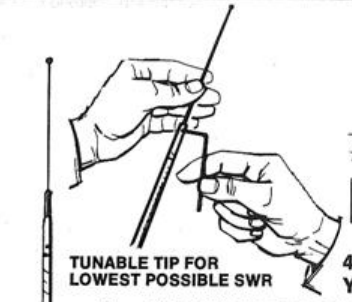
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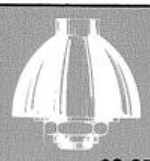
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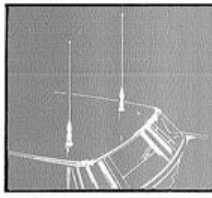
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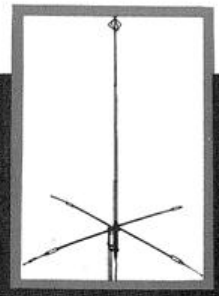
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For CB'ers on the move.

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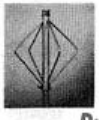
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S9 Is Edited And Published By And For CB'ers.

editorial

KQD4552 rides again!



by TOM KNEITEL, S9 Editor

WHAT'S IT ALL ABOUT

I never get anything free in the mail. Oh, yes . . . once I received a free sample razor blade. When I rushed to try it I sliced off a chunk of cheek. That's about the time I decided to grow a beard and not again be tempted by any further flights of fancy. But enough talk of early American boyhood life—I'm here to tell you about why you received this magazine in the mail—a (gasp!) *free gift*—and what it's all about.

Well, let's start off by saying that we know that you recently got started in Citizens Radio. How do we know? We make it a point to know just about all important events in the world of CB radio—and, to us, when someone new joins our ranks *that's important!* We'd like to see that you have as little grief as possible in starting out and that you continue to get the most from your radio system. It's not always easy—all of us in CB have popped our share of fuses and ruined some coaxial connectors. One day somebody said, "Why doesn't somebody put out a magazine for CB operators; something which would help newcomers to get started and also keep old timers aware of all of the latest techniques, news, FCC rule changes?"

Somebody else said, "Who needs it?"

So here we are—CB radio's "Who needs it?" magazine. Luckily for us, a whole bunch of thousands of CB'ers decided that *they* need it and so we've been around the CB scene since 1962!

Actually, the name of our monthly magazine is *S9*. Right now you're reading something called *S9 Junior*, so named because it is a specially prepared mini-edition which we think will give you some idea of the type of information contained in the regular monthly editions of *S9*, which are considerably larger.

The aim of S9 is to be interesting, entertaining, and informative. We aren't affiliated with any club or sponsored by a manufacturer of equipment. We are CB'ers—just like yourself—who feel that CB operators need a spokesman; a unified, official, voice for the world to hear. We have opinions which we aren't afraid to express—even if they tromp on a few toes from time to time. We are seeking a fair shake for all CB operators and over the years of our existence we have been instrumental in numerous significant rule changes for the benefit of CB operators.

Our opinions aren't the kind which you have probably come to expect from a magazine—that is, the dogmatic ideas of one single person who happens to be the editor. *S9* never forgets that we speak for *all* CB'ers and we welcome and invite *all* CB'ers to keep us posted on their views and ideas. These suggestions make up our opinions.

As you might have already guessed, CB operators aren't simply "readers" of *S9*. They are a vital part of our very existence. We depend upon CB'ers for news items, photos, stories. When we publish their stories and articles we even pay top authors' rates for the field.

Now if you figure that you're going to be part of the world of CB, we'd very much like you to consider the possibilities of the two of us getting together and becoming a part of each other's scene. We pledge to support and back you, and all CB'ers, for a better CB radio service. We hope that you will participate in *S9* along with other active operators.

Whether or not you decide to back *S9* (and we hope you do), we think that you'll find that this copy of *S9 Junior* will be a useful publication to keep around your CB "shack." You won't cut your cheek with it, but it will help you cut your CB teeth. S9

Free Bonus Items For Every S9 Subscriber

Unless you are an advanced CBer, you probably can't use Johnson's new solid state Messenger 124



New Messenger 124 full-function, 23-channel base station. $289.95
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The Right Rig For You



It's Not Easy Selecting One—
Unless You've Got The Facts In Advance!

One of the most often asked questions we receive at S9 is, "Which is the *very* best CB set on the market." That's like asking, "Which is the very best car on the market?" If you're only going to drive at 25 MPH to and from the neighborhood shopping center then you can pick up a second (or third) hand putt-putt special with the bumpers dragging on the blacktop and, for your needs, it might well be the *very* best car on the market. On the other hand, if you like to make like Dan Gurney at the traffic lights, then perhaps nothing less than a raked "funny car" is the very best car on the market. If you want class, with steady, trouble-free operation over the years, then maybe a Bentley is the best thing on wheels *for you*. The *for you* is the key here—and so it is with CB rigs.

There is no *very* best rig on the market, and the only people you can hear making such statements these days are people who luckily purchased a CB set which happens to suit their needs—for *them* it is the best set around. For you it may be too much or too little set. *You* are the one who must decide what your needs are and then start eliminating those sets which are not directly suited to your needs and budget. While there is no denying that some rigs are inherently of better overall quality than others, you'll find that the vast majority of CB rigs are well designed, well built, and well suited to a particular communications need.

Today's CB transceivers (transmitter/receiver combination sets) are a far cry from the early efforts which were produced 10 years ago when the CB channels were first made



A good rig doesn't have to cost mucho bucks. This WRL Rustler II clocks in at under $90; offers 11 transmit channel positions and a tunable receiver.

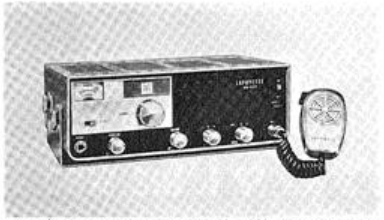
available to the public. One reason is that manufacturers have advanced their technical capabilities and can now use highly efficient tubes, or sophisticated solid-state devices. Things like Nuvistors weren't even invented when CB sets first came out. Designers have added refinements to CB sets which clip, compress, amplify, and otherwise soup-up the human voice so that you get the maximum possible range (or "talk power" as CB operators call it). They have frequency synthesizing circuits which permit operation on all CB channels with a minimum of components, which keeps price down.

They have come up with receivers capable of pulling in the most feeble signal while filtering out even the strongest signals on adjacent channels. They have, in other words, learned the secrets of pampering incoming and outgoing radio signals to make them behave properly under the most adverse conditions. With a possible average of 100,000 CB transceivers yacking it up on each of CB's 23 channels, equipment of lesser stature just wouldn't function.

SELECTIVITY

Channel crowding means that one of the

Please Tell Your Friends About S9



Lafayette's HB-600 CB rig offers, amongst many other goodies, your choice of two different noise limiters so you can pick the one which specializes in the noise problem you have at the moment.



The Pinto 23B is an elegant little unit which has recently been placed on the market by the huge J. C. Penney chain of stores.

prime considerations when looking at the receiving capabilities of a transceiver is to see its *selectivity*. Selectivity is, as its name implies, is the ability of the piece of equipment to *select* for your ears only those signals on the specific channel to which you are tuned, rejecting those on adjacent channels. Receivers with poor selectivity may hear as many as 3 channels at once. If you happen to live in an area where CB activity is high you'll find that extracting the desired signal from a channel is rough enough at times, and trying to pull it out from under 3-channels' worth of chatter is nearly impossible. Selectivity also means the ability of the receiver to reject unwanted "image" signals which are created within the CB receiver itself.

While there are many approaches to achieving good selectivity in a CB receiver (and each manufacturer seems to have his own pet method), the usual standard is the equivalent of two stages of 455 kc intermediate frequency (IF) circuitry. Since the current trend in CB equipment design leans toward double (or "dual") conversion receiver design, the usual manner of achieving good selectivity is by combining low and high frequency IF strips, often in conjunction with a crystal or mechanical filter. Excellent results are obtained by very low frequency IF (262 kc., 100 kc., or even 85 kc.), which sharpens the receiver, is teamed up with relatively high frequency IF strips (4.5 mc., 10 mc., etc.) which help reject "images." Exotic variations are available too, and these include *triple* rather than double conversion, or a high IF fed into a low IF, *plus* a filter.

Selectivity is certainly one of the major cost factors in any CB rig, and you can bet your bippy that a low-priced, bargain set is going to be as selective as the proverbial "wide open barn door." Probably you think that such a remark is a knock, but it isn't! If you live out in the country where CB activity is relatively low you find that selectivity is less important than it is to someone who lives in a high-activity area. You may be able to buy more for your CB dollar by purchasing a set with fair selectivity should you decide that you will not be an area of heavy CB activity.

Low cost CB rigs have always been popular, probably because of the popularity of CB in the wide open spaces. High priced CB gear should be shopped for with considerable care, paying extra attention to the selectivity claims for the equipment.

SENSITIVITY

Sensitivity is the ability of the CB rig to pick up weak stations. Since the sensitivity circuits are the first things which the incoming signal encounters in your rig, they are commonly known as the *front end*.



The Golden Eagle Mark II is a super deluxe base station which has created nothing less than a minor sensation with CB'ers. This unit, manufactured by Browning Labs, has just about every imaginable feature to make CB'ing as easy as possible.



Tram's Titan II is one of the most versatile CB sets ever offered on the market. Offering 2 separate SSB transmission modes in addition to standard AM, on all 23 channels, the set offers what amounts to operation on 69 "channels."



Johnson's Messenger III is one of the most popular sets ever produced. Small and attractively styled, it offers solid communications with excellent reliability.

