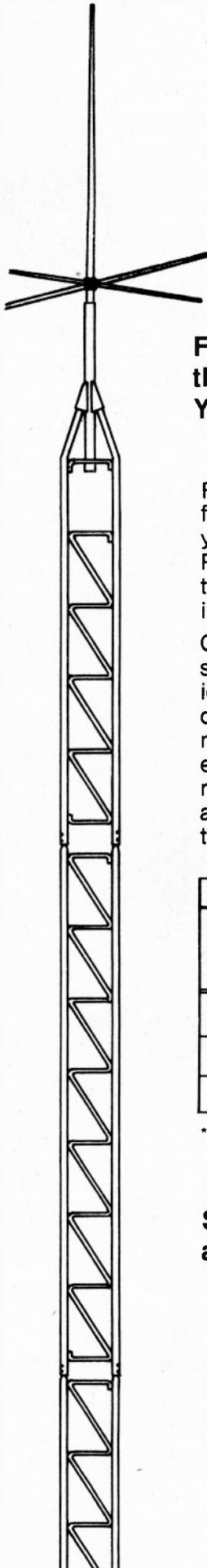
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Check this handy chart for tower heights to support your antenna. It shows wind load, ice or no ice conditions. Your antenna size, conditions, tower model determines maximum tower height above a proper base or extension of tower above bracket. You should not exceed those maximums for a proper antenna installation. CB beams are limited to 20' above a structure or building.

| Self-Supporting Height of Towers* | | | | | | | | | | | | | | | | |
|-----------------------------------|--------------------------------|------|------|------|--------|------|------|------|--------------------------------|------|------|------|--------|------|------|------|
| Tower Model | Wind Load = 20 psf | | | | | | | | Wind Load = 30 psf | | | | | | | |
| | No Ice | | | | ½" Ice | | | | No Ice | | | | ½" Ice | | | |
| | Antenna Area, ft. ² | | | | | | | | Antenna Area, ft. ² | | | | | | | |
| | 0 | 2 | 5 | 10 | 0 | 2 | 5 | 10 | 0 | 2 | 5 | 10 | 0 | 2 | 5 | 10 |
| 20 | 39.1 | 31.9 | 23.8 | 15.8 | 28.1 | 22.7 | 18.6 | 13.7 | 32.0 | 24.9 | 17.8 | 11.1 | 21.3 | 18.0 | 14.1 | 9.9 |
| 25 | 44.7 | 37.6 | 29.4 | 20.4 | 29.8 | 26.5 | 22.3 | 17.1 | 36.6 | 29.5 | 21.9 | 14.4 | 24.4 | 21.1 | 17.2 | 12.5 |
| 45 | 56.8 | 50.4 | 42.3 | 32.2 | 37.9 | 35.0 | 31.1 | 25.7 | 46.4 | 40.1 | 32.4 | 23.8 | 31.0 | 28.1 | 24.3 | 19.3 |

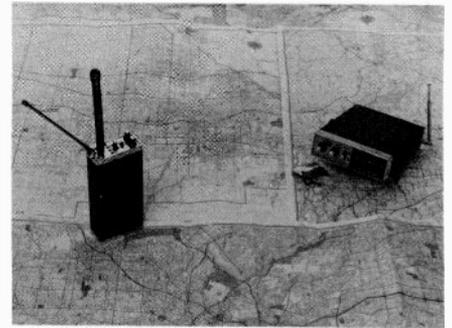
*Does not include wind on transmission line.

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if you wish to monitor a variety of frequencies on an ever changing basis. The majority of tuneable pocket scanners only have the capabilities of receiving one band—and generally they have been preset to receive only the 150 through 174 MHz high band.

Pocket scanners have a variety of uses—and operate quite efficiently on their built-in telescopic or rubber antennae. In areas of weak reception, you might have to take the unit off your belt and hold it up at arms length to get the antennae away from your body and slightly higher for clearer reception. None the less, the pocket scanner allows you to conveniently take your monitoring capabilities everywhere you go. On an outside antennae, pocket



scanners generally exhibit the same sensitivity as conventional mobile unit scanners, but lack a little bit of selectivity that the mobile units generally have greater of. This is why your pocket scanner may not operate at peak efficiency in large cities on an external antennae whereas your mobile scanner does—the pocket scanner simply does not have enough circuitry to offer full selectivity on those tight frequencies.

Portability of monitoring capabilities has long been a demand by consumers, and if you are to choose the best scanner for your particular use, it could be a valuable aid to staying up-to-date to what's happening on the air waves wherever you may go. Check out a portable scanner today—their performance will happily surprise you!

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APRIL STAR CHECK

ARIES—An old friend from the past silently sneaks back into Aries' life for a brief eyeball on the 3rd. Full moon on the 4th creates tension with loved one. End of April clears the air waves. Get ready this year to start looking for a new 4-wheeler or 2-wheeler with 16 training wheels. Jupiter's expansive influence will get you around in style from now on. You may also adopt the new 40-channel system now. Non-stop modulating.

TAURUS—Indecision mysteriously plagues you this month, particularly in financial or work-20 matters. The 30th is especially frustrating. Single YLs and buffalos may find a strong psychic attraction to one of opposite sex. Just be wary, though, of super voices on other end of those 10-4 transmissions that could lead to a very disappointing eyeball. Jupiter, planet of expansion, enters greenstamp sector of chart this month offering opportunity to fatter piggybank tremendously.

GEMINI—Everything for Geminis doubles this year, starting April, including beltline if you don't keep active enough. Luck prevails. Good buddies and loved one fill this month with cheer. Better half is extra generous with greenstamps on the 18th. April 3rd finds you extra creative and inventive at work 20. 30th may cause you to secretly slink out of public eye and sulk alone somewhere.

CANCER—Full Moon of the 4th throws a carrier on the day's plans at home 20 where underground plumbing may act up if not checked in time. Life in general improves after April 18th when old friends gather round and unexpected favors are done in honor of your loyalty as a good buddy.

LEO—Be extra cautious on the boulevard the 4th when you might meet up with a flake who won't give you the right of way. On the 6th you may eyeball that mysterious sweet talkin YL or buffalo who's been keeping you on the by. Could be a strange accent that's got you so entranced. April 18th is a good time for that annual checkup and allover spring tuneup.

VIRGO—That long ago but not forgotten favorite YL or buffalo who's been haunting you for awhile now materializes on the 11th. Don't be surprised if you are gifted by this usually conservative unsentimental person after the 18th. April of 1977 springs you into a new job or a substantial promotion at work 20. Beneficial influence is in force for nearly a year.

LIBRA—Librans wear their hearts on their sleeves as springtime brings them closer to loved one. The poetic modulations you hear on the crystals are Librans, fer sure. Those April showers on the 12th won't rain on their parade if they can help it. The 18th and 27th are especially happy for these four season flower people.

SCORPIO—Action begins this month at work 20 where co-workers lend a hand to help get you through the busy month. For those industrious Scorpions who have kept their noses to the grindstones, rewards are in store. That's a big 10-4! April 18th is the happy day. Avoid confrontations with better half April 20th when gears may get jammed and happiness is thrown into reverse temporarily.

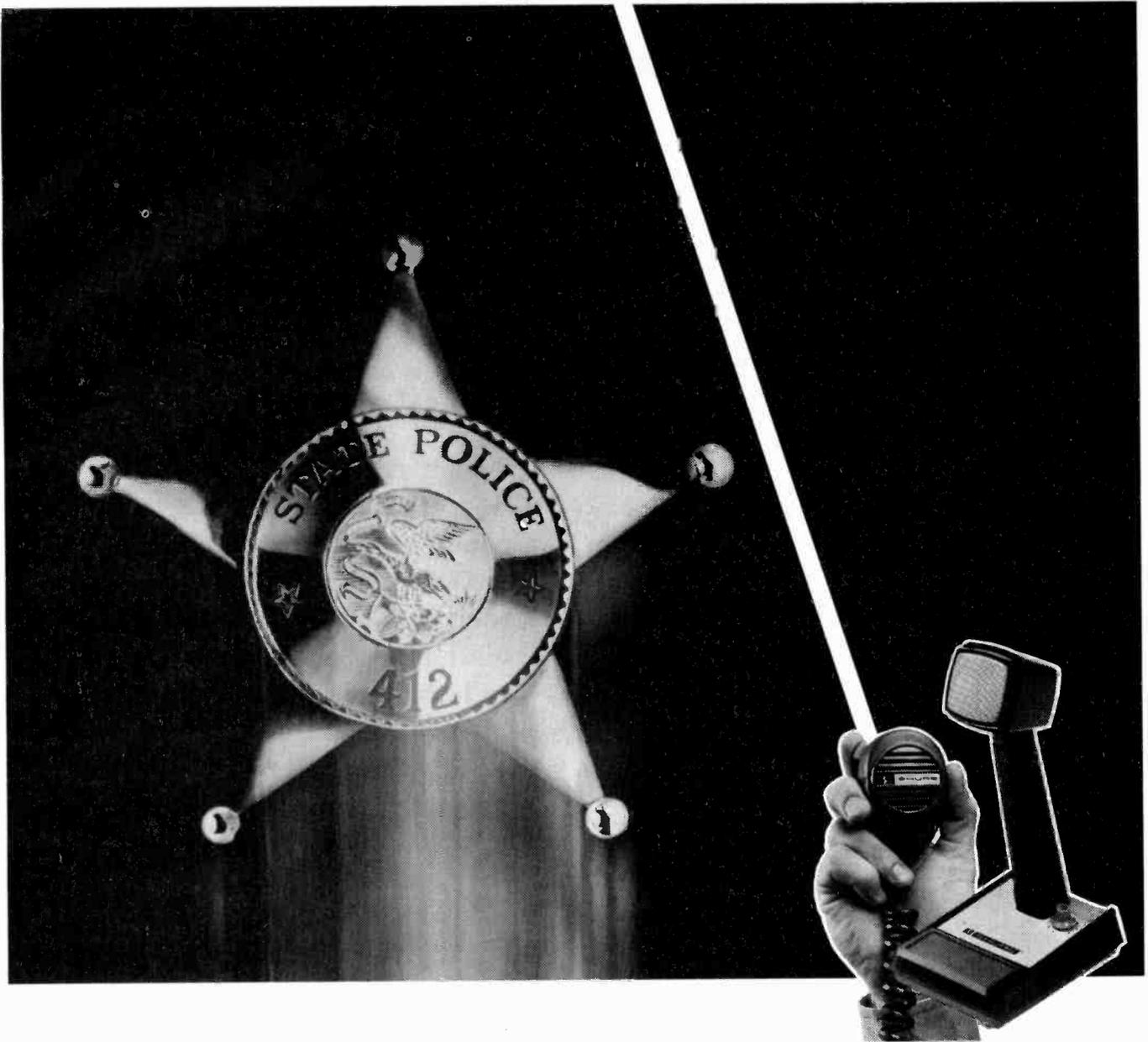
SAGITTARIUS—This could be the month or the beginning of the astrological year in which Sagitarians find newly wedded bliss. Opportunities abound all of April to test your true love for this super YL or buffalo. You come into contact socially with many who are attracted to you. April is your month for fun. Home 20 is noticeably neglected while you're rolling down the boulevard.

CAPRICORN—Usually too busy Capricorns find the need to include a large new pet in their lives to fill those lonely hours. April will keep you pedalling at the home 20, however, where you may be doing some necessary entertaining to insure your social and promotable status at work 20. April 11th is an excellent day for this. Do not make plans for the 20th or you may find them completely reversed.

AQUARIUS—April 3rd is an auspicious day to reserve for using your inventive mind to create a new source for making greenstamps. This month finds you non-stop ratchet jawing from your mobile and home base. An old good buddy surfaces on the 18th and then disappears again around the 27th, probably for the better.

PISCES—Pisceans are given an extra spurt of energy this month and use some of it on some wild shopping sprees. End of April finds their piggybanks depleted if not careful. This spring brings the beneficial influence of Jupiter to your home 20, which you will either be improving or moving to a better one, fer sure. Life in general is rosy.

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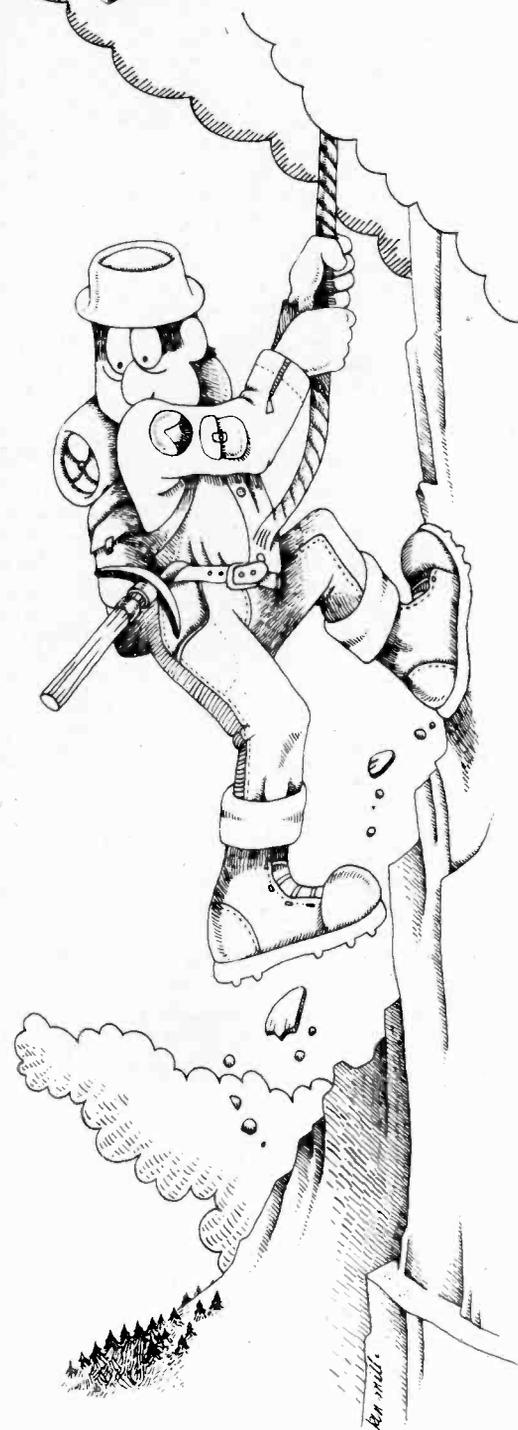
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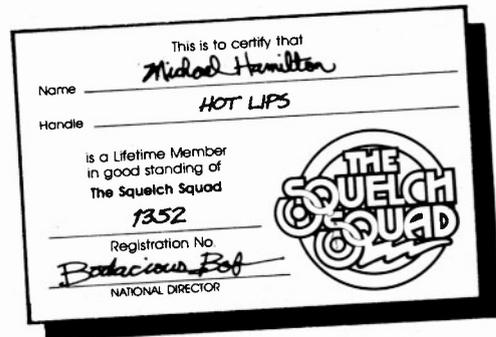
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TOMCATTIN' with "Tomcat!"

Across The Channels With
S9's Editor, Tom Kneitel (Tomcat/ KÉZ5173)



THE other day I received an auto supply catalog in the mail and was amused/amazed to see they were offering a "dummy CB antenna" which you attach to your vehicle so that people will *think* that you've got CB! Price of the thing was higher than a real CB antenna—and why would someone want to look like a CB'er if they weren't one? What with so many CB'ers trying hard to make their mobile installations as hidden as possible to avoid theft, all this oddball gimmick would do is attract would-be thieves! . . . Recently on the way to the salt-mines I tuned the usual in-transit channel for the parkway I have been driving for a number of years. I was met by all of the busy little bees on the channel buzzing about how the in-transit channel for that parkway was about to be "changed," along with the long-standing in-transit channels on most other parkways in my area. What was previously handled on 3 channels was now to take up about 6 channels. One of the goodbuddies shouted me to give me the news—and my response was to ask him for the reason *why* this was being done, and at whose suggestion. Well, he didn't know for sure, but "everybody's talking about it," so obviously it was the thing to do. I asked several other operators, nobody had any answers except that the "channels were all being changed." After my asking this same question for about a week I was finally told bluntly by several operators to "stop asking stupid questions," and that if I wasn't going to make the channel changes with *everybody* else that I'd be alone on the channel when it was vacated. Hey, I'm willing to be as cooperative as the next guy—but I never could believe that people should be herded like sheep into doing something which they didn't fully understand—especially at the command of mysterious unseen powers. Well, the channel-change day came and went, and sure enough some of the old gang innocently trundled off to some other channel. I *wasn't* left alone on the original channel—seems like there were others who weren't about to be part of this until they had some answers.

I've heard of this taking place in other areas too—never could understand it! At least 6 people have subsequently told me the "true" story of what had happened. Two people swore that *they* themselves started it all as a gag just to prove that "CB'ers will follow any instructions so long as they think that other people are going along with the idea—even if they don't understand it." They say that they made up an arbitrary list of "switchover" channels for the area and then started announcing over these channels that they heard that on a certain day the original channels were to be abandoned. Within a week, they say, the channels were buzzing about the "changeover" and everybody was taking it very seriously. Nobody apparently asked "why"? After all, didn't *they* say it was to take place? However, others claim that the idea was sparked by a Channel 9 monitoring group whose earlier proposal to clear mobile units off Channel 10 had failed—the thought being that by totally rearranging the entire in-transit channel set-up, the old Channel 10 clear-off concept would slip through unnoticed. Yet another source says that the idea was promoted by an area CB retailer who figured that by changing a workable 3 channel system into a useless and confusing one occupying 6 channels—well, maybe the resulting channel shortage created would help sell some 40-channel rigs—the changeover date strangely coincided with the 40-channel date, January 1, 1977! In any event, if anybody tries to pull off a massive channel shake-up in your area—ask "why" and "who said so," before you decide "if and when." If you can't get any answers which suit you—then stay where you were—probably someone's cruel hoax anyway! . . .

EVERYBODY'S A CRITIC DEPT.: Several readers were thoughtful enough to send me a copy of a particularly lurid *girlie magazine* in which there was, oddly enough, a discussion of CB radio. They complained that "CB RADIO/S9 MAGAZINE, although the largest and oldest CB publication, has far too many articles and too much new product news." What did they like? They much preferred

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So, indulge yourself. S9 is the CB magazine that doesn't quit when it comes to giving CBERs all the scoop on what's happening out in the CB world. Do it now! Today! Before you forget!! After all, spreading joy is what CB's all about, now, isn't it?

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one recently started CB magazine which features a scantily clad YL each month under the questionable title "Beaver of the Month." Oh well, you can't please everybody! . . . Have you read the paperback CB BABY by Clark Whelton? A few issues back I mentioned that I had seen an advance copy and thought you'd enjoy it. Clark Whelton, who is also KEW4880 and has been on CB for 5 years now, tells me that the book is doing very well and that he has received a lot of mail and QSL cards from those who have read it. It's an Avon Book (#30999), \$1.75! . . . Many of our readers became angered when *Moneysworth*, a publication which supposedly tells its readers how to save money, ran a lead story (last November) headlined *Present CB's To Be NG*. Parrotting the crop of rumors which are always current in CB, the author of the piece put together a bit of rumor here, a piece of scare material there, and came to an absolutely stupid conclusion, based upon an apparent total unfamiliarity with CB Radio. Maybe they ought to run girlie pictures instead! . . . A fishing vessel in the Bahamas was in trouble so it sent out a MAYDAY on Channel 9—nobody local heard it—nobody in Miami heard it. The vessel was heard by stations in Ohio, Nebraska, Iowa, and the Dakotas, via skip. Operators in those areas called the Miami Coast Guard and help was dispatched—I wonder if the people on Channel 9 who offered this aid were aware that Uncle Charlie sez that working skip is illegal! . . . An unemployed engineer was recently charged with criminal mischief when he sent a 12-inch-long cinderblock crashing through the windshield of a car because (he claimed) the "waves from the car's CB rig caused pains in my legs." The CB'er was on the way to the saltmine when he received the unusual comment on CB via his windshield. The cinderblock tosser was sent for psychiatric tests! . . . *Ego Building Dept.* the CB RADIO/S9 offices have been graced with a new resident—a stray cat, which happens to be about the grubbiest looking member of the feline corps I've ever seen. He was promptly dubbed TOMCAT!! . . . *Early Times Bourbon* has come up with a cocktail called the TOMCAT—an outfit called *Bar-Tender's* is offering a powdered mix to make it. There are also TOMCAT drinking glasses to go along with all of this! . . . I've noticed that the radio/TV new reports are growing rather hostile towards and slanted against CB—have you noticed it too? A number of times I've heard network news broadcasts dishing out information about how power mikes will be outlawed, how 23-channel rigs are to be banned, how a possible new set of 220 MHz CB frequencies will replace present 27 MHz frequencies making all present CB gear outmoded,

and the tired old sunspot panic story. All of this propaganda is bilge and seems to me to be directly related to the fact that some folks at the broadcast networks have come to the conclusion that an uncomfortably large percentage of their audiences are now addicts of CB rather than part of the radio/TV broadcast audience. Like, in pre-CB days you got a lot more use from your car radio than from the broadcast set. And at home—not only are a lot of people deciding that there's a lot more fun on the CB channels than there is on the TV channels, but the folks on the CB channels are supposedly messing up the reception of those who remain to watch the 99th reruns of *I Love Lucy!* So you can see that there is a great desire for CB to crawl back into the woodwork—and the next time you hear CB being put-down by a broadcaster, ask yourself what that station has to gain if you decided to be a former CB'er, and if you neighbor was discouraged from buying a rig. They're about as subtle as a left to the jaw! . . . A Smokey from the suburbs tells me that he has found that there seem to be a large number of instances where CB rigs left overnight in mobile units parked in residential areas are ripped off by the crews of early-AM refuse removal trucks . . . The weekly TV situation comedy program called *The McLean Stevenson Program* took to the channels in early December—seems that the star of the series, in addition to being rather unfunny, is supposed to be the owner of a CB rig (on the show). They even let us see the rig a few times—a 1961-vintage General Radiotelephone MC-5—now that's what I call class! The rig was funnier than the rest of the program! By the way, do you know the first national TV series to feature CB radio? It was *77 Sunset Strip*—way back in 1961—it was a Polytronics unit! The following year a CB rig turned up in several episodes of *Naked City*, they used a Lafayette HE-20B! Yes, there really was such a thing as CB radio before C. W. McCall and Sonny Pruitt! . . . Don't look now, but CB blew its chance to wrestle away from the radio control people those channels which lie between some of the CB channels (such as between Channels 15 and 16)—it's highly unlikely that Uncle Charlie will ever turn them over for regular CB use after the recent channel shuffle and equipment redesign—just too much trouble to put them into use at this point. And they're hardly used at all by the radio control people who fought so hard to keep them! Pity! . . . "SPEAK OF THE DEVIL" DEPARTMENT: A few issues back I made the mistake of mentioning a long-lost 1961-vintage crackpot "CB club". In it's short life it was a real bummer—they (unsuccessfully) tried to organize a hooligan CB protest "march on Washing-

ton," their publication seemed hell-bent on issuing forth the most gross personal attacks on FCC executives, it was (in fact) a rowdy and violently anti-FCC organization. As an organization, it had some extremely "questionable" elections and dealings, all masterminded by one individual—who eventually amassed quite a bit of "dues" money shortly before the "club" silently vanished into the night. Well, my mention of all of this in these pages apparently produced some strange effect—like a magical invocation, I suppose, because the very same sharpie is suddenly back in business again with yet another "CB club." This time he is claiming all over the place that he's on the level, glibly comparing his "new club" to the ARRL—oh brother, here we go again! If it's any indication of things to come, his "new club" is sporting a name rather similar to the last one he promoted, and the "club" publication bears a name which duplicates the title of a CB publication which went out of business about 15 years ago! Get your greenstamps ready, kiddies!!! . . . FCC'ers are talking about the top FCC exec who had his CB rig ripped off from his car while it was parked in the indoor FCC parking lot in Washington, D.C.! . . . *Signs of the times Dept.:*

For many years while CB was relatively "quiet," I was able to live my life at a rather leisurely pace—but things have changed since CB hit the big time. Within the past few months I've been asked several times to write a nationally syndicated CB newspaper column, do a CB radio program, endorse about 4 different brands of CB gear, help write a possible network TV series on CB'ers, and become editor of no less than 4 other new or proposed monthly CB magazines. Basically, I'm a lazy guy—I did get up the energy to complete a new book on CB which will be out from Hayden Books soon—I did trek out to California to watch them shoot a new CB movie, CITIZENS BAND—I did a few radio panel discussions on CB—but it wasn't easy while trying to devote the primary portion of my efforts to getting this magazine out every month—and still have time to rack up some time at the mike. And there are those of you who think that I've got a soft job? . . .

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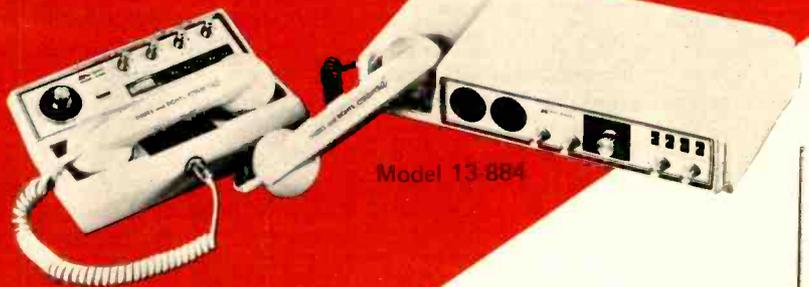
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THE HAM BANDER

Get Your Ham License -- PRONTO!

It's Easier Than You Think!

PART 4 OF A SERIES



By Lee Aurick, KNE7802, W2LE

THE previous lesson discussed the plateau which has plagued so many students of c.w. It is not recorded, but there is little doubt that it may even have bothered Mr. Morse, himself. Since those long-ago days, many competent instructors have pondered the progress of countless thousands of students. Why did some move along so rapidly while others seemed to grope their way to about 8 WPM, and then became too exhausted to move any further?

The answer is not to be found entirely in individual aptitude. Sure, some people have more of a flair for it than others, and some instructors with considerable experience have suggested that musical ability is a great aid in learning c.w. This may be partially true, particularly at the very high speeds where it helps to have been born with a metronome in your head. But, this writer has had successful students who were "tone-deaf", and would have been hard pressed to play a kazoo.

The U.S. Army gave a c.w. aptitude test to all new recruits at the reception centers in WW II, and those who were most successful were marked for communications training.

However, it is now generally recognized that the training *technique* is the most important part of teaching c.w.; even more important than a desire to learn the code. Certainly the majority, if not nearly all of the candidates selected for training in the Army had never expressed a desire to learn the code, and even after their training was begun, many preferred the night infiltration course.

