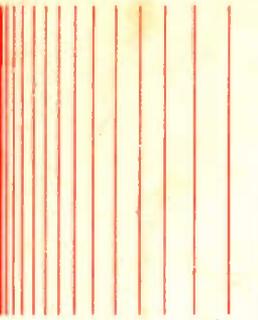


NEW '63 CB CALL AREA MAP — P. 32 & 33

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the citizens band journal

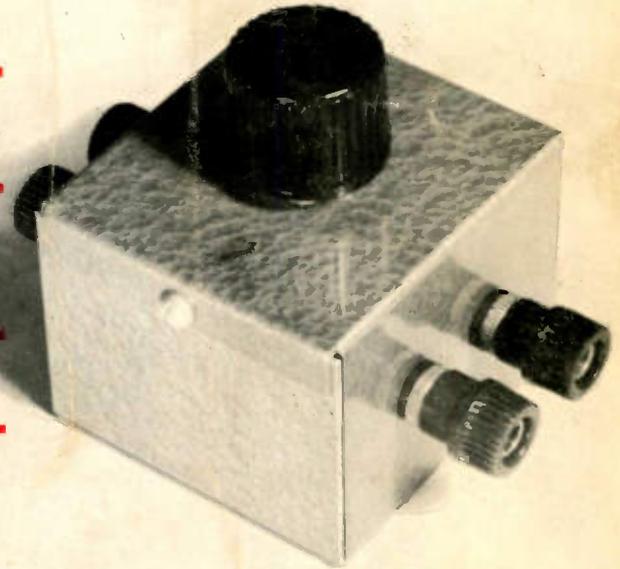
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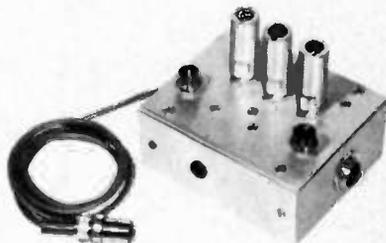
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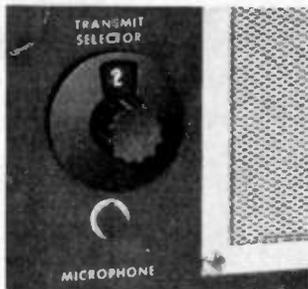
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the citizens band journal

Vol. 1, No. 5

November, 1962

S. R. COWAN, PUBLISHER

300 West 43rd Street New York 36, N. Y.

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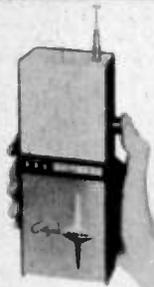
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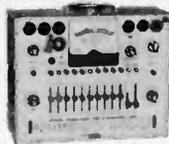
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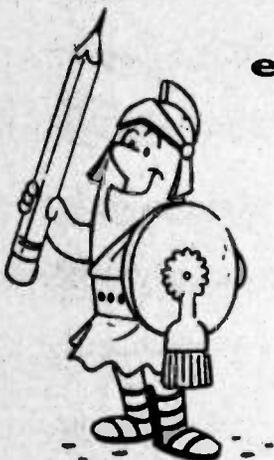
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International Communications Fair

310 MADISON AVENUE, NEW YORK 17, N. Y.

editorial



50 OVER 9

by TOM KNEITEL, KBG4303

EDITOR, S9
300 WEST 43rd STREET
NEW YORK 36, N. Y.

Good news this month from Washington! The FCC approved the use of 26.620 mc/s for Civil Air Patrol use in the continental U.S. This was a pet project of ours, originated almost two years ago. It means that the C.A.P. will be able to vastly increase their radio net because thousands of CB'ers can participate in their program with standard 27 mc/s CB rigs. We doff our fedora to Fox Charlie Charlie and say "thanks" for showing this confidence in the potential of CB'ers and their equipment for emergency communications. For further information on how you can fit into this Auxiliary U.S. Air Force radio net, contact Col. H. F. Ellis, USAF, DCS/Operations, HQ Civil Air Patrol, Ellington AFB, Texas.

The *Newark News Radio Club* (an organization of short wave listeners) *Monthly Bulletin* reports that a member in Massachusetts heard a Canadian CB station on channel 7 in Moncton, New Brunswick, calling "CQ United States or Canada" one evening. Last month we reported (in the GRS monthly column) that the "hamming" was on the increase north of the border, but we didn't think it had gone *that far*. Yankee CB'ers who attempt to skirt the FCC regulations by "hamming" haven't called "CQ" since the real early days of CB—at least 1959. Several years of intense development have yielded numerous highly sophisticated types of "CQ" calls which aren't quite as blunt as coming right out and saying "SEEK YOU!"

There is a "true" story which has been circulating in CB circles which you may or may not have already heard. A composite

version (that is, made up from the best parts of the several versions now going around) goes this way: An FCC inspector stopped in at the 10-20 of a CB'er in Atlanta (Dallas, San Francisco, Chicago, etc.) to give him a citation for working skip. While at the CB'er's house the FCC man noted the many CB-QSL cards adorning the walls of the CB shack. He confiscated all of the cards and those whose cards were found there also received citations for DX'ing.

The story is a hoax. The usual method of issuing a citation is by mail; FCC people would not confiscate personal property (QSL cards) without a Federal Court order, and the senders of the QSL cards could not have gotten citations for DX'ing *solely* on the basis of the cards themselves. They would have to have been caught in the act of DX'ing by an FCC monitoring station.

This is in no way intended to hint that you should try your hand at some fast skip the next time the band opens because you'll probably get caught (and it would serve you right). We would remind you, however, *not* to believe all of the scuttlebutt which drifts along the 11 meter channels.

Hey, don't forget the *International Communications Fair* at the New York Coliseum November 28 to December 2nd—it promises to be of interest to all of us tinkering with radio communications. Displays from just about every outfit in the communications field (CB, Commercial FM, Ham, etc.) will be on hand to show their products for 1963. The gang from S9 will be there so drop by the *Cowan Publishing Corp.* booth to say "hello."

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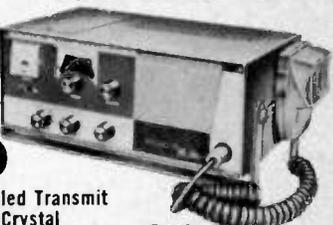
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Keep this issue of S9 handy for constant use by you and your family and make every day Christmas when the mailman brings the loot each morning!

Now a few words about the listings themselves. We have made *no* attempt to list the "spec sheets" and "data sheets" available from the various individual manufacturers on their individual CB units, antennas, and accessories. Such material can be obtained from every manufacturer and if you require detailed information on a particular piece of gear, we suggest that you address your request to the manufacturer, obtaining his address from a current advertisement in S9.

When using this listing, *in no event* should you write directly to S9 requesting materials. We *do not* stock any of these items nor do we have facilities for forwarding your requests to any of the companies listed. We cannot vouch for the quality of all the items listed, nor for the rapidity of delivery. We suggest that you allow at least 3 weeks for delivery for the items.

When writing for any of the items be certain to *print or type* your name and *entire* address clearly.

Many of these companies offer various items other than those listed in these pages, it is therefore *absolutely necessary that you specify that you want the material described in the November issue of S9 Magazine*, and, whenever possible, give a description of the material being requested.

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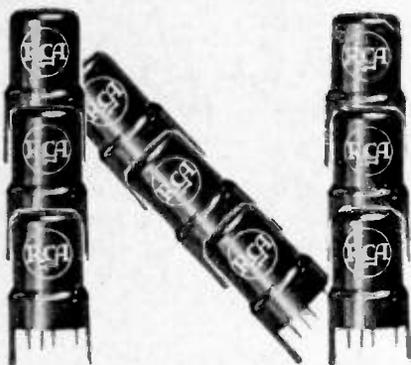
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WHAT'S NU WITH THE



NUVISTAPLUG?

by JIM GIBSON, 2W7610

Our recent report on the Raytronics NUVISTAPLUG unleashed a considerable barrage of reader mail. "Will the gadget work with my 3 tube Apex RF Sniffer" . . . or "Will it improve my 19 tube triple-duper super-her?" These are typical of numerous questions aroused by the report (in S9's September issue). So we queried the manufacturer and came up with considerable additional information. It *should* leave virtually no questions unanswered on the installation, operation and performance of the device.

As reported in September, the NUVISTAPLUG replaces the RF amplifier tube in the receiver's first stage. Equipped with two NUVISTORS, the device is designed to improve receiver performance by cutting the amount of internal noise generated in this

portion of the circuit. There are no connections required other than simply inserting the NUVISTAPLUG into the socket originally occupied by the RF amplifier tube. While every attempt has been made to keep the NUVISTAPLUG as "universal" as possible, *it may not be plugged into every receiver without regard to tube type.* Thus, the first step in deciding whether the device will work with your rig is to scan the chart shown in Fig. 1 which lists the tubes which may be

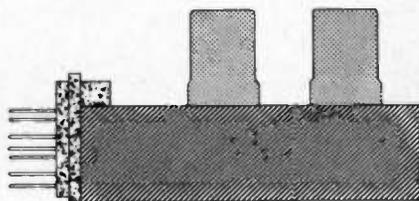


Fig. 2. The actual size of the NUVISTAPLUG.

NUVISTAPLUG REPLACEMENT CHART

Model	Replaces these types
62	6AH6 6AK5 6BH6 6CB6 6CE6 6CF6 6DC6 6DE6 6BZ6
625*	6BJ6
675**	6BA6 6AU6 6BD6
1275	12AU6 12BA6

Fig. 1. *Model 625 requires .270 amps filament current, whereas the 6BJ6 tube requires only .150 amp. It is useable directly in the Johnson Viking Messenger Model 242-126. Models 242-127 and 242-128 require the addition of a 47-ohm 1/2-watt resistor across the filament (pins 3 and 4) of tube V3 (the 6BJ6 IF amplifier) in order to supply the required filament current for the NUVISTAPLUG.

**Model 675A has an extended tube base for use in International Crystal EXECUTIVE transceivers as they utilize tube shields.

interchanged with the various NUVISTAPLUG models. With few exceptions, these 7-pin miniature pentode tubes are found in the RF amplifier position of most modern superhet receivers.

Another consideration in the installation of the unit is the physical size of the NUVISTAPLUG. In checking with most of the popular equipment on the market today, it has been found to fit into position with ample room to spare. But, if you like to test-fit before purchasing the unit, use the outline drawing given in Fig. 2 as a guide to physical size.

Once the NUVISTAPLUG is in place, some simple "touch-up" is needed to match it perfectly into the circuit. The "touch-up" spots are the antenna and RF coils located near the tube (in almost all cases they are coils with a single slug adjustment). To perform this "touch-up," tune the receiver to the center of the band or to the channel which you use most often. With a signal being monitored, tune the slugs for best reception—either loudest sound in the speaker or a peaking of the S-meter. For some CB transceivers, the antenna coil also serves as the transmit tank coil; for example, the RCA MARK VII, Lafayette HE-20 and Hallicrafters CB-3. In

these sets it is only necessary to repeak the RF coil (which is located on the output side of the tube).

The newly installed NUVISTAPLUG may produce two effects which may, at first, seem abnormal. One is a lowering of the usual background noise heard through the speaker—the other is *reduced* readings on the S-meter. These effects do occur since the NUVISTAPLUG may actually have *slightly* less gain than the tube it replaces. However, the *important* effect (and the entire reason for using the NUVISTAPLUG) is that it is *greatly* reducing the noise in relation to the signal. The manufacturer states that the improvement gained by using the NUVISTAPLUG is approximately equivalent to a doubling the power at the transmitting station (a gain of 3 db).

Of course the device has no effect on noise which originates outside of the receiver, typically from man made (ignition, etc.) or atmospheric sources. It has no effect on the transmitter's output. NUVISTAPLUGS may, in some instances, be of advantage when used as substitutions in the IF amplifier stages of the receiver.



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POWER SUPPLY MODIFICATIONS ARE NOT FOR CB

by HERB FRIEDMAN, 2W6045

One of the latest popular transceiver modifications is the substitution of Silicon Diode Rectifiers (SRs) for rectifier tubes. The idea behind the change is greater power output, and if you listen to anyone who has made the change you will hear claims which are astounding. Unfortunately, you never hear of the considerable repair bill which is caused by the "big switch" to SRs. The only one who benefits from a change to SRs is the local service shop—and here's why.

Figure 1 shows a typical rectifier tube power supply with an output B+ of 250 v.d.c. under load of 70 milliamperes. Notice that the rectifier causes a nominal 50 volt drop. If the rectifier tube is replaced with an SR

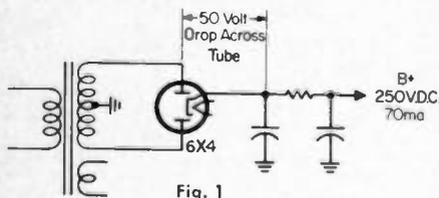


Fig. 1

as shown in Fig. 2, the B+ rises to 299 v.d.c. because an SR has a nominal drop of only one volt, not 50 volts. At first glance it would appear that the SR replacement is beneficial, but this is not so. First, the increased plate voltage will result in increased plate (and screen) currents to all the tubes, and while the plate input to the final amplifier would rise appreciably, it would rise above 5 watts—definitely illegal. But being realistic you care not whether you run over 5 watts. But you should care about the second result because it is going to cost you a considerable amount of money.

The 50 volt B+ increase is applied to every

component. Resistors which are safely rated by the manufacturer for 250 volts may be close to or above the overload point when 299 volts are applied. All the tubes draw extra current and these little extras add up to a large excessive load on the power transformer which can result in complete burnout after several months. Is this all?—no it's not! The B+ can rise pretty close to the voltage rating of the filter capacitors. Then when you use the rig for mobile operation the 14 v.d.c. input (charging voltage is about 14 volts) can push the B+ above the capacitor's ratings, and in a few months you have to replace some fairly expensive capacitors. And we aren't finished yet.