Better-made (and usually higher priced) gear has a stage or two of radio-frequency (RF) amplification in the front end to give incoming signals a little more *zip!* The current rage is for Nuvistors to perform this task. Nuvistors are tiny metal tubes which give high amplification with little of the internal noise commonly associated with standard radio tubes. As a matter of fact, there are a number of tubes which are better than Nuvistors for a front end, but Nuvistors have caught the public's fancy.

Sensitivity ratings are given in microvolts on a CB spec sheet, and the lower the rating figure, the more sensitive the receiver.

AUDIO

While most CB rigs are about equal insofar as their receiver audio is concerned, we have noted that there has been some experimentation with processing the sound coming out of the receiver to make the incoming signal sound as if the other station (the one you are hearing) is using transmitter radio compression.

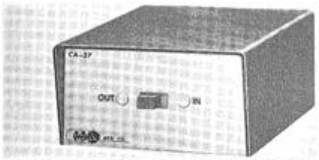
While this processing is a nice extra, it still does not have the impact of voice "processing" in the transmitter. It is handy in that it prevents local signals from cracking your windows when you have the volume control open wide to receive a weak signal. This is accomplished by the compression critical establishing a *ceiling* on volume at a comfortable listening level (any



If your an on-the-go person, a set such as Johnson's Messenger III can be taken off the desk and temporarily installed in a special Field Pack case which contains both power supply and antenna. Presto — you're an instant walking 5-watt CB station!



CB sets, such as this Regency rig, are beginning to turn up in some pretty fancy places. Here we see CB being used to coordinate the Festival Parade for the Indianapolis 500 Mile Race. The Regency Imperial is the set shown.



Some folks buy a CB set and then want to add a little soup to the signal. This WRL CA-27 compression amplifier is a nifty add-on accessory to give your voice some extra punch.

signal caught trying to get in above this level is promptly placed on a jiffy reducing diet).

NOISE LIMITING

A popular noise limiter in CB units is the so-called *series-gate* circuit, an *old* standby but which nevertheless does a most effective job. One minor difference in various sets is whether or not you can switch the noise limiter in and out of the receiver circuit, or whether it is always functioning. Don't reject a set if you can't switch on the noise limiter; it's probably an automatic type that adjusts itself according to signal conditions.

One innovation on the CB scene is the *noise silencer* circuit, which is an advanced and sophisticated type of noise limiter. Its specialty is crushing impulse type noises, such as are created by motors. Since it isn't completely effective on continuous-type noise, it is usually supplemented by a second limiter. A switch allows you select standard noise limiting or a noise silencer.



At the heart of every CB Rig there is a crystal like this one.

RECEIVER TUNING

There are two types of receiver tuning: fixed (or crystal controlled), and tunable like your table radio. Many sets have both of these features. Sets having a combination fixed and tunable receiver are good in at least one respect. They permit you to save some money since you need only purchase transmitting crystals and use the tunable receiver to operate on channels you didn't ordinarily require. You will find that this will be a nuisance, however, unless the rig has a crystal spotting circuit. This circuit, controlled by a pushbutton on the front panel, allows you to locate your transmitting frequency (channel) on the tunable receiver's dial in a jiffy. Otherwise, tuning around can be a bit rough on the nerves (to say nothing of the fingers) because in a great many units the dial



Since most CB rigs are factory supplied with hand-held "mobile" type microphones, some CB'ers find it desirable to install a special base station mike on a pedestal when using the set at home or in an office. This Turner mike has a built-in voice amplifier.

markings aren't particularly accurate, or they only become accurate after the receiver warms up and stops drifting.

CB sets offering the frequency synthesizer circuits give you fixed channel selection, but nevertheless give you full 23-channel coverage.

Some fixed tuned receivers offer a feature called "Delta tuning," which is a fine-tuning control (like on a TV set) which permits you to adjust your receiver frequency slightly to compensate for the other fellow being somewhat off-channel.

TRANSMITTERS

All CB base stations and mobile units are rated a 5-watts *input* which is the FCC maximum for the CB service. The *output* will be somewhat less—under 4 watts, possibly about 2½ to 3½ watts. This is because 100% efficiency in a transmitter is still not attainable and the best we can hope for is about 60 to 70% efficiency. The on-the-air difference between a 2½ watt signal and a 3½ watt signal is almost nil.

The big difference in the transmitter is actually found in the modulation, or audio, section. Since FCC rules limit the amount of modulation a CB station may use to 100%, there are ways which have been found to achieve *big talk power* without overmodulating.

Many transceivers incorporate this circuitry under names such as "range boost," "speech clipping," "compression," "limiting," or "audio preamplification." Each works its own special way, but the end result is to make you sound as loud as possible within the limits of the FCC rules.

Compression circuits seem to be the easiest to copy through severe interference, but clipping circuits give the appearance of doing more for you (they really don't) because they cause more distortion than a compressor.



Penney's Pinto 23, while small in size, still has room for an S-meter to give you a relative rating of incoming signal levels.

It must be remembered that unless you intend getting a message through intense interference or over an extremely long distance, a plain, garden variety CB transmitter, minus fancy audio circuitry, will probably suit you just fine. It is also true that certain types of voices aren't helped to any appreciable extent by audio gadgets.

One of the more recent things to be hawked by some CB manufacturers is the so-called *sideband* method of modulation, this includes *double sideband* (DSB) and *single sideband* (SSB). Both methods have been around radio for a number of years, each having created its own minor sensation upon impact in the various corners of the radio world.

Without getting involved in a lengthy technical dissertation in an attempt to explain the mechanics of SSB or DSB, suffice it to say that a 5 watt rig with SSB or DSB design will have more talk power than a set utilizing standard amplitude modulation (AM). Two-way communications between 2 SSB rigs will be better over long distances than an identical situation involving AM sets.

"SSB"

SSB communications cannot be copied on standard CB rigs, the signals sound garbled. It takes two to tango, and it takes 2 SSB rigs to make a contact. It is possibly for this reason that SSB has not yet become popular with CB operators; it limits the number of stations you can talk to. While this would make the FCC happy, many CB'ers feel that, until more SSB rigs are sprinkled amongst the masses, they'll bide their time with AM. DSB signals, while not as potent in their distance abilities as SSB, can be copies on standard AM CB sets.

Anybody interested in a totally "private" CB system, one which cannot be monitored by most CB'ers, should investigate SSB rigs.

METERS

The CB rig which has any meter at all probably has something called an "S meter." This meter indicates the relative strengths of signals coming into the receiver. With no signal coming in, the meter is adjusted to show a reading of zero, then all other signals will read from 1 through 9 and in decibels over S9. Frequently combined with the S meter is a power meter (the dual function of the meter is selected by a switch on the panel). The power meter shows the relative strength of your own transmitter, when it reads maximum you know that your transmitter is operating at top efficiency. The S meter is a handy accessory, not only in daily operation, but for trouble shooting.



The B&K Cobra 98 CB transceiver has a 3-way meter which gives you S-meter receiver-strength readings, shows you your actual output power in watts, and also gives you information of the efficiency of your antenna system. Neat!

Some CB transceivers have a little red neon bulb on the front panel which flickers when you talk. Like the S meter, it's not essential while communicating, but is a convenience that assures that the complete audio section is working.

OTHER FEATURES

Just about all CB transceivers incorporate a *squelch* circuit. This circuit enables you to set the receiver so that no background noise or static are heard when no station is transmitting on the channel to which the equipment is tuned. Dead silence is heard, but anybody coming on the channel will instantly bring your equipment to life and the station will be heard normally. The squelch circuits in different sets are of different quality, but a good one will not "open up" for sudden bursts of static, as will poor ones. The squelch can be adjusted for different sensitivity levels, even to the point where it will keep your set quiet for all but very strong local signals.

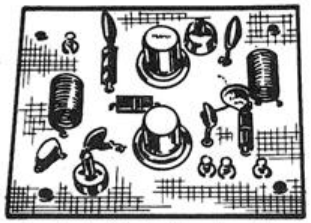
CB sets have built-in low-pass filters to screen out certain types of television interference. While this doesn't seem to be a vital factor in mobile operation, if the set you choose for a base station does not have an adequate filter, you may have to purchase an external filter.

Since the number of channels on which your set will operate is a cost factor, you should give this feature some advance thought when looking for your dream rig. If you are a business

user, you can probably get by with a set which offers as few as 2 or 3 transmitting channels. A person who intends talking to only his home from his car, and vice versa, can also get by on a handful of channels.

If you expect to be using your equipment in areas of high CB activity, where finding an open channel is a hit-and-miss affair, then a set having a 23 channel capability is your cup of CB. This also holds true if you are going to be taking trips, or face the possibility of frequent residential changes.

As previously mentioned, sets having *frequency synthesis* circuits come fully equipped and ready to go on all 23 channels. While a very few non-synthesis sets come ready to go on all channels, chances are the set you buy will come equipped with crystals (1 transmit and 1 receive, or just 1 transmit alone) for a single channel. Crystals cost an average of $3 to $5 each and should you have to go out and buy 46 crystals (2 crystals for 23 channels) could run you over $200. This must be considered when weighing the generally higher price of a frequency synthesis set against the seemingly cut price of many sets which come equipped to operate on only 1 channel.



End sagging signals. This circuit board contains a signal booster for your receiver. Added to a receiver which is having sensitivity problems, the WRL NA-27 Nuvistor Preamplifier will add the necessary moxie to hear those distant units.

Most CB rigs today come equipped with something called a pi-output network. This combination of two screwdriver adjustments located at the rear of the set enables you to "peak" the output of the transmitter for maximum efficiency. It is necessary to use either a field strength meter or standing wave ratio (SWR) bridge meter to check the output level. (The "output" meter built into the rig is generally less accurate.

