CONFESSIONS OF A CLASS B CB'er—P. 9

S9

SEPTEMBER 1963

50¢

the citizens band journal

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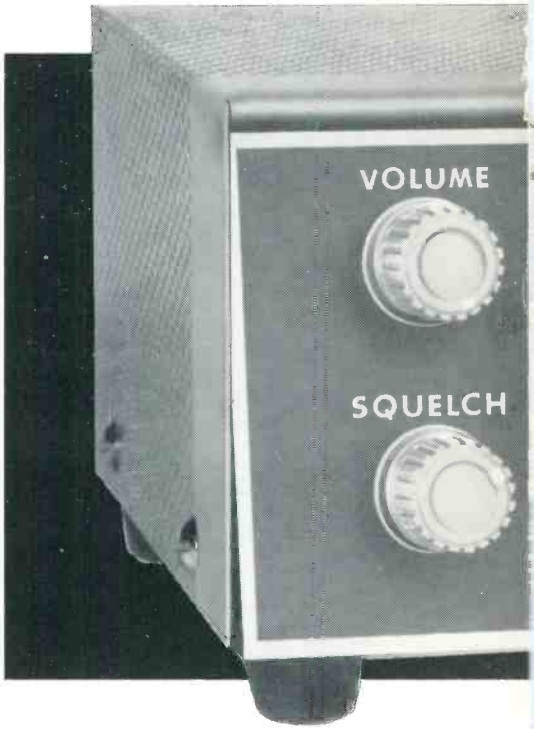

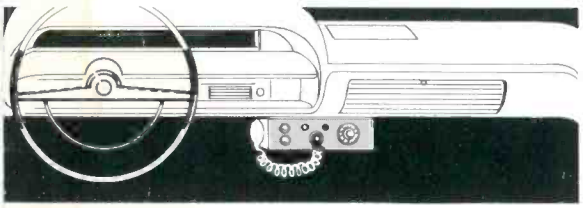

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S9
the citizens band journal

Vol. 3, No. 3

S. R. COWAN, PUBLISHER

September, 1963

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

FEATURES

DEPARTMENTS

STAFF

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Subscription form between pages 48 and 49!

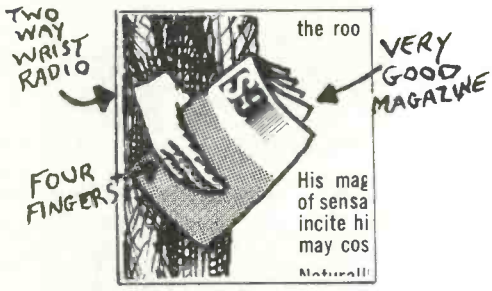
READER MAIL

FINGERLESS

Editor S9:

Your "Quiet, Skinny" man in last month's subscription ad (page 17) is just too much. Why does he have only four fingers on one hand?

Robert Dempster, 14W2192
Seattle, Wash.



He wore it off pointing out the many reasons why you should subscribe to S9.

NOT CRICKET

Dear Tom,

"It just ain't cricket," as the ol' saying goes. That, in a nut shell, is what I think about the FCC's Docket 14507 (license fees).

Why should we CB'ers have to pay such a large amount of the license fees? I agree with you 100%, something should be done to reduce them a little. I am sure that other CB'ers feel the same and we may, through enough letters, cut it down a little. I'm sure that most of them feel the same as I do; I don't mind paying a fee, but not one of that amount.

In my opinion, the FCC is trying to get rid of the Citizens Radio Service. They do not want to come right out and take it away from us so they will charge so much for the license that no one will pay for it. I believe that if we all stick together they will give way to a failure.

Like I previously stated, we wouldn't mind paying about the same amount as Hams. But paying twice as much . . . "that just ain't chicket."

Don Huntley, KDD1522
Bat Cave, N. C.

Dear Sir,

With reference to your July editorial on CB license fees, I agree with you. CB is authorized with ½ of 1% of the power of a Ham station, yet we will be paying two times the amount a Ham operator pays for his license. This is out of proportion and should be brought into line.

How can the FCC impose this tax without Congressional approval? I always thought that taxes had to be approved by Congress before they were legal. If they are going to charge for a license, they should at least have the fees more in line. They are always trying to squeeze the small operator who must buy his equipment and then pay an outrageous fee for the privilege of operating it. I had always understood that the "airwaves" belonged to the public.

I am a constant user of CB and I am also interested in Ham radio. I would be willing to pay a reasonable fee for the license but the price they have on a CB license now is far too much. Ham radio operators are not allowed to make even 1¢ from the operation of their stations, yet even they will be charged for a license. CB radio operators will be in the same position, only CB'ers are permitted to use their stations in conjunction for business. We find ourselves in the position of paying the highest price-per-watt of any radio service governed by the FCC, and also having the most stringent regulations being set up to be imposed upon us.

I'm happy to see that S9 had the courage to come out against this latest FCC proposal. Where is everyone else?

Virlyn Duncan, 6Q1350
Dutton, Ala.

I don't know, Virlyn. Reader response to our news of this FCC proposal was surprisingly small compared to the magnitude of its possible results.

PART 15 VS. CLASS C CB

Editor:

I have read the "Model Comment" in the July S9, the letter from the radio control model enthusiast who called all Part 15 users "damn fools." I think that the author of the letter is looking for an argument, not a solution to "peaceful coexistence." He probably won't get either.

I've operated Part 15 regularly, even long before I received my Class D license and was always able to avoid friction (maybe I was just lucky). I have also helped Class C radio control operators and don't see why everyone can't get along, since we'll have to put up with each other anyway, according to the regulations.

George J. Masciarelli, KBC2762/N-1269
Clinton, Mass.

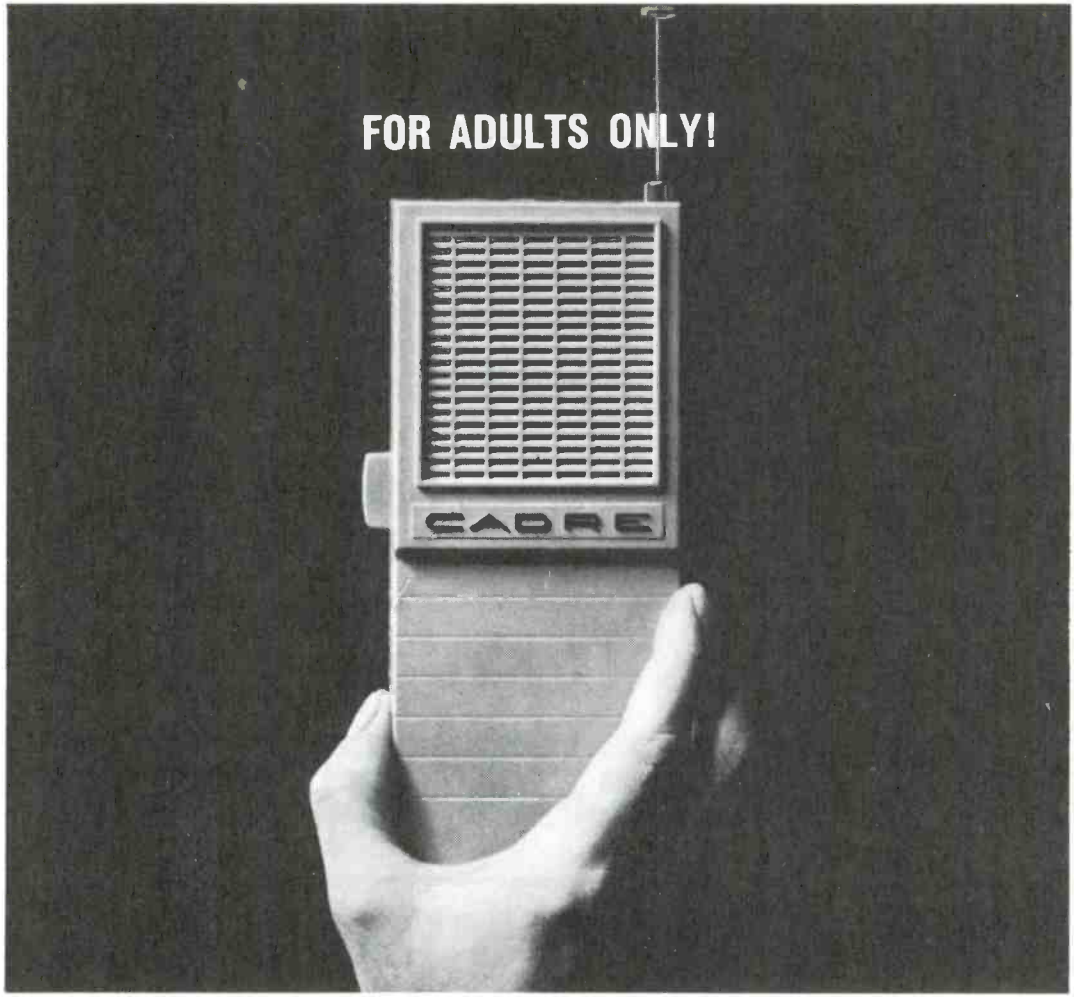
MORE "HOTFOOT" FLAMES

Dear Mr. Kneitel,

Recently I read your editorial "Untimely Hotfoot" (June S9) about anti-FCC clubs.

May I say that I am in complete agreement with your thoughts regarding the proper approach in dealing with the FCC. To me, the only guide that will be used by the FCC in formulating new and revised regulations dealing with the Citizens Band

Continued on page 59



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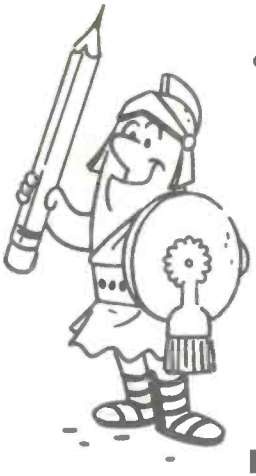

editorial

KBG4303 rides again!

by TOM KNEITEL
EDITOR, S9

INTERVIEW WITH A CB EDITOR

We can't get to each and every CB jamboree and convention, although we show up at as many as time will permit. Here are the questions which are most often asked at the conventions, together with our candid off-the-cuff opinions on each. If we weren't able to dig your particular jamboree this summer, hope that this will answer the question(s) on your mind.

Will the "new" Part 19 contain provisions for "hobby" use of CB?

No one knows for certain. My personal opinion is that the FCC may not *officially* create "hobby" CB channels, but might tolerate a certain amount of non-obnoxious "hobby" use on certain "inter-station" channels. At one time there was a pretty good chance for one or two "hobby" CB channels, however extremist pressure groups have stuck too many barbs in Commission officials to have them look favorably on their pleas.

What are S9's views on so-called "National" CB organizations?

S9 feels that there is a definite need for a good, strong, well organized, legitimate national organization which represents a cross section of CB'ers throughout the country. Up until now, none of the many so-called "national CB clubs" have achieved this stature, all seem to contain one or more flaws in their thinking, approach, or organization which had them doomed from the start. Frequently we hear these groups compare themselves to the hams' American Radio Relay League. This is an invalid comparison.

The ARRL is a group which is representative of a truly national membership with officers being drawn from each part of the country. Ham operators, because of the fact that they are permitted to speak to each other from Maine to California, have made wide personal reputations for themselves across the country. Most occupants of a particular ham band seem to know each other pretty well after even a few months of operation—even though the operators may never have met personally.

CB, on the other hand, has created many great local friendships and "heroes," because the (legal) contacts on the band are local in area and limited in scope. As a result, the local "heroes" are usually unknown outside of their own club or county. CB has not generated very many "national hero" types.

As a result, every local club feels that the world revolves around itself. When they affiliate with a "national" club they want it on their own terms, they want their own fair haired boy in an important spot, the local members do not want to vote some guy they never heard of into a national office when they have "their own" to take care of.