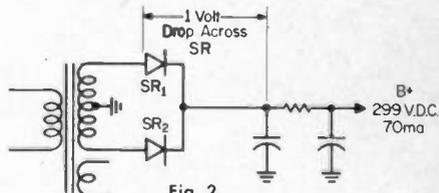


Fig. 2

As the power supply deteriorates over a period of months its efficiency falls below that of the unmodified supply and you actually get less output than before modification.

Modern transceivers use Silicon Diode Power Supplies because power requirements are reduced (you save over a ¼ ampere on just a 12 volt rectifier tube filament) and because SRs develop virtually no heat as compared to a rectifier tube, which as you know get darn hot. There is no question as to the SRs value when used in a power supply specifically designed for them. But rectifier tubes should never be replaced by SRs if provision isn't made for overload protection.

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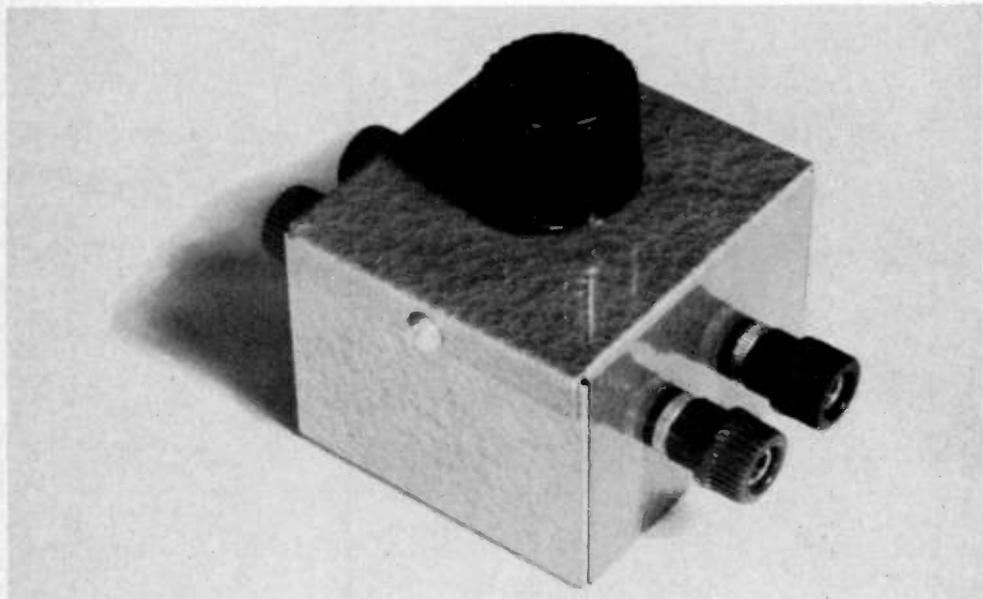
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By **RUFUS P. TURNER**

If you are using a superhet receiver, chances are you are being harassed by heterodynes. This is inescapable in an active band.

The annoying whistle can be eliminated by a notch filter connected in the audio channel of the receiver and tuned to the whistle frequency. This is not a new idea: the Heterofil of the 1930's was such a device; so is the more complicated Selectoject. There are many resistance-capacitance circuits which may be used to reject the unwanted audio frequency. Examples are the Wien bridge and the parallel-T. But in order to tune these circuits to the rejection frequency, you must adjust two or more well tracked po-

tentiometers, and in most cases must also switch capacitors in groups of two or three in order to cover the audio spectrum. The Whistlestop uses an adaptation of the new Hall network which employs a single tuning pot. The tuning range is 70 cycles to 10 kilocycles without bandswitching.

Figure 1 shows the complete circuit. Only three miniature capacitors, two $\frac{1}{2}$ watt carbon resistors, and one volume control-type potentiometer are needed.

Construction

Since neither layout nor wiring is critical, you can follow your own inclinations in building. The author's unit (Figure 2) is built in a small aluminum chassis box ($2\frac{5}{16}$ " long,

PARTS LIST

- C₁ 0.1 ufd 200 v miniature metallized paper tubular—Aerovox P123ZNG
 C₂ 0.01 ufd 200 v miniature metallized paper tubular—Aerovox P123ZNG
 C₃ 0.1 ufd 200 v miniature metallized paper tubular—Aerovox P123ZNG
 R₁ 300K ½ watt carbon
 R₂ 20K ½ watt carbon
 R₃ 10,000-ohm C2 Taper potentiometer—IRC Q 13-116

MISCELLANEOUS PARTS

- 1 Aluminum chassis box: 2 $\frac{5}{16}$ " lang, 2 $\frac{1}{8}$ " wide, 1 $\frac{3}{4}$ " high—LMB No. O0Z
 4 Insulated binding posts
 1 Single-lug insulated terminal strip
 1 Fingergrip knob

2 $\frac{1}{8}$ " wide, and 1 $\frac{3}{4}$ " high) and provided with input and output binding posts. Some users will prefer to omit the box and cluster the components around the potentiometer, and mount the whole business as another control on the receiver front panel.

Metallized paper capacitors are specified because they provide the high capacitances in such small physical size.

The potentiometer, R₃, must have a C2 logarithmic taper. This is important, since ordinary linear taper will not allow setting to the low ohmages needed to squelch a high frequency.

The best place to connect the Whistlestop is between two audio stages. But you can also use it (although somewhat less effectively) between the receiver output and an earphone. (Do not try to work it between output and loudspeaker.) Like many another RC network, this device knocks the overall volume down appreciably, so the receiver gain control must be tuned up to compensate for this loss. If you wire the Whistlestop permanently into the circuit, include a DPDT toggle switch for cutting it out when not needed. (See Figure 3.)

Be sure to keep the interstage coupling capacitors in the circuit,

Continued on page 58

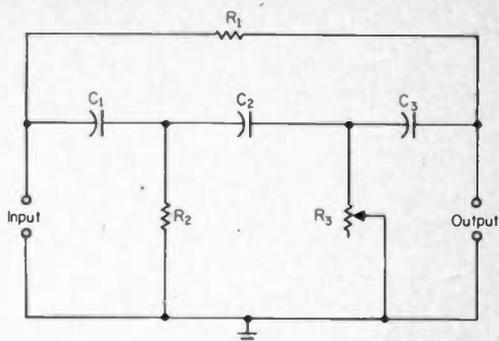


Fig. 1

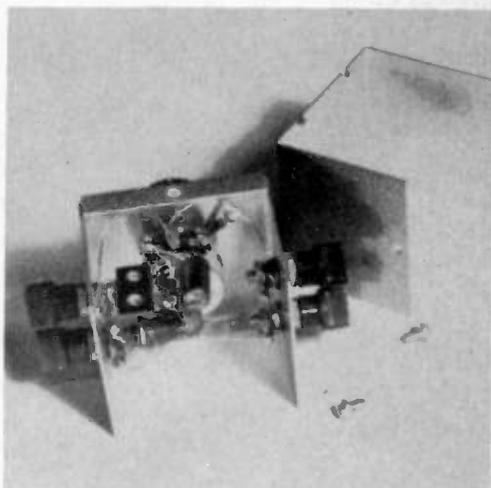


Fig. 2. Here is an interior view of the WHISTLESTOP. You can see the wiring is simple and the components are connected directly between tie points. The box is optional and may even be dispensed with if the unit is mounted behind the receiver's front panel.

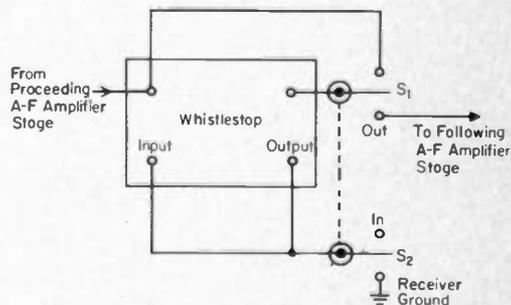


Fig. 3. Diagram showing how easily the WHISTLESTOP ties into the circuit of the CB rig. It may be left in the circuit at all times or cut out (with at DPDT switch) when not needed.



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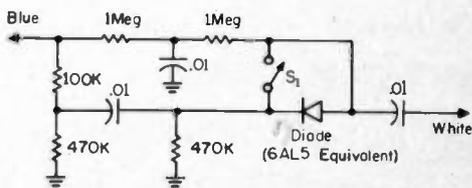
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a simple noise limiter

by HARVEY HURWITZ, 2W2921

The use of an automobile receiver with a Citizens Band converter is usually made quite difficult unless you take steps to eliminate the high noise pickup. This noise is most often produced by the ignition system, generator and wiring in the vehicle itself. Although you can eliminate most of the noise generated in the car, there is little you can do about the cars around you. The installation of a Noise Limiter in the set itself is the only answer. The limiter circuit shown below is of the Half Wave type and provides adequate reduction of pulse type noise without affecting the tone or quality of the incoming signal.

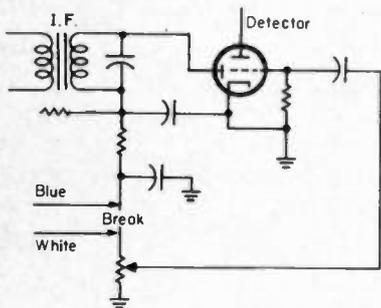
In this limiter, the positive noise peaks will be shunted to ground by the action of



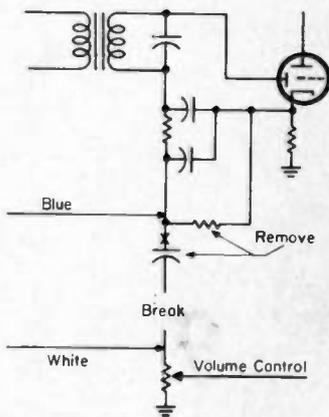
Noise Limiter

the diode bias potential developed across the resistance network. Since noise pulses are usually quite higher in amplitude than the signals themselves, this action in effect clips off the high peaks resulting in a sharp drop in audible noise.

The entire unit may be wired on a 7 lug terminal strip and mounted at any conveni-



A—Receiver



B—Receiver

Check your receiver against these schematics to determine the type before attempting to install the limiter. This device is recommended for tube type receivers only.

ent place in the receiver, preferably near the volume control. Installation of the unit requires the following. In most cases, you simply break the lead in your car radio that goes to the ungrounded side of the volume control. Connect the blue lead from the .01 capacitor to the volume control lug. Connect the red lead coming from the junction of the 100K and 1 Meg resistors to the end of the wire that you originally removed from the control. See Schematic. Mount the switch S-1 at any convenient point being sure to twist the switch leads together. Dress these leads down against the chassis to avoid hum pick up. There are some sets that vary from the standard. If your set utilizes a detector circuit as shown in schematic B, you will have to modify it as follows. Remove the capacitor that is attached to the high end of the volume control. Remove the resistor that is connected to the other end of this capacitor. This will effectively change the circuit into the type shown in schematic A.

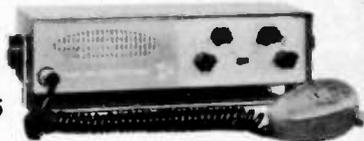
Although this unit was designed for use in an automobile type receiver, there is no reason why it can not be used with equal facility in any type of CB Unit.



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So don't delay. Place your order today!

BOOST RECEIVER SENSITIVITY TO 10 TIMES!

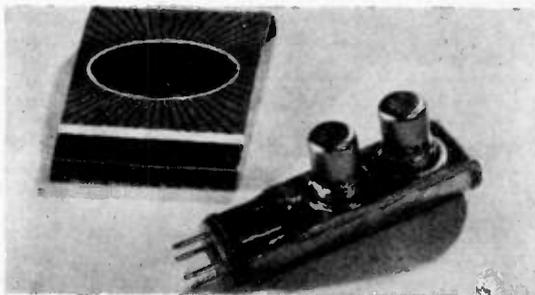
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ALL ABOUT

Radio Emergency Associated Citizens Teams



REACT

A BOLD PROPOSAL FOR EMERGENCY COMMUNICATIONS

Owners of citizens band equipment already are performing wonderful and unrecognized community services in hundreds of communities. Often they work through locally organized clubs, which help to channel emergency calls. Even where a club exists, however, there are many obstacles to efficient, swift emergency service, since this is only one of their many activities.

REACT is a program whose sole purpose is to establish a simple and foolproof system of local emergency procedure for communicating with the right authorities, at the right time, with maximum efficiency.

It does *not* replace in any way the organization of an existing club, nor does it interfere with existing routine. REACT simply is a carefully planned system; the club adapts REACT to its own procedures. Where no club exists, REACT may be put into effect immediately and without complicated planning and wasted time.

HOW AND WHY IS REACT NATIONAL IN SCOPE?

REACT is a plan oriented strictly to *local*

community problems. There are, however, major advantages that stem from REACT's national organization. First, the national headquarters is in a position to accumulate information on new emergency techniques from hundreds of other communities, and pass on to local chapters this valuable information. An idea from another town may save a life in yours some day.

Second, REACT National Headquarters, on behalf of local groups throughout the nation, can work far more effectively with other national emergency forces such as Office of Civil Defense (O.C.D.M.); Red Cross; American Radio Relay League (RACES program of radio amateurs, the official disaster radio network); military communications groups; and the President's Committee for Traffic Safety . . . in coordinating proper use of citizens band radio in time of national emergency or major disaster.

It is *critically important* to our national safety that, in the event of war or other substantial emergency, citizens band radios be used correctly and in proper coordination with other emergency radio services. This

can be accomplished only through a national organization, recognized by, and working directly with, national emergency authorities.

HOW IS A LOCAL REACT TEAM ORGANIZED?

A local REACT team will be established in any community where citizens band owners exist and submit an application to National REACT Headquarters.