The tips you have been given in the previous lessons have been developed through many years and thousands of students, and represent the thoughts of a legion of instructors.

The plateau *can* be avoided, and you can progress from 5 WPM to just about whatever speed you wish to obtain if you'll practice listening to and sending individual letters and numerals at approximately 20 WPM. The reason for this is that you do not have to *relearn* the

sound of each character at each increase in speed. The characters will sound the same at 5 WPM as they do at 20 WPM because they *are* the same. Practice, alone, will gradually enable you to recognize *more* letters in one minute. And that is how c.w. speed is increased.

An Important Final Tip

There is just one more idea that you will find useful as you progress to higher speeds. You won't really need it at 5 WPM, but at speeds above 5 WPM it becomes essential. However, 5 WPM is a good place to start practicing it. It is called, Copying Behind. It's really quite simple when you think about it, and it makes for very smooth writing down of c.w. at the higher speeds. As you know, some of the letters are much shorter than others. The numbers and punctuation take longer to send than any of the letters, but it doesn't necessarily take longer for the receiving operator to write them down. For example: period and comma. The idea is to *copy behind* the sending operator. It requires a bit of practice, and here is how it's done.

Since you're not a mindreader, you don't know what the other fellow (or gal) is going to send before he starts. However, if it's to be a letter, it will be a capital. If it's to be a number, it won't make any difference. Let's say the sentence he is going to send is the classic, "The quick brown fox etc., etc." The first letter to hit you is the T, and since it's the first letter in a sentence or phrase, it is to be a capital. Don't rush to get it down on the paper. The next letter, the "h", is time to think about putting your pencil on the paper to record the T. Still, *do not rush*. First, the vertical bar, and then cross it at the top. Now continue, still at a slow pace, to start your stroke for the "h". At this point the sending operator has just started to send the "e". Your hand moves to the right, completing the "h", and continues on to start the "e", the most frequent letter in the English

language and the shortest one in c.w. The sending operator now has a pause, equal to three dahs, between words. He's *not* sending, but your hand is now completing the "e". Hearing the pause, you *know* that he has finished a word, and that there will not be another letter such as a "y" to make "They". At the same leisurely pace, your hand moves further to the right to allow the space needed as the sending operator starts the first letter in the next word, "q". As he starts the "u", you will start to write the "q". This is an example of copying one letter behind. At 20 WPM it is desirable to copy at least three letters behind, maybe even five. At 35 WPM, expert operators copy several words behind. Copying behind the sending operator makes for a smooth performance. It allows the time necessary to put down on paper the short and long characters without rushing. Rushing leads to quick fatigue. Copying behind will enable you to copy c.w. and to operate for long periods of time without getting tired.

You now have all the "secrets" that make a good c.w. operator. It is suggested that you review the hints contained in previous lessons. Putting them all together with the most important ingredient-practice-will make you a confident operator under all circumstances.

The Written Exam

The remainder of this lesson, and all subsequent lessons will be confined to preparation for the written exam. Remember, you will be asked only twenty questions, and the answers will be provided. Your task will be to determine the *one* truly correct answer out of the five provided for each question. Then, on the answer sheet, a pencil mark is placed beside the letter that corresponds to the correct answer. We're coming down to the wire now QRV?

Rules and Regulations

In what Part of the FCC Rules will the regulations governing the Amateur Radio Service be found?

- a) Part 15
- b) Part 97
- c) Part 95
- d) Part 34
- e) Part 116

The correct answer is b).

What emission may be employed by Novice Class operators?

- a) A1 (c.w.)
- b) A2 (tone-modulated c.w.)
- c) A3 (single sideband—SSB)
- d) A4 (facsimile)
- e) P (pulse emissions)

The correct answer is a).

Radio Phenomena

The process by which "sky wave" radio signals are bent back toward the earth is called:

- a) reflection
- b) ionization
- c) absorption
- d) refraction
- e) propagation

The correct answer is d).

The sunspot cycle is generally considered to be of _____ years duration.

- a) 7
- b) 5
- c) 9
- d) many
- e) 11

The correct answer is e).

Operating Procedures

What does a signal report of RST 589 mean?

- a) unreadable, fair signals, rough tone.
- b) readable with practically no difficulty, weak signals, rough a.c. tone.
- c) perfectly readable, strong signals, perfect tone.
- d) readable with considerable difficulty fairly good signals, near pure tone.
- e) perfectly readable, very weak signals, near perfect tone.

The correct answer is c).

Amateurs use the RST (Readability, Strength and Tone) System to communicate quickly to another operator the conditions under which his c.w. signals are being received.

The RST System is as follows:

Readability

1. Unreadable
2. Barely readable, Occasional words distinguishable.
3. Readable with considerable difficulty.
4. Readable with practically no difficulty.
5. Perfectly readable.

Signal Strength

1. Faint signals, barely perceptible.
2. Very weak signals.
3. Weak signals.
4. Fair signals.

5. Fairly good signals.
6. Good signals.
7. Moderately strong signals.
8. Strong signals.
9. Extremely strong signals.

Tone

1. Sixty cycle a.c. or less, very rough and broad.
2. Very rough a.c., very harsh and broad.
3. Rough a.c. tone, rectified but not filtered.
4. Rough note, some trace of filtering.
5. Filtered rectified a.c. but strong ripple-modulated.
6. Filtered tone, definite trace of ripple modulation.
7. Near pure tone, trace of ripple modulation.
8. Near perfect tone, slight trace of modulation.
9. Perfect tone, no trace of ripple or modulation of any kind.

This system is used on "voice" as well as c.w. by omitting the tone report when "voice" is used.

What is a traffic network?

- a) a group of amateurs who meet on a specific frequency and at a specific time to exchange messages.
- b) a group of amateurs who get together to discuss technical subjects.
- c) the manner in which the wires in a transmitter are cabled together.
- d) a system by which it is decided who will call the DX station first.
- e) a system of stop-and-go transmissions.

The correct answer is a).

Emission Characteristics

An A1 signal of quality may be defined as one which:

- a) has a pure note.
- b) has no clicks.
- c) does not chirp.
- d) has freedom from harmonics.
- e) all of the above.

The correct answer is e). In addition, the smallest possible bandwidth should be used.

Type A₀ emission is:

- a) video.
- b) radioteletype.
- c) voice.
- d) steady carrier, unmodulated.
- e) none of the above.

The correct answer is d).

Electrical Principals

Electrical power is measured in:

- a) Watts
- b) Hertz
- c) Farads
- d) Amperes
- e) Ohms

The correct answer is c). A rectifier rate at which a voltage (EMF), forcing current through a circuit, will accomplish work.

(continued)

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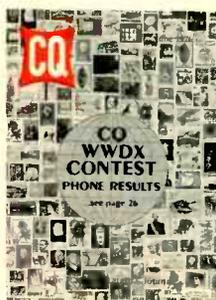
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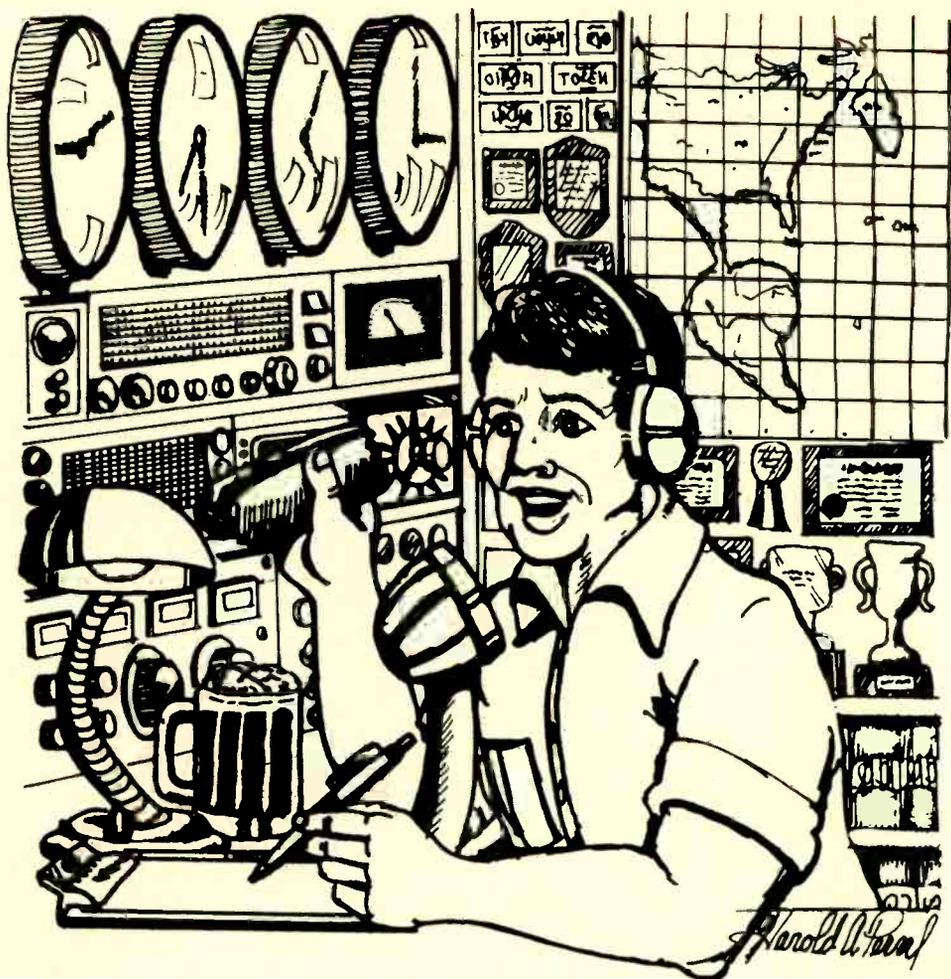
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THE HAMBANDER (continued)

What is rectification?

- a) changing volts into millivolts.
- b) an easy way to work distant stations.

c) the process by which a.c. is changed to d.c.

- d) another name for hetrodyning.
- e) an inferior form of harmonics.

The correct answer is c). A rectifier usually includes filters to smooth out the rectified a.c.

This is an example of _____ rectification.

- a) full-wave
- b) half-wave
- c) linear
- d) digital
- e) loop

The correct answer is a).

This is an example of a _____ network.

- a) L
- b) M-derived
- c) T
- d) pi-
- e) series

The correct answer is d).

Circuit Components

An Ohmmeter is used to measure _____.

- a) current
- b) impedance
- c) voltage
- d) capacity
- e) resistance

The correct answer is e).

An electrical conductor is characterized by _____.

- a) high resistance
- b) low resistance
- c) small size
- d) its resemblance to glass
- e) its insulation.

The correct answer is b).

Antennas and Transmission Lines

A dipole antenna is characterized by _____.

- a) feeding at one end.
- b) feeding at the center.
- c) feeding at both ends.
- d) feeding 1/3 of the way from one end.
- e) coaxial feed.

The correct answer is b).

The main purpose of a transmission line is to _____.

- a) act as a load
- b) provide vertical polarization
- c) conduct the radio energy to the antenna
- d) provide a high SWR
- e) exhibit low loss

The correct answer is c).

Radio Communication Practices

A device to drain away unwanted

electrical charges on radio equipment is called a _____.

- a) heat sink
- b) drain
- c) ground rod
- d) getter
- e) interlock

The correct answer is c).

If an oscilloscope is not available, an alternative means of checking ones signal is to _____.

- a) use a digital counter
- b) tune-up slowly
- c) ask someone on the air
- d) trust to luck
- e) listen at an amateur's station a mile or so away, and have a licensee put your station through its paces.

The correct answer is e).

73, W2LE

2 Spring is coming

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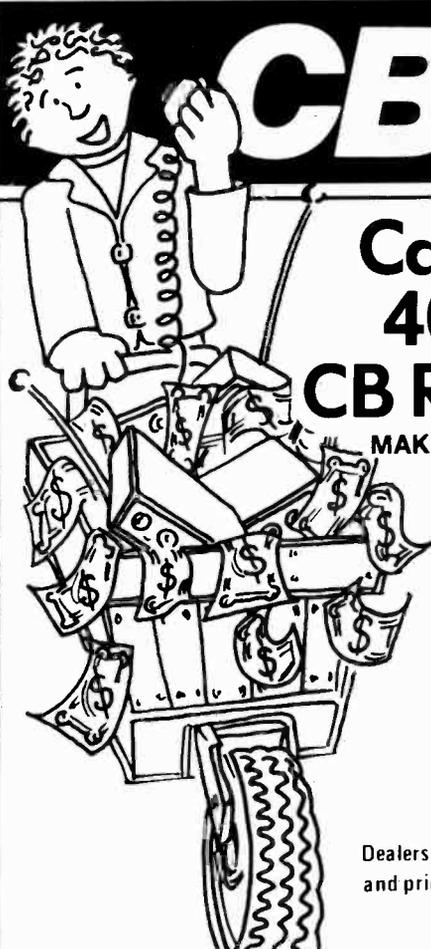
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S9's Monthly Column for Sidebanders

ON THE SIDE.....

by Bill Sanders,
1849, KW-5304
SSB-295

VACATION-TIME SIDEBANDING

NOW'S the time to start thinking about how sideband will fit into your vacation plans as you mobile around the continent. Obviously, if you're crossing any international borders you'll have to find out about getting licensed in other countries (pardon me señores, but Mexico is a no-no). Primary special considerations for the itinerant sideband operator (and this has been true not only for vacationers, but for Sidebanding truckers who have been reminding me of it for months) are channels and identification.

In your local area the sideband crowd may use some particular channel like 4-USB, 27-USB, 7-LSB, or whatever. It may be as natural as sneezing in a dust storm for you to click-over to such a channel when you want to speak to local operators. Problem is that you may not think twice about pulling the same stunt when you're operating out of your local area—and firing up the sideband rig on a random channel in unfamiliar territory might accomplish several undesirable goals, not the least of which being that you will most likely *not* find any kindred sideband souls with whom to speak. Secondly you will more likely outrage local AM'ers on that channel who could quite possibly decide to take reprisals on local sideband channels. On the other hand, even if you did happen to tap

into the correct sideband channel (who knows, maybe they're on Channel 4 too!) you might be on the wrong sideband and earn yourself instant enemies from the sideband crowd. So the idea is to let off on the right foot by using the correct channel.

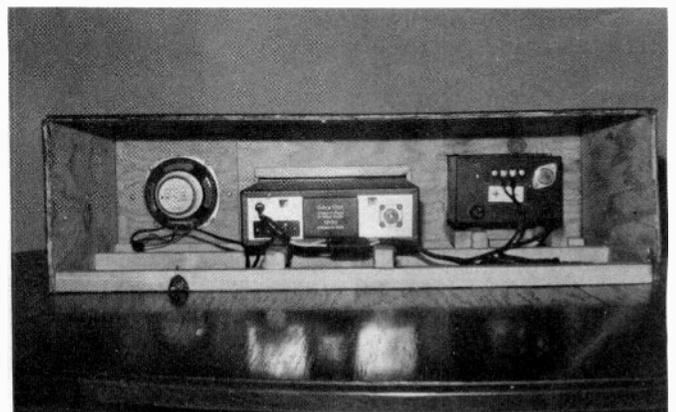
Best bet is to try Channel 16-LSB, since this seems to be in heaviest national use—at least you'll have a better shot at scaring up a few sideband operators there than anywhere else. In many areas Channel 16-LSB is a calling channel so I wouldn't advise settling down there for any long-winded orations unless you want to make a few enemies—not a bad thing to keep in mind when you're on the calling channel even your own home area!

So, before you barge into a sideband channel in any unfamiliar territory, think twice to make sure you're doing it in the right place—maybe monitoring the channel for a while until you hear that familiar sideband signal popping through would be a good idea before you announce you're *on the side* on *any* unfamiliar channel.

Another often heard comment is concerned with identification. As you know, Sidebanders *don't* use AM-type *handles*, instead we use ID numbers. So, if an AM'er is called *Hairless Joe*, or *Speed Demon*, or *Captain Kirk*, or whatever, in his home town, he can use the same identification from coast-to-coast. Same with



Jan, of San Antonio, Texas, became enthusiastic after reading in CB RADIO/S9 about using a mobile unit combined with a power supply to create a base station, that he took his Cobra 132 out of the mobile



unit and went to the drawing board. These two photos show the wild console he constructed—it contains the rig, a speaker and a regulated 4-amp power supply. Looks like a winner!

the Unit Numbers which many AM'ers are now using. But on sideband there is a different situation. Let's say that you belong to the *Ipswitch Center Sideband Club*—along with everybody else in your hometown of Ipswitch Center. You normally use the club's ID numbers assigned to you—IC-988—that can probably get you by anywhere within 100 miles of Ipswitch Center, but in the neighboring state they might hear your IC-988 and think you're a nut or a wise-guy—or both, the end result being that you could easily end up being given a hard time rather than a hearty welcome. Possibly you could try to explain that in Ipswitch Center your numbers are as familiar as the *Purina checkerboard*, *hoping* that you'll be known and loved with these numbers in areas you're passing through. And this holds true not only for numbers from small clubs in rural areas—even larger city, county, regional or even statewide club numbers usually create raised eyebrows 100 miles outside of their local stomping grounds.

Best solution to this is to get yourself a set of *national* sideband identification numbers—numbers which will quickly and easily be recognized anywhere you might go in the U.S. or Canada, numbers which are sure to quickly make you part of *any* local sideband crowd without pain, grief, and lengthy explanations as to who and what you are, and how you came to be that way!

No problem in doing this as you can easily pick up a set of national *SSB Network* identification numbers. These "SSB" numbers are widely and well known and are your *best bet*, since so many thousands of active operators in *all* areas have them, use them, know them, and instantly and enthusiastically come back to other stations using these numbers. Having been around since 1964, *SSB Network* stations are spread far and wide across the entire continent. Believe me, it's a great feeling to mobile into an unfamiliar area and be not only welcomed with open arms by the locals, but to right-off-the-bat have something in common with so many of them—well, its *all* the difference in the world!

In some areas you can receive a set of their distinctive ID numbers right over the air from local *SSB Network Control Stations*, in some areas you can get a set assigned to you by selected leading sideband equipment dealers who have been allocated assignment blocks by the *SSB Network*. *SSB Network* numbers can also be easily obtained by mail directly from the network HQ—*Send them a self-addressed stamped envelope* and request that they send you an application form. They have a limited number of early low (or *prestige*) numbers from a special reserved block set aside for CB RADIO/S9 readers who apply for them—so when you write to them, be certain to mention that you're a CB RADIO/S9 reader and you'll receive an application form giving you access to a low number assignment. Their address is *The SSB Network*, P.O. Box 381-R, Smithtown, N.Y. 11787.

By the way, you *don't* have to limit the use of an *SSB*

Network identification number *only* to vacation time—the vacation aspect is really a side benefit! Many active Sidebanders use their national *SSB Network* identification numbers for *all* of their communications—even when *not* on vacation! I use mine most of the time! Replaces long strings of local, county and regional numbers I've collected!

I just saw the striking new *SSB Network* embroidered patch, now made available for the first time to the national Sidebanding community. These are a *gigantic* 5-inches around (almost half the height of this page), and *beautifully* done in red, white, and blue. They are \$3 each, postpaid, from the *SSB Network*, address above. *Wow! They're sharp!*



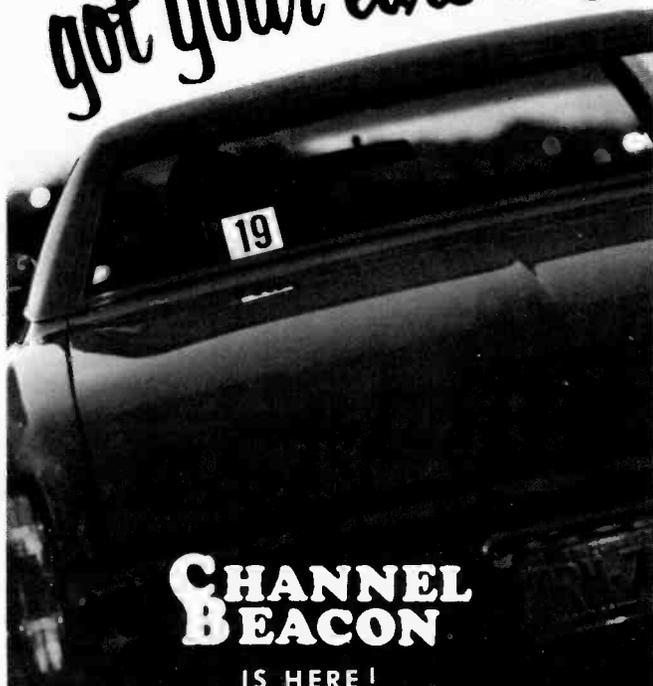
Imagine this embroidered patch; red, white, and blue; a giant 5 inches round (almost half as high as this page)—quite striking on your shirt, sweater, or jacket. It's described further in our text this month.

MAILBAG

A considerable amount of mail has been arriving concerning the sideband use of the top five channels which we suggested here a while back. For instance, Al, in Meriden, Conn., is a member of the Connecticut Wireless Single Sideband Radio Network (more conveniently called the *CW Net*) and advises that the concept has been well thought of in his area. Al adds, however, that he thinks that we should refer to the *TAKE FIVE* channels, *not* as channels—but instead, as *frequencies!* I can dig it—do any readers have comments to offer on this? Al also comments that sideband operators passing through Connecticut are welcome to say hello on 16-LSB or 17-LSB, in some areas there is also activity on 16-USB.

Buck SSB-2033/ARIX-2399, in Flagstaff, Arizona, writes to say that he has noticed that with so many new sidewinders taking to the airwaves that there seems to be a trend towards the breaking down of the group discipline and courtesy long known on our

Hey, CB'ers got your ears on?



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21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

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Total Order Amt. \$ _____

Card # _____ Mail to:
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700 E. Baseline C-2
Tempe, Az. 85282

Expiration date _____
Master Charge bank number _____

Signature ✓ _____

Name _____

Street _____

City _____ State _____ Zip _____

AZ Residents add appropriate sales tax. Allow 3 to 4 weeks for delivery.

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channels. He's starting to hear 10-Codes, profanity, handles, and a lot of other unwanted and unnecessary chatter on Lower-16. Buck observes that it's time for clubs and individual operators who wish to continue sideband as a serious communications tool to start educating those who are taking to the air on sideband channels to tell 'em how it's done on these channels. He also complains that it's annoying when someone tells you that they want to exchange QSL cards but fails to reciprocate with their card after you send yours.



Woody is a reader—here he's shown with his Robyn rig and D-104 mike—also a homebuilt console to house the rig for base station operation. Woody's from New Jersey.

Another complaint comes from Joe, in Clearfield, Utah—who says that there is so much "Ancient Mary type hash and garbage" on Channel 16 (which he blames primarily upon "Eastern stations") that "you sometimes can't even get across the street." He is particularly unhappy about the fact that Channel 16-LSB is not respected in all areas as a calling channel.

See you next month! Bill—SSB-295.

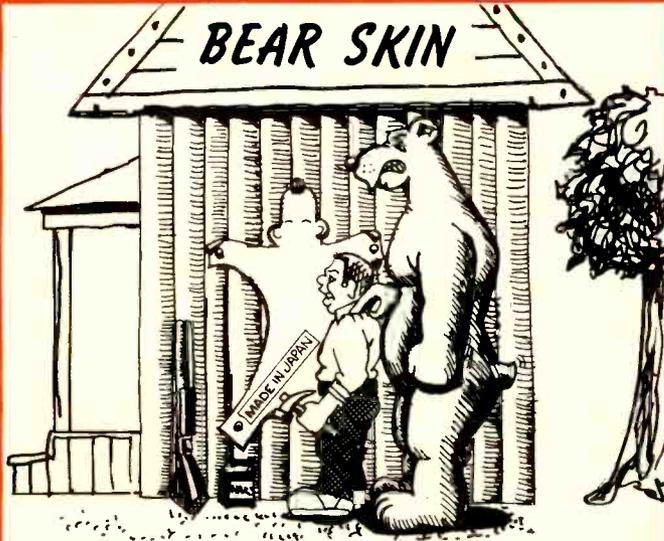


Nuts and Bolts Dictionary

By Harold Perry

A Special THANKS to our goodbuddies who sent in these great CB Slang words.

Robert J. DeCrocker (*The Old Hound Dog*) Kalamazoo, Mich.



That's a Police Car. Other terms used are Tijuana Taxi and Bubble Gum Machine.

Brian Gerard (*Blue Rider KZR 4279*) Parkchester, N.Y.

GOON SQUAD



Those jerks that hog the channels all to themselves and never give anyone else a break.

HAVE YOU GOT A CB SLANG WORD THAT I DON'T HAVE? (You probably do!) Then send it to me and I'll put it in the next issue of S9 with your name and handle. In case of duplicate definitions the one postmarked first will be used. SEND postcards to: HAROLD PERRY c/o S9 Magazine 14 Vanderventer Ave. Port Washington, New York 11050

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“Tomcat’s 1977 Spring / Summer 10-13 Channel Roundup”

LAST Fall we presented to our readers a directory of the most popular in-transit mobile channels being utilized for 10-13’s and various other uses in the U.S. and Canada.

At that time we commented that we might have goofed on a few of them, and possibly overlooked a couple of roads. After publication, readers pointed out a few listings which were incorrect, missing, and since that time, a steady trickle of updated information has been arriving. So, now I’ve put it all together and it turns out (hopefully) to be something you can use when you take to the open roads this Spring and Summer—the channels to stay tuned to for traffic conditions, Smokey Reports, and whatever.

Base stations are requested to avoid using the following channels for ratchet jawing if they are located within 15 or 20 miles of the roads indicated. Taking into consideration the fact that skip conditions can transport a signal for thousands of miles, perhaps it would be best for base stations to totally avoid the *more* popular 10-13 channels if at all possible, in any case—avoiding Channel 19.

Truckers primarily use Channel 19 nationwide at this time, having abandoned their former Channel 10 and several other channels which at one time comprised their communications network. Passenger car operators (4-wheelers) are usually treated courteously on Channel 19, but sometimes forget to realize that truckers get a bit testy with those who start yakking away on Channel 19 with messages which are not connected with 10-13’s. If you hook up with someone on Channel 19 and decide to modulate with them on some non-traffic related topic, best bet is to switch to another channel.

It is worth noting that on some roads there is such a heavy concentration of communications traffic from truckers on Channel 19, that 4-wheelers have started utilizing Channel 10 or other channels.

Some roads listed in this compilation indicate several channels in use. This may be accounted for because either 1) truckers are on 19 while 4-wheelers are on other channels, or 2) channels may change over different sections of the road in question. When in doubt, you can always give a shout on Channels 19 or 9 to ask for info on the proper channel to use for the road you want, for sure someone will be only too happy to steer you straight!