Therefore, unless the situation in CB changes greatly, it would not seem very probable that the raw ingredients for a truly national organization are going to be available in CB. The present system is for organizers of the "national club" to ram their own men down the members' throats for officers, and is most unsuitable. Naturally, only the "organization's men" are given any

Continued on page 57

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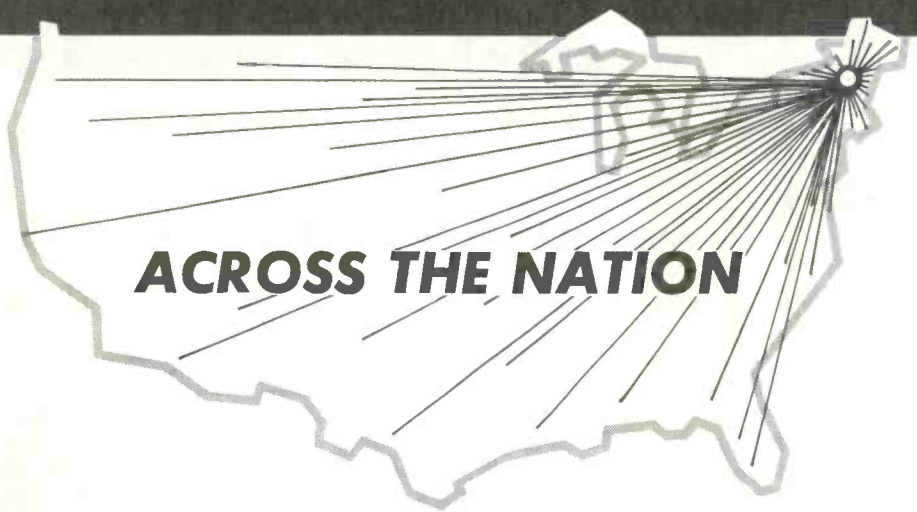

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CONFESSIONS OF A CLASS B CB'ER!

ODD ANTICS ON THE "OTHER" CITIZENS BAND

by DAVID SMITH, 18W2754/18W1168

I suppose the highwater mark of my career as 18W2754, scourge of the Citizens Band, was the night energy from the Stoner rig was thrown into one end of a length of twin lead while the TV was still connected to the other, but I shall speak here of some of the more harmless activities conducted as 18W-1168, which might (or might not) interest the FCC if they happened to do a little snooping up at 465 megacycles. It is on (or near) this frequency that I have had some of my most interesting and memorable RF experiences. Before we go another wavelength, however, let's take a look at the real meat of the matter—the 465 megacycle Citizens Band, and a pair of Vocaline 465 mc. transceivers.

465 mc. is a strange land where radio waves refuse to go around corners or over hills but love to bounce off the sides of buildings or the bottoms of water towers. A wavelength is only 2 feet long, and you could pick up a 60 DB gain antenna system with one hand. Little ground plane antennas fed with RG-58/U are the vogue, and power outputs of a watt or less are generally the rule. You can drive through the heart of a great city like St. Louis or even New York and never hear a soul, but just try to transmit from a hotel room and other souls will hear you.

In the mid 1950's, the Vocaline Radio Corporation put a little 465 mc. transceiver on the market and although the price was plenty high in light of today's performance standards, it was low enough at that time to attract quite a few buyers. The unit is seen in fig. #1 along with one of the available accessories—a ground plane antenna designed for external mounting in base station applications (although the ground plane was also suggested by the company for use in mobile installations). The transmitter section has an RF output of ⅓ of one watt which will just light a dial lamp when the latter is touched to the tip of one of the stick antennas. The receiver section has a noise figure of about 20 DB, so it can be seen, at least in retrospect, that even hoping for a range of ten miles or so was stretching things a bit. However, back in those days we were relatively blind to the ways of the ethereal environs, so I ordered a pair of the now battle scarred units, and at last they came.

I suppose the postman might have been well into the next block by the time a friend of mine and I had the little jewels out of their boxes and set up in or more accurately, on, our respective sets of wheels—he on his motorcycle, and myself in the car. V-8 and 2-cycle engines were started and away we

went, straight north and straight south. It was perhaps a full half minute before each of us came to an abrupt halt, and with blank stares toward the speaker cones we wondered, "Now where did *he* go?" Yes, Class B CB was certainly over estimated as to range. "Why heck," we thought, "as far as range is concerned, we could do better with a tin can telephone!" "Or by yelling." Or so it seemed at least, and so for a long while the units were banished to exile in a very dark corner of an equally dark upstairs closet.

Meanwhile, an interesting series of experiments was underway in the car. This involved a newly installed power converter and a tape recorder. After the converter was rigged up, it took exactly one evening to discover how much fun house-power on wheels could be, and we proceeded to use the converter to accomplish myriad forms of mischief. Traffic on Main Street stopped to stare as we swept manhole covers with a noisy vacumn cleaner. We projected home movies on the screen at the drive in theater during intermission. And, best of all perhaps, we collected sounds with the tape recorded—sounds sometimes heretofore unknown to science, like the noise of a loose tailpipe while crossing railroad tracks at 60 miles an hour.

I suppose it was with thoughts of sound collection planted somewhere in the subconscious that the Vocalines were finally brought out of hiding and set up on the workbench. A realization had slowly dawned that perhaps sheer distance wasn't the only flavor at Howard Johnsons. There were others: short range reliability, clarity and quality of sound reproduction, freedom from interference, and, best of all, the all-important lack of need for connecting wires. Need we hint more?

The first recording involving the Vocalines was that of the Go-Kart races in 1958. Go-Karts had just been invented and the fad was raging. The car was parked across the street from the track leaving the tape recorder and one of the Vocalines locked inside, both units running of course, and we headed for the track on foot with the other unit which ran from a motorcycle battery carefully packed in an old army knapsack. By some miracle the battery lasted the duration of the race, and by an equally great miracle the car battery had just enough poop to start the engine upon our return. It didn't take long to realize we had a gem of a recording which, in its edited form, is a real masterpiece. The Vocaline link had performed flawlessly. The sound quality was excellent, limited only by the roar from some 20 unmuffled Go-Kart engines. The signal strength had held up even when the extreme end of the track put a quarter of a mile plus two bleachers loaded with spectators between us and the car. Incidentally, for this recording the unit in the car was set up with one of the ground plane antennas clamped to the top of the car's BC antenna with the cable led in through the driver's wing window which easily shut due to the small diameter of RG-58/U. The hand-carried unit taken trackside used its own little stick antenna, nothing more, and in later recordings we sometimes used the stick antennas at both ends rather than to fiddle with the ground plane at the car. In such cases the Vocaline was merely hung up by its carrying strap over the rear view mirror above the dash panel. Even with the car locked the 465 mc. signals seem to cut right through the windows with no appreciable loss, and having the unit complete with its antenna enclosed within the car has the effect of riding the reception of ignition blasting from passing automobiles. Just why is somewhat of a mystery, but that's the way it works at 465.

After the grand success of the Go-Kart race, the Vocalines were repeatedly pressed into service as a radio link between the recorder and the scene of action. There were recordings from the top of the Ferris wheel, from the merry-go-round, from under a back seat in a buddy's car as he drove through the country with his girl, and at one point we even had plans to lock one of the units into transmit and send it and the battery pack aloft in a huge box kite. However, having thought of the reportedly ill effects suffered by a radio transceiver after high velocity impact (in case something goofed) this idea was never carried out, although the plans for the kite are still on the workbench.

Last winter, on a memorable and very cold, windy night, the record span of distance was achieved after several weeks of tinkering. A friend had one unit set up by his bed with the ground plane outside the window on a fishing pole fastened to the side of the house, and we had been talking every morning upon waking before breakfast. One night we decided to make a run for distance, so the other unit was mobiled off to an elevated railroad crossing some four miles away. The unit was simply held up on the driver's window ledge, and we could hear each other beeping and whistling. This is the greatest distance ever covered with the two units, and at that time the unit in the car was getting about 130 volts from the converter.

The photograph shows the Go-Kart mobile set up last summer. Pat, WN9EHM on the ham bands, is at the wheel, and the RG-58/U leading to the ground plane can be seen crossing his right shoulder. The CTP is clamped to the tip of the Kart's roll bar and is a bit hard to see. The Vocaline itself is situated in a wood holder constructed specially for the purpose, and this can be seen between the driver's feet just back of the front wheels. The setup worked fine with no ill effects from vibration, although Pat did have a time holding the mike, pressing the transmit button and keeping control of the Go-Kart all at the same time! The Kart, by the way, can hit 35 miles an hour or better.

Plans for the future call for construction of a beam for 465 and a special converter for the SX-99 by Tapetone. Who knows, maybe we can get ten miles yet! Suggestions anyone?

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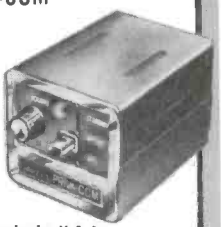

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- With Bracket Handle, Push-to-Talk Ceramic Mike, Transmit and Receive Crystals for Channel 15 plus Crystal for Dual Conversion

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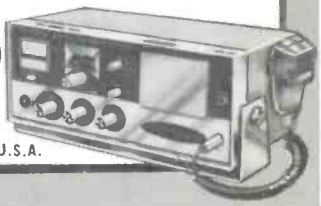

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THE THINKING MAN'S 'SCOPE

COVER STORY

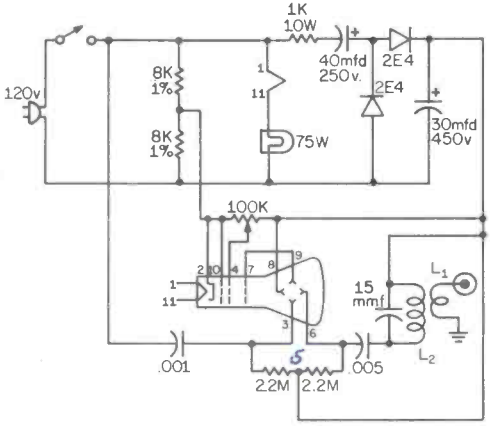
A SUPER SIMPLE 'SCOPE, DEVOID OF EXTRAS AND FRILLS

by ALTON E. GLAZIER, 12W0420

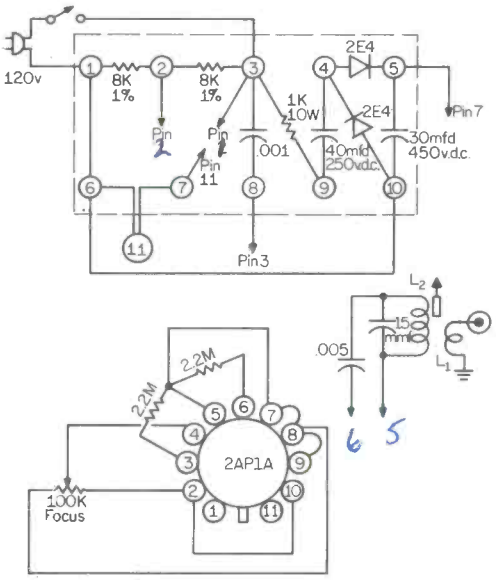
Here is a scope devoid of all unnecessary frills. It has *one* purpose—that of modulation monitoring. This circuit is not a rehash that can be found in most radio handbooks. Modern components have been combined with simple design to bring a practical scope to all serious-minded CB'ers.

ABOUT THE SCOPE

In order to increase sensitivity so that the scope can be used on low-power transmitters, the voltage was purposely kept quite low, but high enough to give a proper amount of illumination. In increasing the sensitivity of the scope it was found mandatory to dispense with any form of transformer. This is a two-fold blessing. First, it eliminates magnetic field distortion; and two, allows the scope to be built in a case 5" x 9½" x 3".



Schematic of the Thinking Man's 'Scope. The cathode ray tube is a 2AP1A.



Physical layout of the Miller #450 terminal board is shown in the top illustration. The bottom illustration shows the prysical connections to the pins of the CRT. Note that Pin 5 of the CRT is not connected to the workings of the tube and is used only as a tie point.

It has been found most radio operators of commercial equipment are reluctant to make any changes in their equipment, so it was decided to use a wave envelope pattern. Therefore, the only thing necessary to get a pattern is a small pickup coil placed near the final tank coil. The scope has a sixty-cycle sweep incorporated in it. The construction of the scope is quite simple, for most of the parts are mounted on a terminal board (Miller #450).

One word of caution. Follow the parts lay-

out as nearly as possible, for although the space is adequate, it is not generous. After the parts are mounted, and the leads are connected, lay aside.

TERMINAL BOARD ASSEMBLY

You will note that the Miller board #450 has eight pairs of terminals; however, for the sake of simplicity, the diagram shows only five pairs. Do not use those terminals which are grounded to the legs. As a matter of fact, there are no ground connections made to the chassis except the one shown as L1.