REACT requirements are short and to the point. There is a minimum of required organization. Its purpose is best served by confining its activities entirely to local emergency service. A local REACT team is organized and operated as follows:

1. National REACT Headquarters appoints a Local REACT Headquarters to coordinate all services.
2. A pre-membership meeting is held by interested individuals to establish the following essential structure:
 - A. Election of officers. (optional)
 - B. Agreement upon a particular channel to be used exclusively or primarily for emergency calls. (mandatory)

STATEMENT OF REACT OBJECTIVES

1. To assist in all forms of local emergencies by furnishing instant radio telephone communications with REACT headquarters and/or proper authorities and services.
2. To promote close cooperation with all forms of emergency radio communication in event of disaster.
3. To maintain and encourage operating efficiency through proper communication techniques on the air.
4. To operate and maintain equipment at peak efficiency and in accordance with F.C.C. regulations.
5. To promote the use of agreed-upon, or nationally recognized, channels for emergency situations only.
6. To co-operate in locating and reporting sources of radio interference in all radio service categories.

C. Agreement upon a monitor station or station system capable of immediate response 24 hours a day, seven days a week. Monitors may be chosen to suit local conditions—individuals, taxi co., hospital, police, Local REACT Headquarters, or any combination thereof. (mandatory)

D. Establishment of membership list, list of local authorities and emergency services with their citizens band calls and telephone numbers.

3. Application is then submitted by letter to National REACT Headquarters by the Local Headquarters, including listing of all essential information agreed upon above.

4. Upon acceptance of a Local REACT Team's application, national headquarters will forward for member distribution (a) individual membership cards; (b) metalized REACT decals for vehicle identification; and (c) gold call letter decals for vehicles; plus (d) periodic REACT bulletins from national headquarters.

5. A strong program of local publicity, prepared by National REACT Headquarters, then will be released to acquaint your community with REACT and its important service.

A REACT Team may be formed either by an existing club or, if no club exists, by an interested group of citizens band owners.

Their primary purpose is to serve their community by providing an *organized local area emergency radiotelephone network* to enhance, extend and supplement existing communication facilities. For further information, write to: REACT, 4401 W. Fifth Ave., Chicago 24, Illinois.

HOW ABOUT REACT DUES, MEETINGS, ETC.?

There are *no dues or initiation fees*. All costs of the REACT program are borne as a public service by the REACT sponsor, The Hallicrafters Co., Chicago, Illinois.

As for meetings and member obligations, bear in mind that REACT is *not* a social group or a business association. Its *only purpose is to provide clear and immediate local emergency communications*. Meetings, therefore, are of local option once your REACT procedures are established. The more you

Continued on page 58



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Reports

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A short while back we received a letter which said: "Our hunting and fishing club uses walkie-talkies on our outings. But we'd like some extended range. Isn't there some gear we could get which wouldn't exhaust our treasury? Everything we see in the magazines costs over \$150. A complete mobile-base setup would cost over \$300. Isn't there something for about a hundred bucks?"

We at S9 figure we're partly to blame for this letter. Perhaps it's because all the new gear seems to be super-duper specials. Yet, there is rock-bottom priced gear which can give you dependable communications in non-saturated CB areas or as a secondary (portable) system. As example, *Allied Radio's Knight-Kit C-11 Transceiver* is about as low cost as you can get. For less than \$115 you can pick up a complete system, consisting of two C-11s, ground plane, mobile whip, mobile bracket, mobile supply, two sets of crystals and a complete set of pre-wired cables. A nice buy for the money.

The C-11 (less than \$40) is supplied in kit form; it is so simple that no one should have assembly difficulties. Construction time, even for a newcomer to electronics, is about eight hours. Part of the assembly ease is due in part to an excellent, thoroughly illustrated instruction manual.

The C-11 is a combination of point-to-point and printed circuit wiring. The 110 VAC power supply, the amplifier/modulator and the receiver is point-to-point wired.

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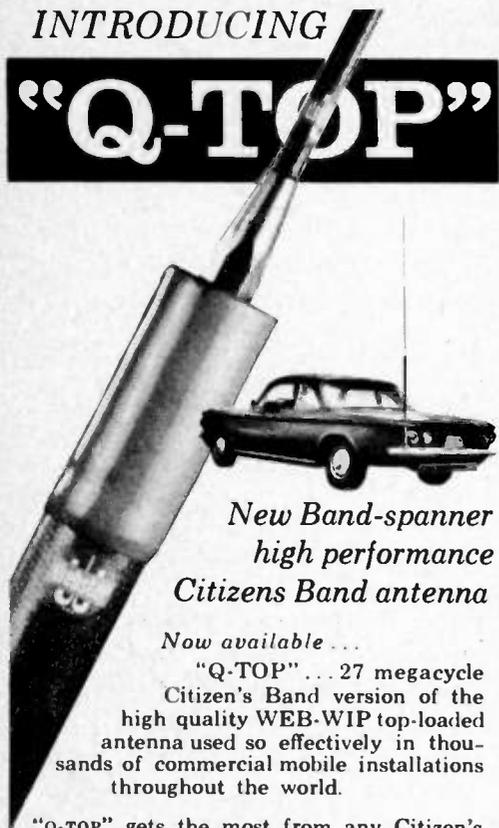
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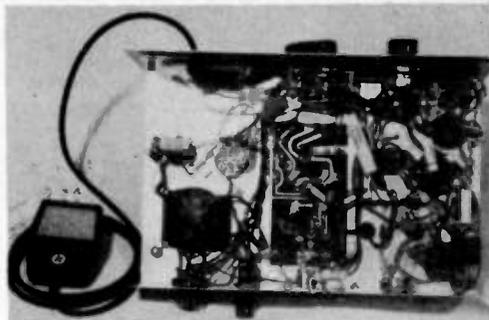


Fig. 1. Few components and "open" layout contributes towards a virtually foolproof assembly.

The transmitter, as shown in Fig. 2 is the same unit in Allied's more expensive rig (except it is single channel) and is wired on a PC board.

The use of the PC board insures that transmitter performance will be at a fixed value and that wiring errors or incorrect lead dress no dot affect the operating frequency. The transmitter's output is over 2 watts. The transmitter also has a TVI harmonic filter.

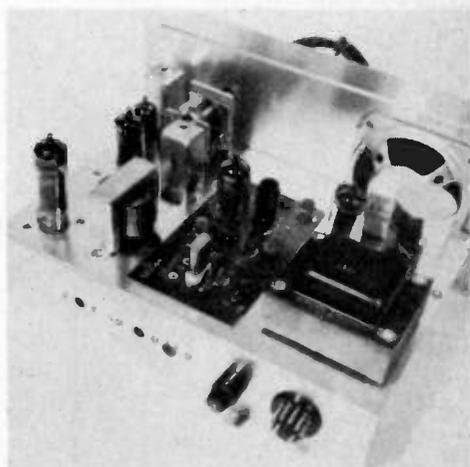


Fig. 2. Transmitter section (in center) is the same unit used in the more expensive Knight CB rig and uses a printed circuit board to insure trouble free operation. Transmitter output feeds a harmonic filter for TVI elimination.

The receiver is a super-regen and does not require instruments for receiver alignment.

The receiver is quite sensitive. No noise limiter is provided since a super-regen is self-limiting, and, it's quite effective. The

Continued on page 60

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Proudly Announces the



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Complete with crystals
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The finest 23 channel transmitter and tunable receiver combination available anywhere.

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HALE 'N HEARTY

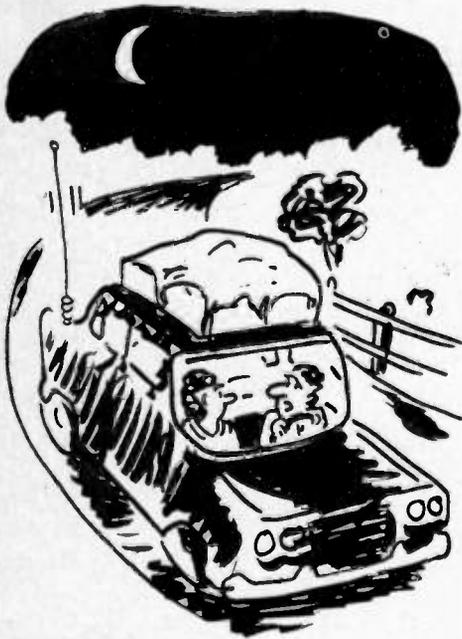
by ALVIN HALE



"Okay, 'Itzy-Bitzy-Fly-As-Fast-As-You-Can,' I've got a surprise for you too—you forgot to turn your CB transmitter off!"



"Remember that 'skip' station that called you last month?"



"Make with some nagging about the CB rig Sophie—like at home, I'm falling asleep."



"That couple we just passed, I introduced them via CB radio."

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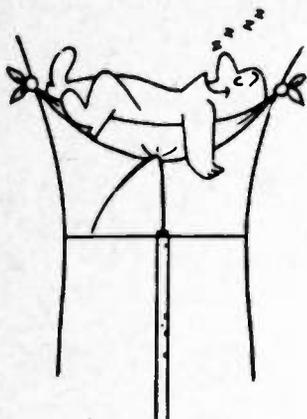
OK "Sandy" Attached is \$_____ (229.00 per unit) to cover full payment of _____ (Quantity) New Saturn CBX-15.

OK "Sandy" here is my Down Payment of \$_____ (23.00 per unit) to cover the down payment of _____ (Quantity) units. Please rush the finance forms Air Mail.

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ANTENNAS

by ED NOLL, KCC2618
 BOX 23
 CHALFONT, PA.

A LONG-WIRE V BEAM

The long-wire V antenna has a number of attractive advantages for specific CB applications. It has a high gain and can be constructed economically using readily available parts. Basically it has a uni-directional horizontal radiation pattern as in Fig. 1. However, it does have a number of minor radiation lobes coming out at various horizontal angles. These can be of help when there are a number of mobile units involved in addition to communications between two fixed stations.

Two typical applications for a long-wire V antenna are given in Fig. 2. In the first example it would be possible to establish strong-signal base-station communications between two business offices located in well-separated towns. The major lobes of the two antennas would provide the needed gain for the long haul. At the same time, the minor lobes of the V antennas would provide communications with the mobile units of each office operating within the environs of each town.

The second application is a technique that can be employed when a fleet of vehicles must serve two towns from a base

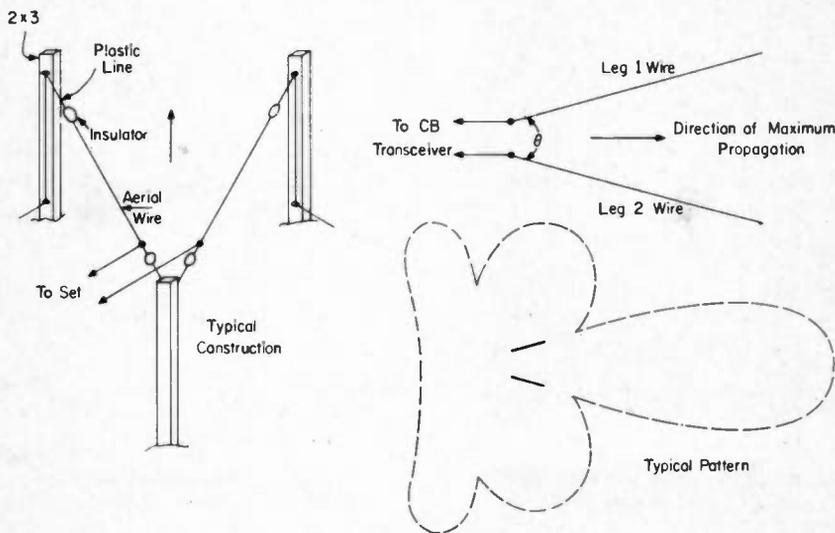


Fig. 1—V-Beam Antenna

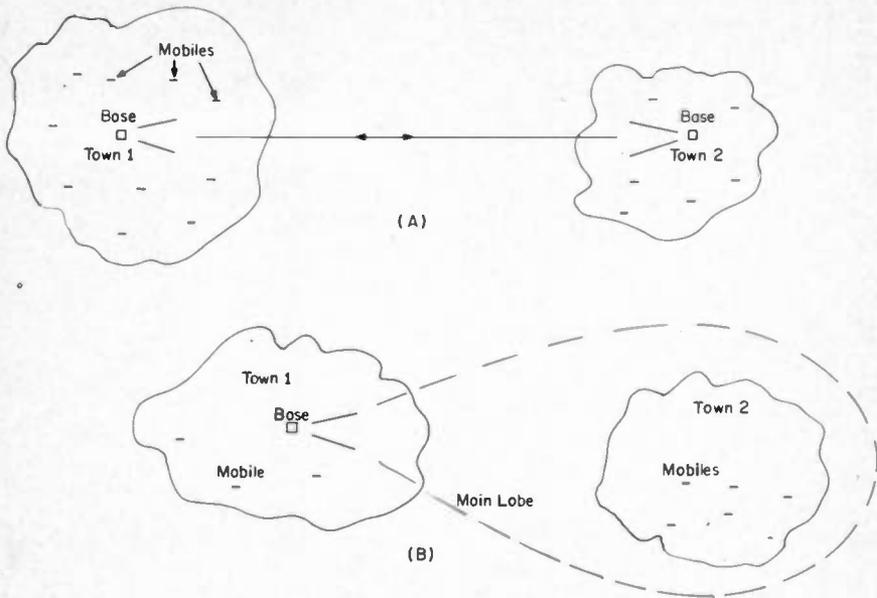


Fig. 2—Applications for V Antennas

station located in one of the communities. In this case, the V antenna is oriented with its maximum lobe directed toward the distant town. Since the vehicles operating in this town are located in the same general direction with respect to the base station, the major lobe of the antenna is all-inclusive. Insofar as the base-station town is concerned, communications are handled by the single major and the minor lobes of the V pattern.