Channel 9 is specified as an Emergency Channel, in some areas the police monitor it and can send you help. Various emergency oriented clubs and groups also monitor this frequency, however the watch hours, locations, communications range, courtesy and efficiency of these groups varies so widely that one cannot be assured of nationwide reliability of emergency use of Channel 9 should aid be required. Some groups are excellent and are always 10-8, while others are 10-1, 10-7, and worse! Do not overlook the fact that if you draw a blank on Channel 9 with your 10-33 shout, you can usually get a response on Channel 19 or other channels listed in this directory.

If you’ve got some additional data for our listing, send it along to: *Tomcat’s 10-13 Channel Roundup*, c/o S9 Magazine, 14 Vanderventer Ave., Port Washington, N.Y. 11050. I’ll issue a revised and updated listing from time to time.

Listings in *italics* are road, route, highway, and interstate numbers and names. (continued)

ALABAMA All roads 19 and 21.

ALASKA All roads 19 and 21.

ARIZONA

8 14, 19, 21
10 19, 21
17 21
40 17, 19, 21

ARKANSAS

30 11, 19
40 19
55 19

CALIFORNIA

5 5, 6, 15, 17, 21
8 19, 21
10 19, 21
15 17, 19, 21
17 21
40 5, 19, 21
80 17, 19, 21
99 12, 15, 17, 19
101 17, 18, 19
395 19, 21

COLORADO

25 19, 21
70 19, 21
80 19
287 19, 21

CONNECTICUT All roads 19.

Merritt Pky. 15
W. Cross Pky. 15

DELAWARE All roads 19.

DIST. OF COLUMBIA

All roads 19.

FLORIDA

10 19
11 15
75 11, 15
95 19

GEORGIA

19 11
20 11, 19
75 11, 15, 19
95 19

HAWAII All roads 19.

IDAHO

15 11, 19
80 19, 20, 21
90 17, 19

ILLINOIS All roads 19 and 21.

INDIANA All roads 19 and 21.

64 12, 19

IOWA

35 19
69 11, 19
80 13, 19

KANSAS

35 3, 7, 19, 20
50 20
70 5, 21

KENTUCKY All roads 19.

75 12, 19

LOUISIANA All roads 19.

20 11, 19

MAINE All roads 19.

MARYLAND All roads 19.

MASSACHUSETTS All roads 19.

MICHIGAN All roads 19.

MINNESOTA All roads 19.

MISSISSIPPI All roads 19.

MISSOURI

14 15
29 14, 15, 19
44 19
55 19
66 19
70 19, 21

MONTANA All roads 19.

94 11, 15, 19

NEBRASKA

17 19, 20, 21

NEVADA

15 17, 19, 21
80 3, 11, 17, 19, 21

NEW HAMPSHIRE All roads 19.

NEW JERSEY All roads 19.

Palisades Pky. 15

NEW MEXICO

10 17, 19, 21
25 19, 21
40 19, 21
54 15, 17, 19

NEW YORK Most roads 19.

Hutchinson Riv. Pky. 15
Palisades Pky. 15
Sprain Brook Pky. 15
Taconic State Pky. 23

N.Y. City

West Side Dr. 15
FDR Drive 17
Belt Pky. 10
Cross Isl. Pky. 10

(continued)

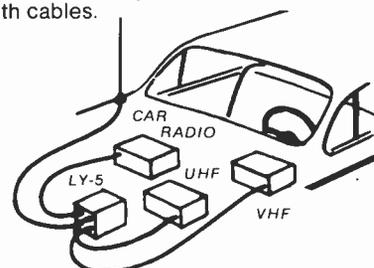
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TOMCAT'S 10-13 CHANNEL ROUNDUP (continued)

Gr. Central Pky. 12
 Interboro Pky. 12
 Long Island
 25 12
 25A 10
 27 & 27A 10
 347 12
 454 12
 495 19
 N. State Pky. 12
 S. State Pky. 10
 N/S Parkways 10, 12
 135 12, 19

NORTH CAROLINA

40 11, 19
 85 11, 12, 19
 95 11, 19
 421 11, 12, 19

NORTH DAKOTA

All roads 11 and 19.

OHIO All roads 19.

70 & 75 15, 21

OKLAHOMA All roads 15 and 19.

35 15, 19, 20, 21
 40 15, 19, 21

OREGON

5 6, 17, 19, 21
 80N 11, 17, 19

PENNSYLVANIA All roads 19.

22 5, 19
 30 5, 15, 19

PUERTO RICO All roads 19.

RHODE ISLAND All roads 19.

SOUTH CAROLINA

20 11, 19
 26 19
 85 11, 19
 95 11, 19

SOUTH DAKOTA All roads 19.

TENNESSEE All roads 11 and 19.

TEXAS All roads 19 and 21.

10 17, 19, 21
 20 19
 24 11, 19
 30 15, 19
 35 15, 19
 40 11, 19
 45 15, 19
 65 11, 19
 75 11, 19
 78 11

UTAH All roads 17, 19 and 21.

VERMONT All roads 19.

VIRGINIA All roads 19.

81 11, 12, 19

VIRGIN ISLANDS All roads 19.

WASHINGTON

2E 3, 14, 19
 2W 3, 14, 15
 5 17, 19
 10 17, 19
 12 17, 19
 90 17, 19

(Logging trucks—14)

WEST VIRGINIA All roads 19.

WISCONSIN All roads 19.

94 11, 19

WYOMING All roads 19.

25 19
 80 19, 20, 21
 90 19

CANADA All roads 1 and/or 19.

Quebec (W. of Montreal) 10
 Maritime Prov. 10

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|--------------|--------------|----------------|-----------------|-------------|
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| 2SC482 1.75 | 2SC773 .85 | 2SC1013 1.50 | 2SC1478 1.50 | 40082 3.00 |
| 2SC485 1.10 | 2SC774 1.75 | 2SC1014 1.50 | 2SC1678 5.50 | 2SC608 4.85 |
| 2SC502 3.75 | 2SC775 2.75 | 2SC1017 1.50 | 2SC1679 4.75 | SK3046 2.15 |
| 2SC517 4.75 | 2SC776 3.00 | 2SC1018 1.50 | 2SC1728 2.15 | SK3047 3.75 |
| 2SC614 3.80 | 2SC777 4.75 | 2SC1173 1.25 | 2SC1760 2.15 | SK2095 3.50 |
| 2SC615 3.90 | 2SC778 3.25 | 2SC1226A 1.25 | 2SC1816 5.50 | SK3048 3.25 |
| 2SC616 4.10 | 2SC797 2.50 | 2SC1237 4.50 | 2SC1908 .70 | SK3054 1.25 |
| 2SC617 4.25 | 2SC798 3.10 | 2SC1239 3.50 | 2SC1957 1.50 | |
| 2SC699 4.75 | 2SC781 3.00 | 2SC1243 1.50 | 2SF8 3.00 | 2SK19 1.75 |
| 2SC710 .70 | 2SC789 1.00 | 2SC1306 4.75 | HEP-S 3001 3.25 | 2SK30 1.00 |
| 2SC711 .70 | 2SC796 3.15 | 2SC1306-1 4.90 | 2SD235 1.00 | 2SK33 1.20 |
| 2SC735 .70 | 2SC799 4.25 | 2SC1307 5.75 | MRF8004 3.00 | |
| 2SC756 3.00 | 2SC802 3.75 | 2SC1307-1 6.00 | 4004 3.00 | 3SK40 2.75 |
| 2SC765 9.50 | 2SC803 4.00 | 2SC1377 5.50 | 4005 3.00 | 3SK45 2.75 |
| 2SC766 10.15 | 2SC839 .85 | 2SC1449 1.30 | 40080 1.25 | 3SK49 2.75 |

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|--------------|-------------|-------------|---------------|--------------|
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| 2SA316 .75 | 2SB235 1.75 | 2SC460 .70 | 2SC828 .75 | 2SC1756 1.25 |
| 2SA473 .75 | 2SB303 .65 | 2SC478 .80 | 2SC829 .75 | |
| 2SA483 1.95 | 2SB324 1.00 | 2SC491 2.50 | 2SC830 1.60 | 2SD30 .95 |
| 2SA489 .80 | 2SB337 2.10 | 2SC497 1.60 | 2SC839 .85 | 2SD45 2.00 |
| 2SA490 .70 | 2SB367 1.60 | 2SC515 .80 | 2SC945 .65 | 2SD65 .75 |
| 2SA505 .70 | 2SB370 .65 | 2SC535 .75 | 2SC1010 .80 | 2SD68 .90 |
| 2SA564 .50 | 2SB405 .85 | 2SC536 .65 | 2SC1012 .80 | 2SD72 1.00 |
| 2SA628 .65 | 2SB407 1.65 | 2SC537 .70 | 2SC1051 2.50 | 2SD88 1.50 |
| 2SA643 .85 | 2SB415 .85 | 2SC563 2.50 | 2SC1061 1.65 | 2SD151 2.25 |
| 2SA647 2.75 | 2SB461 1.25 | 2SC605 1.00 | 2SC1079 3.75 | 2SD170 2.00 |
| 2SA673 .85 | 2SB463 1.65 | 2SC620 .80 | 2SC1096 1.20 | 2SD180 2.75 |
| 2SA679 3.75 | 2SB471 1.75 | 2SC627 1.75 | 2SC1098 1.15 | 2SD201 1.95 |
| 2SA682 .85 | 2SB474 1.50 | 2SC642 3.50 | 2SC1115 2.75 | 2SD218 4.75 |
| 2SA699 1.30 | 2SB476 1.25 | 2SC643 3.75 | 2SC1166 .70 | 2SD300 2.50 |
| 2SA699A 1.75 | 2SB481 2.10 | 2SC644 .70 | 2SC1170 4.00 | 2SD313 1.10 |
| 2SA705 .55 | 2SB492 1.25 | 2SC681 2.50 | 2SC1172B 4.25 | 2SD315 .75 |
| 2SA815 .85 | 2SB495 .95 | 2SC684 2.10 | 2SC1209 .55 | 2SD318 .95 |
| 2SA816 .85 | 2SB507 .90 | 2SC687 2.50 | 2SC1213 .75 | 2SD341 .95 |
| | 2SB511 .70 | 2SC696 2.35 | 2SC1226 1.25 | 2SD350 3.25 |
| 2SB22 .65 | | 2SC712 .70 | 2SC1243 1.50 | 2SD352 .80 |
| 2SB54 .70 | 2SC206 1.00 | 2SC713 .70 | 2SC1293 .85 | 2SD380 5.70 |
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| 2N178 .90 | 2N1142 2.25 | 2N2222A .30 | 2N3053 .30 | 2N3819 .32 | 2N4410 .25 |
| 2N327A 1.15 | 2N1302 .25 | 2N2270 .40 | 2N3054 .75 | 2N3823 .70 | 2N4416 .75 |
| 2N334 1.20 | 2N1305 .30 | 2N2322 1.00 | 2N3055 .75 | 2N3856 .20 | 2N4441 .85 |
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| 2N918 .35 | 2N2218 .25 | 2N2906A .30 | 2N3646 .14 | 2N4220A .45 | C103y .25 |
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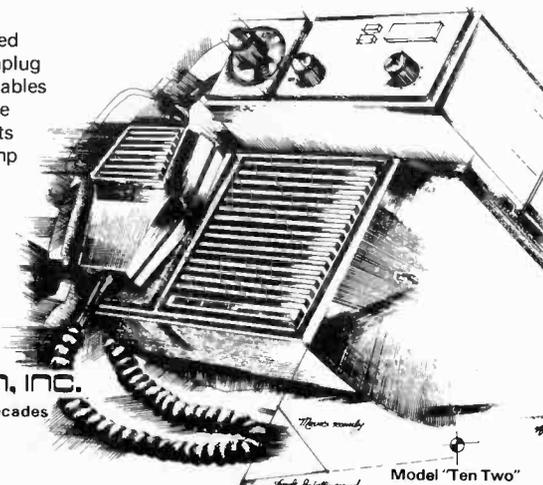
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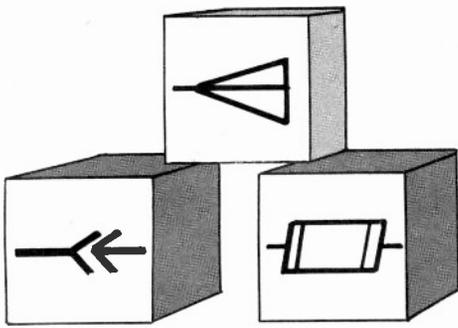
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Basic Radio

by Irving Tepper

PART 14 Inductance



FROM our earlier discussions about electromagnets, we know that an electron flow through a coil develops a magnetic field. As long as the current remains constant, the magnetic field remains stationary, unchanging. Now, let's move back a few steps, before the switch, S_1 in Fig. 4.14(A), is closed to permit a constant current flow. As shown in Fig. 4.14(B), as soon as we close S_1 current flow begins and a magnetic field starts to radiate out from the

force a current flow in the opposite direction to *counter* or cancel the applied voltage. Because the induced voltage *counters* the applied voltage it is often referred to as the *counter electro motive force* or the CEMF. The CEMF is generated and opposes the applied voltage only during the time the current is rising from zero to its normal level, Fig. 4.15(A). This period of time is known as the *transient time*. Once the *steady state* current has been reached the magnetic field is no longer expanding and the CEMF is no longer generated. The CEMF is only a factor during the transient period. The result is that the induced voltage generated during the transient time opposes the current flow and *delays* the current rise to the steady state level. It *does not prevent* that rise, it just *delays* it. The same voltage, applied to a resistance, would create a current rise to the maximum level with no time delay as shown in Fig. 4.15(B).

the coil will try to drop to zero and second, the magnetic field will collapse. As the magnetic field collapses it moves back toward the center of the conductors of the coil. Once again we have the motion required to create a self induced voltage. Since the magnetic field is now moving inward (collapsing) the induced voltage has the opposite polarity that was created when the field was expanding. The induced voltage now tries to *maintain the current flow*

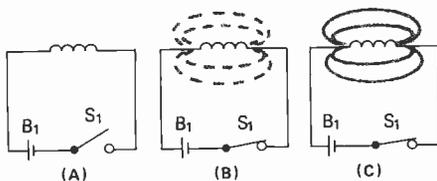


Fig. 4.14(A)—With S_1 open there is no magnetic field. (B) When S_1 closes the current flows and a magnetic field begins radiating outward, expanding. (C) when the current reaches its maximum level, determined by the coil resistance, the field stops expanding and is at its steady state.

conductors. As the current flow through the circuit increases, the strength of the magnetic field also increases and the magnetic field expands outward to surround the entire coil as shown in Fig. 4.14(C).

Self Induction

The fact that the field in Fig. 4.14 is an *expanding* one is very important. Recall that earlier, when we discussed the generation of AC, we showed how a voltage could be induced in a wire if the wire was moved through a magnetic field. It is also possible to induce a voltage in a wire if the wire remains fixed but the *magnetic field moves*. An expanding field is a *field in movement*. Induction of voltage in the conductor occurs as long as the field is expanding.

The expanding field caused by the rising current flow in the circuit shown in Fig. 4.14 induces a voltage in each turn of the coil. The polarity of the induced voltage is *opposite* to the polarity of the applied voltage, B_1 , and tries to

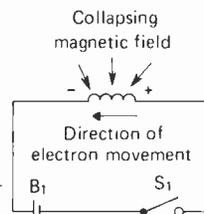


Fig. 4.16—When the circuit is broken the magnetic field collapses (inward directed arrows) and generates a large pulse of voltage across the coil but the voltage soon dissipates.

that existed in the steady state. The induced voltage generated during the collapse is also known as a counter EMF because it is trying to *stop the collapse* of the current.

Because the switch is opened in the circuit of Fig. 4.16, it is not possible for the CEMF to maintain the steady state current level. What the CEMF does do, however, is to force all the electrons in the direction shown by the arrow and so generates a large pulse of voltage across the coil in an attempt to maintain the current flow. If the induced voltage is high enough it can add to the battery voltage and try to arc or jump across the contacts of the open switch.

Lenz's Law—To summarize the behavior of a coil across a DC voltage source, when the switch is closed the electron flow is opposed by the self-induced voltage created by the expanding magnetic field. After the transient period, when the electron flow has reached its steady state, the magnetic field is also steady, no longer expanding and inducing no CEMF. When the switch is opened the magnetic field collapses creating a self-induced voltage that tends to maintain the current flow through

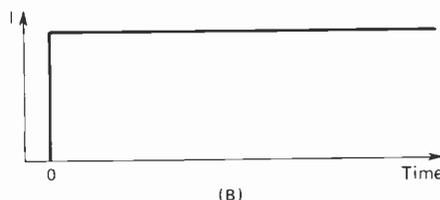
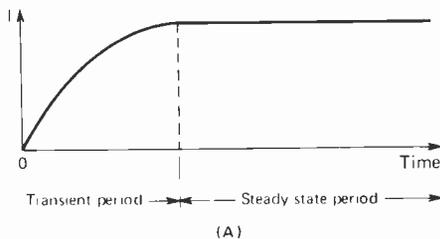


Fig. 4.15(A)—The CEMF opposes the rise in current and delays it during the transient period. (B) In a pure resistive circuit there is no delay. The current rises in zero time.

the coil because the polarity of the voltage is such that it tends to move electrons in the same direction as the steady state electron flow. This action is known as Lenz's Law which can be stated as follows:

1—When the current through a conductor is increasing the induced voltage opposes the applied voltage and tries to prevent the current from rising.

2—When the current through a conductor is decreasing the induced voltage aids the applied voltage and tries

to maintain the electron flow.

Further simplified, Lenz's Law states that the polarity of the induced voltage opposes a change in the magnetic field that caused it.

Inductance

Any circuit that is capable of opposing any change in the current flowing through it, due to CEMF action, is said to have *inductance*. Any conductor has inductance but in such small amounts that the conductor has to be coiled to

reinforce and increase the effect. Inductance is a physical property and is possessed by the component even though there is no current flowing through it, just as a resistor possesses resistance even though no current flows through it.

The unit of measurement for inductance is the *henry*, abbreviated as H. The henry is frequently too large a unit for the measurement of some inductance values and the measurement may be in millihenries, 1/1000 of a H, abbreviated as mH. Smaller values of in-

Information Sheet #8, Electrical Shock Hazard

Most electrical shock occurs when body skin surfaces contact bare electrical wires. Fortunately, skin is a fairly good insulator. Measurements of skin resistance made from one hand to the other with an ohmmeter, can be as high as one megohm or more or as low as one thousand ohms if the hands are damp. If the skin surface is damp and the voltage high enough, sufficient current can flow through the body to present a danger.

In all the experiments performed up till now the voltage source has been a 9 volt battery which presented no shock hazard. Experiment #16 uses the 117 VAC line as the power source and this is dangerous and must be treated with great care and respect. Before we explain how to avoid electrical shock you should know something about how it affects the human body.

How much current must flow through the body before it is felt or before it is a danger?

Tingling—1 mA—Slight sensation only.

Pain—5 mA—At this level the current stimulates many of the body's sensory nerves and pain is developed. The victim will pull back from the source of the shock automatically.

Partial Loss of Muscular Control—10 to 20 mA—The sensory nerves are so stimulated that muscles contract involuntarily and the victim is barely able to break free.

Total Loss of Muscular Control—20 to 100 mA—In this current range the victim cannot release himself. While painful, it is not necessarily deadly because the current flow usually spreads across the body and most of it bypasses the heart area as it is so small.

Heart Action Affected—100 mA and up—Since the heart is operated from internally generated electrical pulses, a large external current flow through the body can cause these pulses to become disarranged. The heart muscle will then vibrate without a set pattern and a condition called *ventricular fibrillation* exists. When this happens the heart is unable to pump blood and if not corrected quickly can result in brain damage or death.

It is virtually impossible for the layman to de-

termine whether or not a heart is in fibrillation or totally stopped, therefore the emergency procedures must cover both conditions. The steps are:

1—Call for medical help and while waiting do the following:

2—Give the victim a sharp blow to the chest, in the center, over the breast bone.

3—Institute cardio-pulmonary resuscitation. This technique can be learned from any up-to-date first aid book or your local Red Cross first aid program. Basically, it consists of mouth-to-mouth resuscitation and closed chest massage. If two people are available, one should check the mouth for obstructions and then start mouth-to-mouth at a rate of 15 respirations per minute.

The second person should be performing closed heart massage by pressing down on the sternum (left center of the chest), releasing pressure and reapplying at a rate of about 60 beats per minute in a continuous rhythmic fashion.

If you are alone, you must first apply mouth-to-mouth as above and switch to heart massage and then back to mouth-to-mouth until help arrives.

Protection against Shock—The purpose of this in-

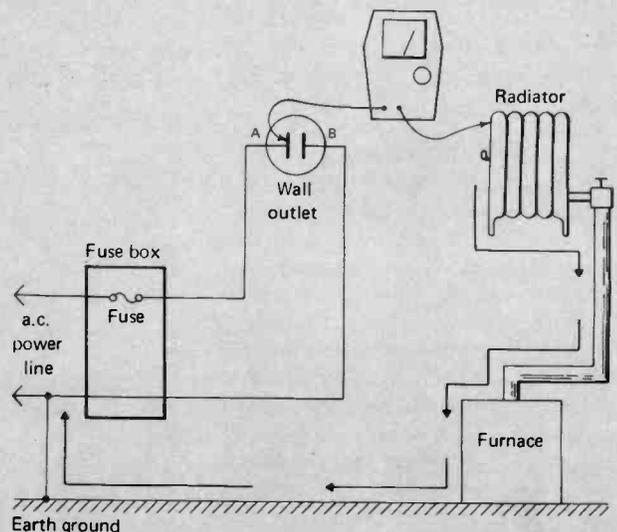


Fig. 1—It is possible to measure the full line voltage between one side of the wall outlet and ground because one side of the power line is grounded just after it enters the building.

ductance are measured in microhenries, 1/1,000,000 of a H, abbreviated as μH .

The circuit symbol for inductance is L. Thus, an inductance of 3 henries would be shown as $L=3\text{H}$.

A circuit or component has an inductance of 1 henry when a change of 1 ampere in 1 second induces an average of 1 volt. This relationship is expressed as

$$E_{\text{induced}} = L \times I \text{ (in 1 sec)}$$

From this, we can derive the following:

$$L = E_{\text{induced}}/\Delta I \text{ and } \Delta I = E_{\text{induced}}/L$$

It must be clearly understood that the value of inductance possessed by a coil is a physical property and so its value must depend on the physical properties of the coil. These properties are the

- number of turns in the coil
- permeability of the coil material
- cross-sectional area of the coil
- length of the coil

The greater the number of turns of

wire, the greater the inductance, the greater the cross sectional area of the coil, the greater the inductance, the longer the length of the coil the lower the inductance. From this we can assume that L, the inductance is proportional to

$$L \propto \frac{N^2 \mu A}{R}$$

where L = inductance
N = number of turns in the coil

(continued)

mation sheet is not to frighten you but make you aware of the danger of shock and most importantly, *how to avoid shock*. Since most modern pieces of electronic equipment are solid state devices the operating voltages are well below the danger level, considered to be about 50 to 60 volts. The greatest danger is the 117 volt power line, not only because of its voltage, but because of the available current, as high as 15 to 20 or more amperes. This is more dangerous than, for example, the high voltage available in a TV set, 20,000 volts, but with virtually no current output, often less than 1 mA.

The obvious answer to the avoidance of power line shock is, never touch both sides of the power line at one time. In fact, never even touch one side if you can avoid it. This simple directive is not easy to follow because you may come in contact with the line voltage in the most peculiar way, without realizing it is about to happen.

When the power line enters your home, it is required by the National Electrical Code that one side of the line be connected to earth ground and that includes the water pipes, any steam lines, radiators, electrical wall plates and so on. This is illustrated in Fig. 1. If you connect a voltmeter from side A of the wall outlet to the radiator, as shown, it will read the full line voltage because of the re-

turn through the metal pipes of the heating system.

This means that if you, by some chance, touch *one* side of the power line *and* ground you *could* be across the line as shown in Fig. 2. While you are not likely to poke your finger in an outlet there are some pieces of electronic equipment in which one side of the power line is connected to the metal chassis. Thus, if you touch the chassis *and* ground, again, you are across the power line. See Fig. 3.

For complete shock protection you must:

- 1—Never touch both sides of the AC line at once.
- 2—Never touch one side of the AC line and ground.
- 3—Never touch two chassis, one with each hand if they are both plugged into the AC line before checking for shock hazard.

When constructing or repairing equipment operated from the 117 VAC power line, be certain that there are no exposed wires. It is not uncommon for line cord insulation to dry out, become brittle and expose the wires. Replace such cords immediately. When constructing equipment, make sure that the power line is not grounded to any metal parts of the chassis, that there are as few exposed connections as possible and that *none* of the exposed power line connections are *outside* the chassis.

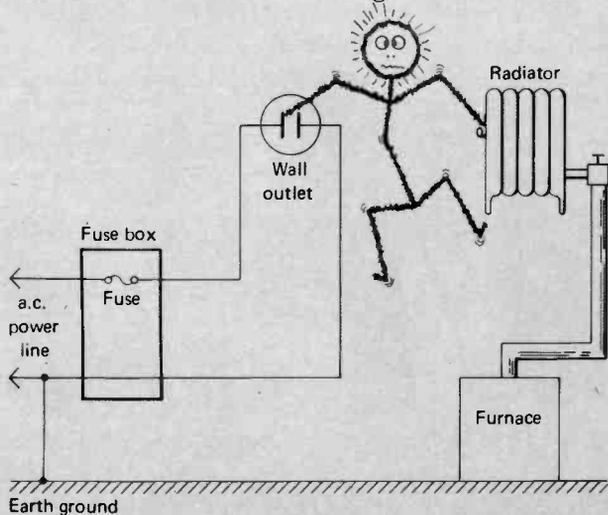


Fig. 2—It is possible for a person to receive a shock by accidental contact between one side of an outlet and ground.

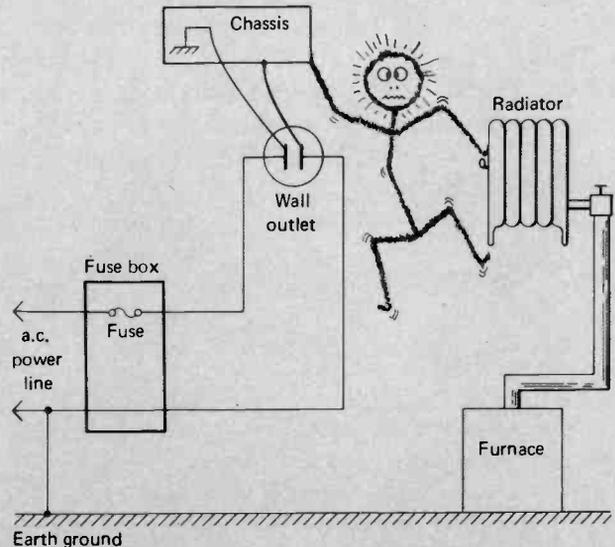


Fig. 3—It is possible for a technician to receive the full 117 V power line by touching a metal chassis or enclosure and the ground system.