TUBES VS. TRANSISTORS

The question of tubes vs. transistors was probably first asked on the day transistors were introduced to the public. Since CB equipment comes in both varieties, you will no doubt be faced with the problem yourself.



Some CB units (in this photo, it's a Johnson set) offer the bonus feature of a built-in PA system.

Some things to remember: Transistors require no heat-up time and the rigs function as soon as they are turned on; many transistor rigs will operate *only* in cars with a 12-volt negative ground electrical system and therefore cannot be used in most foreign and sports cars; transistorized rigs are usually much smaller than tube transceivers. Common complaints about transistor rigs include the claims that they are more susceptible to noise than are tube sets and the fact that the transistors won't work on extremely cold mornings (although many manufacturers now guarantee that their transistor rigs will operate at temperatures far below those normally encountered this side of Siberia); tube sets, at present anyway, are usually easier and less expensive to repair.

You pays yer money and you takes yer cherce. Some CB'ers swear by their transistorized sets, others swear *at* them. And just as many tube-users do the same.

EXTERIORS

You have to be the only judge of how the outside cabinetry of the CB rig will look, and if you intend placing the set in your home or car, perhaps you might wish to take your wife along on the shopping trip.

While there are plenty of blood-and-guts rigs on the market which can make your CB shack the most impressive place this side of Cape Kennedy, you might decide that your needs can best be served by a set which might be termed "decorator styled." In any case, with the many sets available you will not find designs in either extreme (or anywhere between) lacking.

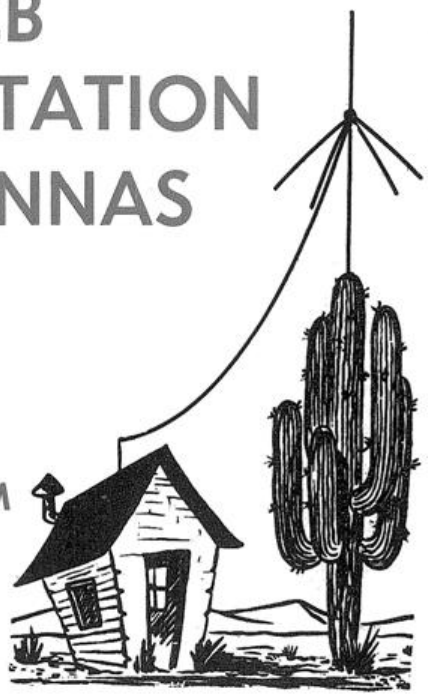
SO THERE YOU HAVE IT

As you can see, there are many variables in set design, just as there are many variables in the requirements of users. Starting out with really bare-bones basic sets, they go right on up to super-deluxe monsters with every feature you can think of except a built-in player piano.

Decide what you need, establish your price, check what's available. Buy. Enjoy. S9

CB BASE STATION ANTENNAS

THE LONG AND SHORT OF THEM



Remember that cigarette ad which says, "It's not how long you make it, it's how you make it long." Well, you couldn't say that about a CB antenna because it *is* how long you make it, and most certainly it's *how* you make it long. In fact, luckily for CB'ers, there are a number of antenna manufacturers around who spend a considerable amount of time, effort, and money in research, development, and marketing so that you'll like how they make their products. The result is a fantastic number of antenna types and styles from which to choose.

Now there's a bit of a problem along here somewhere because there are so many different antennas that the sheer mass of them tends to dazzle many newcomers to CB. Couple this with an unusually large number of CB old wives' tales about the mysterious giant-on-the-roof (which some CB'ers prefer to call a "skyhook"), and you've got not just a king sized problem but one which is a silly millimeter longer—in fact, 11,000 millimeters long!

Have no fear, each antenna has a specific and clearly defined job in CB life. Armed with a few facts you can dauntlessly charge forward into the maze and emerge with the exact "one for you" clenched tightly in your fist. And if you've got a particular favorite antenna manufacturer, you'll be happy to know that each manufacturer usually has his own unique approach to most of the basic design styles.

A BASE STATION ANTENNA

There are two general categories of base sta-



The basic ground plane.

tion antennas. One type is *omni-directional* and it radiates your signal with equal strength in all directions. Sometimes this is called *non-directional*, however such a term is incorrect since it actually means that your signal goes into no directions at all! Then there are antennas which are designed to concentrate your signal into only one direction for maximum punch at a specific distant station. These are called *directional beam antennas.*

Dotted along the lines which separate these two types are all manner of variations on the themes involved, and smack-dab in the middle there are even types which can be changed from omni-directional to directional with the flick of a switch.

Let's look at the omni-directional group first, and start off with the original, basic, bare-bones, type base station antenna which everybody used before all the fancy stuff came down the pike. The basic base station antenna is known as the *ground-plane* and it's still popular.

A ground plane consists of a 108 inch vertical whip (same as a "full length" mobile antenna) surrounded by four horizontal 108-inch whips at its base. The horizontal rods appear to be drooping, and not because of an error in design engineering. There are two reasons for the droop. First, they allow the impedance of the antenna to correctly match the impedance of the transmitter (50 ohms). They also angle the signal to hit about 20 degrees above the horizon for effective coverage. A further refinement of the ground plane is the so-called *dual* ground plane, consisting of a standard ground plane with a second set of horizontal radials placed 108 inches below the original set (the lower set doesn't droop). The second set has the effect of isolating the antenna itself from the mounting mast, thereby reducing electrical losses in the mast and coaxial cable which might adversely affect the radiation pattern. In fact, the additional radials lower the angle of radiation even more than the drooping set. Puts the ol' signal right about 5 degrees above the horizon.

The ground plane has been with us since the earliest days of CB, it started just about the same time as the "coaxial sleeve" antenna. Even though the coaxial sleeve antenna takes up considerably less space than a ground plane, even though it lays the signal down right smack on the horizon (by the way, that's your ultimate objective), even though you can still walk into any CB shop and purchase one, the antenna has fallen into bad times. Apparently it got lost in the shuffle somewhere along the line. Few CB'ers use this type of antenna today, despite its fine quality.

Probability is that coaxial sleeve antennas were overshadowed by an entirely new breed of CB antennas. It really isn't fair to try to lump these new antennas into a single group because each is different in design, electrical concept, and numerous other features. The main similarity is the intention. The intention is to have an omni-directional antenna which has the ability to put out *more* signal than a ground plane. This is not to say that your rig will be putting out more actual wattage, it won't. Your 3 watts out will just come on like 6, 10, or whatever; depending on the particular antenna. Antennas which have this ability to increase the *effective radiated power* are said to have *gain.*

While this breed of cat requires that the antennas designed for omni-directional gain radiation have certain basic similarities (and so many of them will look "alike" to the casual observer), there are actually a number of sophisticated en-



Antenna Specialists Magnum III flings out your signal in all directions — boosting it along the way.



The Avanti Astro Plane is a spiffy design in omni-directional antennas.

gineering differences which set them apart from each other. Probably the most obvious similarity is the fact that most all have their vertical radiator running about 18 feet high. Horizontal radials? Well they run from a dozen or so right down to 4, 3, and . . . yes, even none! They all have the ability to keep your lay your signal down low towards the horizon (remember . . . your objective?) better than a ground plane.

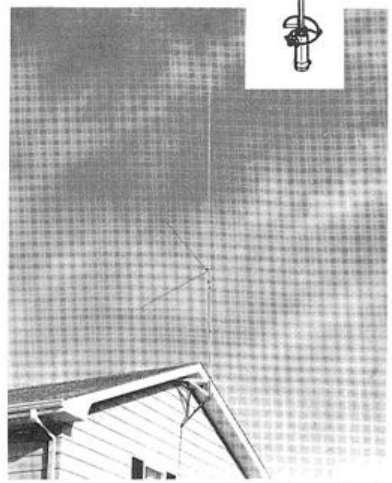
Members of this family of antennas include the Antenna Specialists Super Magnum (lovingly called the "Maggie" by CB'ers), Hy-Gain's CLR-2, Lafayette's *Range Boost*, Astro's *Super Star Burst*, The Mosley Devant, Cush-Craft's *Ringo*, Avanti *Astro Plane*, New-Tronics PRO-27JR, Antenna Specialists *Mini-Skirt M-200*, and models made by Francis Industries, Master Mobile Mounts, and others.

DIRECTIONAL ANTENNAS

You can take two omni-directional gain antennas, mount them side by side on your roof, put a little control box (called a "co-phaser") in your shack and accomplish a most unusual feat. By running your signal through this amazing little box you can switch around the loading of the two antennas and thereby vary the direction of your outgoing signals, plus the ability of the antenna(s) to receive signals in specific directions.

Why would you want to do this? Suppose you are trying to contact your mobile unit over a long haul. Even when he would be on the fringe coverage of an omni-directional antenna, he would probably be well within the coverage of a directional antenna system. Such a system takes all the signal you are sending out to non-communication areas and concentrates it in one desired direction. On receiving, this factor means that you will only hear signals from one direction, thus eliminating much of the interfer-

Cush-Craft has an interesting approach to omni- directional antennas with their Ringo antenna. ▷



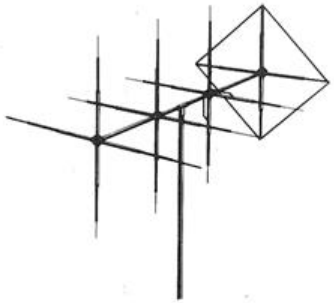
A CB favorite is the Hy-Gain CLR-2 base station sky hook.

ence on the channel from stations in areas other than in the direct "beam" of your signal.