As shown in Fig. 1 the V antenna can be constructed from inexpensive copper aerial wire, several glass or ceramic insulators, plastic washline, and two or three wooden 2 x 3's or metal poles. Often the apex of the V configuration can be attached to the building and, therefore, only two masts are needed.

Wooden 2 x 3's provide a very inexpensive mast. Short lengths can be self-supported by a cement base placed two or three feet into the ground. It is preferable to use a form such as a lard can. For a short mast the base of the 2 x 3 can be treated with creosote and placed directly in the ground. In the latter case, some heavy rocks should be used when the hole is filled in to steady the mast when the ground is softened by rain. A simple set of guy wires, as in Fig. 3, can support up to the maximum permis-

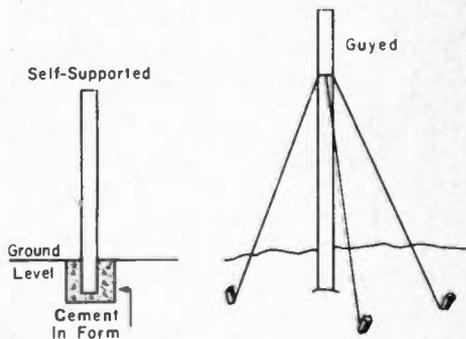


Fig. 3—Supporting the 2 x 3's

sible twenty-foot length. Guy wires should be broken up with insulators placed every several feet to prevent undesired resonant conditions.

The minimum practical length for a V antenna is about one wavelength per leg which provides a gain of three DB (power gain of two). The longer the length of the antenna, the higher the gain. Thus the gain you can obtain from a V antenna depends on the available space you have for erection. A leg length of eight wavelengths can provide a gain of better than ten DB. The very long V antennas are usually not practical for most CB applications because of the er-

tion space required. However, such antennas are practical and economical in the open spaces particularly when long-haul communications must be established. Under these conditions a reliable coverage of fifty miles and greater *may* be possible.

The longer the leg length of the V-antenna, the smaller must be the angle between the two legs of the V. The chart of Fig. 4 presents practical V dimensions for CB operations. Notice that the desired angle decreases with the leg length.

Wavelength	Leg Length in Feet	Apex Angle θ in Degrees	Gain
1	35.4	90	3*
2	71.8	70	4*
3	108.5	58	5*
4	145.2	50	7
5	181.5	45	8
6	217.8	40	9
7	254.1	37	9*
8	290.4	35	10*

Fig. 4—V Antenna Dimensions for CB Band

It should be noted that even a one wavelength V antenna provides a gain of three DB. However, you must remember that a similar antenna at the second location provides a 3 DB improvement in sensitivity. There is an overall 6 DB performance im-

provement for the system. You can well understand how this improvement continues to build up as the leg lengths are increased at each base station.

The longer the V antenna, the sharper is its major radiation lobe. Therefore it must be oriented more carefully if full benefits are to be obtained.

ORIENTATION

The orientation of the V antenna is an important consideration when full advantage must be taken of the construction. As shown, the direction of maximum propagation bisects the included angle between the two legs. In laying out the antenna refer to

a local road, township or county map that shows the geographical positions of the two sites. A compass can be of considerable help. Be certain to consider the magnetic declination in your particular area of the country when searching for the true north direction. It is then possible to obtain a bearing on the direction of the second site by referring to the map.

Continued on page 58

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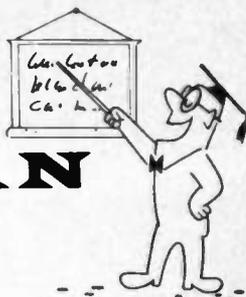
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CB ANSWERMAN

by LEN BUCKWALTER, KBA4480



Editor's Note: Readers are invited to ask the CB ANSWERMAN any questions which they have regarding the CB service. Address your questions to Len Buckwalter, KBA4480, Wilridge Road, Georgetown, Conn.

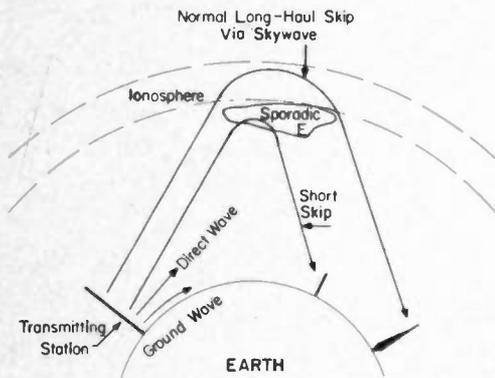
SOMEBODY UP THERE

Recently we had a conversation with CB'ers in Baton Rouge, about 50 air miles from our location in Franklin, La. There is an argument in the club as to whether this was on skip or ground wave. Can you solve it?

F.C., L.M., Franklin, La.

*There once was a man named McGee
Who worked only legal CB
His lid he did flip
To find he rode skip
As a victim of "Sporadic-E"*

The answer is wrapped up in our little limerick above. But let's look at all sides of the argument. Although the ground wave boys are completely out of the running, the skip boys have such a shaky position that the kitty should be split up and the bets placed over again.



The sketch in Fig. 1 shows not two, but four major paths open to a CB signal: ground wave, direct wave, sky wave and one we'll get to in a moment. Notice how the ground wave hugs the earth and follows the curve. While this is great for AM broadcasting on the lower frequencies, the conductivity of the ground for 27 MC is so

poor that CB ground wave is almost nonexistent. Most all useful CB work is done on the direct wave. As illustrated, this is the signal that travels in a perfectly straight line between earth and the ionosphere above. It's a line-of-sight deal that works best when transmitting and receiving antennas "see" each other. Now we've heard of a 50-mile contact on direct wave . . . but one unit was being operated by a Piper Cub jockey who had the advantage of about 3500 feet.

Lastly there is the sky wave which bounces off the ionosphere in skip fashion. It can carry CB signals many hundreds of miles. If the skip advocates want to win the argument without the aid of a rolling pin, they should state the very special type of skip that is probably occurring in the Baton Rouge to Franklin hop. Marked in Fig. 1 is the Sporadic-E layer, a renegade cloud of signal-reflecting gas that unpredictably sneaks about the lower reaches of the ionosphere. Only recently has it been discovered that it whizzes through the atmosphere at about 300 miles per hour. Its effect on 27 MC is well known. Reaching their peak during spring and summer, patches of Sporadic-E will reflect waves back to earth over relatively short distances. Thus, skip is fundamentally the correct answer in the argument, but a clear-cut victory is assured if it's qualified by "short-skip via Sporadic-E."

TVI

My TV and CB antennas are about 50 feet apart. I put a filter in the CB coaxial cable, but still get TV interference. What's the next step?

W.L.B., Florence, S. C.

Virtually all CB units already have a built-in TVI filter which must be checked for proper adjustment before any further steps are taken. The usual procedure is to set the TV on channel 2 and adjust the screw for least interference while transmitting. (The screw location is usually given in the CB instruction manual.) Next is the external filter you bought for the co-ax cable. It should be mounted as close as possible to the chassis of the CB set, directly on the antenna output connector, if convenient. In any case, both CB chassis and filter should be well grounded to the building. (A heavy wire to the screw on the AC wall outlet place is usually adequate.)

Sometimes an external filter will work better if it is hooked up in reverse. Try it—but work another station during the process to check if your signal has dropped.

If interference persists, install a high-pass filter made for the purpose at the antenna input of the TV set. Try reversing this, too, for least interference.

If these measures do not rid the set of TVI, attempt to improve the TV reception. Any increase in signal strength pays off in reduced susceptibility to interference. As signals grow stronger, the TV automatically becomes less sensitive and thus responds less to an interfering signal. You might check the elements of the TV antenna for corrosion, broken connections in the lead-in, etc. A more costly solution in the installation of a higher-gain antenna designed for fringe area operation.

GOBBLEDYGOOK

Is there any real cheap way I can scramble my voice so other stations can't eavesdrop on my communications?

P.T., Miami, Fla.

You could try one system used successfully in the last war. The U.S. Army had a group of men speaking over a net which proved quite secret and secure. It wasn't entirely a coincidence that the men were American Indians conversing in their native tongue. Here's an example which I defy you to translate; "Bui-djalilathgadu-isi-wandja" ("He kicks my calf," in Iroquois).

Secrecy in communications is perfectly acceptable to the FCC—as long as call-sign identification is given in plain language and you're not engaged in some activity like running arms to the rebels. While there are electronic devices for voice scrambling, their high price tag largely limits their use to government agencies and industrial applications.

HOME STUDY

Where can I get a home-study course in CB communications?

T.H., New Ulm, Minn.

CB is still a young field and at the present time there is no technical correspondence course solely devoted to it. However, this is no problem to the prospective student. Whether you're interested in CB, hi-fi or TV, you'd soon discover that the same fundamentals apply to all fields in electronics. Electron theory, Ohm's Law, tubes and transistors, power supplies and dozens of other circuit parts and principles apply equally to the CB rig or table-top radio. Once the foundation is acquired, you can progress to the more specialized area into which CB falls—communications.

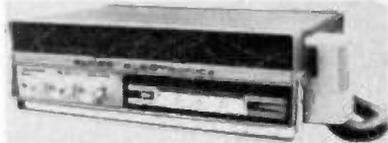
There is a wide choice of good correspondence courses which take the home-study student through basic electronics and into his desired specialty. You might not find CB in the catalogs of these schools, but we suggest you write to each and explain your goal. You'll find their replies to contain a wealth of helpful and descriptive information in those areas which prepare you for CB.

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Special club subscription rates for \$9

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CANADIAN

G. R. S. NOTES

by M. PAUL ARNOVITZ, XM52127

1117 ST. CATHERINE ST.

MONTREAL 2, P.Q., CANADA

Canadian skiers this winter will encounter a new experience in communications. The famous Canadian Ski Patrol System (Laurentian Zone) is going into GRS. Sonny Wachman (VE2ALW), chief of the newly formed Communications Branch of the Canadian Ski Patrol (Laurentian Zone), has advised me that he is formulating plans for a complete communications net for the Laurentian ski area. This involves walkie-talkies for the patrolers on the slopes, base stations and a tie-in with vehicles and aid stations. I would suggest that any person or equipment manufacturer who would like to participate in this very worthwhile undertaking should get in touch with me or Sonny Wachman direct at 1295 Allan Avenue, St. Martin, Quebec. The Canadian Ski Patrol System is a non-profit organization (manned by volunteers) which is fully endorsed by government authorities.

Another new club has come into being in the Montreal area. Formed shortly after the inception of GRS in Canada, the *Quebec 27 mc Pioneer Radio Club*, now forms the nucleus of English speaking CB interest in this area.

"Although we've only had four meetings to date," says club President Allan Cytrynbaum (XM52140), "interest is definitely on the increase." A total of 23 members have participated in the two club activities to date: A Laurentian outing and a well organized hidden transmitter trackdown. The latter event brought out over 15 mobile units and numerous base stations in a stimulating Sunday afternoon hunt.

The Club executives include Grant Power (XM52470) and Allan Bobb (XM52357) as secretary and treasurer respectively. Channels 9 and 13 are monitored during the major part of the day.

In line with their policy of fostering the effective use of CB in the public welfare,



members have embarked on a project of assistance to anyone in need. A traveller requiring aid is quite often surprised when he is handed a smartly printed card bearing the legend, "You have been assisted by the *Quebec 27 mc Pioneer Radio Club*."

This is a fine example of a club that is eager to be of service to their community and I know that they have freely given their services when requested by law enforcement authorities, although they have received no official recognition.

Since there is no Call Book for GRS, George Whittaker (XM52500) has volunteered to personally forward all cards for stations which have the XM51000 and XM-52000 series calls. Just mail your QSL cards to George at 130-5th Ave., Verdun, Quebec, and he will steer them where they belong.

Remember, your club news, comments or enquiries are welcome. Send them along.



THE YL KORNER

by PEGGY DALY, 2W7360

987 AMSTERDAM AVENUE
NEW YORK 25, N. Y.

With summer behind us and fall setting in, many of the Citizen Band clubs will be getting started with their activities. Sadly enough, many clubs will be folding up because of lack of activities. I have seen clubs with as many as a hundred members fade to just a coffee klatch because there was not enough going on to interest the membership. First and foremost, in order to have a good club, you must have the interest of your members. It is extremely important to keep your members active in projects that will be of benefit to them or the community. This will hold true not only to the YL clubs, but to the OM's as well.

In most clubs or organizations you will find a handful of hard working members. These are the people who should head the different committees. It should be their job to select from the membership the people that they think will be most cooperative in carrying through with a given task. Another thing to keep in mind is—give as many as possible a chance to be on a committee. This will make everyone feel that they are a part of the club or organization. And YL's should be included in this!

Most groups hold a dance or similar affair about this time of year and if planned well can be a huge success. It is a good way to introduce newcomers to your group and possibly obtain new members. If not planned well, well. . . . Here is Alice Miner and Anne Warne of the Staten Island Chapter of the National 11 Meter League making some last minute arrangements for the successful dinner dance that their club held.

Last Christmas I was part of a Women's Committee that held a dance with the admission being a toy or a gift for an old person. The turnout was so great that we were able to visit five different hospitals and a home for the aged, plus give a cash dona-



tion to a school for retarded children. Needless to say, I was proud to have been a small part of this committee. I have hopes that a similar dance will be held in our club this year, although I realize that it will not be on such a large scale, it would be just as gratifying.

Since the general interest as far as we are concerned is Citizen Band, I don't think that we should get too far off the beaten path inasmuch as club activities go. By this I mean, that there are group activities that include the use of communications. You might suggest to hold classes in proper procedure while transmitting. This will promote better communications and show a little consideration for the stations that do not have such good receivers and those with superregenerative units. You will also be giving that possible emergency call a chance to get through.