BASIC RADIO (continued)

- μ = permeability of the coil
- A = cross-sectional area of the coil
- R = reluctance
- \propto = proportional sign

Inductors

An *inductor* is formed by winding wire around a core. The core may be air or metal, most frequently soft iron. The symbol for an air core coil is shown in Fig. 4.17(A) and an iron core coil symbol is shown in Fig. 4.17 (B). The inductance values of coils used in radio communications ranges from as low as 1 microhenry to a high

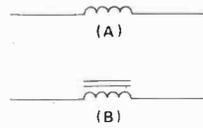


Fig. 4.17(A)—Symbol of an air coil inductor and (B) an iron core inductor.

30 henries or more. In addition inductors are rated for a specific current. Exceeding this current will cause the inductance value to decrease because the core material saturates or it may even burn out the conductor causing an open circuit.

Since the inductance required in a circuit may vary or be of an unusual value, some inductors are made variable by adjusting the position of the core within the coil. Others are made

variable by adjustable contacts. The symbols for variable inductors are shown in Fig. 4.18.

Inductors in Series and Parallel—In order to produce certain values of inductance it is frequently necessary to connect inductors in series or parallel. Coils in series (Fig. 4.19(A) are additive.

$$L_{total} = L_1 + L_2 + L_3 \dots etc.$$

The above formula holds true *only* if there is no magnetic coupling between any of the coils. The effects of coupling between the coils will be discussed in detail later. (continued)

Information Sheet #9, Fuses, Fuse Holders

Fuses provide a simple and inexpensive method of protecting circuits from damage due to short circuits or improper operation of equipment. Fuses are made from a short length of fusible metal placed in some form of housing. The fuse is then placed in series with the load and power source as shown in Fig. 1. When wired in this manner, all current drawn by the load *must* flow through the fuse. If the current drain exceeds the safe value, the fuse element melts and opens the circuit. This interruption of the current flow protects the voltage source and prevents the connecting wires from overheating due to the excessive current flow.

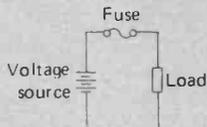


Fig. 1—A fuse, generally made of an alloy of zinc and lead, is placed in series with the circuit it is to protect. Excessive current flow melts the fuse element and opens the circuit.

Fuses are rated by current and voltage. The current rating indicates the fuse's maximum current handling ability before the fusible link will melt, usually at the narrow point in Fig. 2A. The voltage rating indicates the maximum voltage that may appear across the fuse with arcing over the burned out gap.

High current fuses have heavy elements while low current fuses have thin elements. Low voltage fuses are short in length while high voltage type fuses are very long.

Most fuses are designed to open circuit at precisely their rated current. A special type of fuse, called a slow blow, combines two actions. On severe

overloads of 2 to 3 times the rated current the fuse will burn out immediately. A continuous small current overload will, after a short duration, open a solder joint held under spring tension. The slow blow fuse, shown in Fig. 2(B) will allow short duration current surges but will burn out if the current does not drop down to normal in time. Such fuses are used for motors and other loads which have in high momentary starting current.

Fuse Holders—Two types of fuse holders are shown in Fig 3, one of the open type that must be used within an enclosure and the second, a panel mount that encloses the fuse entirely.

When purchasing a fuse you must be prepared to specify the current and voltage rating and the physical size. Electronics equipment makes use of the AG size and our project uses a 1A, 3AG fuse.

Testing—Fuses are tested by measuring their resistance with an ohmmeter. A good fuse will measure zero ohms on the R \times 1 scale. A bad fuse will measure infinite resistance. A fuse with a melted element or a blackened glass is obviously bad but a fuse that appears perfect may still be defective and will show up only when measured with an ohmmeter. Care must be exercised when measuring the resistance of fractional value fuses on the R \times 1 range. The normal meter current may exceed the fuse rating and burn them out each time you measure one.

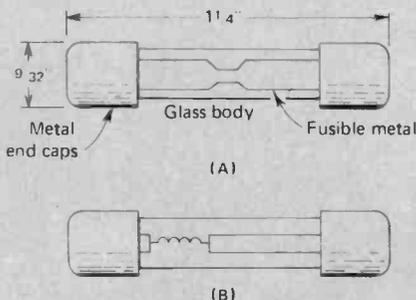


Fig. 2(A) — Construction of a fuse commonly used in electronics. When overloaded, the narrow center section melts. (B) Construction of a slow-blow fuse described in the text.

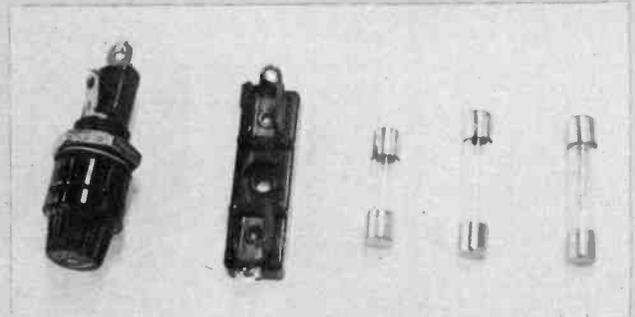


Fig. 3—Two types of fuse holders, one enclosed panel mount, and one clip-in holder. The short fuse is a low voltage type, the center fuse is rated for 250 volts as is the slow-blow fuse at the right. Photo by I. Kahn.

BASIC RADIO (continued)

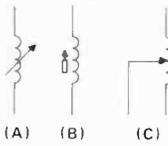


Fig. 4.18—Symbols for variable inductors. The center symbol indicates a variable core. As the core is removed from the coil the inductance decreases.

When inductors are placed in parallel (Fig. 4.20) their value is calculated from the formula

$$L_{\text{total}} = \frac{1}{\frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3} + \dots \text{etc.}}$$

The above formula also holds true only if there is no magnetic coupling between any of the coils. For inductors in series or parallel, they must be magnetically isolated from each other.

Inductance and AC

Up to now we have discussed inductors

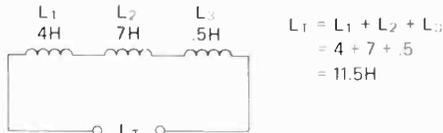
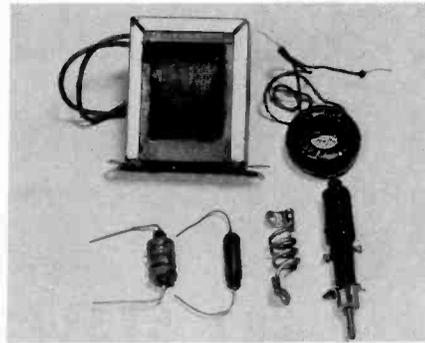


Fig. 4.19—Inductors in series are additive as are resistors.

tors only with DC applied to them. From the time the switch was closed to the time the steady state current was reached (Fig. 4.15A) took only a few milliseconds. When the switch is op-



Various types of inductors encountered in electronics equipment. Top left, a 10H iron core choke used in 60 Hz power supplies. Top right, a torroid coil used for low frequency (audio) filter circuits. Bottom row, left to right, radio frequency choke for low to medium frequencies, another radio frequency choke but for very high frequencies, a coil for tuning circuits for very high frequencies and last, a variable inductance for low radio frequencies. The inductance can be varied by shifting the position of the core attached to the screw shaft. Photo by I. Kahn.

ened it takes no more time than a few milliseconds for the current to drop to zero. Because the delay is so brief, so temporary, it is not taken into account in any of the DC calculations. To determine the current flow we use only the DC resistance of the coil wire and the applied voltage so that

$$I_{LDC} = E_{DC}/R_L$$

With an alternating current applied to an inductor we have a completely different case and a very different effect. Because the AC voltage is changing its value constantly the current flow in Fig. 4.21 must also be changing constantly. This means that *the changing current*

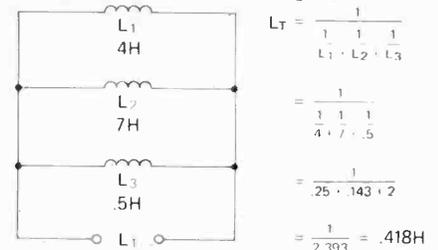


Fig. 4.20—The total value of inductors in parallel is less than the lowest value inductor in the parallel circuit. Note that for above L_T is 0.418H and the lowest inductor value is 5H.

Information Sheet #10, Neon Light Indicators

Neon light indicators are often used because they draw very little current and they can be operated from the 117 VAC line. A neon bulb is shown in Fig. 1(A). It consists of two electrodes in a sealed glass enclosure that is filled with neon gas. The circuit symbol for the neon bulb is shown in Fig. 1(B).

When a high enough difference of potential appears between the two elements, electrons are ripped

from the valence rings of the neon gas molecules and as the electrons return to the valence ring they give up their energy in the form of light. This condition is called *ionization*. The color of the light can be controlled by the type of gas; neon is orange and argon is blue.

The typical neon bulb of the type shown in Fig. 1(A) requires about 50 volts to ionize. If this bulb is placed directly across the 117 VAC line excessive current will flow and result in immediate burn-out. To prevent this, a 100K resistor is placed in series with the neon bulb to limit the current flow. Pre-assembled units are available with the resistor built in as shown in Fig. 2.

A neon bulb when energized with DC will develop a glow around one element as shown in Fig. 3. With AC each element will glow.

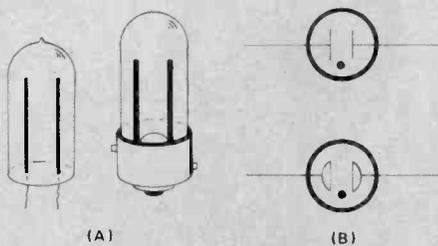


Fig. 1(A) — Construction of two types of neon bulbs. (B) Neon bulb circuit diagram symbols.

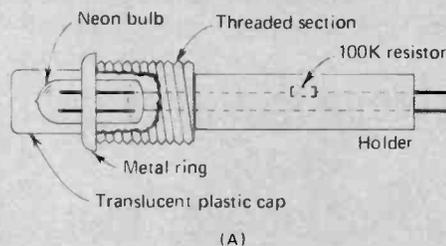


Fig. 2—Neon bulb and series 100K resistor used to indicate the presence of 117 VAC line and a typical self-contained assembly used for a panel indicator.

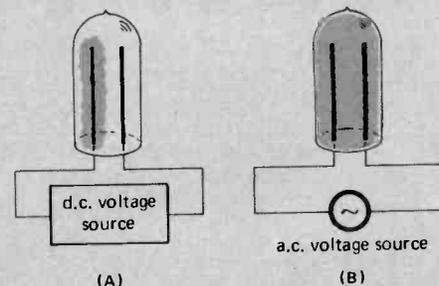


Fig. 3—A neon bulb can be used to indicate if an unknown voltage source is AC or DC. If the gas ionizes around one post of the bulb the voltage is DC. If both posts glow the voltage is AC.

flow is always opposed by a CEMF because the magnetic field, in trying to follow the current changes, is continu-

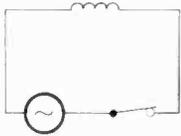


Fig. 4.21—When AC is applied to an inductor the current flow is opposed because the continually changing applied voltage generates a constant CEMF.

ally building up, dropping to zero and reversing polarity. The magnetic field of the coil reacts by producing a constant CEMF that has the very same effect in opposing the current flow as would a resistance and so this opposition to the flow of alternating current is called reactance. Since the reactance is caused by the inductance it is called,

more fully, inductive reactance and is measured in ohms. The symbol for inductive reactance is X_L .

Since the reactance of the inductor is produced by the changing current, X_L must be affected by the frequency of the applied AC. Recall that the rate of change is greater for high frequency AC voltages (Fig. 4.13). Thus X_L will

Information Sheet #11, Transformers

Transformers will be discussed in great detail very soon but the immediate need to use one in Experiment #16 makes it necessary to provide some basic information. As the name of the device indicates the

transformer "transforms" or changes something. Transformers are used to raise or lower AC voltages and currents. In the circuit of Experiment #16 the transformer is used to reduce the power line voltage from 117 VAC to 12.6 VAC. The elementary construction is shown in Fig. 1(A) and the transformer symbol in Fig. 1(B). The current designation is T.

The transformer operates only on AC and transfers energy from one winding to the other by magnetic lines of force that flow in the core. The core is usually made of soft iron assembled in layers, called laminations. The primary winding is the winding to which the voltage is applied. The secondary winding is that from which the increased or decreased voltage is taken.

There is a maximum current rating for a transformer determined by the diameter of the wire used and the amount of iron in the core.

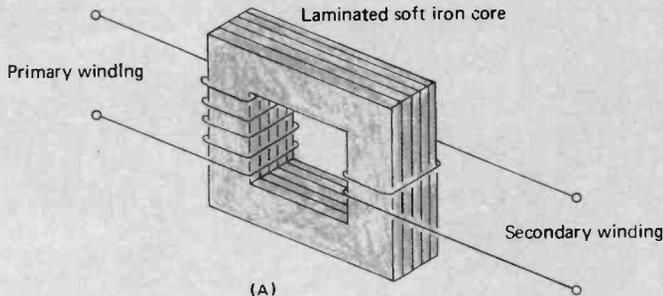
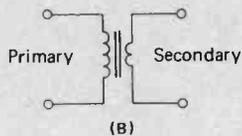


Fig. 1(A)—Construction of a basic transformer consists of two windings around a closed laminated, soft iron frame. (B) Symbol for an iron core transformer.



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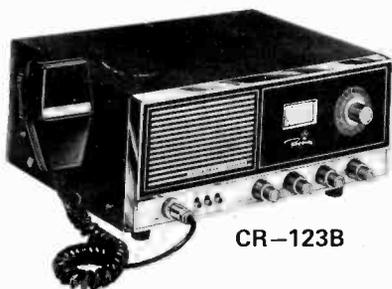
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vary with frequency as well as the inductance of the inductor. The equation for inductive reactance is $X_L = 2\pi fL$

where X_L = inductive reactance in ohms
 L = inductance in henries
 f = frequency of AC voltage in Hertz
 π = pronounced pi, equal 3.141, approximately

While X_L must change with frequency, the inductance does not change. Recall that the inductance, L , is a function of the physical construction of the induc-

tor and thus the inductance does not vary with frequency.

Let's look at some typical calculations. For example: Calculate the inductive reactance of a 3H coil connected to a 150 Hz source

$$\begin{aligned} X_L &= 2\pi fL \\ &= 2 \times 3.141 \times 150 \times 3 \\ &= 2826.9\Omega \end{aligned}$$

If the same 3H inductor is connected to a 20Hz source, its reactance would then be

$$\begin{aligned} X_L &= 2\pi fL \\ &= 2 \times 3.141 \times 20 \times 3 \\ &= 376.9\Omega \end{aligned}$$

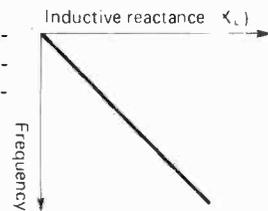


Fig. 4.22—A plot of X_L versus frequency indicates that for a given inductor, X_L rises with frequency.

If we were to plot the reactance of the inductor versus frequency we would get a graph such as shown in Fig. 4.22.

Phase Relationships—If a sine wave voltage is applied to a pure resistive circuit

Experiment #16—Impedance

Materials:

- 2—perfboards 6 $\frac{7}{8}$ " x 9 $\frac{3}{4}$ " (Radio Shack #276-1583)
- 1—1" angle iron bracket
- 9— $\frac{1}{2}$ " #4 Round head wood screws
- 12—4" long, 20D common nails
- 2—pieces of wood $\frac{3}{4}$ " x 2 $\frac{1}{3}$ " x 6 $\frac{7}{8}$ "
- 1—piece of wood $\frac{3}{4}$ " x 2 $\frac{1}{4}$ " x 8 $\frac{1}{4}$ "
- 4—Fahnestock clips (Radio Shack #270-393)
- 1—6 lug terminal strip (Radio Shack #274-689)
- 1—Transformer 117V/12.6V @ 1.2A (Radio Shack #273-1505)
- 1—150 ohm resistor $\frac{1}{2}$ watt (Radio Shack #1000 Series)
- 1—SPST toggle switch (Radio Shack #275-602)
- 1—Fuse holder for 3AG fuses (Radio Shack #270-364)
- 1—1A 3AG Fuse
- 1—Neon indicator light (Radio Shack #272-705)
- 1—Boyonet pilot light socket (Radio Shack #272-318)
- 1—#53 pilot light (14V) (Radio Shack #272-1117)
- 1—Roll of #32 enameled wire (Radio Shack #278-011)
- 1—Line cord and plug, 6' long
- Assorted 4/40 hardware

Part I—How to construct the Chassis

Procedure:

1—Drill the holes in the front perfboard as shown in Fig. 1. If you prefer, a sheet of $\frac{1}{8}$ " masonite, of the same size, can be substituted for the front panel perfboard.

2—Assemble the chassis as shown in Fig. 2 and

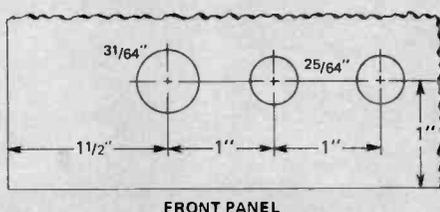


Fig. 1—Front panel drilling dimensions and layout.

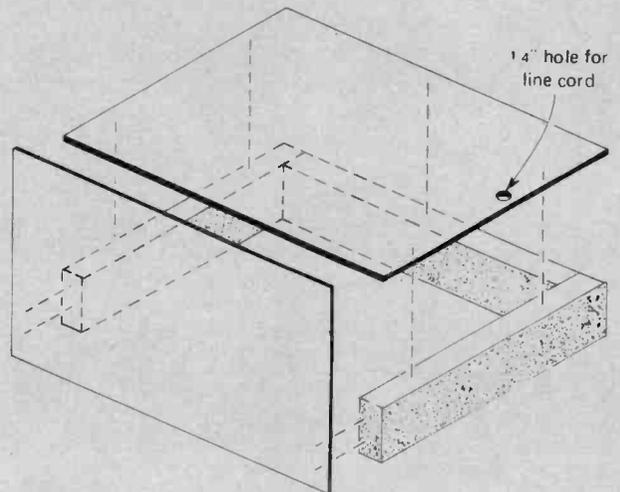


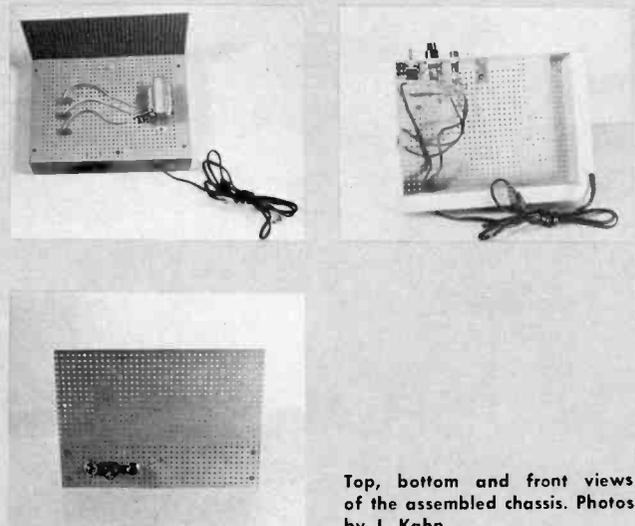
Fig. 2—Exploded view of chassis assembly.

the photographs. Nail the ends of the wood supports with $1\frac{1}{2}$ " wire nails.

3—Add a 1" angle iron to support the center front area of the perfboard.

4—Mount the toggle switch, fuse holder and neon on/off indicator.

5—Mount the transformer and fahnestock clips as shown in the photos.



Top, bottom and front views of the assembled chassis. Photos by I. Kahn.

Experiment #16

Part II—Wiring the Chassis and Testing the Circuit

1—Slip the two black transformer primary wires down through holes in the perfbboard.

2—Wire the circuit shown in Fig. 3A using the wiring layout of Fig. 3B.

3—Tie a strain relief knot in the line cord inside the chassis leaving 6" on the free side of the knot.

4—Insert a 2 ampere 3AG fuse in the fuse holder.

5—All resistance tests that follow are to be made with no power applied.

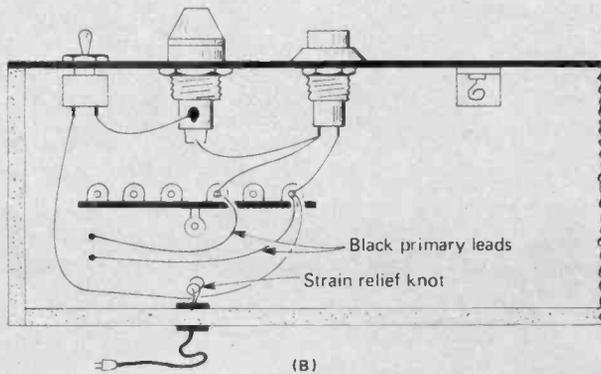
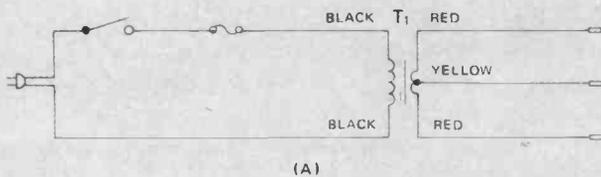


Fig. 3(A)—Circuit to be wired. (B) Wiring layout for the current shown in (A).

A. Measure the resistance across the AC plug, as shown in Fig. 4, with the On/Off switch in the Off position. Enter the reading in Chart I.

B. Measure the resistance across the AC plug with the toggle switch in the On position. Enter the reading in Chart I.

C. Measure the resistance from one blade (either one) of the line plug to the transformer frame to be

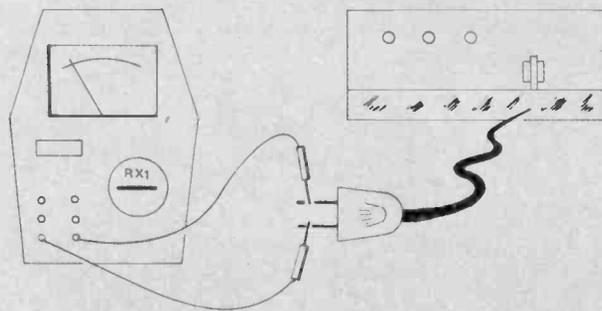


Fig. 4—How to test the resistance of the transformer primary circuit.

| Step | Circuit Test Points | Normal Resistance | Measured Resistance |
|------|--|-------------------|---------------------|
| A | Across line plug with S_1 Off | Infinity | |
| B | Across line plug with S_1 On | 35 | |
| C | From one blade of the line plug to the transformer frame | Infinity | |
| D | Across line plug with fuse out | Infinity | |

CHART I

certain that the primary winding is not shorted to the transformer core. The resistance reading should be infinite.

D. Remove the fuse from the holder. (This is the equivalent of a burned out fuse.) Repeat Step B.

Further resistance measurements are not needed unless there is a wiring error or defective component.

6—If all resistances are correct, plug in the line cord, turn the switch On and observe neon power indicator; it should light.

7—Set the VOM to the 150 VAC range.

8—Measure the primary voltage across the two black primary wires. Record the reading in Chart II.

9—Lower the meter range to 0-60 VAC and measure the voltage across the full secondary and enter the reading in Chart II.

10—Measure from one end to the center tap and then the other end to the center tap. Record readings in Chart II.

| Circuit Test Points | Normal Voltage | Measured Voltage |
|---|----------------|------------------|
| Across transformer primary | 117 VAC | |
| Across transformer secondary | 12.6 VAC | |
| From center tap to one end of secondary | 6.3 VAC | |
| From center tap to other end of secondary | 6.3 VAC | |

CHART II

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(Fig. 4.23A) the resulting current will also be a sine wave since the current is directly proportional to applied voltage. Notice that in Fig. 4.23(B) that as the voltage increases in a positive direction the current also increases in step with it. When the voltage reverses the current reverses direction and stays in step with the voltage. When two waves such as those shown in Fig. 4.23 are exactly in step with each other they are said to be in phase. To be in phase the two waves must pass through their minimum and maximum points at the same time and in the same direction.

If a sine wave voltage is applied to an inductance the current is actually opposed by the CEMF. The result is that in a pure inductance (an inductance with no resistance) the current flow is delayed by 90°. This is shown

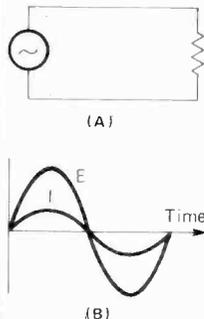


Fig. 4.23—When AC is connected across a resistive circuit (A) the voltage and current flow (B) are in phase with each other.

in Fig. 4.24. The voltage sine wave, E, starts at 0°. As the voltage reaches its peak at 90° the current starts to flow. (It has been delayed or held back by the CEMF.) Since the two sine waves do not pass through their minimum and maximum together they are out of phase or have a 90° phase difference. Thus, for an inductance, we can say that the applied voltage leads the current by 90°, or the current lags the applied voltage by 90°.

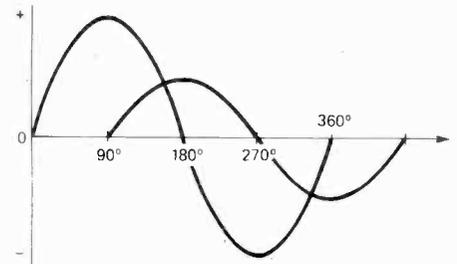


Fig. 4.24—In a pure inductive circuit the current flow is delayed a full 90° resulting in a phase shift.

Suggested Reading:

Schrader, R. L., *Electronic Communications*, Third Ed., New York: McGraw Hill, pp 69 to 71, 75 to 79.

Tepper, Marvin, *Basic Radio*, Vol. 2, Second Ed., Rochelle Park, New Jersey: Hayden Book Co., pp 24 to 27, 30 to 32.

Experiment #16 Part III—Observing the Effects of Impedance

1—Connect a 14 volt pilot light bulb across the secondary winding as shown in Fig. 5. Note the intensity of the glow.

2—Connect the coil of #32 wire in series with the light bulb as shown in Fig. 6. Note the intensity of the glow. To compare the glow to that of step 1 short out the coil with a wire jumper momentarily.

3—Insert fifteen 20 D common 4" nails, seven

from one end and eight from the other. Note the reduced intensity of glow due to increased inductive reactance.

4—Turn the power off, remove the coil and measure its DC resistance. It should read approximately 150 ohms.