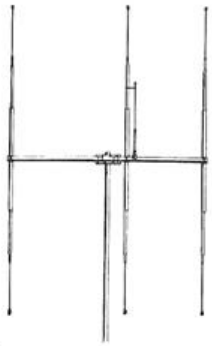
ON THE BEAM

Notice that word we used, "beam," because that's the name for an antenna which is able to do these electronic tricks. While using two omni-directional antennas in the foregoing hookup isn't a true beam, as the word is commonly used in CB. It is a clever way of achieving the same effect.

There are a number of actual beams available however, and, depending on their design, they each produce varying degrees of gain in one specific direction. As an example, Hy-Gain has a gigantic monster of a CB beam (it's actually two 5 element beams placed side by side) which will boost your signal to the point where it is actually equal to 120 watts in the direction it is aimed.



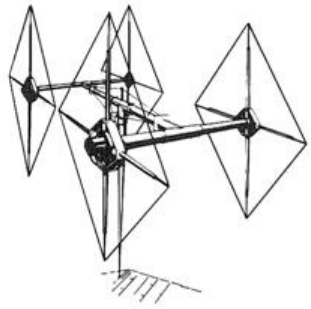
Avanti's Moonraker is a directional antenna patterned after moon bounce antennas.



The Mosley Paragon beam has the ability to concenfrate your signals into one desired direction.



For those requiring a beam antenna but not having as much elbow room as is necessary, what about this Mosley Gamma-323 mini-beam?



Stacking two of Avanti's DPL antennas gives you a walloping directional signal.

You are no doubt asking yourself, "That's great, but what happens if you set this monster up pointed towards the west and then your mobile units calls you from the south?" Good question too, and there's a very simple explanation. You mount the beam on a rotating device which you can control directly from your operating position. On your operating table is this little box with all of the positions of the compass shown on its dial. In the center of the dial is a knob with a pointer. All you do is aim the pointer to your desired communications direction and the rotor takes it from there, swinging the antenna around in a few seconds. If your CB rig has an S-meter you will be amazed to see how the signal to wihch you are listening immediately picks up. An S-2 signal "down in the mud" can peak the meter pin right over the top.

Manufacturers of CB beams which we recommend include Antenna Specialists, Hy-Gain, Ban-Tenna, Mosley, Hornet, Gotham, Lafayette Radio, Master Mobile Mounts, and Cush-Craft. See your dealer for details and specs.

One interesting variation on the beam design is called the "cubical quad" antenna. Two "X" shaped poles support wires which really pack a wallop of a signal. Even within this single type of antenna there are several variations which include switching arrangements to modify and customize the signal for specific contacts. Check Mosley, Avanti, Cubex, Gotham, Nova-Tronics, for details of their qual type antennas.

Actually, there are many, many, innovations and variations on beams—things such as Antenna Specialists' *Scanner*, which is a directional beam which is not rotated is the usual "physical" manner. Only the signal rotates, electronically, to the desired direction.

Our suggestion is to collect all of the literature you can on antennas, set your price, decide whether you want an omni-directional antenna or beam, then use some of the background data we have given you to decide which specific model you want.

Selecting the one antenna which is best for your particular installation is not an on the spot decision. We feel that you ask some local CB operators and dealers which antennas they would suggest. S9

EVERYBODY HAS A MOBILE UNIT



SOME THOUGHTS AND TIPS ON YOUR OWN MOBILE COMMUNICATIONS CENTER

We don't think we've ever met a CB'er who found that putting wheels under his CB rig was a total cinch—either the rig which was purchased doesn't fit or look well anywhere in the car, or else the car's engine creates too much electrical noise for anybody to be heard through the hash. It boils down to several basic problems: selecting the right set, locating it in the car, installing it, placing the antenna, and then filtering out the engine noises. OK? Let's whittle away at all of these.

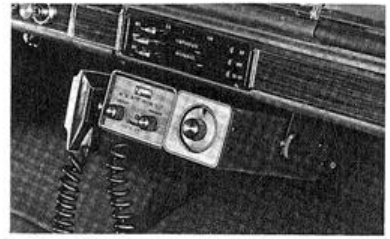
SELECTING A SET

Selecting a set for your car creates unique problems. When you're picking out a base station you can get one any size and shape, in any color, etc. that strikes your fancy. With a car there are other considerations.

For instance, the rig must be able to fit in your car. Many of the larger rigs just can't be squeezed into Volkswagens, Fiats, Porsches, and other small cars. Select a small transistorized rig for these you say? That's fine, but some small foreign cars have positive ground type electrical systems while the majority of transistorized rigs work only on negative ground systems. Then there's the little problem of the fact that some foreign cars have 6 volt electrical systems, while not too many CB rigs are made for 6 volts any more (since all American cars have 12 volt systems these days). Anyway, that's a sampling of the problems which hit you right off the bat.

Presuming you have what most people have, a recent model Detroit baby, you will be able to select any 12 volt tube or transistor rig. The only limitations will be size, price, and your own personal taste.

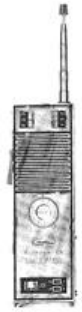
Compact cars means pretty much the same thing, except the transistor rigs are smaller than the tube sets and this may be an advantage.



Dashboard dead-centers are the traditional mounting locations to CB rigs. This Heathkit GW-14 is nicely designed to blend in with any color interior you have in your car.



Tram's rugged Corsar has found a home 'neath the dash of this Porsche racing car.



For those who don't wish to have a permanent CB mobile installation, what could be better than a 23-channel 5-watt hand-held transceiver. The Courier Clipper-23 fills this bill. Keep it in the trunk or glove compartment until it's needed.



Note the small size of Lafayette's 525C CB rig. It's advanced solid state design has made it small enough to mount in even the most compact of compacts.

Foreign standard size cars will have to be checked for their electrical systems. Most tube sets will work with either positive or negative systems (except some rigs with transistorized power supplies). While some transistorized sets will work with either polarity, they must be connected to the power source by carefully observing the proper connections, otherwise you simply destroy the rig the first time you turn it on. And don't forget, a 12 volt CB set will not work in a 6 volt car, and vice versa.

So, first thing on your selection list is to determine which power requirements you have. Next is to work out the possible mounting locations.

The usual mounting place is under the dashboard, right smack dab in the middle. If you've got a car with a center console or a large transmission hump in the center you'll have to figure out someplace else. Don't forget that you and the front seat passenger need leg room, and also that a large rig mounted under the dash on the passenger side is a possible source of nylon stocking snags. So measure the spot you pick, the available height, width, depth, because you'll want to have these facts with you when you go shopping.

Right off the bat you can eleminate sets which are unsuitable to you because of their size, price, external design, or poor reputation. The field has now been narrowed down a bit. Now you work the other way—instead of chopping down those sets you *dont'* need, let's see which sets start to fill your needs.

Can you get by with a set offering only a few channels—or even 1 channel? Maybe you want to cover all 23 channels. If you are in an area which is heavily populated by CB'ers you'll want a set with good selectivity. If you want to talk over long distances you will want to carefully check all sensitivity specs and maybe get a set with some sort of modulation boosting or clipping.

Even after you've figured out these things, there are still additional considerations. The major one is whether or not *you* like the set and can live with it. If so—fine, you've bought the right rig!

INSTALLATION

Presumably the spot you have selected to mount the set is beneath the dashboard, is easily reached from the driver's position, and in a spot where you can connect the rig to the car's power supply and to an antenna.

Just about every rig which can be jammed into a car comes supplied with a mobile mounting bracket (either included or as an optional accessory). Since each of these sets comes from the factory with detailed mounting instructions for the set's individual requirements, we won't go into the gory details here. Suffice it to say that you'll have to be equipped (even emotionally) to drill a few minor holes in the buggy.

Once the rig is mounted, the next step is to get power connected to the thing. First, see if the set's manufacturer has thoughtfully supplied you with a power cord which can be plugged into your car's cigarette lighter. He did? Good! Roll it up and toss it into your trunk! Such a gadget is to be used only in an emergency or for a *very* temporary installation.

Regardless of what you may have heard about wiring the power cable for the CB rig across the car's ignition switch, the best place to obtain the power is directly from the car's battery. For a tube set in a standard negative ground car, connecting the power means no more than running the "hot" power lead to the terminal on the battery marked "POS" or shown with a plus sign (+). The negative wire, which is usually supplied, does not normally have to be connected as the negative side of the battery will be connected to the set's power supply by means of the metal CB rig mounting bracket which is grounded to the car's chassis.

THE ANTENNA

The selection of the best antenna for your particular installation discussed in the story on antennas. Right now we will presume that you have chosen the antenna of your dreams and are trying to find a place to locate the thing. Your choice will be; the cowl, the roof, the rear deck, the bumper.



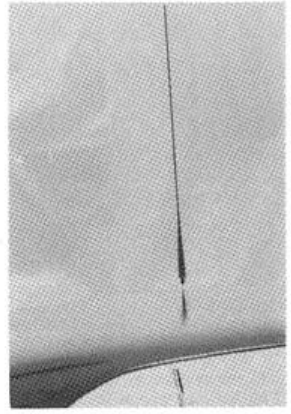
Don't want to drill any holes in the family buggy? This shortie from Antenna Specialists clips right on to the rain gutter with nary a scar to show when you remove it.

For a mounting which requires no drilling into the vehicle, one good bet is the bumper mount. This mount is held in place by a strap or chain link, it holds tight, it works well, it requires the use of a full length (102 inch whip and a spring. Another solution is a magnetic mounting antenna, or even a "no holes" trunk lid antenna.

A popular mounting place for CB antenna seems to be the "rear deck," just behind the rear window and on the left side. Mounting here, while not as good as roof top mounting (insofar as optimum results), seems to be popular because of the fact that a full-length whip can be used.