For ease of construction, the diagram terminals have been marked one through ten. Be sure to note the direction of the diodes. Keep all parts tight to the board, and none protruding from the edges. To make it easy to bolt the board on the side of the chassis, solder a 6/32 brass nut to each leg of the board. This board is positioned as follows: With the chassis upside down, and the front panel toward you, the terminal board is mounted on the left side wall as far to the rear as possible. (In other words, the 110 AC power cord passes through the ⅜" grommet on the rear panel and then between the side wall and the terminal board.) Proceed as follows:

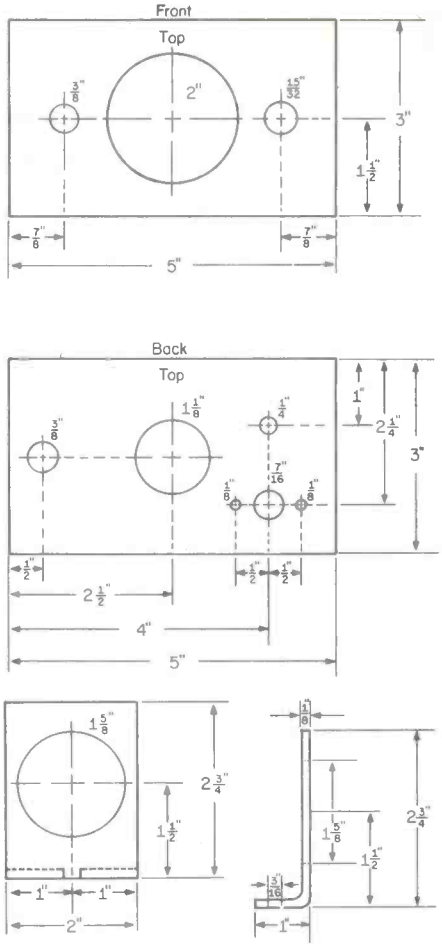
Mount a rubber grommet in the ⅜" hole (for power cord).

PARTS LIST

1 SP ST toggle switch
2 8K, 1%, resistors, 1 watt
2 2.2 Megohm ¼ watt resistors
1 1K resistor, 10 watt
1 100K potentiometer
1 50 Mfd. condenser, Sprague TVA 1414
1 30 Mfd. condenser, Sprauge TVA 1711
1 .001 ceramic 600 volts
1 .005 ceramic 600 volts
1 15 Mmf ceramic 600 volts
2 2E4, or practically any diode which has a 400 PIV
1 Amphenol 78R511 socket
1 5 x 9½ x 3 chassis, Wyco CA 2007 or equivalent
1 5 x 9½ bottom plate
1 #2AP1A Amphenol tube socket
1 #2AP1A tube (902 or 2BP1 with appropriate socket is satisfactory)
1 terminal board, Miller #450
1 Motorola jack

Coils

L-1 2 turns #29 plastic covered wire, wound over L-2 on end away from terminals
L-2 10 turns #20 enameled wire, close wound, on form #22A000RB (Miller)



Dimensions of the cabinet for the 'scope.

Mount female plug (Amphenol #78R511).

Mount Motorola jack.

Mount the tuned circuit coil (Miller #22A000RB1) plus 15 mmf and .005 capacitor.

Fasten one end of the pickup coil L-1 to the Motorola jack, the other end to a ground lug held by one of the bolts on the jack. Now mount the 110 volt switch and the focus potentiometer with three colored wires, 10" long, twisted together, to the inside of the front panel.

Mount the tube socket on its L-shaped bracket with the key pointing down toward the base. Now mount the 2.2 megohm resistors and fasten wires to pin.

Mount the board to the side of the case. Be sure to feed power cord through grommet

on back panel before mounting board down. Solder free end of power cord to switch on front panel. The other terminal of the switch is connected to pin #3 on the terminal board.

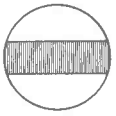
Connect the leads from the terminal board to the female Amphenol socket of the back panel, and also to the tube socket. Do not bolt the tube socket in place, but allow it to rest face down with the pins up. After the leads are connected, tilt the socket bracket up and bolt.

Connect one end of coil L-2 to pin #5 on socket. The .005 capacitor is connected to pin #6 on socket.

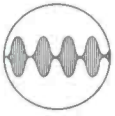
TESTING PROCEDURE

Your scope is now ready for testing, the procedure for which is as follows: Plug into the rear socket (Amphenol #78R511, a 75 watt light globe. This is the dropping resistor for the filament. The light can be used for an "on-the-air" sign or desk lamp. For those who prefer to keep it small, a resistor may be used (180 ohm, 75 watt) mounted to the back panel by brackets.

Snap on switch on front panel and allow time for the heater to warm up. If you have followed directions, a green horizontal line will appear. Focus for sharp line. Note position of horizontal line, and if necessary, rotate tube.



Carrier Only

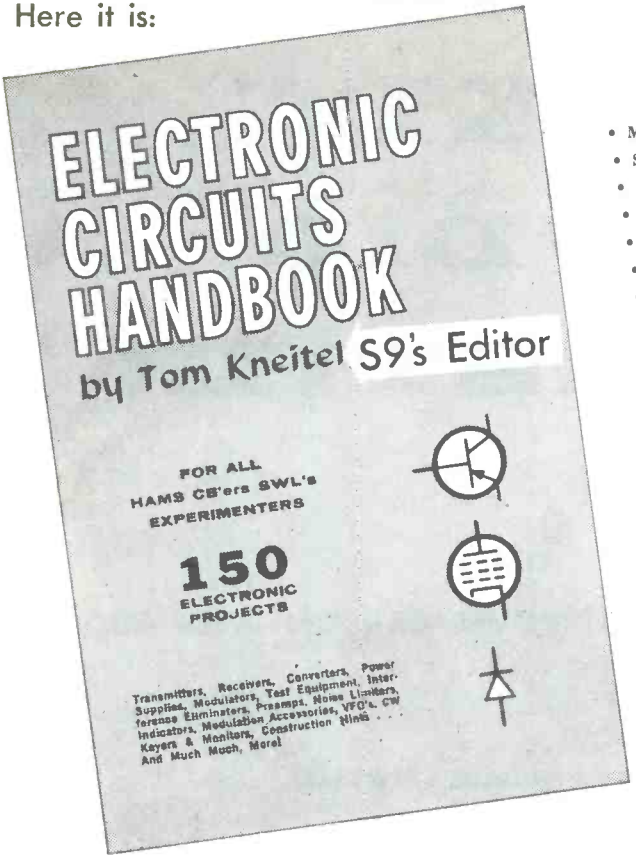


100% Modulation

Plug in coaxial line to Motorola jack. On opposite end of cable, have two-turn pickup coil the same diameter as your final. As coil is moved near final, the scope pattern will widen. Peak coil L-2 by rotating slug on back of panel. (Peaking in this instance means tuning for widest pattern on screen.) Once peaked, no further adjustment is necessary. The pickup coil near the final may be moved in or out until the pattern is ½" wide. When speaking into the mircophone, a pattern such as shown in the illustration will form. Remember, as you approach 100% modulation, the constrictions will come quite close together. If you go over 100%, there will be bright spots at the center line. This causes splatter, a loss of power and an increase in band width, which is illegal.

YOU ASKED FOR IT!

Here it is:



Here's just a sample of what you'll find in its chapters:

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- Speech Compressors
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- Walkie Talkie
- 2 Watt CB Transmitter
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- Line-Noise Filters
- TVI Filters
- Mobile Unit Burglar Alarm
- Schematic Symbols Chart

Here is the book we've all been waiting for! By "Mr. CB" himself, S9's Editor, Tom Kneitel, KBG4303. Tom has compiled a book which presents and discusses in detail 150 of the most often needed circuits around the shack. Beginners, old timers, Hams, and experimenters will find many valuable circuits for construction projects. There's even a chapter which tells how to make all construction projects "a snap." Here's a book which is a MUST for each and every CB'er, written by the leading authority on the subject! Get yours NOW!

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THE "XXD" AUDIO BLASTER

OBSCURE TYPE "XXD" TUBE IMPROVES CARBON MIKE AUDIO

by STEPHEN DEDALUS, 12W5415

A long-forgotten tube was extracted from the "guts" of a similarly long-forgotten Philco table model receiver. What to do with it was the problem, for nothing goes to waste in the CB shack here, especially when it is acquired at the bargain price of $0.00 (a neighbor was tossing the receiver into the incinerator several minutes before the set was added to the collection here). In fact, all parts used in the two circuits shown here were scrounged from the old chassis and the "junk box," but you can, nevertheless, get all parts "store bought" if your junk box is sparsely filled or non-existent.

The tube salvaged from the Philco set was a type "XXD," which our tube manual said was a lock-in duotriode amplifier. *Amplifier, eh?* Here was a possible chance to soup-up the modulation on my carbon mike equipped CB rig.

A little tinkering and we had the circuit shown in Fig. 1, which has the tube connected as a grounded-grid amplifier with the mike receiving its needed operating voltages from the XXD's cathode current. The XXD circuit was hooked to the low

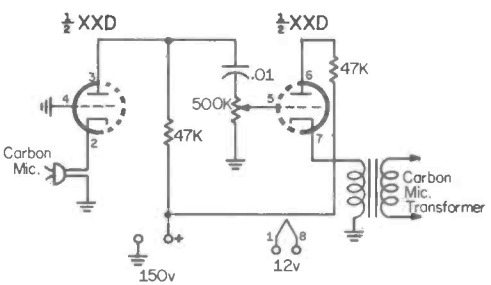

Fig. 1. Circuit of the "XXD Audio Blaster" used to add "talk power" to a carbon mike IB rig.

impedance winding of the CB rig's existing carbon mike transformer. Results were very good, audio quality was considerably improved and we were quite content with our work of art. The 500K pot varies the audio gain.

Several months later we decided to go "all out" and buy a brand new ceramic mike for the station. In a maximum effort to make use of the faithful XXD "Audio Blaster" the modified circuit shown in Fig. 2 was whipped up. Of course, the audio quality of the ceramic mike is normally better than that of a carbon mike, so we weren't really *shocked* when everyone began commenting on the greatly improved audio at the station here, but we certainly were pleased to know that the XXD proved to be a workable way of running the new ceramic mike into the "carbon mike rig." Can't see any reason why the circuit (Fig. 2) wouldn't work fine and dandy with a crystal mike too.

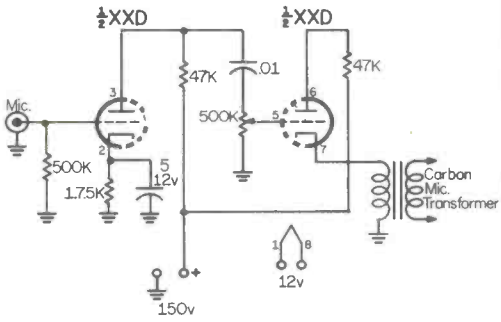

Fig. 2. The "XXD Audio Blaster" modified to convert a ceramic mike for use with a carbon mike CB rig.

Eventually we were beseiged by some of the local "carbon mike stations" to construct several other "XXD Audio Blasters" for use on their respective transmitters. There was a horrified gasp when we couldn't find this obscure little tube listed in the catalogues of the major mail-order radio supply houses. Some research rewarded us with the information that the lovable XXD has an alias now and is available from all tube supply sources under the name "14AF7" or "14AF7/XXD." The tube requires a "loctal" socket, such as an Amphenol 88-8X (about 25¢). The tube itself goes for approximately $3.10.

Subscription form between pages 48 and 49!

PART 15 CALLBOOK

We will be keeping this on a constantly revolving basis, calling on each call area every few months to bring it up to date with the latest additions. If you subscribe to S9 you will be assured of having a complete Part 15 callbook as we have no plans at present to issue these calls in one single volume.

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565-566	I.Snow, 501 E. Keasey, So. Bend, Ind.	A,B
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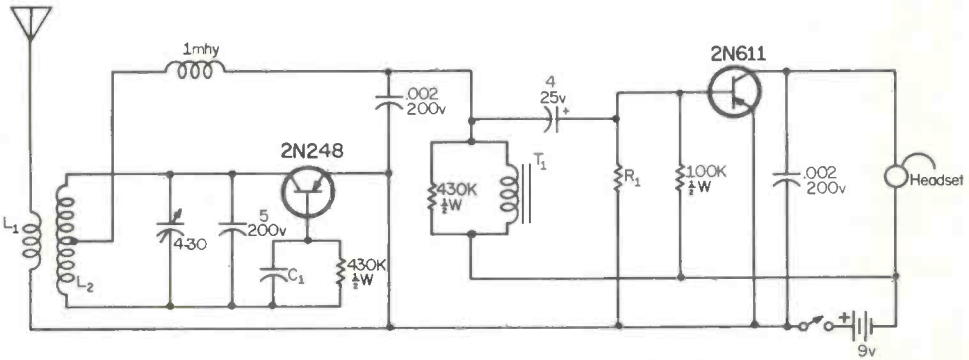


Here's the ultimate in simplicity; yet providing complete receiving facilities for 11 meters, 10 meters, 6 meters, and the industrial-emergency communications band which lies between 30 and 50 mc/s.