5—Substitute a 150 ohm resistor for the coil, apply power and observe the intensity of the lamp.

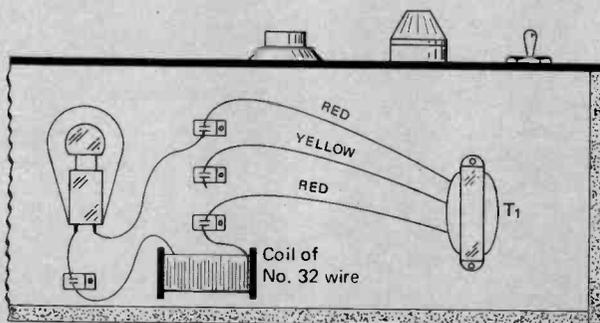


Fig. 5—Wiring circuit for the #53 pilot light and socket across the 12.6V secondary of the transformer.

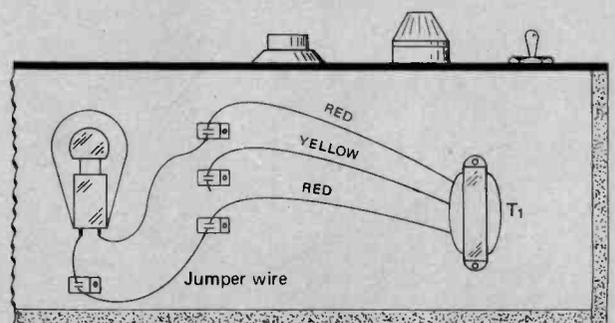


Fig. 6—Inductor placed in series with the #53 pilot light reduces the current flow as indicated by the reduced intensity of the glow.

Self Check Questions

1—When a voltage is applied to a resistance the current rises to its maximum instantly. T or F.

2—When a DC voltage is applied to an inductor the current rises to its maximum value instantly. T or F.

3—The polarity of the induced voltage in an inductor is always opposite to the polarity of the applied voltage. T or F.

4—The transient time in a resistive circuit is longer than in an inductive circuit. T or F.

5—When a magnetic field collapses, a large pulse of voltage is developed across the inductor. T or F.

6—Any circuit or component that opposes a change of current flowing through it due to CEMF action is an inductor. T or F.

7—Calculate the value of induced voltage in a 0.5H inductor if there is a 2A change in current in 2 seconds.

8—What is the value, in millihenries, of a 0.5H inductor?

9—If the current through an inductor is reduced by $\frac{1}{2}$ its inductance

- A) goes up by $\frac{1}{2}$
- B) drops by $\frac{1}{2}$
- C) remains the same

10—If the number of turns of an inductor are increased without lengthening the inductor, the inductance value will

- A) decrease
- B) increase
- C) remain unchanged
- D) reduce with a decrease of current flow.

11—If the frequency of the voltage applied to the coil is increased the inductance will increase. T or F.

12—When inductors are placed in series their inductances add directly. T or F.

13—When inductors are placed in series it makes no difference if they are magnetically coupled or not, their values add directly. T or F.

14—Inductors can be made in a wide range of values but they cannot be made variable. T or F.

15—A 15H and 10H inductor are placed in parallel. Calculate their equivalent value.

16—The opposition to the flow of cur-

rent by a pure inductance varies with the applied frequency. T or F.

17—The inductance of the coil affects X_L inversely. T or F.

18—Calculate the inductive reactance of a 0.75H coil when it is subject to 20 kHz signal.

19—In a pure inductance the current leads the voltage by 90° . T or F.

20—The function of a fuse is to protect a circuit against reduced current flow. T or F.

21—If a fuse appears to be good, that is, continuous element and not blackened it is good. T or F.

22—A good fuse will read infinity on an ohmmeter. T or F.

23—In part III of Experiment 16, Step 3, when inserting the nails in the coil core, why did the lamp dim?

Self Check Answers

1—T
2—F
3—F
4—F
5—F
6—F
7— $E_{ind} = \Delta H = 1 \times 0.5 = 0.5V$.
If I changes 2A in 2 seconds, it is changing 1A in 1 second.
8—500 mH
9—C
10—B
11—F. Inductance is the physical property of the coil and does not change with applied voltage or frequency.
12—T
13—F
14—F
15—6H
16—T. $X_L = 2\pi fL$
17—F. Directly
18— $X_L = 2\pi fL = 6.28 \times 20,000 \times 0.75 = 94,200\Omega$
19—F. I lags E by 90°
20—Against excessive current flow
21—F. Fuses that appear to be good may well be defective
22—F. Zero ohms
23—The addition of the iron core increased the inductance, L, which increased X_L .

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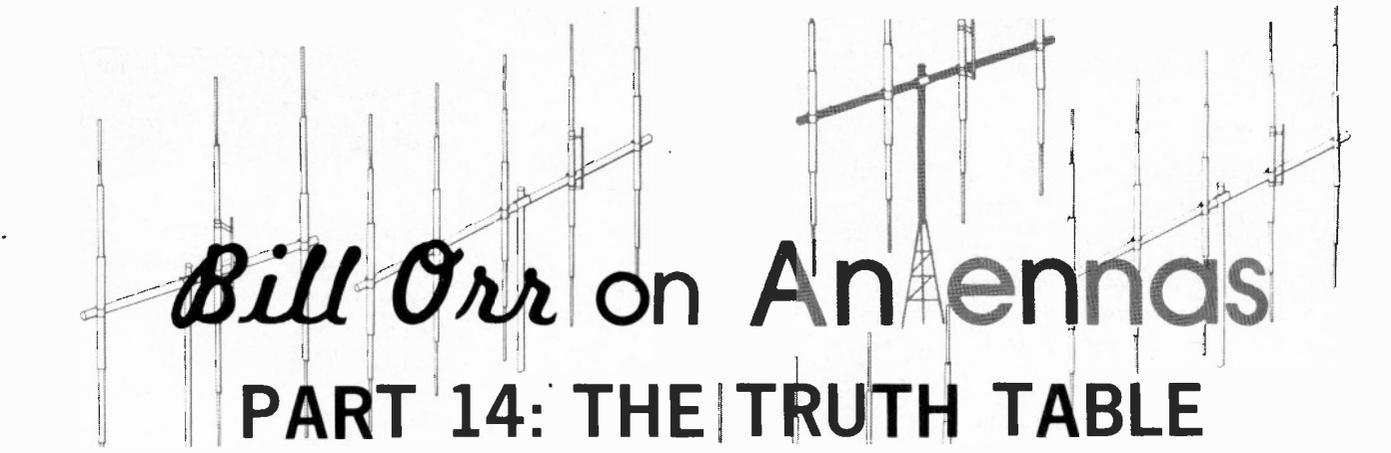
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Bill Orr on Antennas

PART 14: THE TRUTH TABLE

AFTER discussing whips, Yagis and Quads in the past three antenna columns, I think it is about time to wrap up this subject and go on to bigger and better things! So this column will attempt to summarize the power gain (signal gain) of the more popular antenna types.

All radio antennas follow natural rules that are well known to radio engineers. Antenna power gain may be predicted mathematically before an antenna is even built and the theory may be proven on an antenna range, using a model antenna. Very seldom does a "miracle antenna" come along which obsoletes the great sum of knowledge built up over the years since Hertz first used his "sparkling ball" antennas.

An antenna range is simply a large, open, uncluttered area suitable for gain measurements. The antenna under test is commonly placed at the center of the test area, which may be several acres in size. A special receiver, calibrated carefully in signal strength readings is then moved about the test area, measuring the signal strength emitted from the antenna when a known amount of power is applied to the antenna. Usually, the test receiver is moved in a circle about the antenna. Sometimes it is moved up in the air on an elevated platform. Signal strength readings are logged at many locations and are then compared with readings made on a standard antenna. All antennas are compared to the standard, so that the readings may be compared against each other.

The more exotic antenna ranges use scaled-down model antennas, one-tenth or one-hundredth the size of the real thing and signal strength readings are made and plotted automatically. The result is that the signal strength (and signal gain) are quickly known in all directions about and above the antenna.

Most antenna manufacturers can't afford the luxury of a complete antenna range and must either rent one or else use somebody else's antenna data. In some cases, no antenna range is used, and the signal gain figures given in the advertisements are just pure baloney. This confuses the reader and makes the other manufacturers very unhappy, especially those who have gone to the time and trouble to thoroughly engineer and test their antennas!

Fat books have been written on antenna design, and these books are of great interest to the designer. For the user, however, the books are probably too technical. The most important antenna information of use to the CBer, however, can be classified and summarized into a unique *Truth Table* that provides at a glance the theoretical maximum power gain (signal gain) figure of the most popular antenna arrays. Using the Table, you can quickly determine the gain performance of an antenna, as compared to an isotropic radiator (the comparison antenna in the electronic industry) or to a ground plane (the comparison antenna in the zany world of CB radio). In addition, the signal gain of one antenna type may be compared to that of another type. This helps you to sift out impossible advertising claims, inflated gain figures and other delightful practices designed to confuse you and separate you from your money.

The Truth Table

The Truth Table summarizes antenna power gain for the ten most popular types of CB antennas, and compares their gain in decibels. Let's see how the Truth Table works (1).

Look at Figure 1. The vertical columns in the Truth Table summarize antenna power gain for the ten most popular types of CB antennas, and are used to compare their gain in decibel units. The list starts with the imaginary isotropic radiator and progresses through various antenna types up to the 4-element "monster" Quad, the King of CB antennas.

The second column (Decibel Gain Over Isotropic Radiator) compares the power gain of any antenna type in column one to an isotropic radiator. Thus, the two element Quad beam has a power gain of 9.1 decibels over the isotropic radiator, as noted in the Table. The third column (Decibel Gain Over Ground Plane) tells the story "like it is, in the world of CB". This reference column compares signal gain to a practical, useful antenna and is a meaningful comparison of antenna gain for the CB operator. The three element Yagi beam, for example, has a signal gain of 9.8 decibels over the ground plane antenna.

Gain figures given for each type of antenna are those

| TRUTH TABLE OF ANTENNA GAIN | | |
|-----------------------------|--------------------------------------|--------------------------------|
| Antenna Type | Decibel Gain Over Isotropic Radiator | Decibel Gain Over Ground Plane |
| Isotropic Radiator | 0 | -0.3 |
| Ground Plane | 0.3 | 0 |
| 1/2 Wave Whip, or Dipole | 2.1 | 1.8 |
| 5/8 Wave Whip | 3.3 | 3.0 |
| 2 Element Yagi Beam | 7.1 | 6.8 |
| 2 Element Quad Beam | 9.1 | 8.8 |
| 3 Element Yagi Beam | 10.1 | 9.8 |
| 4 Element Yagi Beam | 12.1 | 11.8 |
| 4 Element Quad Beam | 14.1 | 13.8 |

Figure 1—The "Truth Table" rates 8 popular types of CB antennas in relation to decibel power gain over an isotropic radiator and a ground plane antenna. The first column lists the antenna types, the second column the power gain over an isotropic radiator and the third column the power gain over a ground plane. Thus, the 3 element parasitic (Yagi) beam antenna provides 9.8 decibels power gain over the popular ground plane and the 4 element Quad beam provides 13.8 decibels gain over the ground plane. Generally speaking, unless a new antenna provides 3 or 4 decibels gain over the old one, it is not worth the time and money to make a change. (Chart courtesy of Radio Publications, Inc.)

commonly accepted in good engineering practice and are rounded off to the nearest tenth-decibel.

How the Truth Table Works For You

By comparing signal gain in decibels, the real-life advantage of one type of an antenna over another can easily be determined. As an example: You now have a vertical ground plane antenna at your base station and are contemplating taking it down and replacing it with a 5/8-wavelength, extended vertical antenna. What will be the advantage of this antenna exchange in terms of signal gain? Answer: According to column two of the Truth Table the ground plane antenna has a signal gain of 0.3 decibel over an isotropic radiator and the 5/8-wavelength vertical has a signal gain of 3.3 decibels over an isotropic antenna. Thus, comparing one antenna to another, the latter has a 3 decibel gain over the

(1) The Truth Table is copyrighted by Radio Publications, Inc. and reprinted with their permission. More helpful information on the Truth Table and signal gain can be found in the handbook, "The Truth About CB Antennas", by William I. Orr. Available for \$5.95 plus 35¢ postage and handling from: Radio Publications, Inc., Box 149, Wilton, CT 06897.

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former. This is confirmed by the data in column three, which indicates that the $\frac{5}{8}$ -wavelength vertical whip antenna has a 3 decibel gain over the ground plane. This is a definite advantage.

Well, you say, how about going to a 3 element Yagi beam instead of using a ground plane antenna? Is it worth it, in terms of signal gain? According to column three, the difference in gain between the two antennas is 9.8 decibels, a very worthwhile power gain.

A real eye-opener is the signal gain achieved by going from a ground plane antenna to a 4-element "monster" Quad beam antenna. A power gain of 13.8 decibels! Such a power gain should make every CBER on the channel shake in his boots and bow down in humble admiration when your potent signal hits the air! In addition, the "monster" Quad provides equal gain for reception, and will give your receiver the ears of an Iroquois Indian scouting party!

The *disadvantage* of a big gain antenna, on the other hand, is that you have to "aim" it in the direction you wish to work. The beam pattern of a big antenna array is very "tight", or narrow. This calls for an antenna rotator and direction indicator, items which are unnecessary with a ground plane or extended whip antenna.

In using the Truth Table, a good rule-of-thumb to remember is that a change in signal level of one decibel is just noticeable, a change in level of 2 decibels is noticeable and worthwhile over the long run, and a change of 3 decibels is of immediate advantage to you and definitely worthwhile. A signal gain of more than 3 decibels is *very* noticeable and will quickly "open up" a difficult communications circuit.

Antenna Gain and Your S-Meter

It is virtually impossible to translate antenna power gain in decibels into S-meter readings on your CB receiver meter. Yes, it is well known that many S-meters are calibrated in decibels, but no two manufacturers agree on what the S-meter should indicate, and an S-6 signal on one meter may be S-9 on the meter of another receiver. Yet the signal may sound the same on both receivers! In addition, the S-meter scale—in most cases—is arbitrary, with no correlation between actual decibels of signal gain and meter reading, despite the markings on the meter. Expressions of signal strength without reference to conditions of measurement and decibel reference are—as expressed by Poo-Bah in the operetta "The Mikado" (by Gilbert and Sullivan)—"merely corroborative detail, intended to give artistic versimilitude to an otherwise bald and unconvincing narrative".

In the past, some manufacturers of better CB equipment have tried to make one S-unit equivalent to 4 decibels power gain, but this definition is the exception, rather than the rule.

A word, then, of warning—please don't try to interpret the Truth Table in terms of the "funny" S-meter of your CB transceiver!

(continued)

The Truth Table Pays Off!

The Truth Table is a handy device to evaluate the most popular CB antennas. Now, if a description of an antenna (or a photograph or drawing) is given you, you can often determine the antenna type from inspection of the photograph by counting the antenna elements, noting to which element the feedline is connected, etc. Then, after the antenna type is determined, look up the probable signal gain figure for this antenna design in the Truth Table.

Generally speaking, no one antenna manufacturer has a monopoly on excellence, signal gain, or is the ultimate source of antenna wisdom or design. Power gain aside, the quality and ruggedness of antenna hardware and components are of great importance and should not be sacrificed for price, or allegedly superior antenna performance. A poorly designed antenna will quickly fall apart in bad weather. Talk to other CB operators and also to radio amateurs. Above all, speak to your parts distributor or dealer of CB equipment. Visit his store and examine the antennas he has in stock. Ask for his judgement. Check antenna construction and hardware. Write the various antenna manufacturers for their catalogs and full details. After all, it is *your* money you are spending!

On-the-Air Antenna Checks. Good or Bad?

Some experimentally-minded CBers attempt on-the-air antenna checks, switching back and forth between two antennas to determine if one performs better than the other. Such tests, if properly conducted, can be valid only for the particular set of circumstances under which they are run. It should not be generally assumed from such a test that if Antenna A works better than Antenna B at one station, it will outperform Antenna B at a different station location under different environmental conditions.

If you wish to perform a controlled on-the-air check between two of your antennas, it may provide you with useful information for your particular location. The two test antennas should be in the clear and situated about the same height above the ground. They should be adjusted so that the SWR on each transmission line is reasonably low. The antennas should be connected to your CB equipment through a coaxial switch, so that the two feedlines can be transferred back and forth rapidly.

A nearby friend can serve as a test observer. He should be a mile or so away from you and his antenna should have the same polarization as yours. He will note the difference in signal strength between the two antennas as you switch back and forth, making a short transmission on each antenna. It is not necessary to speak into the microphone while the measurements are being made. The tests should be repeated several times, and at different hours during the day (preferably when the channel is unoccupied!).

During the test transmissions, the SWR meter is used in the feedline to monitor transmitter power output and SWR on both antennas. An effort should be made to insure that nothing changes at the transmitting and receiving locations other than switching the antennas, otherwise the results of the experiments may be confusing and inaccurate.

The difference in S-meter reading between the two antennas is averaged over a series of tests, and an average difference in signal strength is computed. Of course, if the S-meter calibration is unknown, the resulting difference in signal strength is not absolute. Even so, an indication of signal strength difference between the two antennas is useful information to have at hand.

On-the-air checks such as outlined should be run with several different stations. You may be surprised at the difference in results between two different observers!

Calibrating Your S-Meter

The S-meter in your CB transceiver may be calibrated in terms of signal strength by a qualified technician. This is how he will do it. Your receiver is connected to a radio signal generator which has an 11 meter output signal calibrated in microvolts of signal strength. By sending this test signal into your receiver and noting the corresponding S-meter readings as the signal strength is varied, the technician can plot a graph of meter readings versus signal strength. The graph can then be converted into decibel units above an arbitrary reference level. The indications can then be marked directly upon the scale of your meter. Using this accurate calibration, you ignore the old markings on the meter and read signal strength directly from the new decibel scale. As long as the receiver gain does not change (due to ageing of tubes or transistors) the meter readings will help in determining true signal strength levels when antenna comparisons are being run.

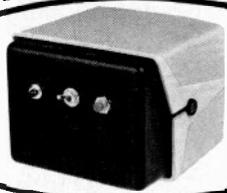
Once the meter calibration job is done, you can then run other antenna tests, such as front-to-back ratio and front-to-side ratio on your antenna, or the antenna of other nearby CB stations. You must be careful, though, as signal reflection from hills or other nearby objects can play tricks with your measurements. Experience in this measurement technique is a great teacher, and room still exists for the home experimenter to build, tune and adjust his own beam antennas. A calibrated S-meter certainly helps to do this job.

Laugh of the Month (April)

A few days ago the author of this column was driving along a main thoroughfare and noticed that a new CB shop had opened. It was doing a good business, too, judging from the number of cars in the parking lot and the forest of whip antennas! So, executing a quick turn, I pulled into the parking lot.

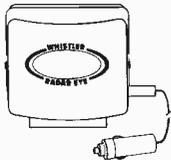
As I got out of the car, I noticed a group of CBers standing around a small display counter which was

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BILL ORR ON ANTENNAS

(continued)

located in a corner of the parking lot. Someone was talking, and it looked like a small sales booth had been set up. Sure enough! When I walked over I saw a very persuasive young man was extolling the virtues of a mysterious product that would improve both CB transmission and reception by lowering the SWR on the antenna.

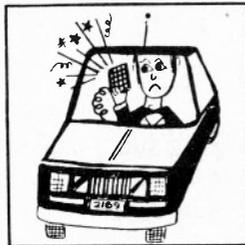
I pushed closer to see what it was that he was selling. *It was a tube of some kind of grease!*

"If you rub this SWR grease on your antenna, coating it liberally, you will reduce the SWR down to one-to-one, regardless of the present value", he promised. I pressed closer, to get a close look at this wonderful substance. It looked like a tube of toothpaste!

The fellow squirted some of the goop on the antenna of his car as he told the assembly that for a mere five dollars they could double the signal strength with a single application of SWR grease! Amazing!

As he continued to give his pitch, I strolled into the store and casually asked the manager if he knew what was going on in his parking lot. He did not, and one look sent him quickly to the telephone to call the police to pick up this upstart who was selling without a city vending permit. How many tubes of SWR grease did he sell? I don't know, but if *you* bought one, let me know how it works out!

Having Trouble With Your CB Radio ?



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Labor Charges— \$10.00 minor repair
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All repairs plus parts, plus shipping charges

Your radio will be returned fully repaired within two
working days in most cases (C.O.D.)

- FCC Licensed Technicians
- 5,000 sq. ft. dedicated to service
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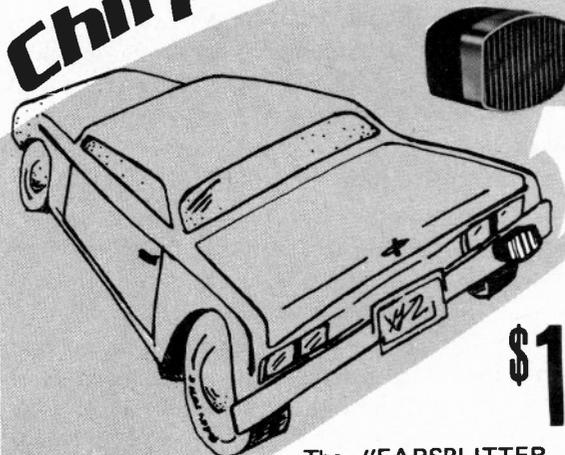
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WASHINGTON OUTLOOK

FCC ISSUES WARNING: SEND NO MONEY FOR FEES

Do NOT—repeat, DO NOT—send money to the FCC, please!

That rare and unusual plea from Uncle Sam was issued by the FCC.

The appeal is directed to all FCC licensees, but particularly to CB applicants.

The unique action stems from an FCC order recently suspending collection of all fees as a result of court decisions invalidating the Commission's fee structure for everything from CB and television station licenses to telephone rate filings.

The Commission's order said it was suspending the collection of all fees pending study of the court decision. An announcement regarding refunds or a revised fee schedule will be issued later.

The Commission urged the public not to call about fees or refunds since this would only delay action on applications or other filings.

The FCC focused today especially on CB applicants. It said purchasers of CB sets should not send in their \$4 fee. It warned, however, that they must send in their applications for licenses, since operation without a license is not permitted.

At year's end (1976), about 7.8 million persons held CB licenses, and applications were being received at a rate of about 400,000 a month.

REORGANIZATION OF CITIZENS RADIO SERVICE RULES and RENAMING OF THE CITIZENS RADIO SERVICE

The Commission adopted a Third Report and Order in Docket 20120, changing the names of the Citizens Radio Service and its subdesignations and implementing an editorial reorganization of Part 95 of the Rules.

The name of the Citizens Radio Service was changed to the Personal Radio Services; the Class A Citizens Radio Service was changed to the General Mobile Radio Service; the Class C

Citizens Radio Service was changed to the Radio Control (R/C) Service; and the Class D Citizens Radio Service was changed to the Citizens Band (CB) Radio Service.

The reorganized Part 95 consists of four subparts, one for each of the three Personal Radio Services. The fourth subpart contains technical standards applicable to all Personal Radio Services. The Rules have been revised to require that licensees in the Personal Radio Services must have in their possession those subparts which are applicable to them, instead of a complete Rule Part 95. Additionally, only Subpart D is required to be furnished with each CB Radio Service unit sold.

The Commission stated that the new names are more descriptive of the nature of the services than the previous designations. The Commission also stated that the reorganization is an interim measure to assist licensees in understanding those rules which they must know. The Commission expects to make more substantive changes in the text of the Personal Radio Services Rules as its resources permit.

The reorganization and name changes became effective January 27, 1977.

INQUIRY INITIATED ON EMISSION CONTROL OF CITIZENS TRANSMITTERS

The Commission has instituted an inquiry into the matter of further lessening the spurious and harmonic emissions for Class D transmitters operating in the Citizens Radio Service.

It said it believed that narrowing the emissions further should result in a decrease in the probability of television interference and interference to other users of the air ways, including those in the Citizens Radio Service itself.

Last October, in disposing of petitions by the American Broadcasting Company, Inc. and the Association of Maximum Service Telecasters, Inc., re-

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When you see the CEDA Seal in a CB dealer's window, it means you've found a CB specialist, one you can trust, because he's pledged to uphold CEDA's standards. Associate Dealer Members of CEDA are equipped to handle your problems and answer your questions, and serve your CB needs not only before you buy, but *after*.

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requesting reconsideration of a July 27 FCC action increasing from 23 to 40 the number of channels available to Class D operators, the FCC said it would institute a new proceeding to deal specifically with the matter of adopting a more stringent harmonic suppression requirement, on the order of approximately 100 dB. (The July 27 action set out new 60 dB harmonic suppression standards.)

The Commission now proposes to require an attenuation level of 100 dB below the mean power output for all spurious and harmonic radiation removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth. It said it was seeking specific comments that address such matters as a realistic time schedule for implementation, any possible economic burdens on manufacturer or consumer, the measurement procedures to be employed, and the practicality of attaining such a level of attenuation.

The Commission said it realizes that 100 dB of suppression may be difficult to measure or obtain, especially at frequencies a little more than 250 percent of the authorized bandwidth removed from the carrier. Therefore, it said, the comments should reflect what would be considered a practical value of attenuation, including, possibly, a range of values dependent on the separation from the center of the emission.

In addition, the Commission said it will also consider comments and reports from current studies being conducted on Class D CB operation. These include but are not limited to studies by the Personal Use Radio Advisory Committee (PURAC) and the tests conducted by the Electronic Industries Association (EIA).

The Commission also announced its intention to issue soon a series of notices addressing the matter of harmonic and spurious attenuation for all other services below 1 GHz, including the television broadcast services and the Amateur Radio Service. These notices, the FCC said, will be concerned with the inter-relationship between all of the operations in the various services and their interference potential.

The Commission emphasized that "the time has long passed where all of the blame for interference can be placed on the transmitter." It said it will solicit comments concerning the degree of interference susceptibility or rejection possessed by the receiver which, the FCC believes, should be capable of providing its appropriate share of interference rejection.

Although the Commission is not accepting comments on these future no-

tice now, it felt that such an issue was important enough to mention at this time in order to allow the participants in the affected services ample time to develop their ideas on this matter.

However, the Commission pointed out that any consideration of transmission emission limitations should be weighed against allowable receiver susceptibility, the economic impact involved, the amount of protection required, and the feasibility of obtaining the protection levels suggested.

GUILTY OF UNLICENSED OPERATION AND TRANSMISSION OF INDECENT LANGUAGE

The U.S. District Court Jury found Lewis L. Simpson of Indianapolis, Ind., guilty of transmitting indecent language on CB radio in violation of Title 18, Section 1464 of the Criminal Code and of operating the CB radio without a license in violation of Section 310 of the Communications Act.