From an electronics standpoint, roof-top mounting is your best bet because your signal will go out in all directions with equal strength. Other mounting sites will make your signal slightly lopsided (strongest signals will go diagonally across the car away from the corner in which the antenna is mounted). The big hang-up with a roof-top mounted job is that you are forced to use a shortie whip so that you won't smash into overhead garage doors, branches, low flying planes and high flying butterflies. Another problem is getting the lead-in cable from the rig to the antenna because of the unpleasant task of having to snake the cable headliner of the car. While recent developments have given us some very hot shortie whips, they generally do not quite match up to a full length antenna.

The cowl mounting location is directly in front of the driver's door, in the spot normally used for the car's regular radio antenna. This is a good spot, although it hasn't proven to be very popular with CB operators, probably because it means relocating the broadcast antenna.



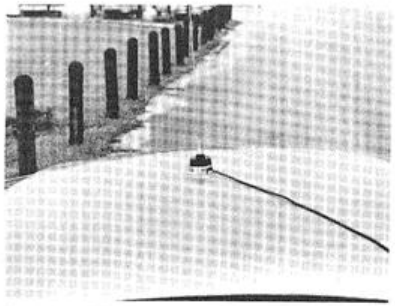
The C/P Perfect 36 (shown roof-mounted for maximum efficiency) is one of the Fibreglass breed of mobile whips.

Combination antennas which will work on both broadcast radio and CB may be used here, although these also haven't yet caught the fancy of CB'ers. You can put a full length whip on the cowl if you want, although most CB'ers seem to prefer a medium length whip here. Reason for placing the CB antenna here and relocating the broadcast antenna is that the CB rig will probably be closer to the left side and it will be easier to make the run over to the left side mounting.

If you've got a car with a weirdo shape like a Renault or Lark, you'll probably want to use your imagination to find the best mounting spot for your antenna.

When the spot has been selected, you can drill your holes and make your installation per the mounting instructions which are packed with every antenna mount.

After the antenna is installed and connected to the rig, check the installation with an instrument known as an SWR bridge. This meter (instructions for using it are packed in the box) reads Standing Wave Ratio, which is the amount of signal which your antenna is accepting from the CB rig. An incorrectly mounted antenna will show a high SWR reading, but even a properly installed antenna's SWR can be lowered; and the lower the SWR reading, the better signal you will have. You will probably find that the SWR can be lowered by trimming down the length of the whip with a wire cutter. Do it this way. Measure the SWR on your most often used channel. If it is higher than 1 to 1, snip ⅛ of an inch off the top of the whip and check it again. If the SWR went



Hy-Gain's Hellcat-3 sticks to your roof by means of a powerful magnet in its base. Will hold tight up to about 80 MPH.



Antenna Specialists offers this tilt-over mobile whip to those CB'ers who have low-garage-roof problems.

down, snip off another ⅛ of an inch. Keep it up until further lowering of the SWR isn't possible. Careful! Don't go too far!

Forget what some CB'ers will tell you about the length of your coaxial cable having to be a certain length in order to achieve a low SWR. This is a fantastic CB fable, and while tinkering around with the length of the cable can actually "fool" the SWR meter into showing different readings, the true efficiency of the antenna system isn't changed one whit.

Some CB antennas will not have to be trimmed because the manufacturers have designed their product with an adjustment which does the same thing as trimming down the whip. With the SWR meter in the circuit, tune the adjustment until lowest SWR is obtained.

If you have a fiberglass whip, the plastic cap at the end of the whip should be removed and the spirally wound wire pulled out from the inside of the hollow antenna by means of a long-nosed pliers. This can then be trimmed, and the cap may be replaced when lowest SWR has been achieved.

ELIMINATING IGNITION NOISES

There has hardly been a single mobile installation which hasn't required some form of noise suppression. With some minor work, you can easily control the noise which the engine creates in your receiver, thereby greatly increasing the range of your mobile communications. Probably the best way to tackle the noise problem is to hack away at each individual noise causing component of the vehicle. So here we go!

The Generator. The whining noise in your receiver comes from the generator. Cure it by hooking a coaxial bypass capacitor, sold for this purpose, from the generator's *output* (armature) terminal to the car's ground. The capacitor may be approximately .25 mfd. You will probably have to remove the factory-installed capacitor at this point; it's not effective for your CB rig. Also, make sure that you *aren't* hooking the capacitor to the generator terminal marked *field*. Several companies make tuned coil/capacitor combinations that are intended to crush generator noise. These are attached to the generator and then tuned (via screwdriver) for least noise in the receiver.

Alternators. Inexpensive noise traps are readily available for your alternator.

Voltage Regulator. You will notice a sure sign of voltage regulator noise if you are bothered by interference more for the first few minutes after you start the engine than after it has warmed up. This can be reduced by installing a .25 mfd coaxial capacitor on the "B" or battery terminal of the regulator. *Do not* bypass the "F" or field terminal.

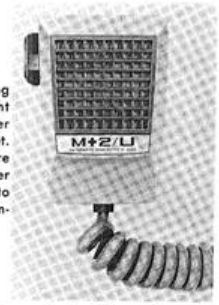
Spark Plugs. You can use either resistor spark plugs or the clip-on resistor attachments for regular plugs. The latter seem to cut slightly into engine performance, but this won't be noticed unless you expect to be running at Indy this year.

Auto Gauges. Even though most CB'ers will argue the point, auto gauges cause noise in CB receivers. Cure it by placing .01 ufd disc capacitors between each guage terminal and the nearest ground point. The leads should be as short as possible. Securely screw the lead at the ground end. You can try this trick on the ignition switch, too.

Distributor. Check the distributor to see that the capacitor across the breaker points has the proper capacitance and that the points are properly set. While this may not necessarily cut down on any noise, it should perk up the engine and restore any power lost by the use of suppression devices on the spark plugs. Install a distributor suppressor in the center terminal of the distributor.

Coil. Place a .001 mfd disc ceramic capacitor with short leads from the coil's battery terminal to the coil's case. Get some "bonding braid" and run it from the fire wall to the coil body, and

S9 Is Edited And Published By And For CB'ers



Mobile operators wanting to boost their signal might wish to add this Turner M+2/U mike to their set. It contains a miniature solid-state voice amplifier in its circuitry. Hooks to any CB rig in a few minutes.

to the engine block. Keep the braid as short as possible.

Power Cable. The "hot" lead carrying power to the CB rig can also bring in some radio noise. Install a Sprague 48P3 feed-thru coaxial capacitor on the fire wall and the hot battery lead from the rig connected through the capacitor to the battery terminal.

Tires. Static electricity in your tires can raise havoc in the noise department. See if you can buy some anti-static powder and use it per instructions on the can. Place *static collectors* inside the front wheel grease retainer cups. Don't panic, you can always let your mechanic do the job!

Motors. Bypass heater motor, defroster motor, electric windshield wiper motor, and any other accessory motors, with a .5 mfd capacitor between the motor power cable and ground.

Most or all of the above mentioned noise elimination devices may be purchased at large radio supply houses.

The ultimate in custom noise elimination may be obtained by purchasing one of the several excellent commercially made mobile noise elimination kits on the market. A list of manufacturers is given in the Accessory section of this book. These kits go far further into the noise elimination situation than the instructions we have offered and should just about kill any and all noises.

Naturally, a receiver having a good noise limiting circuit is a must for every mobile installation. But don't lose sight of the fact that your car may create more noise than your rig's noise circuit can kill.

Those of you who think that we have overlooked some of the newer vehicles having alternator systems can stand easy. Here is our recommended alternator noise cure. Install a .5 mfd 100-ampere coaxial bypass capacitor at the output terminal of the alternator. Bond the case of the capacitor to an adjacent ground point rather than to the alternator case. Now place an identical capacitor at the regulator, on the lead



Truck installation (here, a Pearce Simpson SKIPPER is shown) sometimes offers tacky installation and noise squashing problems. A little imagination is often required.

from the alternator. In fact, replace the original lead from alternator to regulator with a piece of shielded #4 cable (make this by pulling bonding braid over regular #4 insulated wire). Bond the shielding to the capacitor case at each end, and ground it on the car frame at several points along the way.

Now, install another similar capacitor in the lead from the regulator to the battery, shielding the lead as before. Remember that all capacitor cases should be grounded to a point on the car. If you still require additional noise elimination, run a 1 inch copper strap from the regulator cover to ground. You can also shield the control wire from the ignition switch to the regulator, grounding the shielding at each end. Collector rings and brushes on an alternator should be cleaned every 10,000 miles. S9



Estes Engineering offers a series of mobile noise limiting accessories to add to the engine of any car. No, Charlie, the gal does not come along to help you install them!

S9 Is The Official Publication Of The CB Radio Service



the MAXI-mini-beam

Now the Mosley CB Mini-Beam packs more muscle than ever on its sturdy miniature frame. Deluxe coils assure the maxi-performance of the new Model GA-3D. With high-impact polystyrene coil forms and molded covers, these coils are built to take a powerful beating and come out on top.

The deluxe Mini-Beam (GA-3D) saves you money and space, like all the Gamma 323 antennas. It is lightweight enough for an inexpensive TV antenna mount and rotor. Its mini-size takes less room and makes it easier to handle, easier to stack (Model GA-33D offers two beams with stacking hardware). It saves you time too because assembly is simple with preassembled parts, solid-state gamma match, and color-coding.

Some vital statistics:

MINI-size

Boom Length: 9'
Max. Element Length: 11' 4¼"
Turning Radius: 7' 3"
Assembled Wt.: approx. 6 lbs.