Constructed in a castaway plastic box, the unit will tune entire 27 to 55 mc/s range, with optimum results being obtained on the various bands by using antennas roughly ½-wavelength. Here are suggested lengths for the different bands covered:

CB	– 9 feet
10 Meters	– 8 feet
Indust.-Emerg.	– 6½ feet
6 Meters	– 5 feet

Coil L_2 consists of 12 turns of No. 14 tinned copper wire, one-half inch in diameter. This coil is spacewound, center tapped, and mounted in a horizontal position. The antenna is connected to L_2 by means of L_1 which is a 1 turn link of No. 26 insulated wire interwound at the collector end of L_2. Some manipulating of L_1 on L_2 will be necessary to find the coupling which will develop the best signal.

The 2N611 transistor can be substituted with a 2N324, 2N61, 2N192, 2N362, CK872, 2N59, 2N320, Semitronics AT-30H, Workman B5 and B5A types. The type of transistor used will govern the exact value of R_1, although you can start out with a 274K, ½-watt resistor and move up or down as necessary from that point. C_1 may also need some varying, depending on the type of audio transistor selected. Start out with a Cornell Dubilier type 5T51 (510 mmfd., 500 v.).

Transformer, T_1, is a UTC type SSO-5, a "Sub-subouncer" with a rating of 50 hys., 4400 ohms.

Adequate reception is provided over a 1000 ohm headset, such as C. F. Cannon Co's "Cannonball" type AM-15-1.

Reception will be surprisingly good. Happy listening!

S9 STRIKES BACK!

You may have heard that, in some states and cities, it is strictly VERBOTEN to have a shortwave radio receiver in a car.

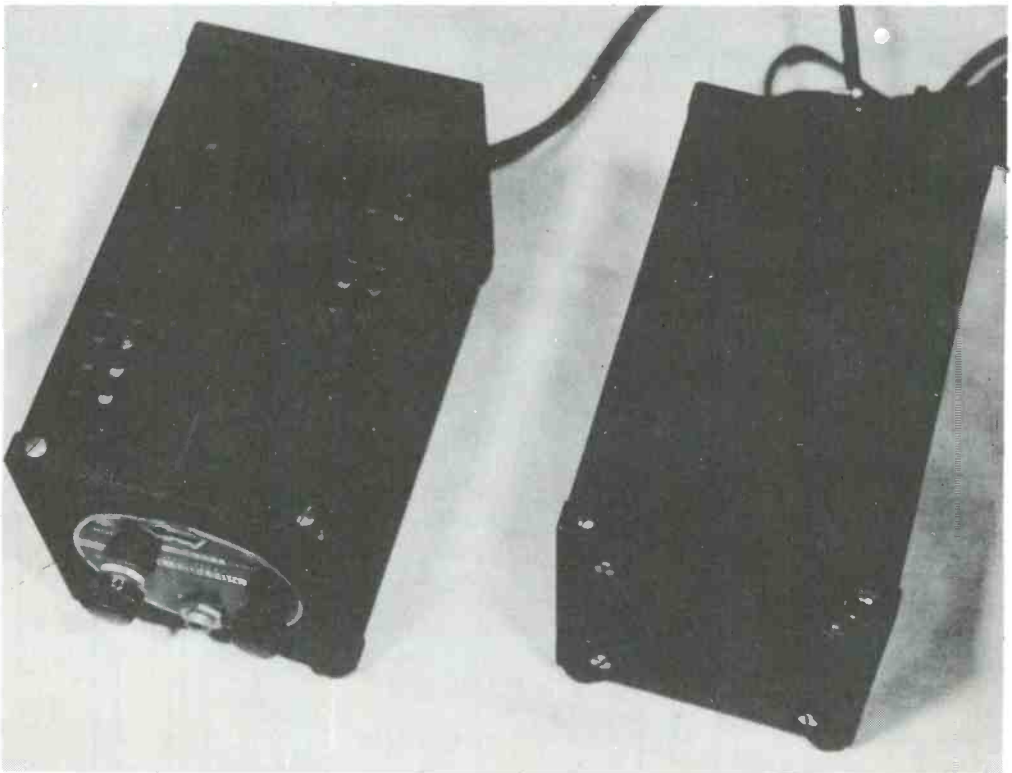
S9 has received many requests from readers for something which they can show to police officers who stop them on the highways and ask, "What's the antenna for?" Apparently, the FCC CB license and the Form 542-C aren't enough for some of the minions of the law, who require a 30 minute explanation of CB radio before they let you pass. This is especially true in rural areas.

S9 strikes back! Here's our answer, explanatory window cards. Cut one from the magazine, paste it in your window with some plastic tape. Possibly you can rubber-band it to your sun visor.

SIMPLE MODIFICATION OF A MILITARY SURPLUS UNIT GIVES YOU 24-HOUR WEATHER FORECASTS

THE WEATHER-AID

PART I



Do you ever wonder what goes on below the standard AM broadcast band? Did you ever wish for an inexpensive way of being kept up-to-date on the weather? If so, this project is for you.

The little BC-1206-C receiver, being designed for 24 volts DC is like most war-surplus equipment in that it is well-built, cheap to buy, but not worth a hoot for anything as it stands. With a little conversion it can be made into a swell 12-volt low-frequency receiver for use in your mobile unit, or a 117-volt AC receiver for home or office use. Its tuning range, 200 to 400 kc., covers frequencies assigned to aeronautical and maritime radionavigation. In addition to getting useful weather information, you will find that the ground-wave DX on these frequencies is phenomenal (and fascinating).

The Simplest AC Conversion

Fig. 1 shows the converted AC model, with matching power supply and speaker built into the cabinet of another BC-1206-C. The original unit as received looks just like the left-hand box in Fig. 1. For reference purposes, a schematic diagram drawn from the original set is shown in Fig. 2. The schematic in Fig. 3 shows the circuit converted for AC operation. The 14H7 tubes have been replaced with 7B7's or 7C7's the 14J7 with a 7A8, the 14R7 with a 7C6, and the 28D7

Subscription form between pages 48 and 49!

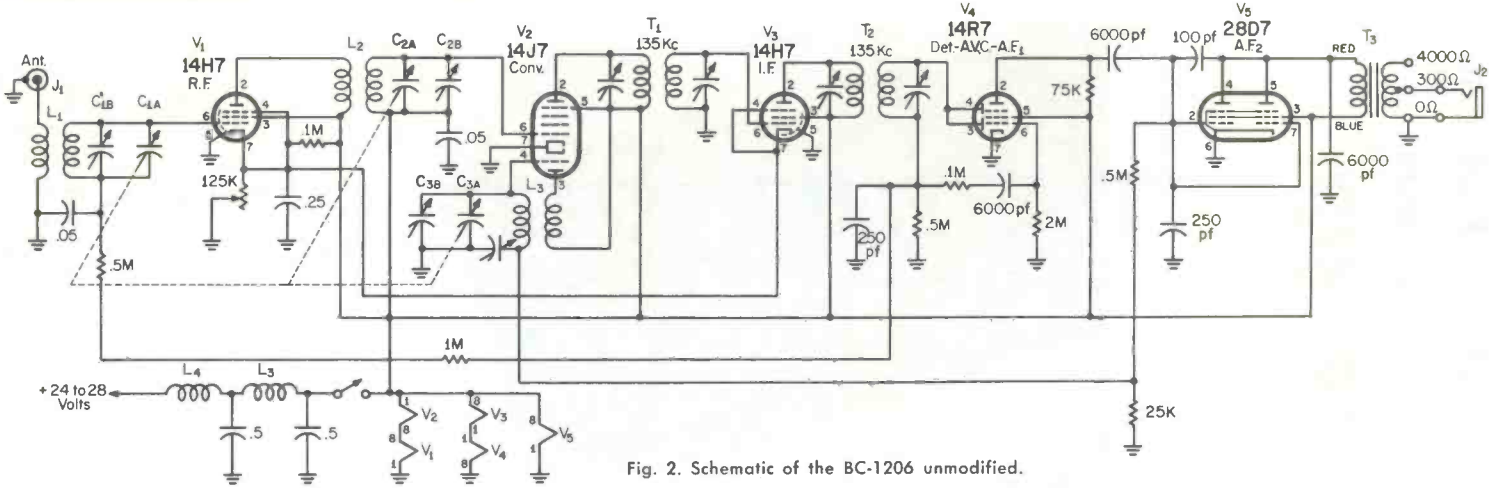


Fig. 2. Schematic of the BC-1206 unmodified.

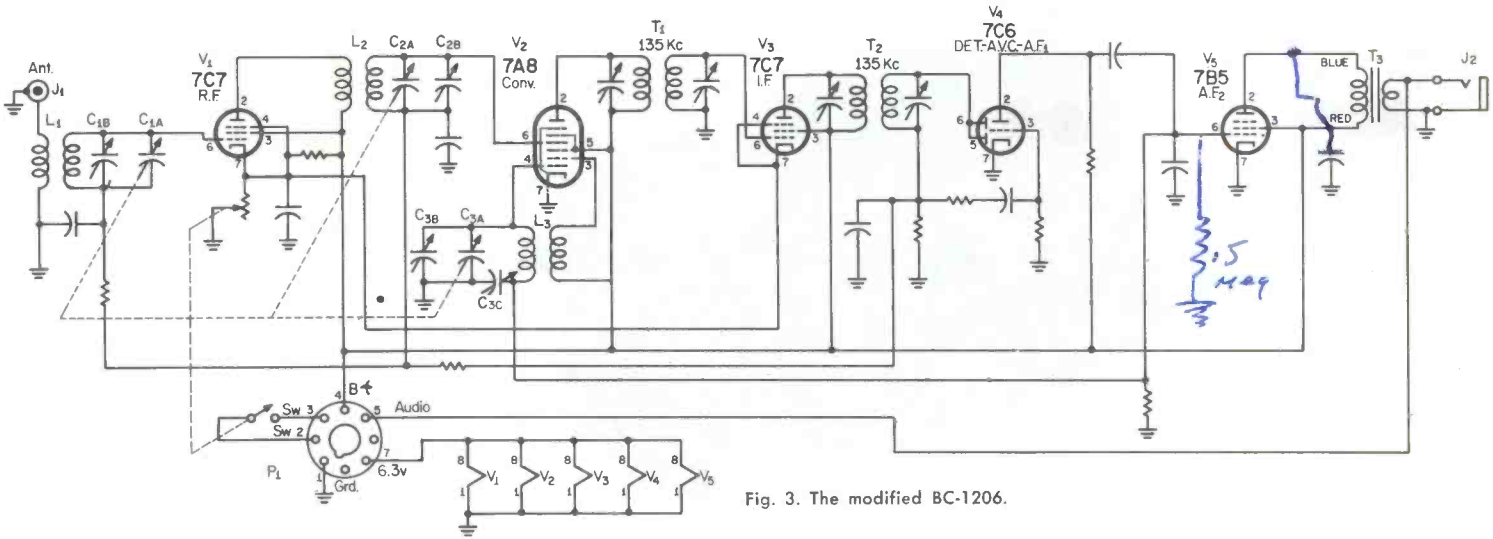


Fig. 3. The modified BC-1206.

with a 7B5. The output transformer T_3 has been replaced with a Thordarson-Meissner 24S52 to match the 7B5 to the 3.2 ohm loudspeaker (the BC-1206 was originally intended for headphones), and a 6-wire cable and octal plug have been added to connect to the power supply and speaker unit.

Internal wiring changes are minor, involving only the rewiring of the heater circuit and some of the connections to the sockets of the last two stages, V_4 and V_5. Realignment is not absolutely necessary, although if you have the necessary equipment (a signal generator which goes down to 135 kc. and an AC voltmeter or VTVM), you might get a bit more sensitivity and selectivity out of it by touching it up. Detailed alignment procedure is given in Part II. In removing the few wires necessary from the sockets, be careful not to break the socket lugs, as they are fragile, the wire is solid, and the joints are well wrapped.