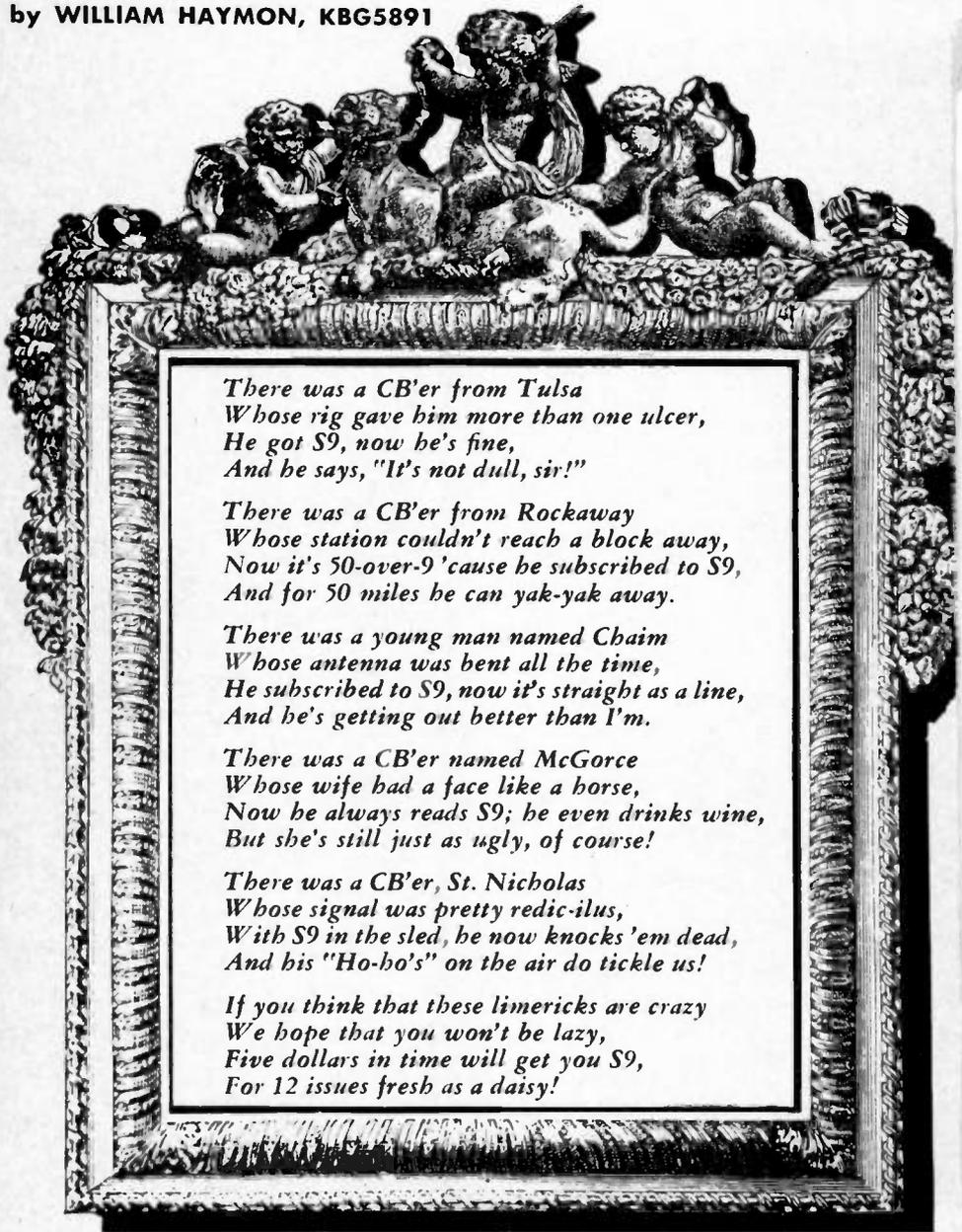
Does your Club have a YL section in its newspaper? If so, I would enjoy receiving a copy. A lot of worthwhile information can be exchanged through the Club papers.

Well, this will be 2W7360 signing clear and saying 73's till next month.

89

"THERE WAS A CB'ER..."

by WILLIAM HAYMON, KBG5891



*There was a CB'er from Tulsa
Whose rig gave him more than one ulcer,
He got S9, now he's fine,
And he says, "It's not dull, sir!"*

*There was a CB'er from Rockaway
Whose station couldn't reach a block away,
Now it's 50-over-9 'cause he subscribed to S9,
And for 50 miles he can yak-yak away.*

*There was a young man named Chaim
Whose antenna was bent all the time,
He subscribed to S9, now it's straight as a line,
And he's getting out better than I'm.*

*There was a CB'er named McGorce
Whose wife had a face like a horse,
Now he always reads S9; he even drinks wine,
But she's still just as ugly, of course!*

*There was a CB'er, St. Nicholas
Whose signal was pretty redic-ilus,
With S9 in the sled, he now knocks 'em dead,
And his "Ho-ho's" on the air do tickle us!*

*If you think that these limericks are crazy
We hope that you won't be lazy,
Five dollars in time will get you S9,
For 12 issues fresh as a daisy!*

HAPPY HOLIDAYS

Saturn

CBX 15



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- TUNEABLE RECEIVER (23 Channels)
- 13 TUBE PERFORMANCE
- RECEIVER RF GAIN CONTROL
- SQUELCH CONTROL
- TRUE PI-NETWORK OUTPUT
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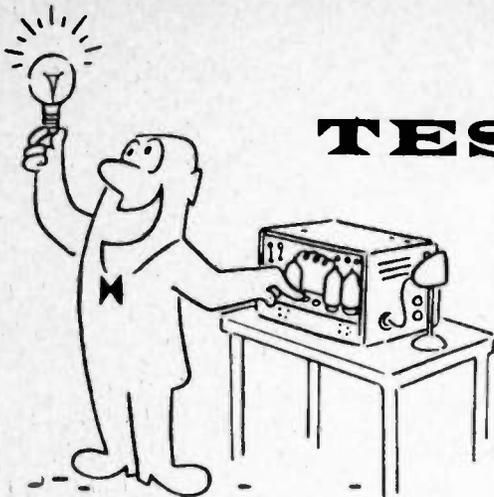
*Max plate input power to final radio frequency stage as defined by current F.C.C. Regulations.



The Saturn CBX-15 Transceiver is the finest 11 meter citizen's band radio of its class in the world. A superb combination of rugged construction and electronic reliability, it has a five piece steel and aluminum chassis and cabinet with advanced circuitry and premium parts. It has been successfully field tested under the most difficult conditions possible. The Saturn CBX-15 can be used as a portable unit, in cars, on boats or in the home. All parts are American made and it is sold with a 90 day unconditional guarantee. Time payment plan available.

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TEST GEAR

by **HERB FRIEDMAN, 2W6045**
2271 KNAPP STREET
BROOKLYN 29, N. Y.

One of the things we tend to forget as we survey the 12 feet of fully equipped test bench at the S9 lab is that many of you have no inclination to fully equip a shop. We were sort of brought back to earth by many letters which more or less asked if there was any rock-bottom priced gear which could locate minor transceiver breakdowns in most circuits.

The S9 lab didn't seem to have anything in this line so we searched through the catalogues and came up with the **GC Electronics Model 36-564 Signal Generator**, a ten dollar device which will quickly spot a breakdown in anything from a broken mike cable to a dead IF amplifier.

The GC generator is a simple battery powered device of the signal injector type. (This type of instrument has been a favorite construction project in the radio magazines for many years.) Two transistors are used to generate an audio signal somewhere in the neighborhood of 1000 c.p.s. However, the signal differs from the usual test signal (which is pure sine wave) in that it is highly distorted. Actually, the GC generator's signal is a spike. Because the signal is distorted strong harmonics up to 18 megacycles with weak harmonics to 30 megacycles are produced. You can



see the generator's advantage, its signal can be used as a tracer in most transceiver circuits.

The GC generator has only two controls, a volume control which varies from strong to very strong and a selector switch which is supposed to select a signal for testing either RF or audio circuits. Actually, the selector can be left in the RF position for both tests. The audio position is only necessary when testing low impedance circuits, such as a loudspeaker.

It is our opinion that the GC generator can be used effectively by anyone.

Let's take a look at some practical uses for the GC generator. We'll assume you have no other test gear other than a VOM or VTVM and the transceiver's schematic. In all instances it is at least assumed that the tubes have been tested (somewhere).

Suppose you get a report that your modulation has failed. You simply connect the dummy load lamp to the transceiver and inject the generator's signal at the modulator grid—then to all grids back to the mike pre-amp. If everything is working the dummy load lamp will slightly increase in brilliance when you connect to the modulator grid; the brilliance change will increase as you work back to the pre-amp. If the brilliance fails to increase from any grid that is the defective stage, and the stages VOM readings compared with those in the instruction manual will locate the defective component. If the brilliance increases from the pre-amp grid the trouble is most likely in the mike cable and the tracer signal applied at the input to the cable will check-out the cable and the connector.

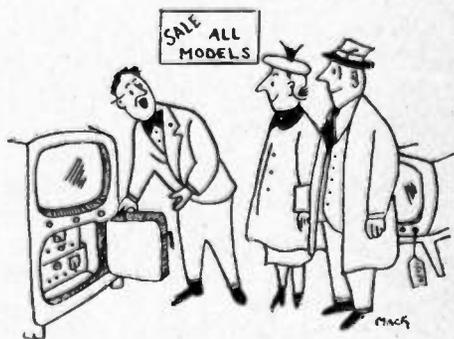
Let's use another example. Assume the transmitter is O.K. but the receiver is inoperative. Again, the generator's signal is used as a tracer. With power off contact the generator across the speaker, if the speaker is O.K. a very weak tone will be heard. (When testing speakers swing the generator's volume control from full clockwise to full counter-clockwise while listening for the tone.) Again with power off, connect the generator across the output transformer, the tone in the speaker should increase in volume. With power on, work the tracer signal back through all the AF amplifiers, the noise limiter and squelch, to the detector output. If the

tone can be heard from the detector on the trouble is in the RF/IF section. Since the generator's output falls in the RF range the signal can be used as a tracer in the IF amplifier. The signal can be worked back as far as the first converter. Failure to hear the tone through any stage indicates the defective stage.

Unless your receiver is extra sensitive the output from the generator is insufficient at 27 mc. so you won't be able to test the RF amplifier. However, if the IF amplifier checks out you have at least narrowed the difficulty down to the RF amplifier or the oscillator and VOM checks should carry you the rest of the way.

As you can see, with GC's Signal Generator you can inexpensively get started on doing your own servicing. While major breakdown will still require some expensive servicing there is no good reason why you shouldn't save a few bucks on minor repairs.

(Note: If you or your club would like to read about the uses for a particular instrument from the CB viewpoint write and tell us so. We will make every attempt to work it in.)



"This model has a built in 11 meter jammer to take care of any CB'ers in your area."

CB CASEBOOK

by LEE AURICK, 2W2780
MT. PLEASANT RD. RFD 1
COLUMBIA, PA.



Ever think of CB radio being used to guard prisoners? Perhaps not, but this is the reason that KCCO895 can be heard so often on channel 17. But here's the story on this unusual operation direct from Warden Jack F. Tracy, the man in charge at Pennsylvania's *Lancaster County Prison*.

"While we have found many helpful uses for our CB radios, the need for which they were originally obtained, and the most important one to us and to the citizens of this county, is *security*. Radio represents a system that can not be compromised by the prisoners we have in detention, and there is absolutely nothing that they can do to deny us the communication we must have to guard them," the powerful ex-Marine, become Warden, told your S9 reporter.

"Here at the main desk is the heart of all prison activity. Though we have an internal intercom system, the most urgent business concerning prison security is now confined to radio. No longer do we have to depend upon a 'trusty' to act as a messenger. This system can easily be compromised in the

event of trouble, and it is altogether too easy to cripple an intercom by the simple means of tearing out a few wires.

"Outside interference, that is, from beyond the prison walls is hardly a problem to us here, either, for the greatest range that we have to cover is usually only a few hundred yards. With the squelch turned down on our units, we are seldom even aware of other stations operating on the same channel."

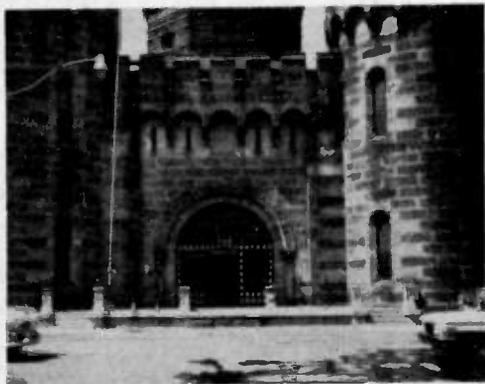
Anxious to see more of this unfamiliar communications application, I asked if it would be possible to see the system in operation, perhaps on a work detail.

With a "Follow me," that he might have used in urging troops to debark on some distant Pacific atoll, we charged out into the main compound. Charging directly at your reporter was a very business-like Police dog, whose only interest in CB radio, and obvious business for the moment, was tearing your reporter limb from limb. A quiet word from the Warden, and the animal sulked off to find some other prey.

Any ex-GI would have recognized immediately what was going on here. Though there wasn't a stick, stone, blade of grass, or butt, visible to the naked eye, a few dozen prisoners were engaged in policing the area, all under the watchful eye of a guard, walkie-talkie in hand, standing just outside of one of the watch towers, high on the wall.

"This guard is in direct contact with the man at the desk inside. Should a situation develop that the guard couldn't handle from the wall, in just a few seconds he can have all the help he needs from every corner of the prison.

"Though my responsibility within the walls is confined to about three acres, we



have an average of 200 prisoners here at all times. This is a considerable number for the size of our facility, and it requires that I make the best use of every member of my staff. Here is where CB radio has been a great service to us."