MAXI-performance

Forward Gain: 9.6 db over isotropic source, 7.5 db comp. to ref. dipole
Front-to-back Ratio: 25 db
SWR: 1.5/1 or better

Bonus Feature: GA-3, the original CB Mini-Beam, can be converted to GA-3D with a Conversion Kit (Model GA3-3DCK).

Get the Mini-Beam with Maxi-Performance at your nearest Mosley dealer. Write factory direct for detailed brochure. Dept. 183

Mosley Electronics, Inc. 4610 N. LINDBERGH BLVD., BRIDGETON MO. 63042



The Finest CB Transceiver Made

Is Only As Good As Your Antenna.

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Illustrated here are examples of the many different **Mosley** CB antennas available.

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CB's Most Exciting Sideline!

MANY CB'ERS KEEP INFORMED BY MONITORING THEIR LOCAL PUBLIC SAFETY AGENCIES— POLICE, FIRE, SHERIFF, HIGHWAY PATROL, ETC.

Are you a *fully* informed citizen? When you become active in CB you'll find that a great many CB operators have availed themselves of a so-called "monitor receiver" or "converter" to enable them to keep track of their community in action.

Many do this in conjunction with their own auxiliary police or volunteer fire activities, some do it just because they like to be well-informed citizens and know what's happening in their localities. Contrary to many rumors on the subject, there is *no* federal regulation which prohibits you from listening to these stations providing the contents of any transmissions picked up are not revealed or made use of. (Some states and local governments have regulations which apply to such equipment in cars.)

Equipment is plentiful and can be had for prices ranging from less than $20 for hand-held units to super deluxe professional gear running into hundreds of dollars. Several excellent base station type receivers are available at prices ranging from $50 to $150.

Three bands are now used by public safety agencies—the so-called Low Band (30 to 50 mc/s), the High Band (150 to 175 mc/s), and UHF (in the 450 mc/s region). While some agencies operate on several channels, usually these are all located in only one of these bands. When ordering a receiver for these services, it will be necessary for you to know which band you want because most monitor receivers operate on only one of the bands. If you are ordering a fixed frequency (crystal controlled) receiver or converter you will need to know the specific frequency or frequencies (stated in mc/s) that you intend monitoring. This information is readily available in the directories published by Communications Research Bureau, P.O. Box 56, Commack, N. Y. 11725. They will send you a complete catalog of their various publications if you send them a stamped, self-addressed, #10 (business letter sized) envelope. Their directories each list hundreds of police, fire, and other emergency radio service callsigns and dispatcher frequencies.



In addition, you will find that *S9 Magazine* has a regular monthly column which is devoted to this exciting CB sideline. We discuss new equipment, we have "shack" photos, we have reader reports of stations heard. We think that you will enjoy VHF monitoring—many CB'ers do!



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Prepared from official sources, these professional directories are the standard reference guides for thousands of CB operators, Civil Defense organizations, REACT and HELP teams, hobbyists, communications engineers, hams, and law enforcement agencies.

Each directory shows hundreds of municipal, county, boro, township, and volunteer agencies within its named territory, including suburban areas for miles around.

The following directories are available:

Cat. #BO	Boston area	Cat. #SF	San Francisco area
Cat. #C	Chicago area	Cat. #WB	Washington-Baltimore area
Cat. #DE	Detroit area	Cat. #FLA	Florida Statewide (municipalities of population 5,000+)
Cat. #NY	New York City area		
Cat. #PH	Philadelphia area	Cat. #NH/RI	New Hampshire & Rhode Island Statewide
Cat. #SC	Southern California		

In addition we have available our #USA-3 "Master Directory" of 267 major U.S. cities not covered in our other directories. This directory covers all U.S. cities of 40,000+ population, plus the primary dispatching channels of State Police, Turnpike, Highway Patrol agencies in all 50 states and 3 territories.

Each directory is $2, and is rush shipped postpaid (by airmail outside of our local mail area)! N.Y. residents include sales tax.

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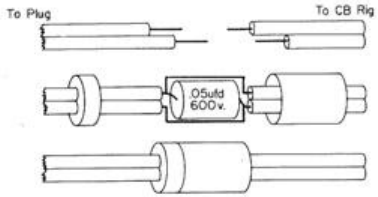
ELIMINATE MOST INTERFERENCE FROM POWER LINES

Did you ever try to hear a distant (and weak) CB station when suddenly a period of prolonged static took out the other station? It's pretty aggravating, but there's a solution for you at the bargain price of about $1.15—and I'm sure that you would probably pay several times the buck fifteen while your being serenaded by the static.

This type of prolonged heavy static generally enters the CB rig through the 115 volt power lines—being sent there by electric razors, oil burners, refrigerators, vacuum cleaners and any one of several dozen other household contrivances.

Most of this type of interference can be eliminated by the insertion of an Aerovox type P123ZNG capacitor rated at .05 mfd, 600 WVDC in the power cable of your CB rig.

The connection is simple, the capacitor is simply placed across the leads as shown in the diagram. For protection against short circuits and shocks, it is suggested that you enclose the connected capacitor within one



of those cylindrical plastic pill bottles which most drug stores keep in stock. A hole is drilled in the bottom of the bottle and also in the cap and these are placed on the power lead before the capacitor is connected. The bottle must be at least 1" long by ½" in diameter to enclose the capacitor.

If you can locate the motor which is causing the interference, you can also place one of these filters there for an extra touch of noise filtering. S9



Here is your chance to join all of your fellow CB'ers who are part of the S9 scene each month. To put it bluntly — your chance to **subscribe!**

Now, **everybody** has a chance to subscribe, but only **you** (as a new CB licensee) can do it for only $4 for 1 year, $7.50 for 2 years, or $11.00 for 3 years. Next month, when you're a static-weary old CB veteran, you'll not have this money-saving opportunity.

A subscription to S9 brings you more than just a magazine each month, it shows that you are an active supporter of CB radios' only effective national spokesman. Your subscription is your YES vote for CB to continue to grow, to be defended against the many fluctuating pressures which constantly pull at CB'ers and our CB service. Your YES vote to protect your investment in CB equipment, to protect your operating privileges, to protect your frequency allocations.

On the other hand — even if you aren't a voting man — S9 will give you 12 **big** issues a year of interesting and entertaining news about CB radio and CB operators, useful projects to build which will help you in your CB operating, new product news, and a general summary of what's going on.

Why not join us during this special **limited** offer? S9 needs YOUR support in order to continue to speak out effectively in the national CB forum, we think that you will find that, as you receive S9 each month, you'll need us too. What could be a better arrangement?

So, welcome aboard. There's a postpaid envelope in this copy of S9 Junior to make things easy for you — but then making things easy for CB'ers has always been our goal.

DIRECTORY OF CB MANUFACTURERS & SUPPLIERS

Below are listed the names and addresses of the leading CB manufacturers. Should you have any questions concerning product specifications, prices, and dealer locations these are the folks who can send you all of the details. Please don't forget to mention **S9-Junior** in your writings — it will bring your request prompt attention.

A & L Communications
200 East Hanover Avenue
Morris Plains, New Jersey 07950

Aerotron, Inc.
U.S. Highway 1, North
P.O. Box 6527
Raleigh, North Carolina 27608

Allied Radio Corp.
100 North Western Avenue
Chicago, Illinois 60600

Amateur Electronic Supply
4848 West Fond
Dulac Avenue
Milwaukee, Wisc. 53216

American Radio Emergency Assoc.
1421 Peachtree Street, N.E.
Atlanta, Georgia 30309

Antenna Specialists
A Div. of Anzac Industries, Inc.
12435 Euclid Avenue
Cleveland, Ohio 44106

Arco Mfg. Company
P.O. Box 817
Grand Forks, North Dak. 58201

Arm Electronics, Inc.
9541 Manor Woods Road
Fort Wayne, Indiana 46804

Arnold's Engraving
2041 Linden Street
Ridgewood, New York 11227

Astro Antenna
2 Rock Spring Road
West Orange, New Jersey 07052

Avanti Research & Development
45 West Fullerton Avenue
Addison, Illinois 60101

B & J Citizens Band Enterprises, Inc.
4352 Dodge Street
Omaha, Nebraska 68131

B & K Manufacturing
1801 West Belle Plains
Chicago, Illinois 60613

Ban-Tenna, Inc.
12546 South Hawthorne Blvd.
Hawthorne, California 90250

Barry Electronics
512 Broadway
New York, New York 10012

Bomar Crystal Company
737 Lincoln Blvd.
Middlesex, New Jersey 08846

Browning Laboratories, Inc.
1269 Union Avenue
Laconia, New Hampshire 03246

CB Associates
2220 Clay Street
San Francisco, California 94115

CB Center of America
5207-09 North Milwaukee Avenue
Chicago, Illinois 60630

CB Radio Center, Inc.
8280 St. Charles Rock Road
St. Louis, Missouri 63114

CB Shack Unlimited
P O. Box 62246
Virginia Beach, Va. 23462

CBC Wholesale Club
Box 703
Lexington, North Carolina 27292

C/P Corp.
RFD #3
Columbia, South Carolina 29205

CTS Knights, Inc.
Sandwich, Illinois 60548

Carroll Electronics
196 South Cooper
Memphis, Tenn. 38104

Commander Electronics
(Div. of Trippe Electronics)
133 North Jefferson
Chicago, Illinois 60606

Communications Research Bureau
Box 56-M
Commack, New York 11725

Community Electronics, Inc.
351 West Sunrise Hwy.
Freeport, L. I., N. Y. 11520

Courier Communications
439 Frelinghuysen Avenue
Newark, New Jersey 07114

Cush Craft, Inc.
621 Hayward Street
Manchester, North Carolina 03103

Custom Components
Box 352
Alden Manor
Elmont, New York 11003

Demco Electronics, Inc.
Bristol, Indiana 46507

R. L. Drake Company
540 Richard Street
Miamisburg, Ohio 45342

Echo Communications, Inc.
1038 South Washington Avenue
Cedarburg, Wisconsin 53012