The AC power supply doesn't have to be built in a BC-1206-C case, but it makes a very attractive pair of matched units if it is, the cost is not high, and the parts removed may be saved for spares. The schematic of

PARTS LIST

- $C_{4A,B}$ dual 20-40 uf., 150 v. electrolytic condenser
- C_5 0.01 uf disc ceramic condenser
- D_1 Silicon diode, "Top-Hat" type
- J_3 octal tube socket
- LS_1 3" PM speaker
- P_1 octal plug or tube base
- T_3 7000-ohm to VC output transformer; Thordarson T-M 24S52
- T_4 Miniature power transformer, 120 v. @ 40 ma., 6.3 v. @ 1 amp.; Thordarson 21F08
- V_1, V_3 7B7 or 7C7 tubes
- V_2 7A8 tube
- V_4 7C6 tube
- V_5 7B5 tube
- 1 BC-1206-C receiver in good condition (war Surplus)*
- 1 BC-1206-C receiver may be in poor condition; for cabinet only (War Surplus); or 1-metal box of similar dimensions
- 2 ft. 6-conductor #20 cable
- 1 3-¾" sq. grille cloth
- 1 3-¾" sq. screen wire
- 1 3-¾" sq., 3/32" thick cardboard Asst'd screws, nuts, solder, wire, etc. Parts not numbered in schematic or referred to in text or parts list are contained in the BC-1206-C as purchased

* BC-1206-C units are generally available from most large surplus supply houses. See if you can get one without the tubes because you'll be replacing the original tubes anyway. The average price for the BC-1206-C units (without tubes) is $6 new and $3 used. The following companies usually stock BC-1206-C units:

G & G Radio Supply, 77 Leonard St., New York, N. Y.
J. J. Glass, 1624 S. Main, Los Angeles, Calif.
Columbia Electronics, 4365 W. Pico, Los Angeles, Calif.
Selectronics, 1206 S. Napa, Philadephia, Pa.
Bill Slep, Ellenton, Fla.
Jefftronics, 4791 Memphis Avenue, Cleveland, Ohio
John Meshna, 21 Allerton, Lynn, Mass.

These companies should also be able to supply you with inexpensive surplus military tubes of the types required for this conversion.

the power supply is shown in Fig. 4. A miniature power transformer T_4, delivering 120 volts at 40 ma. and 6.3 volts at 1 amp. feeds a half-wave silicon rectifier circuit, filtered by the original output transformer, whose primary serves as a chock, and a dual 20-40 uf., 150 v. electrolytic condenser. The primary circuit is fed through the power cable to the switch on the volume control of the BC-1206-C. A 3" PM speaker is mounted on the front panel behind a piece of grille cloth for appearance, a piece of screen wire for protection of the cone, and a cardboard shim. More than adequate loudspeaker volume is obtained, even with only a 5-foot test lead as the antenna. For best DX reception, an outdoor antenna should be used (50 feet is plenty).

The chassis to be used for the power supply should be stripped of all its parts except the 4-lug terminal strip on the underside and the

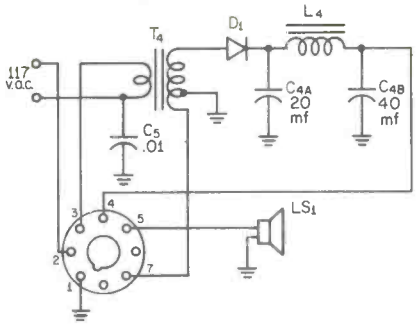


Fig. 4. The power supply for the BC-1206 "Weatheraid."

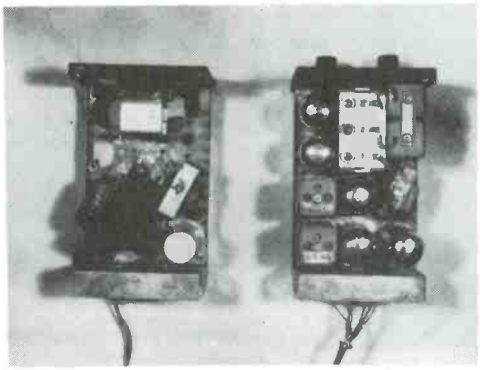


Fig. 5. Top view of the parts mounted on the BC-1206 and power supply.

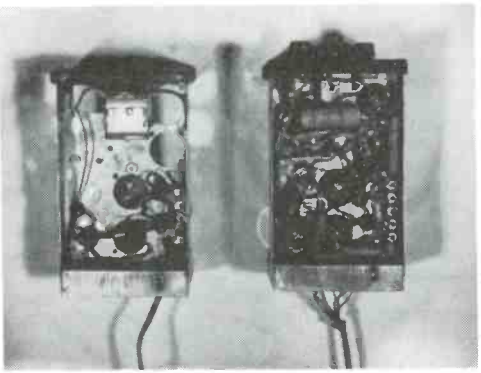


Fig. 6. Bottom view of 1206 and P.S.

output transformer, the primary of which is to be used as the filter choke L_4.

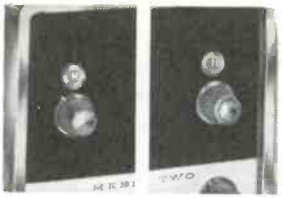
Fig. 5, an interior view, shows how the parts are mounted on the chassis. The filter condenser, $C_{4A,B}$, is mounted in the hole formerly occupied by the 28D7 tube socket; the power transformer covers most of the

Continued on page 59

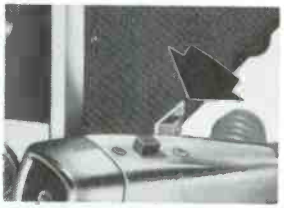
When experience counts, it's S9 every time!

Now! With Tunable Receiver and 10-Channel Crystal Control!

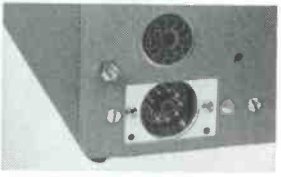
MESSENGER TWO



AT LEFT—Illuminated indicator and selector knob for crystal control.
AT RIGHT—Illuminated indicator and knob for tunable channel selection.



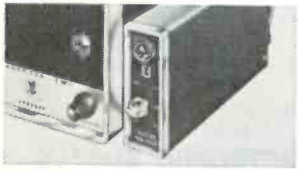
SLIDE SWITCH for selection of either crystal or tunable receiver control.



ACCESSORY SOCKET on rear panel (above power cord receptacle) for instant attachment of "Tone Alert"

High efficiency noise limiter—Excellent sensitivity! High adjacent channel rejection!

Everything you've ever wanted in a CB transceiver!



"TONE ALERT" SELECTIVE CALLING SYSTEM

Mutes speakers until one unit calls another—then automatically your stations receive audio note and indicator light flashes "on", remaining lighted until call is answered. Not a kit, ready to go! Plugs into "Messenger Two", fast hook-up to other transceivers!

Sharp selectivity guards against annoying random triggering. Wide range of tones permits 37 different systems to operate on same channel without overlap. Only 1½" x 4" x 7¾"—wired and tested.

Cat. No. 250-810
115 VAC and 6 VDC
Cat. No. 250-811
115 VAC and 12 VDC
$59.95 NET

Available now—the new version of the popular "Messenger Two"! Pick any one of 10 channels for crystal controlled "transmit" or "receive"—instantly switch to all-channel tunable "receive" with handy slide switch. Channel indicators illuminate for either "crystal" or "tunable" settings—also serve as "off-on" indicators! Highly efficient circuit design makes full use of maximum legal power . . . delivers a penetrating signal that "outperforms 'em all!" Looking for maximum receiver sensitivity? This unit is hot—pulls in signals you wouldn't know were around with less sensitive equipment! New noise limiter circuit in the "Messenger Two" lets you know what QUIET really means in a CB rig! Positive acting "squelch" and automatic volume control circuits—push-to-talk microphone—crystals for 1 channel. 5⅝" x 7" x 11⅜", installs anywhere.

Cat. No. 242-162 . . . 115 VAC and 6 VDC
Cat. No. 242-163 . . . 115 VAC and 12 VDC
$169.95 NET

NEW! 4-color BROCHURE. Write for your free copy today!

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MANUFACTURERS OF THE WORLD'S MOST WIDELY USED PERSONAL COMMUNICATIONS TRANSMITTERS

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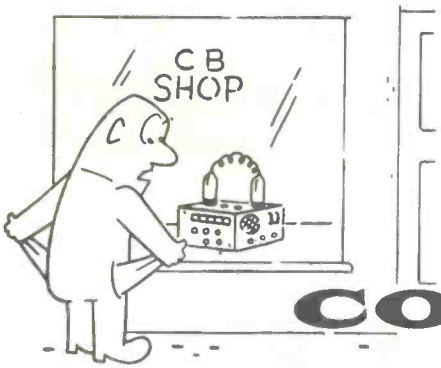


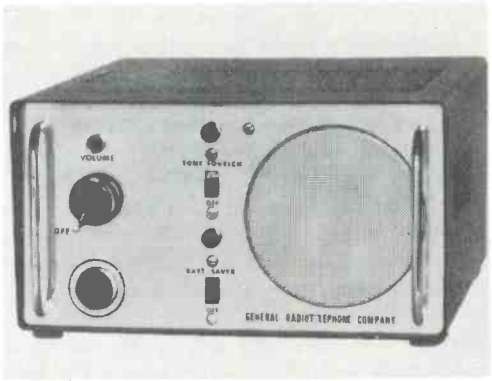
ON THE COUNTERS

Hey, here's a new CB rig—a sidebander, no less! In fact, it's even called the "Side-Bander," by its manufacturer, Olson Electronics, Inc., 260 South Forge St., Akron 8, Ohio. This new transceiver is equipped for full 23 channel operation (crystals and all). The transmission mode is double sideband with reduced carrier, and push-pull modulation.

The fully metered transmitter has a 10 watt P.E.P. modulation capability and pi-network output to match 30-75 ohm antennas. Two dual function meters monitor strength of receiving and transmitting signals, plate voltage to final tube and current to final tube. Double conversion receiver has half-a-microvolt sensitivity for 10 DB signal-to-noise ratio. Has adjustable squelch and noise limiter. Power supply operates from 117VAC and 12VDC. The unit sells for $219.95.

GC Electronics of Rockford, Ill., recently announced their No. 65-525 magnetic microphone holder. A nice feature of the device is that it does not have to be permanently mounted; this means that it can be relocated time and time again on any metal surface. It has a 12 pound holding capacity so you won't have any worries about the holder un-holding when you drive over a bump. For 99¢ it is one of CB's unbeatable bargains.

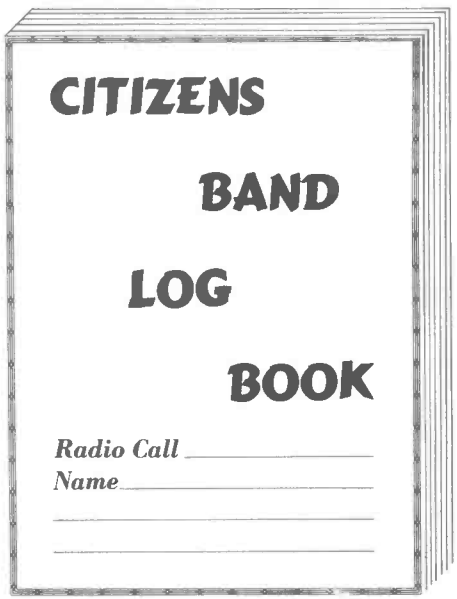
Texas Crystals has purchased the U.S. Crystal Company in Los Angeles and has transferred their Chicago operations to the Los Angeles location. The plant in Ft. Myers, Florida, will continue to serve the eastern portions of the country.



General Radiotelephone Corp., 3501 West Burbank Blvd., Burbank, Calif., has brought out a 60 watt VHF FM transmitter, the FM-120. This unit features a dual power supply (115VAC/12VDC and ultra-compact (4½" x 8½" x 10½") construction. The FM-120 is suitable for the business-industrial services.

How about International Crystal's new remote control console? Have you seen it? This is a device which is as compact and small as the most minute transistorized CB rig. The difference is, of course, is that it isn't a rig at all, just a control head for a Model 50 or 100 EXECUTIVE rig. This permits trunk mounting of the EXECUTIVE with all control functions being taken over by the console which is easily and inconspicuously mounted beneath the dashboard of your vehicle. The Model RMO-9 is for 9 channel operation, the RMO-1 is for single channel operation. Uncle George at International Crystal (18 North Lee, Oklahoma City, Okla.) will send you some interesting specs on this unit, plus their wild, wild catalogue and information on the EXECUTIVE 1500 (which is causing a minor sensation) if you send him a card and tell him you're an S9'er.