Simpson's arrest and indictment resulted from investigations by agents from the Indianapolis Office of the Federal Bureau of Investigation and engineers from the Chicago Office of the Federal Communications Commission following complaints of interference and illegal use of CB radio by Simpson. The complaints were filed by Simpson's neighbors and other CB users.

Prosecution was authorized by the office of James B. Young, U.S. Attorney for the Southern District of Indiana. The case was presented by Assistant U.S. Attorney John Hudgins before Chief Justice William Steckler.

The sentencing of Simpson will take place after completion of the pre-sentencing investigation.

2 OPERATORS ARRESTED FOR INDECENT LANGUAGE

Kenneth Thompson of Upper Darby, Pa., and Stuart M. Herbets of Philadelphia, Pa., have been arrested by the FBI for violating federal laws prohibiting obscene and threatening communications.

The two arrests resulted from an announcement by U.S. Attorney, David W. Marston, that a massive crackdown on illegal Citizens band radio operators in the Philadelphia-Delaware Valley was underway with the FCC investigating the operation of illegal CB radio stations transmitting on unauthorized frequencies, operating over-powering equipment, transmitting obscene language, and violating other FCC regulations.

FBI agents and U.S. Marshals accompanied by FCC engineers from the Philadelphia field office simultaneously executed six search warrants early this

morning, seized the equipment and closed down the stations.

The search warrants were issued by U.S. Magistrate Tullio Gene Leomporra; presentation of information by Assistant U.S. Attorney Richard J. Stout.

The FCC claims that illegal radio communications jeopardize vital communications, such as police, fire, rescue and aviation. Illegal use of CB equipment can also interfere with legitimate radio users, AM/FM radio and television reception.

Federal laws provide penalties up to \$500 per day, per offense for violations of FCC Rules and Regulations, one year imprisonment and \$10,000 fine for unlicensed use of CB equipment and two years imprisonment and \$10,000 fine for transmitting obscene language.

ANCHORAGE MAN GUILTY

Gale Bodner of Anchorage, Alaska pleaded guilty in Federal Court to operating an unlicensed Citizens band radio station in violation of Title 47, U.S.C., Sections 301 and 501 of the Communications Act.

Bodner's arrest and indictment resulted from investigations by engineers of the Commission's Anchorage District Office extending over the past two years.

Prosecution was authorized by the office of G. Kent Edwards, U.S. Attorney, and presented by Assistant U.S. Attorney, Leonard M. Linton, Jr., before U.S. District Court Judge Raymond E. Plummer.

Bodner was sentenced to a fine of \$1000 to be paid in \$100 installments and placed on two years' probation—not to operate a CB transmitter for two years. He was further ordered to sell his equipment within two weeks of its return to him or forfeit it to the U.S. Government.

SHOW CAUSE NOTICES

The Commission, by its Safety and Special Radio Services Bureau ordered the following licensees to show cause why their licenses should not be revoked for violation of Section 1.89 of the rules by failing to respond to official communications:

Torrance, Calif., Donald A. Purkey, KIF-9926.

Jacksonville, Fla., Albert R. Lloyd, KIE-2106.

Port Huron, Mich., Gordon E. Taylor, Jr., KDQ-6623.

Atlanta, Georgia, Ralph K. Richards, KZA 2444.

REVOKED

The Commission, by its Safety and Special Radio Services Bureau ordered

CB SUZY SEZ



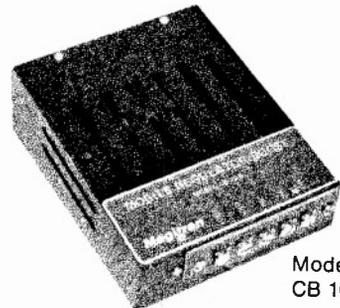
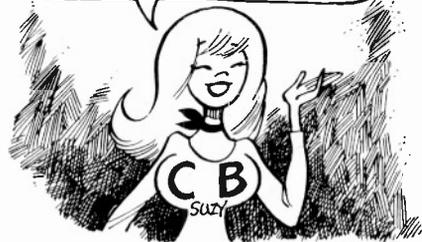
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CB 10-8

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that the following licensees be revoked for violation of Section 1.89 of the rules by failing to respond to official communication:

New York, N.Y., Harry M. Stevens Inc. of N.J., KMD-4441.

Manchester, N.H., Clarence P. St. Onge, KZE-5630.

Pipestone, Minn., Darrel L. Hein, KIN-7793.

Victoria, Tex., Roger W. Worley, Sr., KZK-8858. Ordered that the license be revoked for violation of various sections of Part 95 of the rules including Section 95.83(7) for using radio station for the transmission of music which the Commission's rules

prohibits.

Baltimore, Md., John G. Myers, KEN-5076. Ordered that the license be revoked for willful violation of various sections of Part 95 of the rules including Section 95.95 by failing to identify radio station by its assigned call sign at the beginning and end of each transmission or series of transmissions.

CEASE AND DESIST NOTICES

Ferndale, Mich., Ray St. Peter. Ordered to cease and desist from further violation of Section 301 of the Communications Act of 1934 by operating radio transmitting apparatus

without a license after being warned against such continued illegal operation.

El Monte, Calif., Forrest E. Spittler, Jr. Directed to show cause why he should not be ordered to cease and desist from further violations of Section 301 of the Communications Act of 1934 for continuing unlicensed operation of Citizens radio equipment despite warnings to the contrary.

Phoenix, Ariz., Robert L. Giardini. Ordered to cease and desist from further violation of Section 301 of the Communications Act of 1934 by operating radio transmitting apparatus on a frequency assigned to the Citizens Radio Service without authorization.

CHARGES DISMISSED

The Commission, by its Safety and Special Radio Services Bureau dismissed proceedings on orders to show cause for the following:

Hayward, Calif., Timmy A. Ermay, KXN-8963.

Augusta, Me., Robert L. Tracy, KZI-8914.

Houston, Texas, William D. Gafford, KWT-1844.

NOTICES OF APPARENT MONETARY LIABILITY

Louisville, Ky., Ms. Elizabeth G. Ward, \$100, licensee of Citizens radio station KCX-0083. For violation of Section 95.41(d) of the Commission's Rules by operating radio station on a frequency not authorized by the Commission and Section 95.43 of the Commission's Rules by operating radio station with power in excess of that authorized.

Mulberry, Fla., Mr. Robert L. Browning, \$100, licensee of Citizens radio station KWD-4074. For violation of Section 95.95(c) of the Commission's Rules by failing to identify radio station by the assigned call sign and Section 95.41(d) of the Commission's Rules by operating radio station on a frequency not authorized by the Commission for use by such station.

Pahokee, Fla., Mr. Ted Abner, \$100, licensee of Citizens radio station KMX-1211. For violation of Section 95.95(c) of the Commission's Rules by failing to identify radio station by the assigned call sign and Section 95.83(b) of the Commission's Rules by communicating, or attempting to communicate, with a unit of the same station or another Citizens radio station over a distance of more than 150 miles.

The Commission issued Notices of Apparent Liability for Monetary For-

Your customers have something to hide.

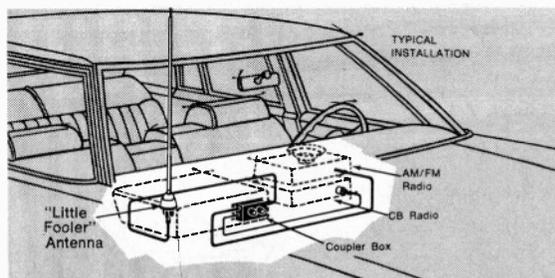
Anixter-Mark's "Little Fooler"TM CB/AM/FM antenna keeps CB a secret.

Anixter-Mark has been manufacturing CB antennas for over 25 years. So when we saw the need for a CB antenna that wouldn't be recognized, we invented "The Little Fooler".

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This antenna also available as a fixed length 36 inch solid stainless steel mast (Model AAF-11-3).



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feiture on various dates to the following radio station licensees in the Citizens Radio Service for willful violation of various sections contained in Part 95 or a repeated violation of Section 1.89 of the Commission's Rules:

Kenai, Alaska, Dan's TV Service, \$50, KYQ-9876.

El Monte, Calif., Earl R. Bingham, \$50, KEB-91732.

Brandon, Fla., Arvin Marshall, \$50, KBG-3991.

Savannah, Ga., Perry D. Klee, \$50, KYZ-4329.

Edgewood, Md., Barry W. Saylor, \$100, KWA-6534.

Jessup, Md., Peter N. Reid, \$50, KHO-6643.

Joppa, Md., Mr. Henry J. Bellmyer, III, \$100, KZL-8323.

Waterloo, Ia., Kim M. Corder, \$50, KYU-7126.

Bacliff, Texas, Joe Adams, \$50, KMW-5107.

Brownsville, Texas

Edward A. Vera, Jr., \$50, KDL-9821.

Joe R. Garrera, \$50, KADK-3272.

Alfred Gomez, \$50, KADL-6727.

Angela M. Ramirez, \$50, KACS-3595.

Houston, Texas, Frank C. Smith, \$50, KWG-8969.

Victoria, Texas, John K. Price, \$50, KACS-9290.

Dingess, W. Va., Flora McCloud, \$50, KAEG-5715.

Logan, W. Va.

Barry G. Collins, \$50, KGJ-0940.

Troy Ellis, \$50, KAAM-7406.

Mark J. Sefton, \$50, KXB-6352.

McConnell, W. Va., Homer L. White, \$50, KZO-2919.

Peach Creek, W. Va., Ralph Baily, \$50, KCK-1991.

Stollings, W. Va., Earl Epperhart, \$50, KBI-7503.

Peach Creek, W. Va., Walter L. Estep, \$50, KME-3830.

Verdunville, W. Va., Arkie Tomblin, \$50, KQZ-2999.

West Logan, W. Va.

Michael L. Swiney, \$50, KXR-0725.

Bobby R. Bridges, \$50, KXE-5404.

Starkville, Ms., Donald L. Kellum, \$100, KJT-5060.

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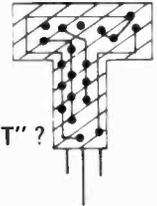
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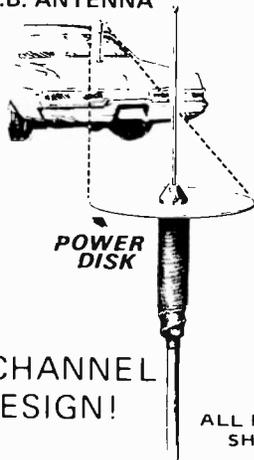
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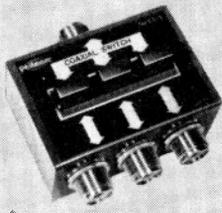
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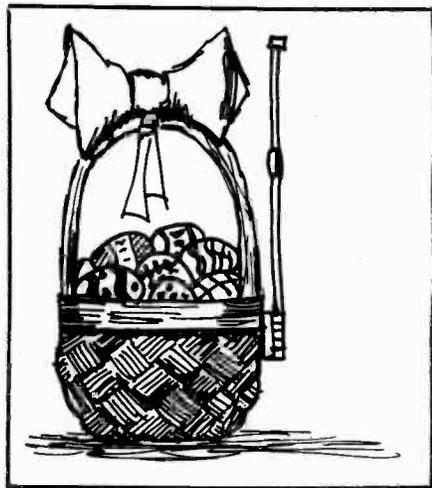
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End of message

ON THE COUNTERS

(from page 65)



SLEEK MIKE

New from Handic. A handsome base station microphone in sleek, slim, modern design. Black with an orange stripe. A perfect accent to the Handic base station for any base station owner who seeks style as well as superior performance. Features include: Built-in modulation meter, Visible, full range volume control, Clearer modulation because of F.E.T. pre-amplifier, Talk lever can be locked into position, All advantages of standard power mike—increased effectiveness of modulation.

Specifications: Microphone cartridge—Dynamic type, Impedance—1000 ohms at 1 KHz, Sensitivity— -30 dB at 1 KHz (0 dB = 1V/ubar), Gain—40 dB, Response—500—5.000 Hz, Weight—900 grams (2 lbs.).

Contact Handic, Kennedy Bldg., 14560 NW 60 Ave., Miami Lakes FL 33014, or mark number D08 on Reader Service Card.

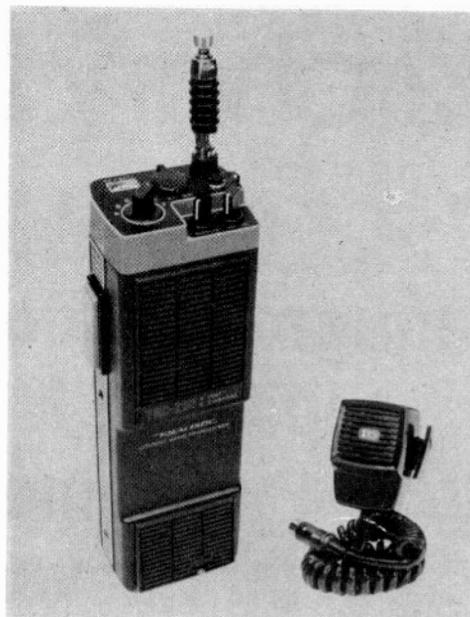
WALKIE-TALKIE WITH REMOTE MIKE FEATURE

Radio Shack has introduced a walkie-talkie that features a jack for use with an external push-to-talk microphone.

The Realistic TRC-200 includes a built-in speaker and separate electret condenser mike for conventional hand-held operation. The remote mike feature makes it possible to set the unit down or fasten it to a vehicle, backpack, or elsewhere, out of the way, and still operate without having to reach the unit itself or use the built-in transmit button on the walkie-talkie case.

A Hi/Lo power switch selects the full five-watt input power or three watts for shorter range communications and longer battery life. Range-Boost panels on the sides of the unit capacitively couple your body to the antenna for extended range.

Features include top-mounted volume, squelch and channel selector controls, battery/RF power meter,



center-loaded telescoping antenna and jacks for an external speaker, 12 VDC power source, antenna and battery charger. The TRC-200 is supplied with crystals for channel 14 and has provisions for adding up to five more channels.

The Realistic TRC-200 CB Walkie-Talkie is priced at \$99.95, complete with carry case and eight "AA" cells. Optional push-to-talk mike, \$11.95.

Available exclusively from Radio Shack stores and dealers. Mark number D39 on Reader Service Card.



MAG MOUNT

The Antler model A-280 is a base loaded, mobile, magnetic-mount antenna with a 47" heat-treated, stainless steel whip. The magnetic base allows the antenna to be easily changed from auto to auto or to be stowed inside the vehicle to prevent targeting of the car by thieves. The ceramic magnetic base has proved to hold fast to any flat steel auto surface at speeds up to 100 mph.

The antennas are factory matched to resonate at 146

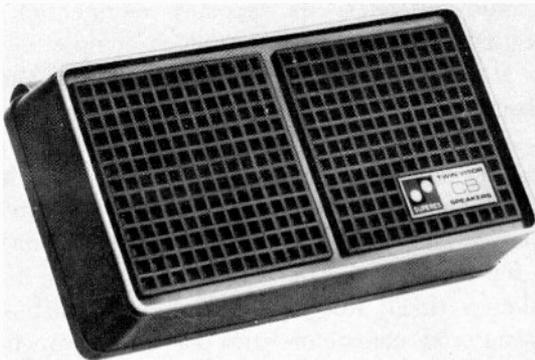
Mhz. A chart is provided allowing adjustments ranging from 144 Mhz to 156 Mhz.

The base load coil is manufactured of tightly wound 14 gage, bare, solid copper wire. The coils are moisture sealed and precision tuned at the factory. The tapered 47" whip is heat-treated 17-7 stainless steel. The new Antler A-280 includes 16-feet of factory installed RG 58U solid dielectric coax with 75% shielding and low loss PL259 type connectors.

D. J. Taylor, Antler research director, describes the new A-280 amateur radio antenna as ideal for repeater transmission.

Antler Antennas are sold nationwide through authorized distributors. The U.S. made antennas are guaranteed by the manufacturer who also provides a complete range of original equipment parts and accessories.

For more information, write Wendell Layne, Antler Antennas, 6200 South Freeway, Forth Worth, Texas 76134, or mark number D10 on Reader Service Card.



VISOR SPEAKER

New from SUPEREX, the VS-19 visor speaker for mobile CB application. The VS-19 is a twin element design incorporating two high quality speakers. The unit is engineered for high voice definition. Self-contained clips that enable quick mounting on the visor are supplied with the VS-19. The VS-19 complete with cable and mini plug retails for about \$15. For further information on the VS-19 and other SUPEREX products, contact Marvin Paris, Marketing Director, SUPEREX ELECTRONIC CORP., 151 Ludlow St., Yonkers, N.Y. 10705, or mark number D19 on Reader Service Card.

ANTENNA MATCHER

Mura Corporation of Westbury, N.Y., has available for immediate delivery its Model CBT-8 antenna impedance matcher. "Now the more demanding and discerning CBer has a simple, yet effective way to obtain optimum antenna performance" says George Hardy, President of Mura Corporation.

Used in conjunction with a SWR meter, the CBT-8



allows the CBer to tune his transmission line to obtain a lower Standing Wave Ratio. A lower SWR means more power transfer from the transceiver to the antenna. "With the CBT-8, the CBer can optimally match his transceiver's output stage to the characteristic impedance of the antenna and transmission line, ensuring maximum power transfer, no matter what CB transceiver or antenna he may use.

Measuring only 3½" x 3⅜" x 2¼", the CBT-8 features two tuning controls, and has an impedance matching range of 35 to 150 ohms. The CBT-8 has a maximum power handling capacity of 100 watts, and can be left in the coax line permanently with only a negligible loss in power. Since it requires no external power source, the CBT-8 is ideal for use in mobile as well as base station rigs. Installation is simple and easy.

For further information, contact Mura Corporation, Westbury, N.Y. 11590, or mark number D26 on Reader Service Card.



ANTENNA MATCHER KEEPS AN EYE ON YOUR VSWR

A combination antenna matcher and VSWR indicator for use with both mobile and base stations is available from The Magitran Company as Model CB 10-39.

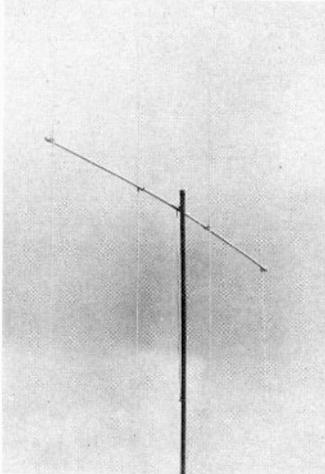
The CB 10-39 eliminates the need for complicated meter readings or reference switching. A simple knob adjustment of the tuning eye light sets optimum antenna performance. Tune the eye for minimum light

and you've got minimum VSWR for maximum performance.

The circuit design of the CB 10-39 features a built-in RF bridge to provide true impedance indication of the antenna for minimum VSWR adjustment. And the use of low-loss series/parallel matching elements gives wide-range optimum impedance matching.

Operation is on all 40 CB channels for continuous monitoring of antenna condition.

Suggested retail price of the CB 10-39 is \$24.95. Mark number D23 on Reader Service Card.



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Shakespeare sets the new standard in directional beam antennas by introducing MegaBeam, the first and only fiberglass base station beam. A totally new design that's been thoroughly tested mechanically and electrically to give you the ultimate in CB communications.

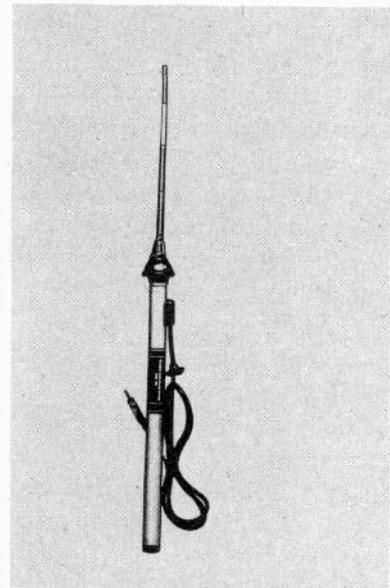
The gleaming white fiberglass construction resists even the harshest environmental conditions. And fiberglass elements far exceed metal in reducing precipitation static. Shakespeare's MegaBeam base station directional antenna provides you with a low VSWR of over the entire bandwidth. And the high quality technology Shakespeare incorporates into every antenna assures you of maximum performance everytime you're on the air.

Set yourself a new standard in CB communications with Shakespeare's MegaBeam Base Station Directional Beam Antenna, Style 4104. The Shakespeare Company—Antenna Group, P.O. Box 246, Columbia, S. C. 29202. In Canada: Len Finkler Ltd., 25 Toro Road, Downsview, Ontario M3J-2A6, or mark number D40 on Reader Service Card.

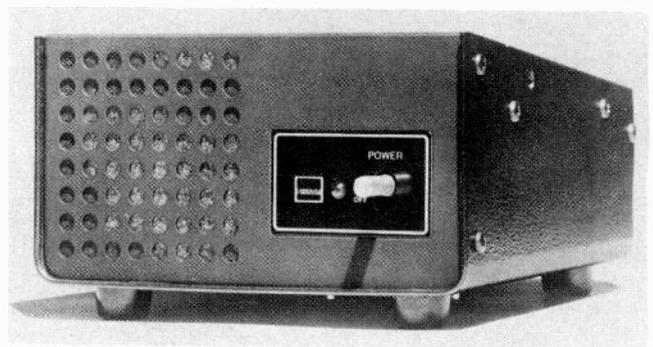
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A new Citizens Band Retractable Antenna for either 23 or 40 channel use is introduced for 1977 by Sparkomatic Corporation, one of the leading creators/designers/manufacturers in the automotive after-market industry.

Retailing for approximately \$39.95, the SA-300's many features include: its complete retractability into trunk or fender well which deters theft, vandalism,



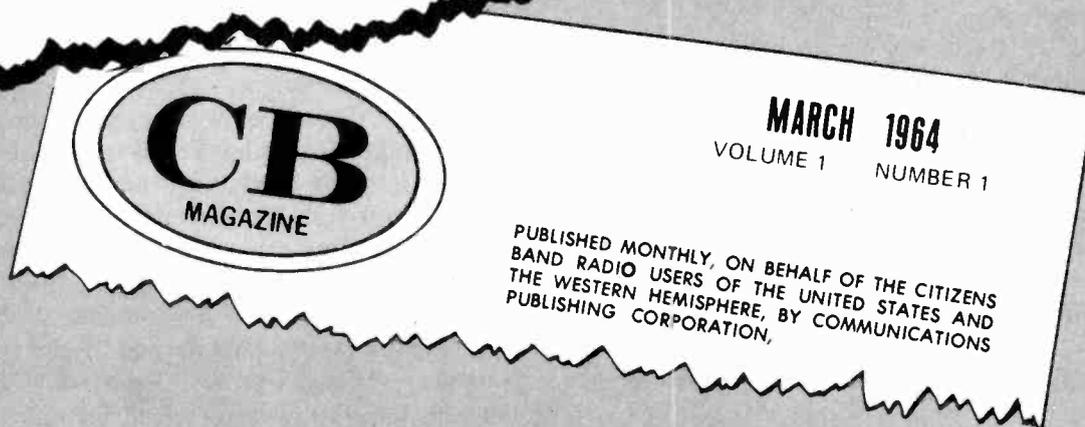
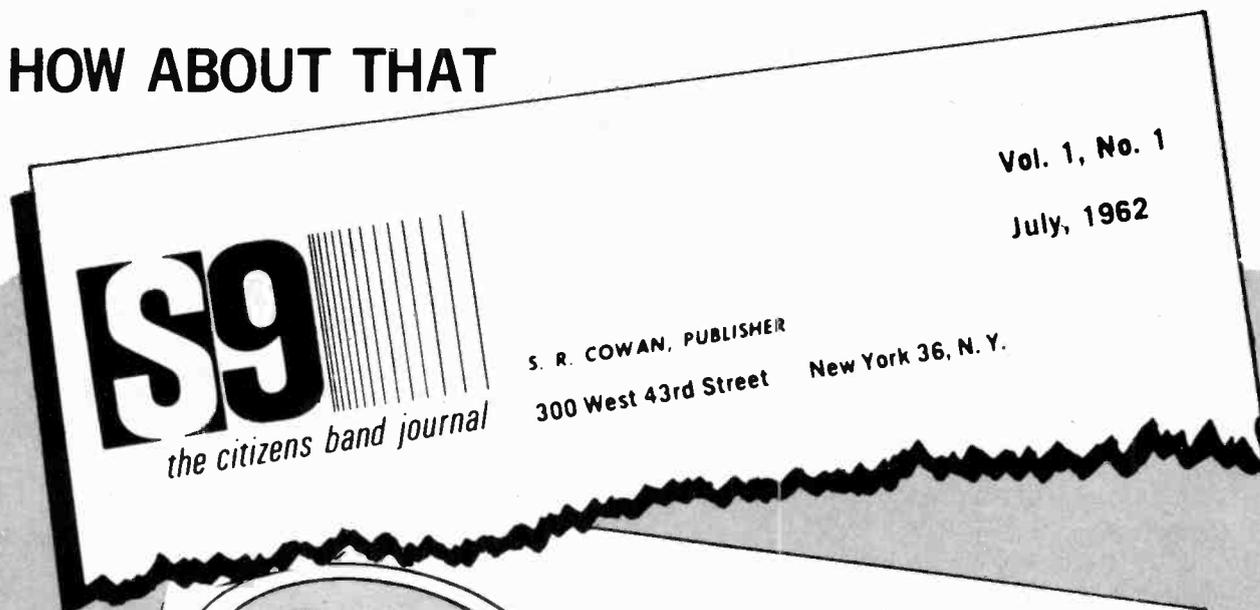
damage from car wash; its pull top security key features—it can be easily extended by using special keys which are supplied; the frequency dividing coupler providing optimum AM/FM/FM Multiplex and CB operation; the unit eliminates the need for separate CB and radio antennas; its specially engineered sealed loading coil in the top section which completely disappears from view when in down position; the high efficiency top loaded 4 section mobile antenna which tunes easily for lowest SWR by means of a threaded section at the tip of the antenna; all internal elements completely sealed against weather and corrosive road chemicals; the universal mount gives maximum versatility for locating the antenna on your car; it comes complete with 17' RG/58U coaxial cable, all mounting hardware and connectors and easy-to-follow installation instructions. Mark number D41 on Reader Service Card.



BASE STATION ADAPTER FOR ALL SHARP CB TRANSCEIVERS

Since all Sharp/Electronics transceivers are designed for vehicle use, a power supply is required when they are used in the home or office. The AD-112 Base Station Adapter plugs into a home electric socket and is equipped with an on-off lever switch, power indicator (LED) and DC 12V output terminals. The Adapter is 5½ inches wide, 3 inches high, 6¾ inches deep and weighs 4.6 pounds. Suggested retail price is \$29.95. Mark number D42 on Reader Service Card.