Eico Electronic Instrument Corp.
283 Malta Street
Brooklyn, New York 11207

Electronic Engineering Company
Wabash, Indiana 46992

Estes Engineering Co.
543 West 184th Street
Gardena, California 90247

Fanon Electronic Industries
439 Frelinghuysen Avenue
Newark, New Jersey 07714

Francis Industries
11855 Broad Street
Pataskala, Ohio 43062

Glen Electronic Supply, Inc.
1720 Market Street
Youngstown, Ohio 44507

Glen Marine Products
416 Ritchie Highway
Glen Burnie, Maryland 21061

Gotham
1805 Purdy Avenue
Miami Beach, Fla. 33139

Graham Electronics Supply, Inc.
133 South Pennsylvania Street
Indianapolis, Indiana 46204

Graham Radio, Inc.
305 Main Street
Reading, Mass. 01867

Grove Electronic Supply Company
4115 West Belmont
Chicago, Illinois 60600

Hallicrafters Company
600 Hicks Road
Rolling Meadows, Illinois 60008

Harbor Electronics
3017 Killybrooke Lane
Costa Mesa, California 92626

Heath Company
Benton Harbor, Michigan 49022

Henshaw Electronic Supply
3671 Troost
Kansas.City, Mo. 64109

Hornet Antenna Products, Co., Inc.
P.O. Box 880
Duncan, Okla. 73533

Hy-Gain Electronics Corp.
8045 North East, Highway 6
Stevens Creek
Lincoln, Nebraska 68501

International Crystal
10 North Lee Avenue
Oklahoma City, Okla. 73102

Jackson Rubber Stamp & Supply Co.
P.O. 443
Franklin Park, Illinois 60131

E. F. Johnson Company
7074 10th Avenue, South West
Waseca, Minn. 56093

Kaar Electronics Corp.
2250 Charleston Road
Mountain View, California 94040

Kolin Engineering Company
Box 357
Bronxville, New York 10708

Lafayette Radio
111 Jericho Turnpike
Syosset, Long Island, N. Y. 11791

Lampkin Labs, Inc.
8400 9th Avenue
Bradenton, Fla. 33505

Mark Products Company
5439 West Fargo Avenue
Skokie, Illinois 60076

Master Mobile Mounts, Inc.
4125 West Jefferson Blvd.
Los Angeles, California 90013

Mosley Electronics, Inc.
4610 North Lindbergh Blvd.
Bridgeton, Mo. 63042

Multi-Elmac Co.
21470 Collidge Hwy.
Oak Park, Michigan 48237

National Radio Institute
Electronics Division
Washington, D.C. 20016

New-Tronics Corp.
15800 Commerce Park Drive
Brook Park, Ohio 44142

Olson Electronics
260 South Forge Street
Akron, Ohio 44308

Omega-T Systems, Inc.
516 Belt Line Road
Richardson, Texas 75080

Pace Communications
24049 South Frampton Avenue
Harbor City, California 90710

Pearce-Simpson, Inc.
P.O. Box 800
Biscayne Annex
Miami, Florida 33152

J. C. Penney Company
1301 6th Avenue
21st Floor
New York, New York 10009

Peterson Radio Company, Inc.
2800 West Broadway
Council Bluffs, Iowa 51501

Polygon Plastics Co.
7 Industrial Park
Walkerton, Indiana 46574

Polytronics Labs
Box 536
Baltimore, Maryland 21203

Radio Shack
730 Commonwealth Avenue
Boston, Mass. 02215

Regency Electronics, Inc.
7900 Pendleton Pike
Indianapolis, Indiana 46226

The Robyn Company
4303 Kroes Road
Rockford, Michigan 49341

SSBCO
(Div. of Mark Products)
Northtown Station
Chicago, Illinois 60645

Howard W. Sams & Company, Inc.
4300 West 62nd Street
Indianapolis, Indiana 46268

B. Schneider
2662 Hewlett Lane
Bellmore, L. I., N. Y. 11710

Herbert Salch & Company
Woodsboro, Texas 78393

Sentry Manufacturing
Crystal Park
Chickasha, Oklahoma 73018

Shure Brothers, Inc.
222 Hartrey Avenue
Evanston, Illinois 60204

Sonar Radio Corp.
73 Wortman Avenue
Brooklyn, New York 11207

Squires-Sanders, Inc.
Martinville Road
Liberty Corner, New Jersey 07938

Swiss Controls & Research, Inc.
Box 260
Michigan City, Indiana 46360

Telcoa Corp.
7741 Deering Avenue
Canoga Park, California 93103

Tel-Star Communications Co.
101 17th Street
Bristol, Tenn. 37620

Tennessee Paper & Box Company
P.O. Box 198
Gallatin, Tenn. 37066

Terado Corporation
1068 Raymond Avenue
St. Paul, Minn. 55108

Terry Electronics
P.O. Box 121
St. Charles, Mo. 63301

Texas Crystal
Div. of Whitehall Elect.
1000 Crystal Drive
Ft. Myers, Florida 33901

Thordarsen-Meissner
Electronic Center
Mt. Carmel, Illinois 62863

Thunder Industries, Inc.
10346½ Rush Street, South
El Monte, California 91733

Thunderstik Products
3844 Reklaw Drive
Studio City, California 91604

Tram Electronics
P.O. Box 187
Winnisquam, N. H. 03289

Turner Microphone Company
919—17th, North East
Cedar Rapids, Iowa 52402

Twin Electronics
207 Mandel Lane
Prospect Heights, Illinois 60070

Unimetrics, Inc.
39 Werman Court
Plainview, New York 11803

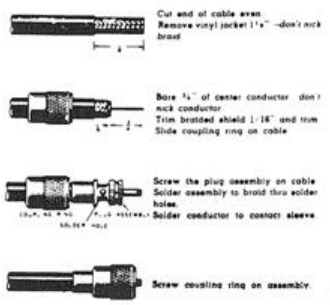
World Radio Labs
3415 West Broadway
Council Bluffs, Iowa 51501

COAX THAT CONNECTOR

HOW TO HOOK UP THOSE LITTLE DEVILS

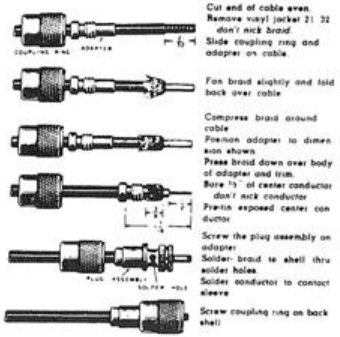
Coaxial connectors have long been a problem to radio men, and a source of unending headaches to CB'ers in particular. Actually the problem isn't really a problem at all, once you get the knack of attaching the little devils to at the end of a length of cable, be it they *heavy coax* such as RG-8/U and RG-11/U, or the small diameter like RG-58/U and RG-59/U.

ASSEMBLY OF CABLES TO 83-1SP PLUG



When PL-259 connectors are used with a small diameter cable, a sloppy job usually results unless a standard adapter is used. These adapters are low in cost and really simplify the job tremendously. Our diagram shows just such an adapter on RG-58/U coax. The braid has been exposed for a distance of about ¾", frayed and pushed back, and the center wire bared for ½" and

ASSEMBLY OF CABLES TO 83-1SP PLUG USING ADAPTERS 83-168 AND 83-185



When attaching a PL-259 connector to heavy coax, the jacket must be cut back for 1⅛" and the inner conductor bared for ¾". The shield should be cut back to 1/16" from the edge of the inner dielectric. The coupling ring should be removed from the connector and slid onto the coax in the proper direction. Now carefully tin the outer shield, the center conductor too. Screw the cable into the plug body until the coax is seated. Some braid will be exposed through the hole in the plug body and should be soldered to the plug body. The center conductor is soldered to contact the hollow pin on the plug. The coupling ring screwed back into position to complete the job.

tinned. Again, as with the heavy cable, put the coupling ring on the coax abd screw adapter assembly into the plug body.

A final test with an ohmmeter should be given to all connector assemblies. It is surprising how much trouble a small piece of wire braid, twisted in the wrong direction, can cause.

Now that you are all experts on coax connector assembly, you should find better results in that CB gear. The antenna that never worked just might load up like a dream, the noise level may drop a DB or two, who knows. Anyway, the satisfaction of doing the job right will be with you.

S9



WON'T YOU TELL US ABOUT YOURSELF?

We are constantly keeping our knob-twirling fingers on the pulse of what's going on in CB. It's the main way we know how to direct our editorial energies. In addition, we are a major source of CB data for the design and marketing divisions of many CB equipment manufacturers. So here we are with some quickie and painless questions to ask you about yourself and your interest in CB, your hopes and aspirations, etc. We'd really appreciate your filling us in on this information, it will be invaluable to us and the entire CB industry. If you don't want to slice your copy of S9-Junior, then feel free to retype or photocopy the questions. Send your information to S9-Junior, 14 Vanderventer Ave., Port Washington, N. Y. 11050. Skip any questions you don't care to answer, your individual answers are held strictly confidential as the only data we reveal from your answers are charts, graphs, tables, and totals.