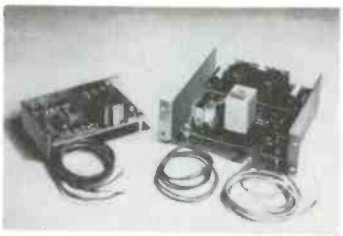
Here's something for nothing (if you own a registered e.c.i. Courier rig). The manufacturer of the Courier has come up with a nifty BIG window sticker in sharp red, white and blue which boldly states that the vehicle is "Courier equipped." The sticker measures 4¾" wide and over 4" high and is on heavy transparent plastic with stickum on one side (it goes on the inside of your window). If you own a Courier and have your warranty card on file with the manufacturer (if you bought your Courier used you won't have this) you can get the sticker FREE by contacting e.c.i. and giving them the serial number of your rig. If you don't have a card on file, or don't have a Courier, you can obtain a sticker for only 25¢. The company address is 325 North MacQuesten Parkway, Mt. Vernon, N. Y. Send!



Here's a good idea for those personal or business users of CB who must keep a record of their transmissions, it's a CB log book. This one runs 30 pages with 38 list-

ing spaces per page, it has a Mead Leatherright cover, and a reprint of the S9 1964 call area map. Sells for only a buck from Carolina Camera Publishers, P.O. Box 1728, Wilmington, N. C., 28402.

Grove Electronic Supply, 4115 W. Belmont Avenue, Chicago 41, Ill., is doing a pretty generous thing. They're actually *giving away* this amazing new catalogue, 64 pages of the durndest buys on CB mikes, antennas, and accessories. And here's a little inside information: Grove is coming out with a whole new line (and a complete one, too) of CB jazz, and if you get on their mailing list now you will be among the first to hear about it.



Dynacoustic Laboratories, Inc., 2543 Grove St., Berkeley 4, Calif., announces a series of compact, fully transistorized encoders and decoders suitable for CB and other types of communications. Typical use in CB would be as a tone call squelch for selective calling. A versatile design and small physical size permits internal mounting in most communications equipment. Further information is available from the manufacturer.

Lafayette Radio, Dept. S9-I-3, P.O. Box 10, Syosset, L. I., N. Y. came up with a dilly this month, their HE-98 communications receiver for the rapidly growing band of CB'ers who like to monitor the police,

emergency and business radio bands between 30 and 50 megacycles. This is an 8 tube rig featuring squelch and a built in 5" speaker. Sells for $59.95. They also have a model HE-99 for reception of these services in the 154 to 174 megacycle band. This is a most exciting hobby, and these sets are of the most inexpensive methods of doing it that we've yet seen.

TOM

KBG 4303

S-9 MAGAZINE

The Apollo Type Company, 222 65th St., Brooklyn 4, N. Y., tells us that they are in production of CB name badges for a number of the clubs in the New York metropolitan area. Because of the large volume of business they have been able to turn out these badges in a number of colors, with pin backs, for very low rates when supplying in bulk to clubs. Have your club drop a note to fellow CB'er Angelo Pollicino, 2A3563, at the company for prices, samples, details. They look nice.

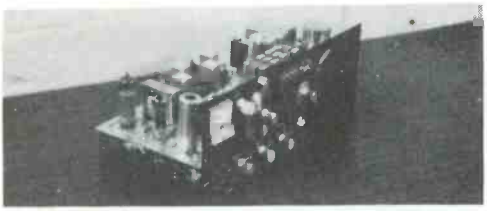
S9 Lab Reports

THE e.c.i. COURIER 1M

The advent of the Courier 1M by *e.c.i.* Electronic Communications, Inc., 325 No. MacQuesten Parkway, Mt. Vernon, New York, is well in keeping with this manufacturers of high standards of quality and pace-setting advances in the CB industry today, as evidenced by some startling innovations incorporated into this unit.

Has this ever happened to you? You are on channel 7 calling your unit 2. He responds, although weakly . . . copy is getting rough. A car goes by and blankets him out. You call him again; more noise on the channel—the local boys are on. You call again; nothing. After a fashion you finally succeed

Subscription form between pages 48 and 49!



Front view of the Courier 1M transceiver. The controls are, to row l. to r.: S meter-RF output meter switch, RF gain, lighted tuneable receiver dial, pilot lamp, transmit channel switch. Bottom row: noise limiter, variable squelch, off-on and volume, fixed channel receiver selector, and push-to-talk microphone fitting.

in making contact, only to have him relate that he's been hearing you "one hundred percent." You know the rest. . . . If this sounds all too familiar to you, we seriously suggest your looking into the Courier 1M.

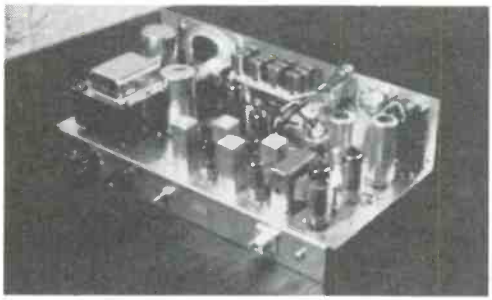
Using eleven tubes (with 16 tube performance) the Courier 1M operates from 110 volts AC and 12 volts DC, making available immediate mobile installation through use of a built-in vibrator supply.

The receiver section of the transceiver is *supremely* selective and unusually sensitive, with both a tunable section (covering channels 1-23) and fixed channel switch, enabling immediate selection of any four channels. No receiver crystals are necessary here —a screwdriver adjustment (that can be made without removing the unit from the case) is all that is required to set the channels! But, perhaps most important, is the noise limiter—a simple slide switch on the front panel which is of a surprisingly effective nature, making this unit as the manufacturer claims, truly the "quietest." This self-limiting gate type noise limiter is capable of reducing even the most disturbing noises to zero, lifting signals to that "armchair copy" level we all enjoy so much. Images are just non-existent. A variable squelch is controllable from the front panel enabling you to completely silence the receiver except when a strong signal comes on. It can be adjusted so that only one level will break in while all others disappear. Another innovation is the RF gain control which permits you to effectively cut down any strong signal to the point where he comes through clearly and without distortion. Result? An overload-proof receiver.

Selectivity (the ability to separate nearby signals) is very sharp, so much so, in fact,

that you can even pull the weaker of two stations on the same channel through clearly! Tunable calibration is accurate to the extent that you'll find yourself being asked for on-channel frequency checks. An illuminated S-meter is provided enabling measurement of signal intensity for checks, etc. Another slide switch converts this meter to a relative power output instrument. When the switch is in the S-meter position, depressing the mike button injecting the push-to-talk mechanism will register a marked increase on the meter when the receiver is tuned on your transmitting channel. Hence, we have a unique spotting arrangement here which proves most useful when calling a station on another channel. You *know* you're on frequency.

The transmitter power input is 5 watts with (according to manufacturers specifications) *more* than 3 watts output. High level plate modulation is incorporated into the Courier allowing 100% modulation at all times. A pi-network transfers maximum output from the 6EM5 final tube to the antenna. A special trap is included here to prevent harmonic radiation into TV Channel 2. The Courier 1M will accept any



Rear view of the Courier 1M by e.c.i. On the rear apron, l. to r.: power plug connection, fuse, S meter adjustment and coax antenna connector. Four IF cans in the foreground are part of the triple conversion circuitry. Crystals can be seen in the right center along the front panel.

52-72 ohm unbalanced line and antenna system, which takes in all the antennas on the market today.

PERFORMANCE

This transceiver was checked at here under real torture-test conditions. At this writing, the 1M has been running steadily for four days (never having been shut off). Communication is being maintained over distances of 40 miles with 100% readability. It has not overheated and it is still as stable as it was fresh from the packing box. Re-

ceiver calibration has remained dependable and accurate. It has been used in the mobile, performing with the same consistency as it does base. Nothing seems to jar the receiver off channel. Traveling even the worst unpaved roads, the Courier 1M remains cool and comfortable, due to its rugged construction. Plugging crystals in and out is an easy job, as only two thumb screws have to be removed to gain access to the interior. Measured power output here was 3.65 watts, indicating extremely efficient design by the manufacturer.

The Courier 1M features unique construction with five individually hand wired sections mounted on a single chassis. This chassis is arranged for track mounting for front removal. The finish is cadmium plated with the ventilated cabinet of luxurious chrome plated steel. Constructional design was definitely planned with the mobileer in mind, as the 1M consumes only a few inches of footroom when mounted under the dash.

We feel the Courier 1M by e.c.i. at $229.50 will provide its owner with exceptional performance for many years.

THE e.c.i. PORT-A-LAB

This is rather a unique type of instrument because it combines the best features of several pieces of handy CB station checking gear.

Hear what the *e.c.i.* Port-A-Lab can accomplish: It reads SWR, it measures your CB rigs RF power output within a 5% accuracy (and will measure Ham rigs up to 50 watts with a 10% accuracy), it will indicate your percentage of modulation, it lets you listen to your own modulation through a pair of high impedance earphones, it is a field strength meter, and (whew!) it's also a dummy load.

Continued on page 61

Read Len Haas' Column "CB In Action," PAGE 38

PART 15 KORNER

by DEAN DETTON, NORTHERN 17

% S9 MAGAZINE
300 WEST 43 ST.
NEW YORK 36, N. Y.

Part 15 activity has picked up with the increase in summertime skip on 11 meters. For example, WESTERN 3 through 10 are experimental stations set up in Oklahoma City by George Beyers of International Crystal. George is running an EXECUTIVE 1500 with these stations and has them on Channels A through H whenever the band opens for skip. A recorded message requests that anyone hearing the transmissions drop a report to George. Sure enough, we understand that George has received QSL's from across the nation. See, it takes only 100 milliwatts to "get out" during a band opening!

The increased activity has brought forth a whole slew of Part 15 QSL cards this month, which we are running here. Send yours in, the other Part 15 operators would like to see it.

ATLANTIC 410, Bill Harrison, 2020 Olga Avenue, Nashville, Tenn., asks us to let you know he monitors Channel A on the hour, starting at 7 P.M. CST. He would like to set up some DX skeds and start a local Part 15 net. Contact Bill via Part 15, land line or mail. Bill's Part 15 QSL is a nifty black and orange job and is well worth having. He is a member of the Nashville Hundred Milliwatters Club.

ATLANTIC 67, J. Mark Comer, 207 Missionary Drive, Decatur, Ga., stands by on Channel 16. Mark can really pull in the DX on his Hammarlund BC-779 receiver (that's a World War II version of the famous "Super Pro").

Got a note from Rich Larson, CENTRAL 1107, 1411 W. Palmer Avenue, Sioux City, Iowa. Rich wants to correspond with other Part 15'ers, either by "skip" or by mail. Richie's rig is the transmitter section of a hand-held unit which runs both fone and CW. His receiver is a Lafayette HE-20C with a ground plane. He monitors Channel 21, but can also operate on 1, 5, 6, 7, 9 and 11. He is currently constructing a Part 15 broadcast band transmitter.

John Frazier, 329 South Fleishel, Tyler, Texas, has built a Knight-Kit C-1000 and is getting together some of the local Part 15 gang to form a club.

John asks about a Part 15 callbook being issued. The *only* Part 15 callbook is the one which appears in installments each month in S9. There are no plans, at present, to issue an all encompassing callbook of these stations. In case you are trying to assemble a complete set, the callbook installments began in our February issue. Back issues are 50¢ each from the S9 Circulation Department.

Steven Budesly, NORTHERN 1281, 147 Morey Place, Greensburg, Pa., is on the air now with a Heath GW-31 and reports that there is *very heavy* Part 15 activity in his area with an actual Part 15 net in formation. They all monitor Channels 10 and 11

(Advertisement)

CB IN ACTION

By Len Haas,
Sales Manager,
Pearce-Simpson, KBG7527

NOISE PROBLEMS IN CB

There are few conditions that bother CB'ers more than noise. Turn up the squelch—cut down the signal sensitivity.

What causes this annoying racket on CB units? The atmosphere is filled with noise that covers the complete radio frequency spectrum. Much of this noise is caused by nature. Some of it is man made, for example—auto ignition systems, fluorescent lamps and any other devices from which sparks are produced.

This noise is picked up by the antenna and is fed into the receiver. Some noise reaches the receiver through the battery lead or power line at the base station. There are several actions which we can take to help solve the noise problem. A number of good filters are available, such as the Miller types 7813 and 7815, which will effectively filter a 117 volt AC line.

In cars and on boats, the storage battery also acts as a noise filter because of its low impedance. Noise can be further minimized by keeping the lead to the transceiver as short as possible.

Ignition systems, unfortunately, radiate noise—particularly at the CB frequencies. While nothing can be done about noise from other vehicles, you can do something about the interference your car transmits. There are several good ignition noise suppressor kits on the market ranging in price from $14 to the Hallet system, which is in a class by itself in the $50 bracket. These kits explain in detail how and where ignition noise can be suppressed. They cover everything from generator whine to regulator noise.