HOW ABOUT THAT



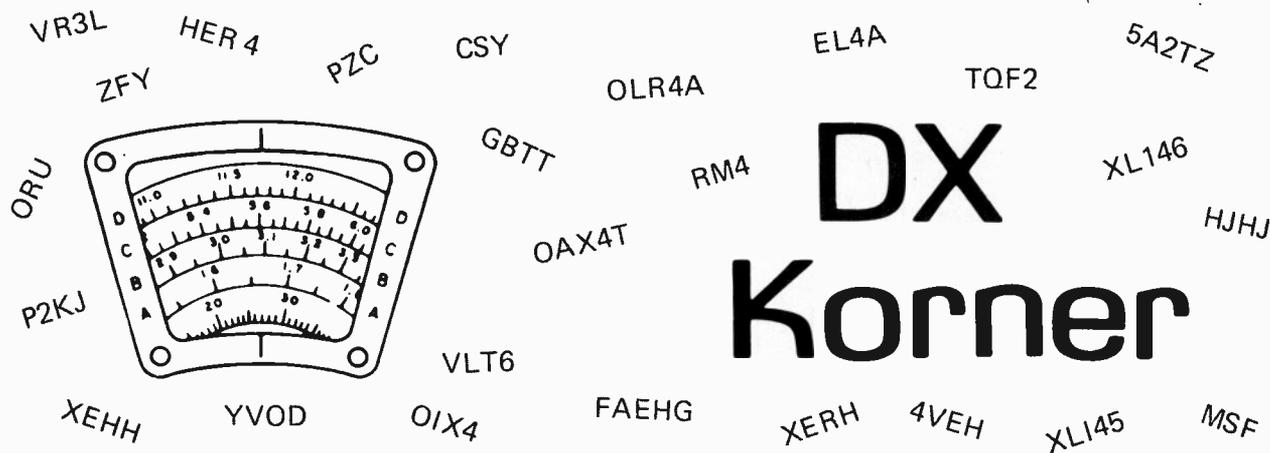
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YOU'VE been asking . . . Part II.

Last month we took a long look at one of the most common questions received here in the mail—What kind of shortwave receiver should an SWL buy?

This month, then, we'll look at another oft-asked question from DX Korner readers; What sort of antenna do I need?

If you're familiar with citizen band antennas, full length whips and coil loaded mobile types and the larger, more sophisticated base antennas, the co-linears or, perhaps, a three element beam, you may find the shortwave antenna situation a real surprise. There are a number of significant differences.

A CB antenna, for instance, needs to cover only a small segment of frequencies around 27 Megahertz (MHz). A shortwave antenna, on the other hand, should do a reasonably good job of bringing in signals from stations all the way from below 3 MHz up to 30 MHz. The typical shortwave antenna needs to be broad band; a CB antenna does not.

With the exception of the mini-whips built into the multi-band portable sets—which really aren't too satisfactory except for receiving the very powerful SW stations—shortwave antennas are much larger than those used by CBers. In the 27 MHz range of CB operation, a quarter wavelength figures out to be something under nine feet. When you can, with a loading coil, shorten that physical length, that is a reasonable sort of antenna to work with. Steel, aluminum, fibreglas work out fine as materials for CB antennas.

A shortwave antenna has to be much longer. For example, way down in the "hot" SW band of 60 meters (4,750-5,060 kHz), a quarter wavelength is nearly 50 feet. And that's much more difficult a length to work with. Of necessity, therefore, most SW antennas are made of wire.

When you come right down to it, antenna design is a complex business. There are all sorts of factors that

have to be taken into consideration. There is no perfect antenna. All represent compromises of one sort or another in their designs.

For now, though, we're just going to pretend that there's nothing complex at all about shortwave antennas. And there really need not be anything difficult about putting up a simple antenna that will work well in pulling in those SW stations you want to hear.

The SWL's old standby—easy to construct, inexpensive in cost, usable over a wide range of frequencies, in general a pretty darned good shortwave antenna—is known variously as the single wire, the longwire (though technically it isn't long enough to be called "long."), the Inverted L, or the Hertz.

It is, basically, a length of wire, preferably more than 20 feet and less than 150 feet, roughly parallel to the ground and as high above it as is practical, terminated at each end with non-conducting insulators, end-fed by a single lead-in wire and located as far away from noisemakers like powerlines and neon signs as possible.

With the lead-in wire leaving one end of the "flat-top" at approximately a right angle, the whole antenna does look something like an upside-down letter L, hence the name Inverted L.

Use a good strong wire—No. 14 enameled copper, stranded copper or phosphor-bronze or even aluminum clothesline will work—for the horizontal flat-top portion. This section of wire should have an insulator, glass or ceramic, at each end to keep the antenna from "grounding out." The flat-top should be suspended from whatever high points are available near your home. This may be between two trees, between your garage and house roof, or whathaveyou. Don't worry about the direction of your antenna. This type of sky-wire receives just about as well from any direction.

At the flat-top end nearest your receiver, attach a single, plastic or rubber-coated wire lead-in. Make a solid "bare-wire-to-bare-wire" connection and solder it. To lick the corrosion problem, coat the solder joint with a clear plastic spray or other insulating material.

Attach the "down" end of the lead-in to your receiver's antenna terminal. An exterior antenna can do wonders even for an inexpensive portable receiver. You can just wrap the lead-in around the portable's whip.

However, this can lead to a signal overload when you're tuning a powerful station. This won't harm your set, but will distort reception of the station.

There are a few safety tips to keep in mind. Don't have your antenna cross over a utility powerline. Wire antennas do sometimes come down in ice or wind storms and if the downed wire falls across a powerline—something goes ZAAAAP! If you're lucky it will only be your receiver, not you!

And, in areas where thunderstorms are common, a lightning arrester is a wise idea and a cheap, but good investment.

For optimum performance with a single wire antenna used across a wide range of shortwave frequencies, an antenna tuner is very useful. An antenna tuner "matches" your antenna to the receiver and the frequency you're tuning.

Some receivers have antenna tuning devices built right in. If your receiver has no antenna tuner or trimmer, you can build one as an out-board addition. A check of the amateur radio construction project books may turn up some simple plans. Several firms (Gilfer Associates, Inc., Box 239, Park Ridge, NJ 07656, and SWL Guide, 414 Newcastle Rd., Syracuse, NY 13219, to name two) market antenna tuning devices.

If you don't feel like building this sort of antenna, do your own thing. You can't do any harm in experimenting with different types of wire antennas. I once knew a fellow who used all sort of items, from an umbrella frame to a bedspring, in his home-designed antennas. Dunno if he ever heard anything using them, but he surely had fun!

BROADCASTERS' YEAR

By Oriental reckoning, 1977 is the Year of the Snake. To many radio clubs and SWLs around the world, 1977 is World Broadcasters' Year. This designation came about at the urging of the European DX Council, the counterpart of our own Association of North American Radio Clubs (ANARC), an affiliation of the major DX-ing hobby clubs.

A long time tradition in the SWLing hobby has been to seek QSLs, cards or letters from stations in response to listeners' reports of reception. And, it seems, the push for a World Broadcasters' Year is to counter what some international shortwave stations feel is an undue emphasis on SWLing merely to collect QSLs.

There was a time when the major international broadcasters needed listeners' reports to know how their signals were being received in many parts of the world. But, frankly, a station doesn't really need thousands of reports a month from the U.S. to let its engineering staff know that it is being solidly received in New York or Texas or California.

The big stations today are more interested in what listeners think of their programs. Understandably, these stations that broadcast daily in English to U.S. and Canadian audiences want you to listen to the program content, not merely tune in for 20 to 30

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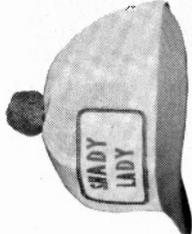
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minutes to gather some details for a reception report and a QSL reply.

So, the object of World Broadcasters' Year is to promote more honest-to-goodness listening to the content of SW programs.

Because of budgetary cuts, some international broadcasters have already cut back on their QSLing activities. Clearly, the QSL business is not top priority with stations these days.

Many SWLs are finding that collecting QSLs is not the only interesting part of the hobby. More and more are finally listening to the programs . . . and are finding them interesting and entertaining.

And if you readers have some favorite programs on SW, broadcasts you regularly listen to and enjoy, let me know about them. Let's spread the word about some of the best shows on shortwave!

WHAT'S NEW

Or, to be more precise, WHAT, WHERE, WHEN is new. This recently jazzed up weekend feature on Radio Finland is a good example of a show worth tuning. The show features current affairs, culture, events of human interest, DX data and, last but not least, a sometimes far-out brand of humor. Listen Saturdays at 2330 GMT, during a half hour broadcast directed to North America, on 11,755 kHz.

A new, quick-reference list of broadcasts on shortwave in English from stations in over 100 different countries is now available from the North American

SW Association. NASWA is the largest DXing club in North America and specialized in the shortwave broadcast type stations. The list was compiled by Glenn Hauser. The list is available for only an SASE, that is, a large sized, stamped, self-addressed envelope from NASWA, P.O. Box 13, Liberty, Indiana 47353. You MUST include a stamped, self-addressed envelope for this otherwise free, and very useful, list.

The Philippine Historical Radio Society is a small, specialized study group, with a radio orientation, formed recently. The group is interested in contacting persons who have knowledge of or who were involved in early radio activities in the Philippine Islands. For further information, write to James T. Pogue, P.O. Box 972, Lafayette, Indiana 47902.

IN THE MAILBOX

"Advise, please, if there are any good books on SWLing," writes Ned Goebriecher of Oswego, NY. "And the location of nearest SWL club in our area."

The first question is one I usually answer by recommending the annual WORLD RADIO TV HANDBOOK. For details on WRTH and its availability, check last month's DX Korner column in S9. While there are some local and regional clubs for DXers and SWLs, most are nationwide groups that keep in contact with members by means of regularly issued—usually monthly—bulletins. For a list of the major clubs in North America, write to the Association of North American Radio Clubs (ANARC), 557 North

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- (1) CBers Do It Better
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Price is \$1.00 each or 3 stickers for \$2.00. Add 25 cents on all orders for postage and handling. Dealers—we can accept large orders for resale. Write for dealer prices.

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Madison Ave., Pasadena, California 91101. Ask executive secretary Dave Browne to send you ANARC's free list of affiliated clubs. Enclose a self-addressed, stamped envelope and tell Dave we sent you!

"Please publish this," says Scott Freiman, Lakewood, NJ. "It will give everyone a tough station to try to tune on the medium wave broadcast band (BCB). The station is Radio WLEY in Cayey, Puerto Rico, a 250 watt outlet that broadcasts in Spanish on 1080 kHz. I heard it about 0000 GMT, but I've only heard it once."

Yes, indeedly, Scott, a nice logging!

DOWN THE DIAL

TURKEY—Many SWLs find the Voice of Turkey's English language programs of interest. The time to hear this one is between 2200 and 0030 GMT on either 9,515 or 11,880 kHz.

ROMANIA—Radio Bucharest has several English language transmissions to North America daily. Programs are scheduled at 0130 and again at 0400 GMT. There are a number of frequencies to try, but give these a "go:" 5,990, 6,190, 9,570, 9,690 and 11,940 kHz.

CHILE—Yes, there are English language programs broadcast a number of times a day from the governmental outlet, the Voice of Chile, Radio Nacional. Try 0110 GMT on 9,565 kHz.

PORTUGAL—Radio Portugal has English transmissions to North America at 0230 and 0500 GMT. Frequencies to listen on are 6,025 and 11,935 kHz.

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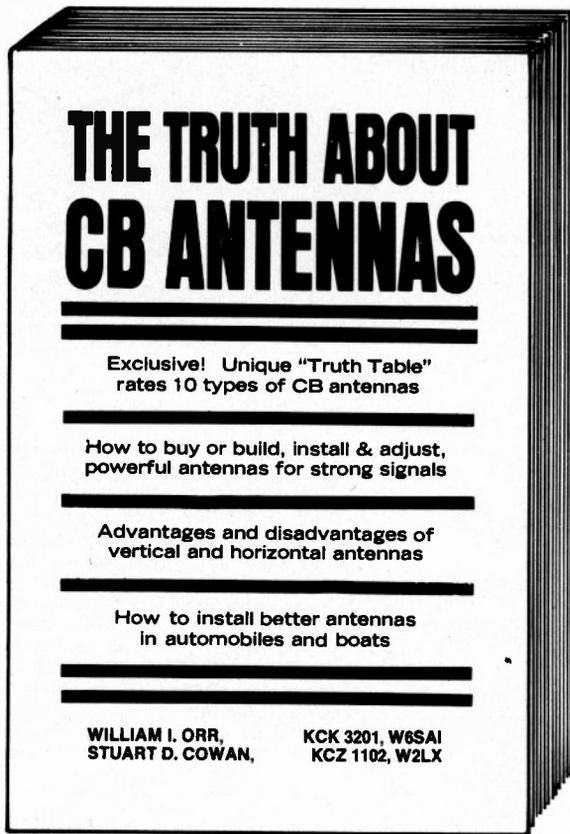
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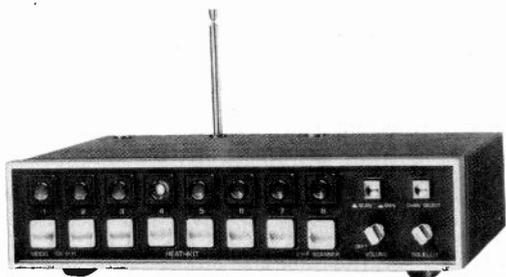
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The Monitor Post

by Rick Maslau, KNY2GL



NEW SCANNERS

Heath Company has introduced two new 8-channel VHF Scanning Monitors, the GR-1131 Hi-Band Scanner and the MR-1134 Marine-Band Scanner.

The GR-1131 Hi-Band Scanner monitors any combination of 8 channels in the exciting "emergency services" band (146-174 MHz). Automatically tunes in on police, fire, ambulance, U.S. Government weather broadcasts and more. The GR-1131 scans each channel stopping on any signal and resumes scanning after the transmission. A priority channel feature checks the channel you're most interested in every 4 seconds and automatically switches to it if there is activity on the channel. Other features include channel lockout buttons, lighted channel indicators, automatic or manual channel selection, and a 4-pole crystal filter for good selectivity. For crowded signal areas, an optional 8-pole filter is available. It also features a built-in telescoping antenna and provision for an external antenna. Operates on either AC or 12 VDC. The GR-1131 is perfect for volunteer firemen, civil defense personnel or just for listening.

The MR-1134 Marine-Band Scanner is a valuable accessory for boat owners or anyone who lives near a harbor or lake. It monitors any 8 frequencies in the 156-163 MHz Marine Band. Picks up weather reports, marine emergency channels, harbor instructions, ship-to-shore and ship-to-ship communications and more. The MR-1134 has the same deluxe features as the GR-1131, and includes a rugged splash-resistant case, ideal for marine use.

The two scanners are mail order priced at just

\$89.95 and \$99.95 respectively. They are just two of nearly 400 useful, fun-to-build kits in the new Heathkit catalog. If you do not already receive the Heathkit catalog, send for your FREE copy today. Write Heath Company, Dept. 350-10, Benton Harbor, Michigan 49022.

REMOTE PICKUP FREQUENCIES

The FCC has denied a petition by the National Association of Business and Educational Radio (NABER) for rulemaking to reallocate certain frequencies in the 450 and 455 MHz bands from the Remote Pickup Broadcast Service to the Business Radio Service.

NABER has sought reduction of the bandwidth of the radio channels allocated to the Remote Pickup service in the 450 and 455 MHz bands from 100 to 25 kHz and reallocation of 30 of the channels within these bands to the Business service.

Last June 29, the Commission amended in their entirety, its rules pertaining to the Remote Pickup service, including subdividing the 20 existing wide frequency channels in the 450-451 and 455-456 MHz bands into 56 channels (Docket 20189).

It concluded that NABER's rulemaking petition was outside the scope of the proceeding in Docket 20189, and should be considered separately.

NABER sought reconsideration of this conclusion, and stay of the August 31 effective date of Docket 20189, pending final action on its rulemaking petition. The effective date was postponed to November 1 and again to November 22, in order to give the FCC adequate time to consider NABER's reconsideration petition.

NABER set forth three primary arguments in support of its request:

—Frequency shortages and congestion exist and are worsening in the Business Radio Service;

—Utilization of frequencies allocated for such use seems unlikely in the foreseeable future;

—Channel loading is light in the Remote Pickup service with only small growth potential evident.

The Commission said while it was persuaded that channel congestion is again becoming a problem in the Business service in certain major cities in bands below 512 MHz, it was not persuaded that a reallocation of



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spectrum from the Remote Pickup service was the proper solution to that congestion.

While some limited relief is being provided to the Business service through the redistribution of channels among private land mobile services, including Business, in the 470-512 MHz band (Docket 18261), these steps at best provide a very limited and temporary relief, the FCC said.

It said it was well understood that these additional allocations in the lower UHF ranges were to serve only as a stop-gap solution until regulations and equipment could be developed that would allow for the use of large blocks of spectrum allocated for land mobile use in the 806-947 MHz band (Docket 18262).

The Commission said it was in this higher range of the spectrum that land mobile service would have to look for long term future growth.

While there were many uncertainties about the schedule for implementing allocations in the 806-947 MHz band at the time NABER's petition was filed in 1974, the Commission said its rules now have become effective and system applications are being received and granted on a regular basis in the private services.

Finally, the Commission noted, that two manufacturers have a range of 806-947 MHz band land mobile equipment type accepted and available and that variety and availability of equipment could be expected to grow as the demand increases.

Therefore, the Commission said, it could see no major impediments to, and in fact expected immediate and rapidly increasing use of, the 806-947 MHz band by the private land mobile services.

While there undoubtedly would continue to be a preference for 450 MHz channels for some time to come because of the somewhat higher projected cost of the 806-947 MHz frequency equipment and the normal hesitancy to move into a new band, the Commission said this preference was not a compelling reason to reallocate spectrum at 450 MHz particularly when such reallocation could result in channel shortages to the Remote Pickup service for which 450 MHz channels hold the only potential.

Therefore, it found the public interest would not be served by a rulemaking proceeding as proposed by NABER, and terminated the proceeding.

In a separate but related action, the Commission held that its action on NABER's rulemaking petition was dispositive of the issues raised in NABER's petition for reconsideration of Docket 20189.

157.425 AND 162.025 MHZ CHANGED

The Commission has amended its rules by changing the status of frequencies 157.425 and 162.025 MHz to form VHF Channel 88 and to make Channel 88 available for assignment to ship stations for public correspondence on the Great Lakes and along the Saint Lawrence Seaway.

These changes were proposed in a rulemaking notice

released last June 16, to implement an agreement reached at the Canada/United States Maritime Telecommunications Meeting, held in February 1975, in Ottawa, Canada.

The 157.425 MHz frequency currently is available for intership communications aboard commercial vessels and for use between those vessels and associated aircraft while engaged in commercial fishing. In areas other than the Great Lakes and Saint Lawrence Seaway, 157.425 MHz will continue to be available for these purposes, while on the Great Lakes and Saint Lawrence Seaway the frequency will be limited to public correspondence.

The 162.025 MHz frequency, now in the Government frequency band, will continue to be used by Government stations in areas other than the Great Lakes and Saint Lawrence Seaway.

Comments in support of the proposal were filed by American Telephone and Telegraph Company (AT&T), American Waterways Operators, Inc. (AWO), Lorain Electronics Corporation, and Waterway Communications Systems, Inc. (Watercom). There were no oppositions.

While supporting the addition of Channel 88 in the Great Lakes area, AT&T, AWO, Lorain and Watercom all contended an inadequacy of existing maritime VHF public correspondence channels and urged the Commission to increase the number of frequencies, not only in the Great Lakes area, but in other areas of the United States as well.

MISUSE OF VHF CHANNELS

Part 83—Stations on Shipboard in the Maritime Services, in section 83.359, sets forth very high frequencies (VHF) for use by various categories of maritime communications. That section specifies the type of use (commercial, noncommercial, public correspondence, etc.); whether simplex (transmit and receive on one frequency) or duplex (transmit on one frequency and receive on a different frequency); and whether usage is for intership, ship to coast, and/or coast to ship.

The FCC has received complaints from the industry that the above uses, designated in section 83.359, are being disrupted by vessels using these frequencies in a manner contrary to that prescribed:

—some vessels are using the ship station half of the duplex channels for intership communications on a simplex basis; and

—some noncommercial (recreational) vessels are using the commercial vessel intership channels.

The FCC feels that it should be apparent to the offending stations that disruption of communications of one segment of the maritime community by another segment of the same community will eventually result in deterioration of all maritime service communications.

The Commission has therefore decided to inform offending ship station licensees that both types of usage are in violation of the rules and that offenders may be subject to monetary forfeitures, revocation of license, or even *criminal* penalties! (continued)

... Use S9 READER SERVICE.

Free Classified Ads

Your classified ad may be run Free of Charge in *THE ELECTRONIC FLEAMARKET* — this offer is good for all S9 and/or Fleamarket subscribers every month. Please limit ads to thirty words or six lines and not more than two ads per month. You can buy, sell, swap or advertise for QSLs. Your ad may cover ham gear, CB gear, test equipment, stereo, or anything else an electronic hobbyist may find of interest.

Remember, this service is absolutely *free* to subscribers who use the coupon below (or a reasonable facsimile thereof). *THE ELECTRONIC FLEAMARKET* will be read by thousands of electronic hobbyists, so don't miss out.

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AGREEMENT ON FREQUENCIES MODIFIED

The FCC announced that a U.S.-Canada agreement has been reached with respect to a modification of the arrangement applying to the coordination and use of VHF maritime mobile public correspondence frequencies governed by the International Telecommunication Union Radio Regulations.

In a letter to the Canadian Deputy Minister of Communications, the FCC advised that the U.S. Interdepartment Radio Advisory Committee had approved the use of VHF Channel 88 for public correspondence within 75 miles of the U.S.-Canadian border and that the necessary rule changes had been adopted by the Commission in November.

The three channelling arrangements agreed to apply to East and West Coast VHF maritime mobile public correspondence and to maritime mobile public correspondence on the Great Lakes and the St. Lawrence Seaway.

The provisions of the channelling arrangement in the West applies to waters of the State of Washington and of the Province of British Columbia where channels 24, 84, 25, 85, 26, 86, 27, 87, and 28 will be used in accordance with the common frequency coordination agreement above 30 MHz, the Commission said.

It said shore-based stations may be established by either country in accordance with this arrangement without prior coordination with the other country, but that there would be an exchange of information as to the establishment of new stations or a change in technical parameters of existing stations before operations commence. Proposed stations which would not comply with the provisions of the agreement must be coordinated ahead of time and will not enjoy protection from interference nor will they cause interference to existing or future stations which are established in accordance with the agreement, it said. Existing stations, the Commission said, are required to comply with the provisions of the agreement within 12 months of this date.

The FCC noted the agreement includes definitions of certain geographic areas and conditions under which certain channels may be used and stipulates acceptable technical characteristics of shore-based stations and what steps should be taken to avoid harmful interference.

Under the East Coast and Great Lakes arrangements, the FCC said both countries will share channel 26; Canada is assigned channels 24, 85, 27 and 88; and the U.S. is assigned channels 84, 25, 86, 87 and 28.

If it is found necessary, a channel of one country may be assigned to a station of the other country within the frequency coordination zone, following successful coordination between countries, the Commission said.

This agreement, which is subject to periodic review at the request of either country, supersedes the provisions of the U.S.-Canadian exchange letters dated

December 10 and 16, 1965, and January 9 and June 8, 1973, as they apply to the use of public correspondence channels.

NEW EXPERIMENTALS OF INTEREST

KG2XJB, DYNALEC CORPORATION, Sodus, New York. Fixed experimental research station to operate on various frequencies between 2 and 30 MHz to conduct experimentation required by a contract with the U.S. Government.

KG2XJC, NEW YORK STATE ELECTRIC & GAS CORP., Binghamton, N.Y. Mobile experimental research station to operate on 170.225 MHz for the operation of a Hydrological Data Acquisition System, monitoring water conditions near a proposed electric generating plant.

KG2XJD, NEW YORK STATE ELECTRIC AND GAS CORPORATION, Binghamton, N.Y. Fixed experimental research station to operate on 169.525 MHz for the operation of a Hydrological Data Acquisition System, monitoring water conditions near a proposed electric generating plant.

KG2XJE, MONACO ENTERPRISES, INC., Spokane, Wash. Mobile experimental research station to operate on 159.95 MHz for testing a radio alarm system for advance flood warnings in Wheeling, W. Va. during periods of high water along the Ohio River.

KE2XFM, GENERAL ELECTRIC RADIO SERVICES CORPORATION, McLean, Virginia. Experimental development station to demonstrate equipment for sales purposes and making field strength surveys using frequencies specified in Parts 21, 25, 81, 83, 85, 87, 89, 91, 93 and 95 of the rules.

KG2XJI, COLORADO DEPT. OF HIGHWAYS, Aurora, Colorado. Fixed experimental research station to operate on 1610 kHz to transmit local travel information to drivers on Interstate 70.

KG2XJL, GTE SYLVANIA INC., Batavia, New York. Fixed experimental research station to operate on 61.25, 83.25 and 205.25 MHz for obtaining RF data necessary for the design of CATV receivers.

KG2XJM, GAI-TRONICS CORPORATION, Reading, Pennsylvania. Experimental developmental station to demonstrate equipment for sales purposes and making field strength surveys using frequencies specified in Parts 81, 83, and 85 of the Commission's Rules.

KG2XJN, DIMICOM, INC., San Diego, California. Experimental developmental station to demonstrate equipment for sales purposes and making field strength surveys using frequencies specified in Parts 21, 74, 87, 89, 91, 93 and 94 of the Commission's Rules.

KG2XJS, GTE SYLVANIA INCORPORATED, Mountain View, California. Fixed experimental developmental station to operate on 3750, 3990, 4150, 5975, 6175 and 6375 MHz for the operation of an antenna test range.

KG2XJW, RCA CORPORATION, New York, New York. Fixed experimental developmental station to operate between 26.96-27.41 MHz.

CB Usage Tips From S9

(CUT OUT & PLACE AT OPERATING POSITION)

Preferred & Designated Channels

- Channel 8 Agricultural operations
- Channel 9 Emergencies only
- Channel 13 Maritime
- Channel 16 Single Sideband only
- Channel 18 Single Sideband only
- Channel 19 Trucks/Vehicles in transit*
- Channels 36 thru 40 Single Sideband Only

*Note that in many areas there are also 1 or more additional channels designated and/or normally used for in-transit vehicles, most often Channels 10 and/or 12. This is especially true in metro areas and their suburbs where Interstate Highways are on 19 and secondary roads such as parkways are on alternate channels. It is not the practice for mobile units on such channels to request breaks. Base stations are requested to avoid using all area in-transit vehicle channels in order to permit their full, free, unobstructed and exclusive use by in-transit vehicles. "Channel Monitors" are neither required nor desired on in-transit channels and are requested to honor any in-transit channels which may have been so designated in local areas by the operators by means of their customary and general usage habits.