As we made our way back to the Warden's office, my sense of ease was returning with every step. It was your reporter's first time in prison, and, though the Warden was a most cordial host, the 112-year old "clink" was beginning to exert its depressing influence. However, I wanted to learn more about why the Warden was so enthusiastic about CB.

"We have regular details, composed of trusted prisoners, assigned to a variety of jobs, many of which take them outside of the walls. For example, we may have a squad of ten men cleaning or tending the grounds outside. The prison, as you may have noticed, is located in a park-like atmosphere, and requires a great deal of work to keep the city-block-square area well tended. The county feels that this chore might reasonably be performed by the men who are 'benefiting' most as its guests. The guard in charge of these work details is equipped with a radio, and therefore has the immediate support of the entire prison, if he should need it. This has resulted in our being able to reduce the manpower requirement, and to assign guards to more demanding areas elsewhere.

"You have seen two of our units, the base station at the desk, the portable surveillance unit on the wall, and I have told about the other portable unit used for work details. We have one other station, mounted in a truck that we use to transport prisoners from here to the prison farm, about a mile

away. On occasion, it is necessary for the guard on the truck to call and ask for assistance. One prisoner, decided to hop off the truck as it was en route to the farm. An all points bulletin was immediately broadcast, via CB, to the local police, and Township Constables, who monitor us 24-hours a day. Our missing man was back in custody in one-half hour, thanks to the splendid cooperation of these people, and with a mighty big assist from CB radio."

I was beginning to get the idea that Warden Jack Tracy was sold on CB, even before I heard of what he has planned for the future.

"A very real problem for us is Security (by now I was sure that the Warden always thought of this word with a capital S) at night. We've tried a few experiments with the guards whose duty it is to make the rounds after dark, and when the men are supposed to be sleeping. We have been forced to the conclusion that the need for radio contact with a lone guard, making his rounds at night, perhaps our most desperate need, cannot be met with existing equipment. I feel that it is extremely dangerous to send a guard into areas where he could easily be surprised, armed only with a flashlight in one hand and a walkie-talkie in the other. I have had considerable correspondence with one manufacturer who apparently thinks my problem is of too limited a nature for him to get excited about. What I really need is a CB unit that can be fastened to a guard's belt, and equipped with a throat or lapel mike. This would at least leave him only holding the flashlight, and would provide him some measure of protection."

At this point your reporter offered to assist in making this relatively simple modification. With the proper microphone, it should be a simple task to connect it in place of the existing unit. Further portability could be obtained by running the antenna to a trouser cuff. Though the Warden promised to consider the offer, as we parted he said, "I'm still hoping to get some electronic's bug in here for about six months. Then I'll get the kind of system I really want."

There are three Stop signs and four traffic lights between my house and the County Prison.





ELECTRONICS 'N STUFF

by **DON STONER, 11W1507**

BOX 7388
ALTA LOMA, CALIF.

ALL ABOUT MODULATION

Rig under his arm, in walked Ralph to Sam Seebee's Service Salon. "How about it, Sam?" Ralph cackled. Ralph, the local "CB king of the mountain" had been chopped down the night before by a signal stronger than his. "Come on buddy-buddy, anything for a little more bazoom." The look in Sam's eyes said—without words—that Ralph was fighting a losing battle.

"Furrrend," drawled Sam, "What are you suggesting is not only illegal and could cost me my Second Class Radio-telephone license, but won't buy you a thing except some trouble with the 'feds.' What this clunker needs is more modulation," Sam crusaded, as he connected a dummy load to the antenna jack on the *Little Jiffy Five Watt Wonder* setting before him. The dummy load was nothing more than two series connected #44 pilot lamps and a coax connector (Fig. 1). "Let me demonstrate, character."

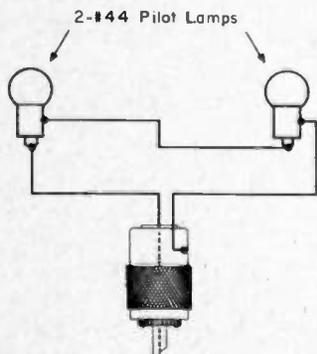


Fig. 1. Here is Sam Seebee's Dummy Load. You can build one for testing your own rig.

Sam depressed the mike button and light flooded the workbench. "Now look as I whistle into the microphone." As he did so

it produced a perceptible flicker. "Now let's stick this clip lead across the 3500 ohm power-controlling resistor," said Sam as he observed his drooling customer. The lamps leaped up in brilliancy indicating a substantial increase in power. A quick check of power showed 15 watts input and slightly more than seven watts output. "Yeh, yeh," snapped Ralph, "leave it that way, huh Sam?" "Aw, go peddle your bicycles, you power maniac, I'm trying to demonstrate something," retorted Sam. "Let's try the same experiment," he continued, as he poised his lips for a long whistle. This time the lamps dimmed down considerably. "That, Ralphie, is known as downward modulation. This rig has just enough audio to modulate a five-watt carrier input level. When I jumped it up to 15 watts, it couldn't handle the extra load. For all practical purposes the audio could only modulate one-third of the carrier. On the other end of your radio circuit the additional RF power may move the S-meter up a ways, but the modulation will not sound as loud as before. When it comes to cutting through interference, or working over long distance paths, jumping the resistor does more harm than good." Sam looked pleased as if he had just saved another Christian from the lions.

"O.K., O.K., I give up, but surely a good looking, intelligent fellow like you must be able to goose up the modulation. Even stock it isn't very good. Surely you could do better, Sam," Ralph said, giving it one last try by appealing to Sam's natural modesty. "There are several things that can be done legally," replied Sam, walking over to the parts cabinet. "We can use one of these," Sam noted as he waved a big black object under Ralph's nose. "Let's take the jumper off the 3500 ohm resistor and re-

place it with this 1 mfd. capacitor. Not only does the 3500 ohm resistor drop the DC power input to the final, but it also knocks down the audio a bit. Look at the difference when I connect this in the circuit." This time the bulb sprang to life. Although not as bright as with the jumper, each time he whistled the brilliancy of the bulb increased considerably. An on-the-air check with a distant station proved the point that the signal was the most readable with the capacitor in the circuit. Ralph, a happy man, danced out of the shop with visions of 60 mile contacts whirling around in his head.

At the next club meeting, Sam used this experiment as the subject of his lecture. "The dummy load made with lamps is the handiest piece of test equipment you can own. You can test your rig just by hooking it to the antenna connector. It's legal for you to evaluate your rig's performance, or leave the transmitter on for long periods, since the bulbs will not radiate a signal very far. The brilliancy of the bulbs will tell you how much relative power your talk box is putting out and the change in brilliancy indicates everything you need to know about your modulation. The lamps definitely should get brighter when you talk into the microphone. The amount of brightening is a direct indication of your modulation content. If they dim down, your rig is sick. If they just flicker, it indicates the audio circuit could stand some improvement. Here's why.

The power amplifier produces a radio frequency signal which looks like this block I have drawn on the blackboard (Fig. 2a). You can see this picture on the oscilloscope I use to test modulation. By expanding the

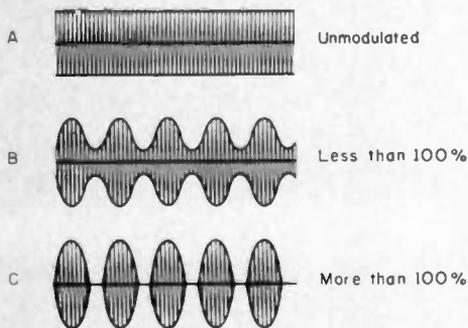


Fig. 2.

picture you can actually see the individual cycles of 27 mic. energy. Normally though, they are so squeezed together that only a "blob" of signal is seen.

When the rig is modulated, this radio frequency energy will increase and decrease at a voice rate. Here's what it would look like if you whistled a tone into the mike (Fig. 2b). Notice that the valleys in the wave do not quite touch, which indicates something less than 100% modulation. Although CB rigs are designed to prevent overmodulation (more than 100%), which is forbidden by the FCC, this is what it would look like on the 'scope (Fig. 2c). Overmodulation causes distortion, but more important, it produces a condition called "splatter" which causes interference to stations on adjacent channels. Your rigs will get through best, with the cleanest signal, when they have between 90 and 100% modulation capabilities.

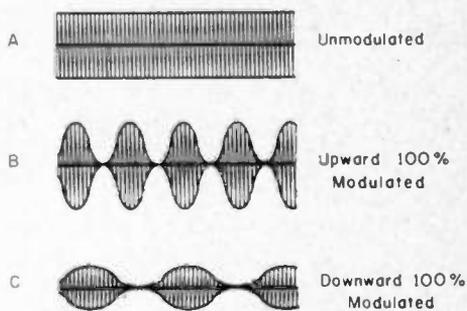


Fig. 3.

There is another important point to this modulation business. Remember the upward and downward modulation situation? Normally when you modulate, the audio power of the modulator is added to the radio frequency power of the final amplifier. Thus the two combine to increase the power output which is what makes the lamp get brighter. However, if the modulator cannot deliver this extra power, or if for some reason the final cannot accept it, the total power output will stay the same or even drop! On the blackboard I have sketched the three conditions (Fig. 3). In (a) we have the unmodulated carrier. Note particularly how high it is in comparison to

Continued on page 58

CLUB NOTES

The *Bayshore (N.J.) CB Club* sent in a club subscription to S9 and also a copy of their sharp looking club newspaper. The paper is edited by member Stan "Stash" Sliwa. Motto of the club is "Better communications through courtesy," a slogan which would do any club honor.

We received a beautiful club directory from the *Lycoming CB Radio Club* of Montoursville, Pa., and another nice one from the *Middle Georgia Citizens Radio Club* of Macon, Ga. The *Lycoming* club also wrote concerning the C.A.P. article which was run in our July issue on Page 16. It seems that their group was the one mentioned as having been "ordered" into action by the C.A.P., as reported in a local newspaper. Bob Shearer, *Lycoming* Prexy tells us the club was not actually ordered into action—the C.A.P. antenna was badly damaged and they were without any form of radio communications until the *Lycoming* club volunteered their services. The erroneous connotation was apparently because of some ill feelings between the C.A.P. squadron and the local newspaper.

Members of the *Citizens Band Association of Connecticut* received a commendation from the Bridgeport Civil Defense people for the helping hand they gave during the *Barnum Festival Parade*. 1W4265 read the commendation to the members at a recent meeting. By the way, they monitor Channel 11 if you should be in the Bridgeport area and need road directions or run into some motor trouble.

Speaking of safety, *Browning Labs.* of Laconia, N. H. is looking ahead to next year's boating season in New Hampshire. They completed extensive tests of CB communications across Lake Winnepesaukee and report excellent results. Next year Channel 13 will be "the thing" in that neck of the woods.

The members of the *Tri-County Citizens Radio League* of Cuyahoga Falls, Ohio, haven't stopped laughing at a goof made by the FCC. One of their members, "Little Mike" (formerly 18B2889), received his CB license with a crazy mixed-up call sign. Instead of the KHA call he expected, he wound up with KF10242, which is a 14th area call. Now everyone thinks he's a skip station! He'll show you his license and spill out the whole sad tale if you give him half a chance.

The gang from the *Citizens Radio Association of Lake County* from Waukegan, Ill., has been wondering what happened to all those Kenosha stations who used to pile up on their local Waukegan channels. Hey fellas, a little bird says they're all on Channel 2 now!

Members of the *Lakeland Radio Club* and *The Five Watters* of Ohio helped in the search for a 2 year old girl lost in the woods. The girl was found 5 hours later safe and sound, thanks to the efforts of these CB'ers from 19-land.

The *San Gabriel Valley Citizens Radio Club* in California invites all 11-land CB'ers to their meetings at the VFW Hall in Monrovia on the second Thursday of every month. They tell us that they "dig S9 the most." Thanks!

CB'ers in western Pennsylvania can save a bundle of loot by purchasing their own local CB callbook and not having to pay for the expensive national edition. Sixty cents sent to the *CB Rangers*, Box 284, Butler, Pa., brings you their callbook which lists almost 600 CB'ers in 137 different towns and cities, also the following info on 21 CB clubs in the area: name, 10-20, call channel, addresses, meeting time and place, etc. Hop to it gang! This is a real steal!

S9



WASHINGTON OUTLOOK

by EDWIN FREDERICK, 2W4580

The FCC has reorganized its Land Transportation Division and split it into several new divisions. Of interest to S9 readers is the new "Amateur and Citizens Radio Division" to be headed by FCC veteran Ivan Loucks (see October S9, P. 33 for his biography), a CB'er and Amateur operator himself (KCF0001/W3GD).

At a talk given by FCC Commissioner Frederick W. Ford at the *Second Annual Tri-State CB Roundup* in Parkersburg, Va., Commissioner Ford related some interesting facts on the future prospects of CB radio. He went so far as to say that if the CB service gets too far out of hand (because of disregard for FCC regulations) "it might become necessary to withdraw the frequencies from the service." He added that this would be a drastic move and unlikely, but could come to pass if the expense of maintaining a field force to govern the service could not be justified.

He also shook a wary finger at manufacturers who are producing CB equipment which may be modified to be operated at power levels above those established by the Commission.

In keeping with their current crackdown on rule violators, the FCC took the following actions recently:

They revoked the license of CB station 18Q2940 operated by Bill Wilson, Glasgow, Ky., for transmitting "indecent and obscene language." He may, however re-apply for a new CB license after 90 days.

They revoked the license of CB station 11Q0712 operated by James Cotton, Whittier, Calif. for "failure to respond to notice and Show Cause of non-compliance."