READING MATTER

1. I have previously read or seen S9 Magazine _____ Yes or No
2. I am a regular reader of S9 Magazine _____ Yes or No. How long? _____
3. I **regularly** read the following publications (check applicable ones)
   - _____ Electronics Illustrated — How long? _____
   - _____ Popular Electronics — How long? _____
   - _____ CB Magazine — How long? _____
   - _____ National CB News — How long? _____
4. I am mainly interested in the following articles (pick only 3, check them):
   - _____ Technical & construction projects
   - _____ CB club news & jamboree notices
   - _____ Feature stories and humor related to CB'ers
   - _____ Equipment tests & new product news
   - _____ Theory explanation features
   - _____ Semi-technical modifications to CB stations to improve performance
   - _____ Stories about and listings of QSL card swappers

YOUR INTEREST IN CB

5. I have already purchased my CB base and mobile equipment _____ (Yes or No)
6. (If the answer is "no") I have selected the equipment which I intend buying _____ (Yes or No)
7. I have spent (or expect to spend) $_____ for my base station transceiver and $_____ for my mobile unit transceiver
8. My choice of equipment was mainly based upon (check only 1):
   - _____ Magazine ads
   - _____ Suggestions by my dealer
   - _____ Recommendations of other operators

9. I expect to use my radio system mainly for (check one):
   _____ Business use _____ Hobby use
   _____ Personal use _____ Civil Defense or similar public service uses
10. I belong to (or intend joining) a local CB operators' club _____ (Yes or No)
11. I have (or will have) a CB station card (or QSL) _____ (Yes or No)
12. I am mainly interested in the following features or CB transceivers:
    (select 3 and number 1-2-3 in order of preference)
    _____ Cost factors
    _____ Solid State circuitry
    _____ Receiver performance
    _____ Base/Mobile operating capabilities
    _____ Speech boosting, clipping, or other amplification
13. I became interested in CB at the result of:
    _____ A friend or associate who is licensed
    _____ Stories in _____ Magazine
    _____ Advertising for CB equipment in _____ Magazine
    _____ Other (state): _____

ABOUT YOU

14. I am _____ years old.
15. My occupation is _____
16. I have completed:
    _____ Grade school _____ Technical or Vocational School
    _____ High school _____ Military specialty school
    _____ College
    _____ Graduate school
17. I am married _____ (Yes or No). Number of children under 21 _____
18. My wife will be using the CB equipment too _____ (Yes or No)
19. My wife participated (or will participate) in the selection of the major portion of my CB gear _____ (Yes or No)
20. My living accommodations:
    _____ I own my own home
    _____ I rent a home
    _____ I live in an apartment
    _____ other (specify) _____
21. My family is in the following annual income bracket:
    _____ Less than $5,000
    _____ $5,000 to $10,000
    _____ $10,000 to $15,000
    _____ $15,000 to $20,000
    _____ above $20,000
22. I hold a ham ticket _____ (Yes or No). Class _____
23. My hobbies include:
    _____ SWL'ing _____ Boating
    _____ Stamps _____ Photography
    _____ Coins _____ Sports cars
    _____ Hunting & camping _____ Other (specify)
    _____ Outdoor sports _____
    _____
24. I live in or near the following large city _____ (50,000 population or more)



"No, I couldn't cure the TVI but I did the next best thing."



"I sympathize with you on your ignition noise, but I haven't had any problems along those lines."



"Frankly, I've gone a little overboard in fixing up the shack here."

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Electronic Equipment
CATALOG

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3415 West Broadway
Council Bluffs, Iowa 51501

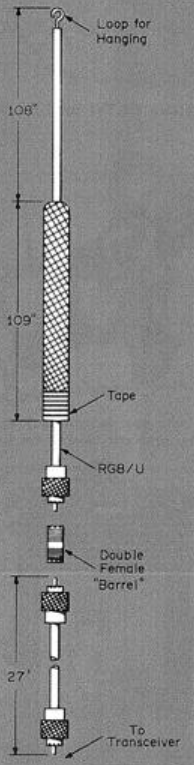
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Gentlemen:
Please send me your Free 1970 Catalog.

Name _____
Address _____
City _____ State _____ Zip _____

The Phantom

A PORTABLE SKY HOOK

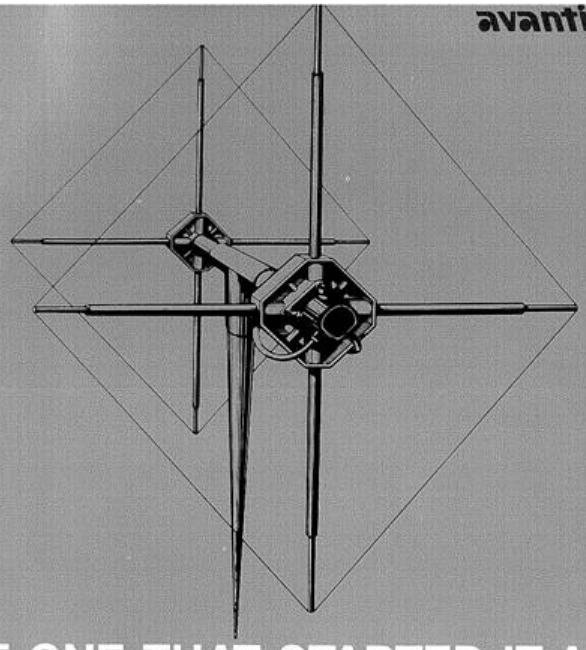


This "Phantom" as I call it, can be coiled up and thrown under the seat, or in the trunk, and for hotel or motel, for the traveling man, at picnics, rallies, or anyplace you care to hang it, it does a fairly reliable job.

Materials needed are as follows: 3 PL259 connectors and 2 adaptors, 1 barrel. Solder gun and solder. Sharp knife and some plastic tape. 27 ft. RG58/U and 19 ft. RG8/U.

Procedure: take outer insulation off the RG8/U a distance of 9 feet, being careful not to damage the coaxial braid. Now push the coax back over the inner insulation until quite loose, then reverse it over itself as illustrated. Now cut off the outer braid at 109 inches and wrap lower end with plastic electrical tape. (Caution, do not wrap all the exposed shield as this tends to make antenna too stiff.) Now make a loop and solder it firm at the top of the antenna, leaving on all inner insulation. Solder on all connectors, and check over your work electrically. The "Phantom" talks again. Happy CB'n.

avanti *PDL



THE ONE THAT STARTED IT ALL

* Patent Pendi

Avanti Research & Development Invented The Dual Polarity Loop Antenna

No other antenna can match the Avanti *PDL-27A's outstanding performance. Its pinpoint signal directivity is combined with ability to transmit or receive on either horizontal or vertical polarity. Contact mobiles on the vertical mode — then switch instantly to horizontal for interference-free communications with other bases. Switching to horizontal adds another channel that can minimize interference from other CB'ers as much as 25 db.

Provides a stronger signal than stacked 3 element beams.

SPECIFICATIONS

Total Height—11.9 ft.	Material—Rugged Rigid Aluminum and Fiberglass
Weight—13 lbs.	Maximum Power—1000 watts
Impedance—50 ohms	Frequency Band—27 mhz to 29.7 mhz
Power Gain—11 db	Polarization—Vertical/Horizontal
SWR—1.2:1 on all 23 CB channels	Wind Survival—100 MPH

$79.95

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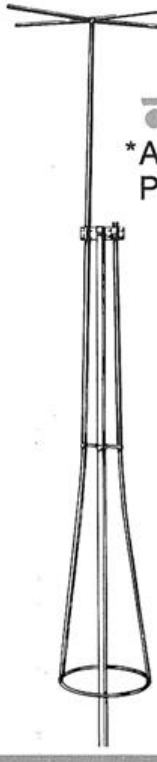
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AVANTI RESEARCH & DEVELOPMENT, INC.

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$29.95
*Patent Pending

MORE THAN 4 db GAIN... MUCH MORE!

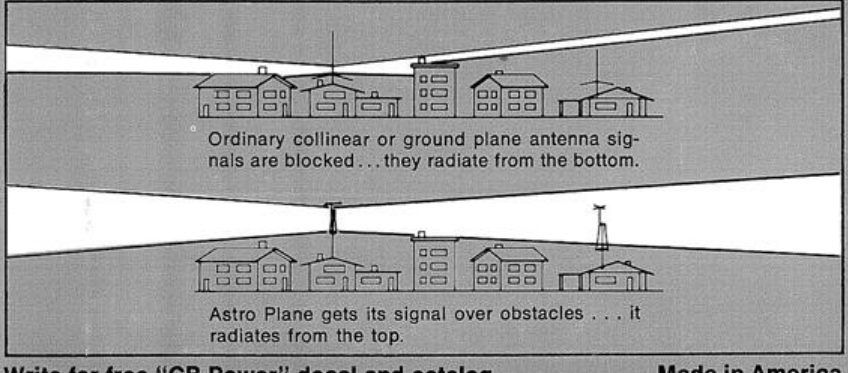
Compact omni-directional design . . . no long drooping radial elements that can break or bend under wind or icing . . . no coils to burn or short out . . . no need to climb tower to straighten or replace radials. Carries Avanti's exclusive 1 year guarantee.

SPECIFICATIONS

Gain: 4.46 db
Weight: 3½ lbs.
Height: 12'
SWR: Less than 1.4:1
Material: Aircraft quality seamless aluminum construction
Maximum Power: 1000 watts
Wind Survival: 120 mph

90% TOP RADIATION

Astro Plane is the only omni-directional antenna that can generate maximum signal strength at the very top of the full legal antenna height limit (see diagram).



Ordinary collinear or ground plane antenna signals are blocked . . . they radiate from the bottom.

Astro Plane gets its signal over obstacles . . . it radiates from the top.

Write for free "CB Power" decal and catalog. **Made in America**

avanti
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AVANTI RESEARCH & DEVELOPMENT, INC.
THE PACESETTER IN HIGH PERFORMANCE ANTENNAS