Those operators who feel the need to function in CB by establishing themselves as "Channel Monitors" should not expect to monitor or control distant stations which are being received at S-3 strength or lower. They should also be aware of the fact that even those local stations in their area may not wish to avail themselves of their services; all stations having

free access to the channels may elect to bypass the monitor should they wish to do so. Those who attempt to pass themselves off as "Channel Monitors" as a ploy to hog the channel for their own purposes should expect to be ignored by most stations. Those monitors who are successful are those with a good signal and good ears, who earn the respect of other operators by keeping their own transmissions as brief as possible, by giving up their own rights to hold conversations while acting as monitor. ALL transmissions from the monitoring station should consist solely of acknowledging breakers who wish to use the channel, and NOTHING more. During busy periods monitors should deny requests for 10-36's and radio checks on their channel.

Those seeking 10-36's should be encouraged and instructed in the art of telling time by means of wristwatch, clock, or broadcast radio station. Those whose primary interest in CB is chucking carriers and/or playing music are requested to consider the pleasures and benefits to be derived from finger painting and shock therapy, respectively.

Stations using power mikes should be cautious that their audio levels are set to a level which will not cause voice distortion, over modulation, or splashover on adjacent channels.

Single Sideband stations generally operate on Channels 16, 18, 36, 37, 38, 39, and 40, although this may vary in specific areas. Stations using standard AM transmission are requested to avoid use of local Sideband channels, likewise Sidebanders are requested to confine their transmissions to those channels established locally for their use.

Dealer Business Card Advertisement

This advertising section is reserved exclusively for CB dealers who wish to keep their name in front of their local customers, but who would otherwise not advertise in a national publication. The ads included are limited to one column inch; advertising copy is limited to non-mail-order type. The costs for business card ads are \$45.00 prepaid. In addition to the ad in the business card section, each dealer participating receives twenty five copies of the issue containing his ad, to sell or pass out in his store. For further information, dealers should contact the publisher, S9 Magazine, 14 Vanderventer Ave., Port Washington, NY 11050. Phone: 516/883-6200.

C.B. RADIOS POLICE & FIRE MONITORS
ESSEX ELECTRONICS CO.
705 SOUTH MARLYN AVENUE
BALTIMORE, MARYLAND 21221
WHOLESALE DISTRIBUTORS
DEALERS WELCOME
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COBRA-TRAM-BROWNING
QUALITY LINE ELECTRONICS INC.
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BETHEL, CT 06801
203-792-7750
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Phone: (212) 863-2724

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Between Myrtle & Central Ave.

(212) 379-2450 AM-SSB-FM SCANNERS
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716-631-3332
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CB SHOP



Rates for CB SHOP are 10 cents per word for advertising which in our opinion, is obviously of a noncommercial nature. A charge of 75 cents per word is made to all commercial advertisers or business organizations (minimum ad, \$30.00). Regular \$9 display advertisers are exempt from the classified ad minimum rate. A 5% discount is in effect for an advance insertion order for six consecutive months.

We do not bill for advertising in CB SHOP. Full remittance must accompany full orders

sent in; otherwise, ad will not be run or acknowledged.

Closing date is the 5th of the third month preceding publication.

Because the advertisers and equipment contained in the CB SHOP have not been investigated, the publisher of S9 cannot vouch for the merchandise or services listed therein.

All paid classified ads must be sent to the attention of Eileen Lucey, Classified Ad Manager.

SPECIAL—100 QSL IRC'S— only \$1.00. Tower-SR, Drawer 1183, Charleston, S.C. 29411.

DEALERS ONLY! Send letterhead for free price sheet. Same day service, most major brands in stock, competitive prices, personal service, monthly specials. Dixie C.B., Rt. 3, Box 517A, Prairieville, LA., 70769.

QSL 100%—Huge buddy packs. More you send, more you get. J.P. Bartling, Box 15424, Orlando, FLA., 32808.

CBers; AVOID SUNSPOT BLACKOUT. Many more channels. More power. Uncrowded. More fun. Quality! Copyrighted report tells why, where and what to do. \$2.00 Money-back Guarantee. Alpha Research Consultants, Suite 125-S, 7715 Chevy Chase Drive, Austin, TX., 78752.

DEALERS WANTED: Profitable spare time business, best wholesale prices, CB radio/antennas/monitors/accessories, Central USA for best shipping. Send card or letterhead for price sheet. Sunridge Electronics, Inc., Rt. 2, Box 375 S, Hillsboro, MO. 63050.

CB RADIO SLIDING CAPABILITIES— Ham radio conversions to CB easily achieved using simple tools. Step by step illustrated instructions available. Details, \$1.00, Refundable. Technical Publications, Box 649-S4, Milwaukee, WIS., 53201.

JOIN THE BROTHERHOOD OF CB'ers—a nationwide organization. Equipment and handle registry; overnight accommodations; bi-monthly magazine published by us; ID CARD; 5 x 7 wall card; bumpersticker and more. Complete membership \$5.00 or free details. Box 461, New Haven, CONN., 06502.

PERSONALIZED BADGES—With name, Handle, Call Letters—only \$1.50 Postpaid. Mac's Shack; Box 1171, Garland, TX., 75041.

QSL CARDS— Something completely different! Nothing even close to it on the market! The "Cadillac" of QSLs! Samples: \$1.00—Fully refundable with order. Mac's Shack, Box 1171-B, Garland, TX., 75041.

CB'ers—WOULD YOU LIKE to be a 'ham' and shoot legal skip world-wide on thousands of channels? Join ARC to learn how! Life Membership: \$4.00 (or 25 cents brings info). American Radio Council, Box 1171-E, Garland, TX., 75041.

BEST PRICES On Johnson, SBE, Tram, Browning, Midland, Antenna Specialist, Avanti, Antenna, Inc., Shakespeare, Turner, Astatic, Mura, CDE, Para-Dynamics, Vanco, and Gold-Line. Write for free price list. CRS Communications, 1552 Central Park Avenue, Yonkers, New York, 10710.

SUFFOLK COUNTY CB'ers: Join Suffolk Emergency, a non-profit volunteer channel 9 monitoring organization looking for dedicated people to help fellow citizens in time of need. For more information on membership, send to: Suffolk Emergency Monitor Team, PO Box 91-X, Huntington Station, NY., 11746.

ATTENTION CB DEALERS: Having hard time getting CB sets? We carry a full line, including Pearce-Simpson, Robyn, Browning, Johnson, Royce, Police Monitors, Crystals, New-Tronics, Antenna Specialists (E & S CB Sale and Service) R4, Winchester, IN. 47394, Phone 317-584-0343.

CB DEALERS— Send today for our price list, same day service. Reputable company in CB business for over 8 years. Over half-million dollar inventory. CB Distributors, Box 15883, Baton Rouge, LA., 70815.

QSLs!...SAMPLE KIT— 25 cents. Immediate attention and courteous service. G.E. French, PO Box 101, Poestenkill, NY., 12140.

CB BREAK "THE CITIZENS BANDER'S NEWSPAPER" Published every 2 weeks. Get the news while it's "Hot"! FCC, gadgets, Jamborees, Awards, New Products, tests, and more! \$8.00 per year. CB Break, Box 378, Brackettville, TX, 78832. Call toll free: 800-531-7156, Texas-call collect: 512-563-2432.

CALL SIGN Rubber Stamp. 1" high, \$2.50. Call, name, address, stamp—\$3.00. Manufacturer, PO 506, Capitola, CAL., 95010.

CB ANTENNA PLANS— Easily assemble high performance beams, quads, special skipbeam, groundplanes, from common hardware—save 80%—since 1964 Corona Tenna-Farms improving antennas while simplifying their assembly. Easy non-technical instructions for building antennas above and more, complete \$2.00. Corona's Tenna-Farm, 1117 Dewitt Terrace, Linden, N.J., 07036.

CB'ERS PROTECT YOUR INVESTMENT Make your Rotating or Omni antennas Stay Up! New Support System, will add needed wind protection and strength to your Mast and Tower. Detail plan copies for 10 and 15 foot towers and do yourself instructions, \$9.95 each or both \$18.50. Patent Pending, N.J. residents add 5% Tax. Ram Home Improvement Corp. Box 1209, Toms River, N.J., 08753.

RADAR DETECTORS, Amateur Base and mobile linears, Wispee Mobile Privacy and many other unique new CB products plus a few found nowhere else. Lowest prices, fast service, free catalog. Lee Sales Company, 6912 Marion, Shawnee, K.S., 66218.

VOICE SCRAMBLER DECODERS. TR Electronics Model-104C is the finest high quality decoder on the market. Adapts to any monitor, 2 1/2 watts output, 3 integrated circuits, filtering to remove scratchy sound and annoying tone, only 3"x2"x4". 1 year parts and labor warranty! Guaranteed satisfaction. \$45.47 Dealer inquiries welcome. TR Electronics, PO Box 527, Mason City, IA., 50401. (515) 423-7473.

QSL 100% Join the Carnival QSL Club of the world. Membership \$3.50, includes 8 1/2 certificate, your CLW unit number, and wallet size ID card. Write for application, 1124 High Bluff, Dubuque, IA., 52001.

CUSTOM EMBROIDERED EMBLEMS, your design, low minimum. Swiss Embroidery with colorfast threads, washable cotton twill background. Free booklet of design hints and guide. Write now. Emblems, Dept. 9, Littleton, New Hampshire, 03561.

YOUR WORLDWIDE Talking Power—Be a Radio Amateur! Widely used guidebook, "Investigating Amateur Radio"—more than just beginning-license information....All the problems and possibilities. Less effort—less expense. Smooth-reading paperback, \$4.95. Refund Guaranteed. Communicator, Box 2283-K, Philadelphia, PA., 19103.

SILTRONIX 1011 OWNERS: Convert unused 28 MHz band to CB H.F. Extend your capabilities to 27.999 MHz. No parts needed. Send \$10.00 for plans to: Gensemer, PO Box, 3471, Rock Hill, S.C., 29730.

ATTENTION TRAM 0-60, Browning LTD Cobra 132-135 owners. We have a fantastic modification available for your radio. Many satisfied users. Write for details. Free crystal catalog also included. FBC, MDIVCO, 2928 14th St., N.W., New Brighton, MN., 55112.

HIGH AND LOW Channel Crystals available for all synthesized CB radios—thousands in stock—immediate delivery. Free Catalog. FBC, MDIVCO, 2928 14th St., N.W., New MN., 55112.

FREE FULL COLOR QSL Card Catalog. Cards, Inc., Drawer P, Lexington, N.C., 27292.

CB LINGO....10 SIGNALS...Police Codes: All these and more in the CB Radio Handy Book. This is the book used by truckers all over the country. Plus, your friends will die laughing when you use the new 11 signals. Both for only \$1.50. Nabco-CB, Box 36S, Hazelwood, Missouri, 63042.

QSL CARDS— 2 color 12 pt. glossy white, 500 for \$10.00, 1,000 for \$18.00. Over 300 designs. Catalog & samples, \$1.00. Lile Guill-Rustburg, VA. 24588.

FUZZBUSTER RADAR DETECTORS, tremendous discount, Master Charge. Immediate shipment guaranteed. H & B Enterprises, Box 477, Candler, N.C. 28715.

CAN WE HELP YOU with good Wholesale Prices. Most Major brands CB Radios, Scanners and Accessories. Same day shipping. Send or call for price list. RRR Electronics, Inc., South Bend, IND. 46628. 219-232-4688.

CB HAM DEALERS: Send your letterhead for free catalog. Siltronix, Swan, Midland, Pearce-Simpson, D & A, Black Cat, Hustler, Avanti, etc. Appliance & Equipment Inc., 2331 Vance Jackson, San Antonio, TX, 78213. 1-512-733-0334.

ANTENNA PLANS. Save and build your own. No Gamma Match or Loading Coils. Base station ground plans \$2.50. Two three or four element beam plans \$4.50. Both plans for \$6.25. Send check or money order. to Antenna Plans, Box 372, Fort Atkinson, WIS. 53538.

BE AN EMERGENCY CHANNEL 9 MONITOR. We'll show you how. We invite you to join the United States Emergency Assistance Radio System (U.S. EARS). Members identify with their state name (such as 'Ohio State Emergency Radio'). We are now accepting Individual and Team membership nationwide. For information and a membership application, send a self-addressed, stamped envelope to: U.S. EARS, Headquarters, PO Box 1956-A, San Jose, CAL., 95109.

"CB BY GEORGE, CB Needlepoint canvas designs, hand painted with your handle or call letters. Finished piece suitable for framing or pillows, etc. Free info, Write George H. Costen, Jr., PO Box 2586, Roanoke, VA., 24011.

TRY SOMETHING REALLY Challenging! Instead of paying \$15.00 for one, build your own High Efficiency Mobile Antenna; usable on all 40 channels. Send only \$1.50 for complete instructions, wire and form for coil- R & R Productions, Box 634, Marshall, MN., 56258.

WHAT'S YOUR HANDLE? Let thousands know your handle and call letters with a Fluorescent Bumper Sticker. Fifteen letters and spaces per line, 2 lines maximum for \$2.00. Five colors to choose from- orange, pink, mintsberg, red and yellow. Mail check or money order to Coastal Communications, 3403 Fielding Road, Baltimore, Maryland, 21208.

150 TWO COLOR COMIC QSL CARDS printed with your name, address and call letters, only \$4.00 plus 85 cents postage. Check or money order. Pack includes 30 different comics. Albert Wilson, Rt. 9, Murfreesboro, Tenn. 37130.

CB TRUCKERS OR SPORT CAP- Fine quality, personalized with your handle and call letters. Red, yellow, blue, adjustable sizes (M) 6-7/8 to 7-1/4, (L) 7-1/4 to 7 5/8, \$6.96 post-paid. Colo. residents add 6%. Extra patch free, additional patches \$1.00 each. Check, Money Order, BankAmericard or Master Charge. Print information clearly. Send order now, allow 3 weeks for delivery. Professional Services International, Dept. S, 2255 East 18th Avenue, Denver, Col., 80206.

DEALERS- Check our extremely low prices and same day shipping for Midland, Shakespeare, Turner, Breaker, Amphel, Consolidated Towers and more. Send for free catalog. Sugar Shak Distributors, 1025 N. King St., Hampton, VA. 23669. 804-723-7024.

BECOME A RADIO AMATEUR Read "From CB to Ham Beginner". All you need to know in one easy-to-understand book. Only \$4.95 at all stores handling "Sams" publications. Or order autographed copy latest edition direct from author (add 50 cents for handling). J.A. Stanley, 855 C South Fillmore St., Denver, COL. 80209. Money-back guarantee.

CALL SIGN AND HANDLE engraved on 1x3 plastic badge with pin/clutch. Choice of colors, all with white lettering-maplewood, green, red, black, blue, orange- \$1.75. H & H Plastic Engravers, PO Box 6606, Pine Bluff, ARK. 71601.

CB RADIOS, VHF/UHF monitors, crystals, antennas. All brands. Lowest pricing possible. Southland, PO Box 3591-F, Baytown, TX., 77520.

BOOST YOUR CB OUTPUT without linears. Boosters easily built with Radio Shack parts or equivalent for \$16. Plans and parts list only, base and mobile, \$7 or each \$5. Quick Service Plans, Box 868, Clemmons, N.C. 27012.

MOBILE IGNITION SHIELDING provides more range with no noise. Available most engines in assembled or kit forms, plus many other suppression accessories. Free Literature. Estes Engineering, 930 Marine Drive, Port Angeles, WASH. 98362.

JOIN INTERNATIONAL EMERGENCY Radio Patrol. Details free. Write Box 434, Saint John, New Brunswick, Canada. E2L4L9.

GIANT NEW LIST of C.B. Transistors!!! American and Japanese transistors at discount prices. Stop the headache and cost of buying from several different companies. Dealers send for free list. All others 25 cents. Partronics, PO Box 266-54, Oshtemo, M.I., 49077.

NEW CHANNELS! Copywrited book details how to install sliders, increase power, add new channels to most new and old units. Many pages. \$9.95 Tecom, Box 696, Welcome, NC, 27374.

C.B. BUSINESS OPPORTUNITY! Turn your hobby into a money-making business or make your business more profitable! Buy CB radio: direct from manufacturer in Japan in quantity at fraction or retail price. Send \$2.00 for report on import information and list of companies to contact. Technical Information Services, Dept. CBSN, PO Box 24A34, Los Angeles, CAL. 90024.

CB DEALERS Send your letterhead or business card today for our price list. We are complete & servicing distributor. T.W.E., Dept. S PO Box 4200, Victoria, TX. 77901.

QSL CARDS- Top quality, reasonable prices, 12 colors, gloss-coated, custom made for you. Free Catalog. Write to CBC Club, Dept. S9, Box 703, Lexington, N.C. 27292.

POLICE SCANNERS, MONITORS. Choose from name brands like Regency, Bearcat and others. Also crystals, antennas, and frequency directories. Complete selection of Citizen Band transceivers, antennas, and accessories. Harvey Park Radio, PO Box 19224, Denver, COL. 80219. Ceda Member Dealer.

HORNET ANTENNAS SELL BEST. Immediate delivery. Dealer inquiries invited. Hornet Antenna Products, Box 880, Duncan, OK., 73533.

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Same Day Shipping From America's Largest Inventory of

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Special Cut C.B. Crystals



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Crystal Boxes /Ham Gear



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SCANNER OPERATORS! Are you registered? Be assigned your own personal monitoring ID letters inscribed on beautiful 2-color bordered certificate, plus discounts and goodies! Thousands already registered! Only \$5, ppd. from CRB Research, Box 56-X, Commack, NY 11725.

NOW FROM THE LARGEST WAREHOUSE IN THE EAST. Same day delivery for on the shelf stock. All major brands. 24-hour service. Send for dealer catalog and free gift offer. Send letterhead to: PALOMAR EAST LTD., Palomar Plaza, P.O. Box 148, Congers, NY 10920.

PROTECT GEAR with bold burglar alarm warning stickers. Strong self-stick vinyl striking green/yellow design. Only \$2 for 5. Enclose self-addressed stamped envelope. CRB Research, Inc., P.O. Box 56-XC, Commack, NY 11725.

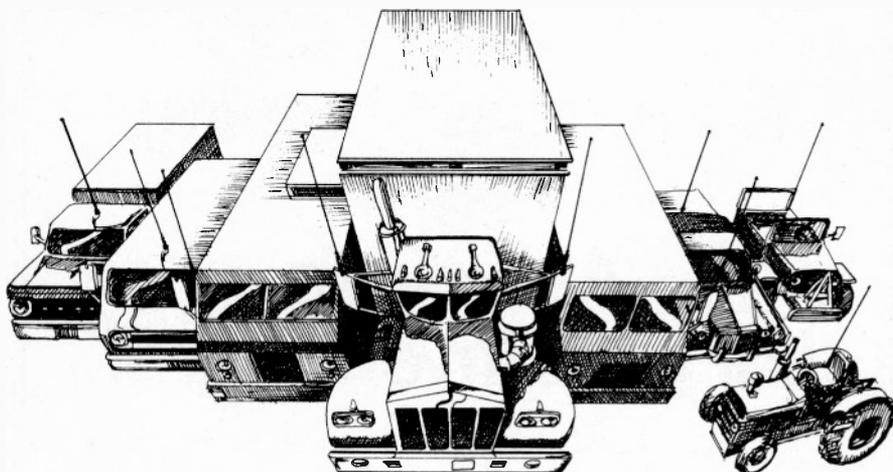
T*SHIRT; "GET IT TOGETHER WITH CB RADIO" in art form letters on front; your 'handle' and/or call on back in two inch letters; polyester/cotton sky blue or heather blue shirts. State size, color, address and printing desired. Send check or MO for \$5.95 plus 75 cents postage & handling for each shirt to Freestyle, PO Box 606, Walled Lake, Michigan, 48088.

WANTED FOR \$\$\$CASH! Back in 1957 the Lionel Train Company made a small set of toy trains specifically designed for girls. It had a pink locomotive and several other cars, all in pastel shades. The set wasn't very popular, hence not too many sold. However, I need this set for my collection, and am willing to pay up to \$400 cash for a complete set in mint condition. If you have this item please write: Dick Cowan, S9 Magazine, 14 Vanderventer Ave., Port Washington, NY 11050.

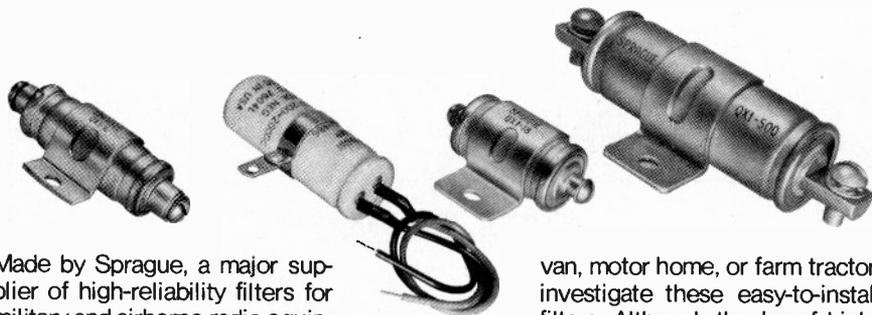
OFFICIAL ID CARDS/CREDENTIALS for Police Dept./Deputy Sheriff/Highway Safety Patrol/Volunteer Ambulance Corps/Rescue Squad/Fire Dept.! Beautiful professional 2-color wallet size ID cards. Sent blank (we do not inscribe name). Available in large or small quantities. Sample set of all 6 cards only \$3, ppd., PLUS FREE BONUS Official CB Operators ID Card. Civil Defense credentials also available to authorized CD units. Order now! CRB Research Inc., P.O. Box 56-X, Commack, NY 11725.

NASSAU COUNTY CB'ERS: Don't sit back... Join REACT!! Central Nassau County REACT, one of the first and largest teams in the nation would like you as a member. We are an independent, non-profit volunteer public service team dedicated to aiding you, our fellow CB'er in time of need. Send today for more information and a membership application to: Central Nassau County REACT, P.O. Box 406-S, Westbury, NY 11590.

They've all got something in common...



noise-free vehicles, thanks to the superior performance of Q-LINE™ radio interference filters



Made by Sprague, a major supplier of high-reliability filters for military and airborne radio equipment for more than 35 years, Q-LINE filters are the industry's most dependable answer to CB radio noise problems. If you have vehicle-originated interference in your car, truck, camper,

van, motor home, or farm tractor, investigate these easy-to-install filters. Although they're of high-quality metal-case construction with unsurpassed attenuation performance and insertion loss characteristics, Q-LINE filters are reasonably priced for the Citizens' Band market.

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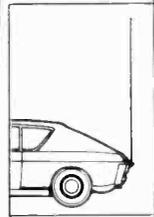
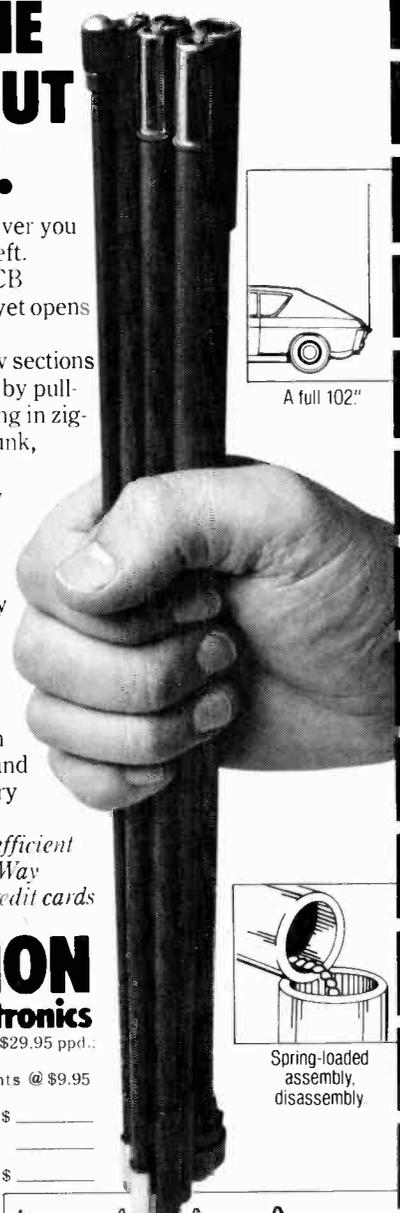
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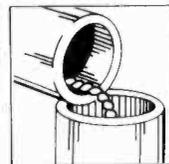
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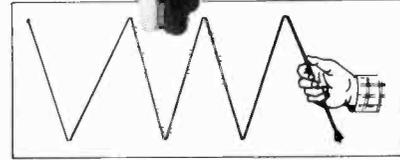
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A full 102"



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Flip it out! Whip-A-Way locks itself together in seconds.

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To speed information to you on products shown in S9 advertising a new computerized Reader Service system has been designed. For additional information on a particular ad in this issue, tear out the Reader Service postcard bound between pages 124 and 125, and circle the numbers on the card which correspond with the Reader Service numbers listed in the advertiser's index below. **DON'T CIRCLE THE PAGE NUMBERS!** Fill in your name and address, and mail. We'll have your information on the way in short order.

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The publisher of S9 accepts advertising from manufacturers, dealers and distributors who, in our opinion, offer readers a high level of quality in products and/or service. Wherever possible we attempt to publish additional information on these products in the form of technical equipment evaluation reports.

Readers should be aware that, at the present time, the CB radio market is drastically backordered in almost every product category, but especially so in transceivers and antennas. We wish to remind our readers that we carefully screen all potential advertisers. In the event that a company's products do not appear within our advertising pages, there's a strong likelihood that it has not passed our minimum standards.

We strongly urge readers to purchase from those companies whose advertising appears in S9; by doing so, you will be assured that the company with whom you're doing business is a reputable one. You'll also be supporting those companies that help make S9 possible. Now, we recognize that many advertisers cannot advertise in every issue. If you don't see the company's ad in the current issue, check back two or three issues to be certain, since almost every major advertiser appears six or more times in one year. If you have doubts about the reliability of any particular product or company, feel free to contact our publisher for information. This service is offered as a safeguard to our readers.

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VSWR - 1.21:1
Impedance - 50-52 ohms
Vertical to Horizontal Separation - 25 db
Weight - 24 lbs.
Length - 16.5 ft.
Rotor Required - Medium to Heavy Duty
Power Multiplication - 28 x
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AV 140 - List price \$157.95.

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