They were still considering a Show Cause action for license revocation of station

4W0152 operated by Warren J. Currence of Elkins, W. Va. The FCC charges that for more than a year 4W0152 "repeatedly violated FCC rules by transmitting communications not addressed to specific persons or stations within the direct groundwave coverage area" of the station, even after receiving warning from the FCC. They also claim that the operator repeatedly uttered "foul, indecent, and obscene, as well as profane language," over the transmitter. The operator was also charged with permitting a dog to bark and modulate the transmitter, operating with a power input in excess of 5 watts, falsely identifying his radio transmissions with an unauthorized call sign. The Commission further said that Currence used his station "to emit an unmodulated carrier with the apparent purpose of deliberately interfering with the communications of other Citizens Radio stations which, in fact, resulted."

Finally, the Commission stated that on least one occasion, he pretended to be an agent of the FCC, and then it went on to discuss the operator's "past record of unlicensed radio operation."

The operator of CB station 20W1705, Ralph Yago, of Pittsburgh, Pa. was given a Show Cause order for license revocation because he refused to make his station facilities available for FCC inspection.

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DO NOT LOOK AT

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WHISTLESTOP

Continued from page 22

otherwise resistor R_1 will offer a DC path between stages.

Operation

After the wiring has been finished, you can test the Whistlestop by connecting an AF signal generator to the INPUT and a pair of high-impedance headphones to the OUTPUT terminals. Set the generator to various frequencies between 70 and 10,000 cycles and tune potentiometer R_3 to reject the signal. You need not go to the trouble to calibrate a direct-reading frequency dial; you are more interested in getting rid of the heterodyne than in measuring its frequency—a simple knob will suffice.

When operating the unit with the receiver, tune the Whistlestop to cancel out the annoying heterodyne. This will also remove the same frequency component from the voice signal, so expect the speech to become a little flat. Unavoidably, the Whistlestop can reject only one frequency at a time; this means that if there are several heterodynes, you can kill only the most troublesome one.

Conclusion

This is a simple device but an effective one. It requires very little space if you want to put it in your receiver, and it is worth the \$6.00 new parts cost.



REACT

Continued from page 28

hold, the closer you will operate as a group, but . . . properly established, REACT functions "on the air."

WHAT IS THE MEMBERSHIP OF A TYPICAL REACT TEAM?

Membership will vary, of course, according to local conditions and needs. Included should be as many as possible of the following authorities and individuals:

Chief of Police	Doctors and
Mayor or Village President	Veterinarians
Local cab co.	Mortuary
Ambulance service	Service stations
Hospital	Fire officials
	Public service officials

HOW DO I SUMMARIZE REACT'S OBJECTIVES?

REACT is a non-profit, non-political group of individual citizens voluntarily banded together through the medium of citizens band two-way radio facilities.



ELECTRONICS 'N STUFF

Continued from page 55

the others. When the transmitter is upward modulating (b) you can see that the total height or amplitude increases. However, if there is something wrong with the rig and it downward modulates (c) the total amplitude will stay the same. Obviously the upward modulation condition will get through the best. Downward modulation can be caused by improper transmitter tuning, insufficient grid drive or power supply defects. Whatever the reason, to correct the condition is a job for a qualified serviceman only.

"O.K., you guys," Sam broke up the meeting, "Who wants to borrow my dummy load?" "That ought to drum up some business," he chuckled to himself.



ANTENNAS

Continued from page 42

A string line can now be run from the apex mounting position in that direction as per Fig. 5. Now run string lines from the apex corresponding to the position of the two legs. The angle between the direction string and each leg should be one-half of the angle indicated in the chart of Fig. 4. The leg strings can now be cut to exact wavelength to determine the positions for the two masts. Position the masts a foot or so beyond what will be the antenna ends to provide space for the end insulators and the plastic washline which can be used to hold the antenna taut. The plastic washline can be run through rings down to the bottom of the mast and can be used to pull up on the antenna whenever a sag develops.

MATCHING

To make full use of the V-antenna char-

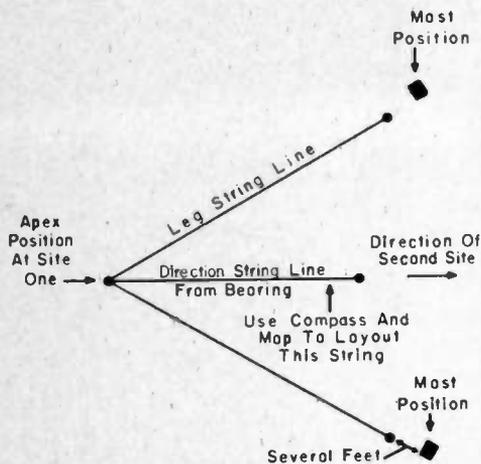


Fig. 5—Layout Site. With String, Map, and Compass

acteristics, the antenna should be matched to the transmission line and the transmission line to the CB transceiver. A V-antenna has a rather high antenna resistance thus a suitable matching arrangement is appropriate. The output of the CB transceiver is 50 ohms unbalanced while the antenna itself is a balanced type with a higher impedance.

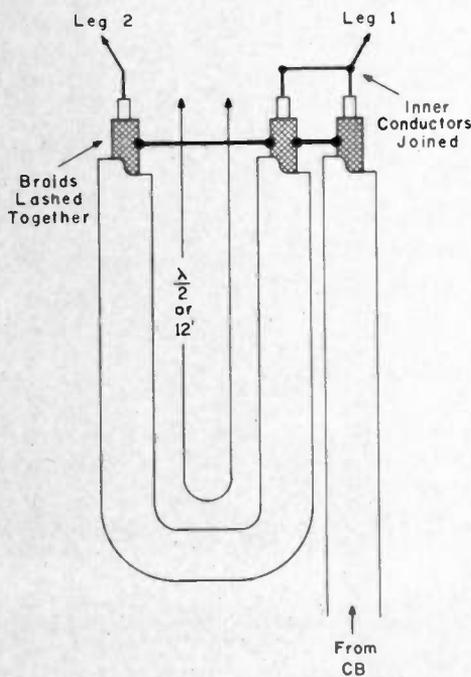


Fig. 6—Coaxial Balun

JAMES KNIGHTS
"GOLDEN LINE"
CITIZENS BAND
CRYSTALS

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 manufacturer inquiries invited

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Lapel Call Plate . . . Deeply engraved on top quality phenolic plastic exposing sharp, clear, white letters. Nickel-Silver catch pin back. Full size 2 1/4 x 1 1/2.

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 C & R Sales Co., P.O. Box 81, Jamaica 18, N. Y.

Thus the impedance-matching device can also be made to serve as an unbalance-to-balance transformer.

The balun arrangement of Fig. 6 represents a simple and low-cost method of feeding the V antenna. It operates as a radio-frequency transformer just as an audio transformer can be used to match and supply signal between single-ended and push-pull audio stages. The balun also provides a four-fold increase in impedance. Thus its secondary side has an impedance of 200 ohms when its primary side is connected to 50 ohms.

The balun section must have an electrical length of one-half wavelength. The length of a CB balun made from RG58/U cable should be about twelve feet, doubled back on itself as shown in Fig. 6. The braid is exposed at each end and joined with the braid of the main transmission line. Thin but strong and flexible wire can be wrapped around the braids to hold them together and make a firm contact. Overlap with insulating tape. It is possible to use some light soldering. However this must be done carefully to prevent a burn through the cable

dielectric and a possible short to the inner conductor. Unless you are skilled at soldering it is advisable to use a wrapped wire connection plan.

The inner conductor at one end of the balun is connected to the inner conductor of the main transmission line and then joined to the one leg of the V antenna. The inner conductor at the other end of the balun is connected to the other leg of the V antenna.

If the transceiver has a tunable antenna circuit a transmission line can be run directly between the V-apex and the antenna terminal. The antenna tuning adjustment of the transceiver is then adjusted for the best match. This plan is simple and works out quite well. We have had success with ordinary 300 ohm television line. One end is connected to a standard coaxial fitting while the other connects directly to the V antenna. The antenna adjustment of the transceiver is then varied for the best match. The 300 ohm TV line provides a reasonably close match to the V antenna. The antenna adjustment of the transceiver brings its impedance up to a value that provides a reasonable match to the 300 ohm line.

The radiation from a V antenna is predominantly horizontally polarized. However, there are some vertical components too. At close ground level most radio propagation reverts to the vertically polarized form. Thus the V antenna can be used for communications with vehicles despite the fact that they use the vertically polarized whip antennas.

S9

plug-in the supplied dummy load lamp and peak one trimmer for maximum brilliance. The adjustment is adequate for short range use. If you have a field strength meter or SWR bridge you can peak the transmitter right on "the button" with the antenna connected. (We suggest some type of tuning indicator be used with any transmitter.)

The C-11 is possibly the lightest rig on the market, and with a handle attached to the cabinet it is quite convenient where highly portable, lightweight equipment is required.

The optional mobile bracket is a "dream." The bracket is permanently attached to the underside of the dash. The rig slides into the bracket and locks in place when two screws engage a keyed slot; the rig can be installed or removed in less than a minute.

An optional mobile power supply is available in 6 or 12 VDC. The wiring is switched by the plug on the AC cord or the DC cord.

If you're in need of a rock-bottom priced or highly portable system we suggest you investigate the *Knight-Kit C-11 Transceiver*.

S9

**ALL
CB EQUIPMENT
FROM
ONE SOURCE**

**WE ARE
AUTHORIZED
DISTRIBUTORS
FOR ALL LEADING
MANUFACTURERS**

GOTHAM DEPT. S9
1805 PURDY
MIAMI BEACH

ON THE COUNTERS

Continued from page 36

selectivity is broad, and strong signals on nearby channels to the one received can be heard.

Transmitter tuning is quite easy since the oscillator slug is pre-tuned. All you do is

DO NOT LOOK AT

PAGE 35!

ALASKAN CB'ers SAY:

GOTHAM VERTICALS DELIVER THE CONTACTS

In rapid succession, dozens of orders for the Gotham Citizens Band Vertical Antenna came in recently from Petersburg, Alaska, where delighted CB'ers discovered that this "ham" antenna gave fantastic results on CB. This is the antenna that needs no tuning or adjusting, the only CB antenna that will also give all-band SWL performance, the only antenna that can be used on other bands if you ever become a ham.

- Absolutely no guying needed.
- Radials not required.
- Only a few square inches of space needed.
- Four metal mounting straps furnished.
- Special B & W loading coil furnished.
- Every vertical is complete, ready for use.
- Mount it at any convenient height.
- No relays, traps, or gadgets used.
- Accepted design—in use for many years.
- Many thousands in use the world over.
- Simple assembly, quick installation.
- Non-corrosive aluminum used exclusively.
- Will work with any receiver and xmitter.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price. **ONLY \$14.95.**

10-4,
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1. YOU WILL HAVE NO DIFFICULTY INSTALLING YOUR GOTHAM VERTICAL ANTENNA IN JUST A FEW MOMENTS, REGARDLESS OF YOUR PARTICULAR PROBLEM, SO ORDER WITH CONFIDENCE EVEN IF YOU HAVE RESTRICTED SPACE OR A DIFFICULT SITUATION.
2. GOTHAM IS THE ORIGINATOR OF THE $\frac{5}{8}$ WAVELENGTH VERTICAL BASE ANTENNA. OUR DESIGN REQUIRES NO INSTRUMENTS, NO SPECIAL TOOLS, NO PREVIOUS KNOWLEDGE. OVER 17,000 HAMS USED THIS DESIGN LONG BEFORE CB OPERATIONS STARTED.
3. EVERY GOTHAM ANTENNA IS SOLD ON A TEN DAY TRIAL BASIS. IF YOU ARE NOT FULLY SATISFIED, YOU MAY RETURN THE ANTENNA PREPAID FOR FULL REFUND OF THE PURCHASE PRICE. THIS IS YOUR GUARANTEE OF FULL SATISFACTION.



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Enclosed find check or money-order for: **\$14.95**

CB-11 VERTICAL BASE ANTENNA, COMPLETE WITH MOUNTING STRAPS, HARDWARE, VERTICAL RADIATOR, LOADING COIL, AND INSTRUCTIONS.

HOW TO ORDER. Send check or money order directly to Gotham. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

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City.....Zone.....State.....

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CB SHOP

Rates for CB SHOP are 10¢ per word for advertising which, in our opinion, is obviously of a non-commercial nature. A charge of 25¢ per word is made to all commercial advertisers or business organizations. 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 all orders and orders sent in otherwise will not be run or acknowledged.

Closing date is the 15th of the 2nd month preceding date of publication.

We reserve the right to reject advertising which we feel is not suitable.

Because the advertisers and equipment contained in the CB SHOP have not been investigated, the publishers of S9 cannot vouch for the merchandise or services listed therein.

DETECT POLICE RADAR traps before they detect you. Build **RADAR KING**. Longest range, earliest warning. Plans \$1.00, kits \$19.95, wired units \$29.95. Wardell Smith, Electronic Designs, 65 Glenwood Road, Upper Montclair, N. J.

STOP THIEF! Discourage those mobile-rig stealing Citizens Bandits with heavy anodized aluminum "warning sticker" or decal. Only \$1 each. Big 4½ by 2½ size. Send now! Jack Scott CB Specialties, 9 West 8th St., Mt. Vernon, N. Y.

CB QSL card. Samples 10¢—MALGO PRESS, Box 375—Toledo 1, Ohio.

NEED CB QSL CARDS? 25¢ brings samples, prices and 50¢ coupon. Redbird Printers, Freedom, Indiana.

CB-QSL Cards—Brownie—W3CJI/3W1974—3110—D Lehigh, Allentown, Pa. Catalogue with samples 25¢.

CB, SWL, WPE QSL's SAMPLES 5¢ N & S Print P.O. Box 11184 Phoenix 17, Arizona.

CB QSL's 100 three colors \$2.00. Bob Garra, Lehigh, Penna.

CB QSL cards . . . send for FREE brochure. Frank B. Mathews Printing & Advertising, 1616 Rural Street, Rockford, Illinois.

LAFAYETTE HE 15, HE 15A, HE 15B, DeWald TR800, R910. Plug-in crystal receive converter. No wiring. No more station hunting. Always tuned to your channel. Three position switch, tune and two crystal positions. \$10.95 with one crystal. Specify model and channel. F. Abate, P.O. Box 206, Pompton Lakes, New Jersey.

\$10 DOWN DELIVERS your CB equipment with 12 to 24 months to pay balance. This month's specials . . . RG8/U coaxial cable only 7¢ per foot (FOB New York) . . . also, any CB transmit or receive crystal, for any type of CB transceiver . . . \$2 each. Include 25¢ additional with order for postage and handling of crystal. House of Sound, 2119 Starling Avenue, New York 62, N. Y.

STINGER—32" of Dynamic CB Antenna. Model ST-1, \$14.95. Postpaid. Bussard Company, Drawer 10, Reynoldsville, Pa.

2 x 3 FCC Warning decal against unauthorized use. 35¢ each 4/\$1.00. CB, Box 457, Encino, California.

CB-QSL-SWL cards. Samples 10¢. Personal picture on cards. No extra cost. SIGNAL, Adams County, Manchester, Ohio.

ANTENNA SWITCH—Operate one CB on two antennas, or 2 CB's on one antenna. Attractive stainless steel. Takes PL-259 plus. Net \$7.95. ROKO Products, Inc., Box 3766, Baltimore 17, Md.

MODULATION BOOSTER—It's New! It's Terrific! As much as **DOUBLES** your transmit and receive range with no violation of FCC power requirements. Compact—Easy to install, with instructions. Net \$14.95. Dealers write: ROKO Products, Inc., Box 3766, Baltimore 17, Md.

CB QSL cards . . . samples free . . . Will also print special cards from your illustration. Fast service. BOGIN PRINTING, 2775 East 12th Street, Brooklyn 35, New York.

CB QSL cards. Free samples. Paul, 7701 Tisdale, Austin, Texas.

Quality QSL's—New designs monthly, samples 10¢—Giant 25¢. Savory, 172 Roosevelt, Weymouth, Mass.

QSL's—CBL's—Finest Quality—Extra Fast Service on stock or custom designed multicolor cards. Samples and catalog 25¢ (refundable). Dunahoo, 516C Prospect, Fairview, Mass.

TONE SIGNALS: Adaptable all CB rigs. With instructions. Standard \$3.95, Deluxe \$5.95 each. **IDEAL ENTERPRISES** (16Q0572), Box E, Westington, S. D.

"Like to buy CB equipment at **WHOLESALE PRICES?**" Thousands of other items such as jewelry, appliances, tools, etc. **BELOW WHOLESALE!** Write for free details. Cost Plus "5" Limited, 35 South Broadway, Yonkers, New York.

FREE SAMPLES—CB QSL CARDS. \$2.50 per 100 in 3 colors, **POSTPAID.** Garth Printing Company, Box 51 S, Jutland, New Jersey.

HUNDRED QSL's 80¢. Samples, dime. Meininger, Jesup, Iowa.

FREE: Bargain Bulletin. Write: "Meininger Ads", Jesup, Iowa.

"INSTANT EYE BALL". Your present Call Card becomes an Eye Ball QSL Card **INSTANTLY** with these pressure sensitive **EYE BALL QSL LABELS.** \$1.00 per 100. Samples 10¢. **ERROL ENGRAVING, WESTFIELD, MASS.**

CB QSL CARDS—100 two color \$3.00 postpaid, samples 10¢. Rusprint, Box 7507, Kansas City 16, Missouri.

FOR YOUR MOBILE ANTENNA—The finest "QUICK-CONNECT" made. Solid brass, best electrical conductor, Heavily chrome plated, plated spring. Fits all standard base $\frac{3}{8}$ "-24 thread mobile antennas. Protect your antenna from theft or damage. Only \$3.00 postpaid. Colam Products, Box 262, Winnetka, Illinois.

Heathkit owners! Double reception! SK-4 preselector mounts inside GW-12. SK-3 preselector inconspicuously mounts outside GW-10, GW-11. Either kit, \$8.99; wired \$11.99. DP-2 coupler-duplexer kit \$4.99. Free kit list. **HOLSTROM ASSOCIATES, P.O. Box 8640, Sacramento 22, California.**

NEW Speech clipper-kit complete \$17.85! Also install our Dual conversion adapter kit in easy-to kit form. Hear only the channel you tune. Enjoy better selectivity, greater sensitivity. All parts, schematic, pictorial complete, HE-15, A; TR-800, 910; etc. \$14.95, with tubes \$16.95. HE-20, A, B, C; Mark VII; 770, 1, 2; Messenger; \$15.50, with tubes \$17.50. GW-10 etc.; HE-15B; TR-910B; \$15.75, with tubes \$17.75, or \$5.00 deposit plus C.O.D. Order Now! Free descriptive literature. Write Dept. "S" Bainbridge Radio Electronics, 2649 Bainbridge Ave., New York 58, N. Y.

GLOSSY 3-color QSL cards 100—\$4.50. Free samples. Rutgers Vari-Typing Service, 7 Fairfield Road, Somerset, New Jersey.

CB QSL Cards 2 color glossy, 100 for \$2.50. Samples dime. Ramsbottom printing, Box 237 A, Kirksville, Missouri.

**NEED CRYSTALS ???
IN A HURRY ???**



- We have Petersen in **STOCK**
- Individually Packaged
- Fresh, New Stock
- All Channels

Please specify equipment type, channel, and "Receive" or "Transmit" with your order.
Only 2.95 each—Be sure where you are . . .
Use PR. Send check or M.O. to Amatronics, Inc.,
Service Dept., 9146 Lefferts Blvd.,
Richmond Hill 18, N. Y.

19Q1872 **CB CALL SIGNS**

Order your call in neat 2 inch die cut letters with base. Just right for your fixed and mobile stations. Letters $\frac{3}{32}$ " show-card stock. Base: Select quality wood.
Price \$1.00 Postpaid

NEW PRODUCTS Dept. C
Box 481 Grand Haven, Mich.

Hy-Gain "TOPPER"

Top-loaded Stainless Steel Whip

For Mobile Citizens Band Antennas

Exclusive top-loading design is an important advancement in automotive whips. Since 78% of radiation is from bottom half of whip and 22% from top half, the least compromise comes from loading at top, rather than at bottom. This outstanding feature in the Hy-Gain "Topper" raises radiating portion of whip to highest point and increases resistance to 52 ohms... no matching. Only 50 inches high, the Hy-Gain "Topper" can be mounted higher on vehicle, increasing superiority of performance. The "Topper" is ruggedly built. Top loading design utilizes a slim polyethylene enclosed coil capsule, permanently sealed to top portion of stainless steel whip. The "Topper" is completely impervious to any weather condition.

Four models are available for a variety of mounting arrangements:

- TLW-M: with chrome plated single hole, top mounting body mount..... **\$14.90 LIST**
- TLWT-M: identical to TLW-M but in three sections for telescoping down to 28"..... **\$14.90 LIST**
- TLW: with standard $\frac{3}{8}$ " x 24 threaded base stud for use with adaptive mounts.... **\$11.60 LIST**
- TLW-T: identical to TLW but in three sections for telescoping down to 28"..... **\$12.00 LIST**

ONLY THE HY-GAIN TOPPER CAN OFFER THIS OPTIMUM TRANSFER OF ENERGY

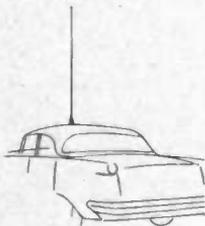
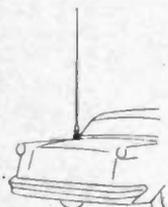
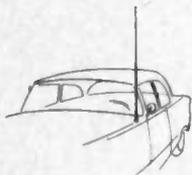
Hy-Gain offers a complete line of CB antennas and accessories

- W-102: 102" continuous taper stainless steel whip with $\frac{3}{8}$ " x 24 threaded stud.... **\$7.25 LIST**
- CMR: base loaded rooftop whip with mount and solderless connector..... **\$14.95 LIST**
- BSW: cadmium plated split ball, spring and 102" tapered stainless steel whip..... **\$14.95 LIST**
- CPR: Original Hy-Gain design for coupling CB tranceiver and AM receiver for simultaneous use..... **\$14.95 LIST**

See the complete line of mobile antennas, body mounts and accessories at your favorite CB supplier or write for full descriptive literature

Hy-gain ANTENNA PRODUCTS

8404 NE Highway Six Lincoln, Nebraska



NEW

Hy-gain

GOLDEN COLINEAR

Iridite-treated Ground Plane for Citizens Band

The only C.B. gain antenna built to rigid commercial specs.

Doubles effective radiated power in all directions

These new features make a great product... superior in every respect.

- Entire antenna, metal tubing and parts are iridite-treated to Mil. Specs. for maximum resistance to rust and corrosion.
- Heavy wall aluminum alloy tubing with injection-molded fibreglas filled styron insulators.
- Heavy steel fittings and rugged construction provide an antenna guaranteed to withstand winds of 100 m.p.h.
- DC ground... drains static and reduces noise ... adds lightning protection.
- The Golden Colinear consists of a $\frac{1}{2}$ wave length radiator over a ground plane which provides a second $\frac{1}{2}$ wave length mirror image. Because of their extended lengths, these elements develop an omni-directional gain of 3.4db field intensity.
- Up to 20db gain in signal to noise ratio.

LIST PRICE
MODEL GCLR

\$93⁰⁰

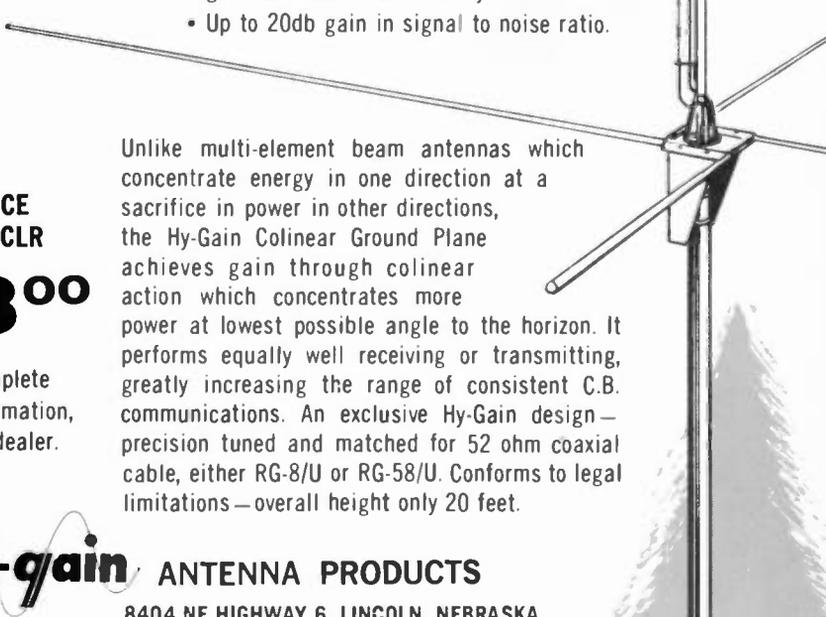
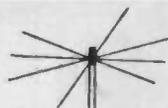
Send for complete technical information, or see your dealer.

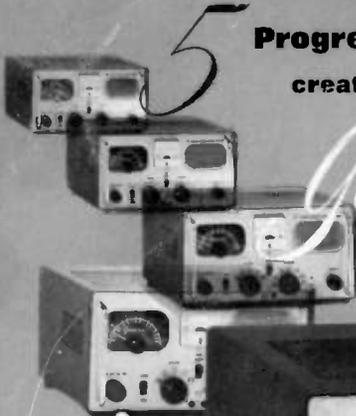
Unlike multi-element beam antennas which concentrate energy in one direction at a sacrifice in power in other directions, the Hy-Gain Colinear Ground Plane achieves gain through colinear action which concentrates more power at lowest possible angle to the horizon. It performs equally well receiving or transmitting, greatly increasing the range of consistent C.B. communications. An exclusive Hy-Gain design—precision tuned and matched for 52 ohm coaxial cable, either RG-8/U or RG-58/U. Conforms to legal limitations—overall height only 20 feet.

Hy-gain

ANTENNA PRODUCTS

8404 NE HIGHWAY 6, LINCOLN, NEBRASKA





**5 Progressive Technical Advances
created the**

General MC5



FREE!
Write for
schematic
and complete
technical
manual



The World's most advanced 11 meter two-way radio

- 3.25 watts minimum output. • High level modulation transformer for unparalleled talk power. • New Zener Diode shunt noise-clamp and series gated limiter circuit for highest noise limiting ever achieved. • New ultra-low drift oscillators for unsurpassed stability.
- New Hi-level Tone-Signal. • Illuminated "S" Meter.
- 6V, 12V, 115V operation. • 15 watt construction.
- Net Price including microphone and crystal... \$199.95.

Optional accessories available. 6 Volt or 12 Volt cord, each \$4.95. Crystal T or R, each \$2.95. 90 day warranty. F.O.B. Burbank, California.

General's Model 615
Multi Function Bridge



The only single precision instrument that measures True Power, Standing Wave Ratio, Relative Field Strength, Net Price \$39.95. F.O.B. Burbank, California. **FREE**—Write for schematic and complete technical manual.

Under present rules part 19.32 the FCC does not provide for more than five (5) watt input in the Citizens Radio Service (26.965-27.225 MC Band)

General

Your dealer or write:

RADIOTELEPHONE COMPANY
Dept. S11, 3501 Burbank Boulevard, Burbank, California

59
300 West 43rd Street
New York 36, N. Y.

Controlled Circulation Postage Paid at New York, N. Y.



POSTMASTER: SEND FORM 3579 TO: 59, 300 WEST 43rd STREET, NEW YORK 36, N. Y.