And finally we come to your basic CB unit. The manufacturer of your equipment designs the best noise limiter into the set which he can afford in his price range. As is the case with everything else, you get what you pay for!

With the help of an adequate noise suppressor system you will enjoy many a satisfying long range Q.S.O.

WIN A "COMPANION" CB. Keep sending in your "CB in Action" stories. There is another award coming up soon. Just send a quick note telling us how CB helped to make an important contribution to your community. If we select your story, you will receive a free "Companion" CB transceiver. Write Len Haas, Pearce-Simpson, Inc., 2295 N.W. 14th Street, Miami 35, Florida.

See you next month with a column on meters and how they work.

and they all read S9, so sayeth Steve.

NORTHERN 1970, E. Craig McKelvey, III, R.D. #3, Box 303, McKelvey Road, Ligonier, Pa. reports that he works the Part 15 channels after 6 P.M. each evening and that he is looking for skeds. He is trying to organize a "cross Pennsylvania net" so that messages can be relayed across the state via Part 15. According to Craig's letter, this net should be in operation by now. If you are interested in joining the net, get in touch with NORTHERN 1970. Craig adds, "I enjoy S9 so much that it's getting to the point that I'm always afraid that my local newsstand will goof up and miss out on an issue! Guess I'll have to subscribe to get some peace of mind!" We'll be glad to have you aboard, Craig, and we promise you more than peace of mind; we promise the best *piece* of CB magazine possible each month.

NORTHERN 660, Steve Albans, 250 Union Street, Millersburg, Pa., tells your reporter that he is presently modifying his Knight C-100 for CW and is going to run it into a *Heliwhip*. He is working on plans for an S meter. Steve says that his newsstand sells out of S9 pretty fast each month and that the March issues were gone when he got there on the 3rd of the month. We passed your letter along to the Circulation Department so that their strongarm men can come around to see your dealer about taking more copies.

We've saved what may be the best for last. We received word from George Eaton, CENTRAL 1598, Box H, Winnebago, Wisc. that his Part 15 club is sponsoring a Part 15 contest in 1964.

From the correspondence we have received, it looks as though the contest will run from January 1 to August 2, 1964 with a $50.00 cash prize going to the operator who works all states solely on Part 15, and another $100.00 for the operator who works the most Part 15 stations during this period.

It is the purpose of this contest to get the hobbyists off Class D and on to the Part 15 rigs to cut down on interference. We expect to have further information on this contest shortly and will pass it along to you.

So what's new with you? Let us hear from you with photos and data on your Part 15 station and operations. See you next month.

Subscription form between pages 48 and 49!

CARD SWAPPERS UNLIMITED

Last month we promised you a repeat of the rules and regulations for the 11 CB QSL swappers awards. First, here are the various awards which any CB'er can win:

SWAPPED ALL CALL AREAS AWARD "SACA"—Awarded upon proof of having swapped CB QSL cards with stations in all 24 CB call areas in the United States.

PREFIX AWARDS "PX-25," "PX-50," "PX-75," "PX-100"—Four separate awards given upon proof of having swapped CB QSL cards with 25, 50, 75, and 100 prefixes respectively. Canadian GRS and Part 15 cards are acceptable. Different prefixes assigned to one call area count separately, for example, 18A, 18B, 18Q, 18QA, 18W, KHA and KHC would count as 7 prefixes.

MASTER SWAPPER AWARD "MSA"—Awarded upon proof of having swapped CB QSL cards with 50 states, Puerto Rico, District of Columbia, all Canadian provinces.

SUPREME SWAPPER CLUB "SSC-1," "SSC-2," "SSC-3," "SSC-4," "SSC-5"—Five awards for having swapped CB QSL cards with 1,000, 2,000, 3,000, 4,000 and 5,000 stations, respectively. Foreign cards, as well as Part 15 cards are acceptable.

Next, here are the rules and regulations:

1. Cards received for actual 2-way contact with distant stations are *not* eligible because of the fact that such communications are illegal. Cards received from stations who have monitored your signals (but with whom you did not engage in communications) are *not* acceptable. Handmade cards are acceptable only if they are postmarked from the location of the station being counted, or are contained in an envelope so postmarked.

2. Do *not* send us your CB QSL card collection when applying for an award. To apply for an award, simply list the callsigns and locations of each station you are counting. Submit this, together with your full name, address, callsign, and the name of the award for which you are applying. Your list may be on any type of paper, however it *must* be countersigned by another licensed CB'er who certifies that he (or she) has actually seen the cards in question in your permanent possession. We reserve the right, in certain instances, to request that applicants send us several specific cards for verification purposes prior to issuance of an award. Such cards will be returned immediately.

3. Enclose 50¢ (no stamps) for each award being applied for. You may apply for as many awards as you can qualify, including awards of lesser magnitude (that is, if you qualify for PX-75, you may also receive PX-25 and PX-50 if you wish. Requests for duplicate or extra copies of a certificate should be accompanied by 25¢ for each.

4. Persons receiving swappers' awards will be listed in the next available issue of S9 after the issuance of the award(s).

5. All awards are attractively designed in 3 colors and are suitable for framing.

6. Additional awards for advanced achievements may be added at a later date. You are urged to list your awards when printing your next supply of CB QSL cards.

7. Additional copies of the award requirements and these rules are available from S9 at no cost. Please enclose a self-addressed stamped envelope.

8. All applications for awards *must* be addressed as follows: Swappers' Awards, S9 Magazine, 300 West 43rd Street, New York 36, N. Y.

This month's mailbag brings a note from Ed Grubgeld, KEJ0733, Solvang, Calif. Ed was listed in our June and August issues. He was so deluged with cards that he is fresh out of QSL's. He said that he will let us know when he's ready to be back in the swapping game. Also heard from Claus H. Colm, KBC0540, Rutland, Vt., who was listed as a swapper way back in May. Claus reports, "I'm still getting about 3-4 cards daily. Wish you'd mention that people should *stop* sending them until I save up some more money for postage."

The following swappers were processed for swappers awards this past month:

SACA 1. Ben Guthrie, KDB1435, Spruce Pine, N. C.

PX-25
1. Marc R. Joondeph, KDB9040, Ridgewood, N. J.
2. Everett Decker, 1W6216, Westfield, Mass.
3. Bob Schappert, 2Q4574, Armonk, N. Y.
4. Lee Aspinal, KBA8595, North Haven, Conn.
5. Fred Worley, KHA8997, New Goshen, Ind.
6. Earl Cogar, KHI4500, Bolair, W. Va.
7. William Jones, KBA8553, Putnam, Conn.
8. Bill Wilks, Hinton, W. Va.
9. Clifford Anderson, KJB0022, Anchorage, Alaska
10. John Anderson, Fulton, Ill.

PX-50
1. Marc R. Joondeph, KBG9040, Ridgewood, N. J.
2. Jay L. Ernette, KIC5239, Jeanette, Pa.
3. Seth Paull, 1W1717, Bristol, R. I.
4. Jerry Rathburn, KHH0407, Alexandria, Ohio
5. Everett Decker, 1W6216, Westfield, Mass.
6. Val J. Golding, KFC3808, San Francisco, Calif.
7. Bill Howell, Jr., KDB3071, Aiken, S. C.
8. Fred Worley, KHA8997, New Goshen, Ind.
9. Bill Wilks, Hinton, W. Va.
10. William Jones, KBA8553, Putnam, Conn.
11. Clifford Anderson, KJB0022, Anchorage, Alaska
12. John Anderson, Fulton, Ill.

PX-75
1. Everett Decker, 1W6216, Westfield, Mass.
2. James Hall KIC4696, Rochester, N. Y.

PX-100 1. Dan Guthrie, KDB1435, Spruce Pine, N. C.

MSA 1. Dan Guthrie, KDB1435, Spruce Pine, N. C.

SSC-1 1. Everett Decker, 1W6216, Westfield, Mass.

SSC-2 1. Dan Guthrie, KDB1435, Spruce Pine, N. C.

Here's the gang of swappers for this month:

1Q1764 Jay Metz, Box 142, Yantic, Conn.
1Q2032 Hugh Stacey, 13 Hudson St., Natick, Mass.
1Q3280 Frank Flood, 81 Prentice, Waltham, Mass.
1Q3477 Joe Perry, 311 Upland, New Bedford, Mass.
1Q4224 Delmas Hastey, 41 River, Houlton, Me.
1Q7098 Richard Larkin, Charlestown, R.I.
1W1619 Bob Gokey, 315 Riverside, Torrington, Conn.
1W4417 Ed Sternfelt, 32 High, Cambridge, Mass.
1W9494 Gary Sibulkin, 67 Trenton, Manchester, N.H.
2A4358 Joseph Mohr, 348 Morton, Rahway, N.J.
2A4918 Dick Aiken, Box 282 Rd. 4, Troy, N.Y.
2Q0602 Arthur Hamm, Church St., Philmont, N.Y.
2Q3439 Tom Grimke, 1482 E. 95th, Brooklyn, N.Y.
2Q4813 Art Leanord, Ridge Rd., Hannacroix, N.Y.
2W4586 John Krejc, 40 Lanza, Garfield, N.J.
3Q0785 Robert Triola, Canadensis, Pa.
3Q1654 William Moore, 102 E. Greene, Middletown, Del.
3Q2052 Walter Haines, Sandtown Rd., Medford, N.J.
3W2348 Joel Gershman, 3902 Pacific Ave., Wildwood, N.J.
4W2406 Ed Keech, 905 Louisana Ave., Cumberland, Md.
5Q0377 Fred Harris, Rt. 3, Gate City, Va.
5Q1503 Ray Trudell, Box 59, Southern Pines, N.C.
5Q2824 Bill Tise, 3401 Country Club Rd.,Winston-Salem,N.C.
5W2109 Allon Clarke, 1009 Hamilton Ave.,Clifton Forge,Va.
5W3016 Ray Mabe, Box 269, Biscoe, N.C.
6W7067 Bobby Suttle, 912 N. LaFayette, Shelby, N.C.
9Q1310 Chuck Page, 1309 Fannin, Bryan, Texas
11Q0153 L.Perry, 6317 San Marino Cir., Bueno Park, Cal.
11Q1313 G.Strainline, 1171 W. Miracle Mile, Tucson,Ariz.
12Q0018 Luke Gerbich, 782 39th Ave.,San Francisco, Cal.
12W5312 Carl Hoegemeier,875 Junipero, Pacific Grove,Cal.
14W1288 Belmont Radio, 31 N.Wenatchee Ave.,Wenatchee,Wash.
15Q1023 Van Wagoner, Cleveland, Utah
18W8516 Jim Bagwell, 5042 Elm, Skokie, Ill.
18W8741 Larry Engle, 418 W. Ft. Wayne, Warsaw,Ind.
19A8789 Rick Schwartz, 333 E. Dixon Ave., Dayton, Ohio
19Q0132 Charles Hellberg, 1404 7th, Parkersburg, W. Va.
19Q3298 Max Schneider, 1815 Beaconwood Rd., S. Uclid,Ohio
19Q5576 Fred Beswick, 105 Main, Tiltonsville, Ohio
19Q8447 F.Cleveland,3754 Princeton Blvd.,S.Euclid, Ohio
19Q9941 Martin Ripper,7617 Cavell, Garden City, Mich.
19W3863 W. McKeever, Box 573, Lakeside, Ohio
19W5023 Harold Schrade,21924 Firwood Ave., E.Detroit,Mich.
20Q4011 M.Kemmerer, R.D. 4,Box 426,Mountain Top, Pa.
20W1572 A.Arthur, P.O. Box 27, So. Weymouth, Mass.
24W0566 Dick Corbett, 1720 Merrmack, Adelphi, Md.
KBA0094 Rob Bergstrom, 138A Jenness, Lynn, Mass.
KBA1081 Ralph Myra, 215 Standish Ave., Plymouth, Mass.
KBA1597 Phillips Redden, 22 Stedman, Chelmsford, Mass.
KBA1852 Elmer Carpenter, 33 Cherry, Medford, Mass.
KBA2614 Clif Smith, Box 303, Block Island, R.I.
KBA3167 Jim Graham, 78 Washington Elms, Cambridge,Mass.
KBA4157 Earl Baker, 3 Payson Pl.,Charlestown, Mass.
KBA4572 Alan Kerr, 28 Belvidere, Boston, Mass.
KBA4832 Norman Ridley, 5 Alfred Ct., Everett, Mass.
KBA5302 Crummy Crumbacker, 42nd FMS, Box72,Loring AFB.Me.
KBA5557 Ted Cummings, Bellflower Rd., Billerica, Mass.
KBA6003 Robeet Haynes, 5 Preston, Danvers, Mass.
KBA6204 Ernest Morgera, 33W. Eagle, E. Boston, Mass.
KBA6650 Bob Bell, 107 Eutaw, E. Boston, Mass.
KBA7557 Clarence Hollis, R.F.D. #3, Brandon, Vt.
KBA6639 Dottie Burdett, 285 Brookline, Cambridge, Mass.
KBA7590 John Joseph, 8 Water, Stonington, Conn.
KBA7242 Neverett Smith, 55 Amherst, Nashua, N.H.
KBA7261 Arthur Dean, 144 Warner Rd., North Haven, Conn.
KBA8091 Polly Huntington, Box 56, Topsham, Me.
KBA8553 Bill Jones, 127 Grove, Putnam, Conn.
KBA8595 Lee Aspinall, 20 Forest Ave., North Haven, Conn.
KBA8619 Dough Fleury, 110 High, Lowell, Mass.
KBA8889 Bernie McPeck, 255 Elm, Braintree, Mass.
KBA9079 Sandy McGraths, 15 Fuller, Everett, Mass.
KBA9619 Joe Souza, 16 Copeland, Roxbury, Mass.
KBB0287 Jim Gardner, Box 242,54 Tewksbury,Ballardvale,Mass.
KBB0574 Don Vaccaro, 5 Grove Court, Lynfield, Mass.
KBC5718 Rod Gilvey, 31 Pitman Ave., Greenwood, Mass.
KBC0901 Art. Robarge, 175 Archibald, Burlington, Vt.
KBC0636 Al McGraths, 15 Fuller, Everett, Mass.
KBC1036 Robert Ziegler, 534 Main, W. Townsend, Mass.
KBC1524 Rusty Rochette, 117 Kinnaird, Cambridge, Mass.
KBC1569 Ray Cummings, 42 St. Germain, Boston, Mass.
KBC1977 Arlene Masciarelli, PO Box 297, Clinton, Mass.
KBC2434 Dave Perry, Box 265, Westboro, Mass.
KBC2451 Eric Ruderman, 21 Drury La., Wakefield, Mass.
KBC2762 George Masciarelli, PO Box 297, Clinton, Mass.
KBC2994 Al Correia, 48 Ocean, New Bedford, Mass.
KBC3088 Wendell Dow, 279 Elm, Salisbury, Mass.
KBC3922 Nick Garreffi, 25 Wentworth, Springfield, Mass.
KBC4118 Paul Ray, RFD # 2, Woonsocket, R.I.
KBC4149 Russel Stone, 23 Trickett Rd., Lynnfield, Mass.
KBC4403 Gilly Leonardo, 75 North St., New Bedford, Mass.
KBC4471 Walter Swan, 22 Bank, Mystic, Conn.
KBC5839 Joyce Swan, 22 Bank, Mystic, Conn.
KBG1130 John Flynt, 3441 Jackson, Wantaugh, L.I., N.Y.
KBG2644 Charles Cavey, 114 Harbor Rd.,Port Washington,N.Y.
KBG3153 Ed Orisak, Walnut Ave., East Norwich, N.Y.
KBG3659 Marvin Balder, 310 Windsor Pl., Brooklyn, N.Y.
KBG4303 Tom Kneitel, 300 W. 43rd St., NY, N.Y.
KBG4462 Jim Simpson, 75 Pearl, Sidney, N.Y.
KBG4657 Fred Wuthrich, 64 Camp, Sidney, N.Y.
KBG4667 John Krueger, 23 Standpipe Rd., Freehold, N.J.
KBI2283 Fred Milo, 56 S. Main Ave., Albany, N.Y.
KBI1282 Alan Klein, 2755 Audrey Terr., Union, N.J.
KBI3455 John James, 149 Knox Ave., Albany, N.Y.
KBI4857 Walter Buczek, 17 Adams, Clifton, N.J.
KCC0599 Ralph Herr, 508 Fremont, Lancaster, Pa.
Kcc0810 Joe Newcomer, 155 Penna. Ave., Carlisle, Pa.
KCD1795 Larry Mandell, 4763 N. Hutchinson, Phila., Pa.
KCD2145 Elaine Bersch, 1133 Fritz Dr., Bethlehem, Pa.
KCD2249 Frank Dowler, 5144 Whitehall Dr.,Clifton Hts.,Pa.
KCF0618 Jay Ross, 7112 Carroll Ave., Takoma Park, Md.
KCF1224 Harold Channel, 306 E. Duncan Ave.,Alexandria,Va.
KCF2541 James Lofton, 712 N. Loudoun, Winchester, Va.
KCG0200 Bill McShea, 808 N. Monroe, Arlington, Va.
KCG0774 Lew Reimberg, 4118 Kathland Ave., Baltimore, Md.
KCG1419 Frank Poynter, 7816 Carroll Ave.,Takoma Park, Md.
KCI0348 W. Hatcher, 713 Parrott Ave., Kingston, N.C.
KCI0410 Gene Shelton, Rt. #3, Gretna, Va.
KCI0595 Steve Canter, 917 Highland Ridge,Martinsville,Va.
KCI2196 Hubert Athey, Box 554, E.Spencer, N.C.
KCJ0291 Ken Mills, 817 Lewis, Asheboro, N.C.
KCI3345 Linwood Jones,97 Wyoming Ave.,Portsmouth, Va.
KCJ0675 Cecil Nash, Rt. 2, Statesville, N.C.
KCJ1118 Bruce Carter, Rt. 1, Walkertown, N.C.
KCJ2269 Frank Anderson, 73 Bishop Ave.,Danville,Va.
KCJ3489 Tom Marvin, Box 762, Culpeper, Va.
KCJ3695 Jack Shortt, 405 Railroad Ave.,Richlands,Va.
KDB0371 Bill Howell,545 Palmetto Lane, S.W.,Aikens,S.C.
KDB1044 Richard Davis,1013 Gervais, Columbis, S.C.
KDB1432 A.Robertson, Spring Hill Dr.,Winchester, Tenn.
KDB1435 Daniel Guthrie, Box 362, Spruce Pine, N.C.
KDB3123 John Dillard,202 E. Commercial Ave.,Monterey,Tenn.
KDB3224 Ray Bronson, Box 427, 514 Smith,Shelby, N.C.
KDB4372 Burch, P.O. Box 25, Florence, Ala.
KDB4538 H.Tripp,1821 Reynolds Ave.,Charleston Hts.,S.C.
KDB6659 Glenn Darnell, 2033 Flanders, Kingsport,Tenn.
KDB7309 Robert Wood, 1625 3rd Ave.,Tuscaloosa,Ala.

KDB7372 John McCullough, 408 Magnolia, S.E.,Aiken, S.C.
KDB8006 Eulene Benefield 4224 12th Ct., N., Birmingham,Ala.
KDB8016 Jimmy Grant, P.O. Box 121, Drayton, S.C.
KDB8119 Oscar Herndon, Box 409, Hartwell, Ga.
KDB8688 J.Bragg, Box 243, Crossville, Tenn.
KDB8946 Gregory Horne, 404 Circle Dr., Shelby,N.C.
KDB9218 Bobby Robbins, Box 505, Chesnee,S.C.
KDD0460 J.Haney, Rt. 1, Box 295,Hendersonville,N.C.
KDD0588 Richard Brown,1321 Cherokee Rd.,Florence,S.C.
KDD0748 Mike Jones, 711 Rollingwood Rd., Aiken,S.C.
KDD0464 Tom Smith, 601 7th Ave., Athens,Ala.
KDD0847 Harold Shavin, P.O. Box 436,Summerville,Ga.
KDD1124 Gene Bailey, 144 Parker,Erwin,Tenn.
KDD1439 Wayne Cash, 521 South St., Erwin, Texas
KDD1522 Don Huntley, General Del., Bat Cave, N.C.
KDD2015 Birnie Florrie, 1731 Kissingbower Rd., Augusta,Ga.
KDD2173 Tom Watson, 502 S.Plymouth Rd., Huntsville, Ala.
KDD3270 John Trawick, 708 Hull, Ozark, Ala.
KDD3380 Jo Shavin, PO Box 436, Summerville, Ga.
KDD4060 Mike Fitzgerald, 421 W.Outer Dr., Oak Ridge, Tenn.
KDD4500 FAYE Smith, 601 7th Ave., Athens,Ala.
KDD4753 John Pennington,L00 Pinewood Dr., Gaffnsy, S.C.
KDD4934 Jerry Elkins, 300 S. Clinton, Athens,Ala.
KDH1887 Dozier Hendry,1318 N.W. 7th Rd.,Gainesville,Fla.
KEA1546 Herman Sills, PO Box 8282, Jackson, Miss.
KEA1859 Alfred Tate, PO Box 2161, Meridian, Miss.
KEA2201 Ralph Gerber, Rt.2 Box252h, Texarkana, Texas
KEB0447 Thomas Hollanger, Box 216, Almyra, Ark.
KEB0796 Harry Childs, Rt.3 Box 44K, Vicksburg, Miss.
Ked2694 Warren Shoemaker, 1706 Rosedale, Bryan, Texas
KEE0743 Chester Price, 808 Banks, Bryan, Texas
KEG0782 James McWain, 807 N.East St., Arlington, Texas
KEG1249 Johnny Bales, PO Box 773, Lampasas, Texas
KEG4287 M.Carter, Palestine, Texas
KEG4356 Pauline Zart, 13419 Red Fern La., Dallas, Texas
KEJ1392 George Thompson, 654 Osos, San Luis Obispo, Cal.
KEJ1462 Larry Goldberg, PO Box 3571, Van Nuys, Cal.
Kej1690 Ed Gagnon, PO Box 203, Wildomar, Cal.
KEJ5976 Mark Keller,1326 N.Citrus Ave.,Holleywood, Cal.
KFA0705 Fred Hart, 5800 Glady, South Gate, Cal.
KFA1028 Thomas Martin, 1679 Manor Circle, Pomona, Cal.
KFA2259 Ed Meeks, PO Box 572, Baldwin Park, Cal.
KFA2363 E. Ormes, 5265-2 Yeakel, Killeen, Texas
KFC2239 Louise Jacobson, PO Box 46, Tracy, Cal.
KFC2336 William Sloane, 1273 Monterey Ave.,Berkeley,Cal.
KFC2838 Jeff Mosbey, 228 Willow Rd., Menlo Park, Cal.
KFC4049 Tom Weitzell, 216 17th, Pacific Grove, Cal.
KFD0130 Vic Naglik, 609 Clubhouse Dr., Aptos, Cal.
KFD0259 Everett Ball, 136 Elm, Vacaville, Cal.
KFD1371 Mary Weitzell,216 17th, Pacific Grove, Cal.
KFF1398 Oliver Olson,3534 S.E.63rd Ave., Portland,Ore.
KFG0327 G. Wertz, 838 N. Hembree, McMinnville, Ore.
KGB1500 Wendell Starr,2827 Bel Air Dr.,Albuquerque,N.M.
KGE1112 Dave Kulas, 403 E. Fifth, Winona, Minn.
KGH0731 John Moore, 2017 South 107 Ave.,Omaha,Nebr.
KGH1315 Roy Moore, 707 May, Marshalltown,Iowa
KGH5907 D. Donaldson,316 North Dade Ave.,Ferguson,Mo.
KGI2607 Hal Redfield,4406 W.Florissant Ave.,St. Louis,MO.
KHA0470 Martin Hickey, Herman Rd., Manitowoc,Wisc.
KHA2982 Frank Sus,1238 Michigan Blvd.,Racine,Wisc.
KHA5040 John Herndon, 2625 15th, Columbus Ind.
KHA5091-3 Burt Porter,525 Summit Ave., Connersville,Ind.
KHA5156 Ed Meadow, P.O. Box 367, LeClaire, Iowa
KHA7329 Wanda Meadow, P.O. Box 367, LeClaire, Iowa
KHA7523 Kay Kagel, 55156 Glenwood, South Bend, Ind.
KHA9668 Don Range, 76 North Weston, Elgin,Ill.
KHB0148 Al Maglinger,1330 Rose Hill Dr.,Owensboro,Ky.
KHB0243 F. Sus, 1328 Michigan Blvd.,Racine,Wisc.
KHB1482 D.Harlan, P.O. Box 335, Mt. Pleasant,Iowa
KHB1535 Bob Kagel, 55156 Glenwood, South Bend, Ind.
KHB1925 Bob Born, 915 W. Waggoner, Decatua,Ill.
KHB3935 Bob Hillard, 817 Clarke Dr.,Dubuque,Iowa
KHB3971 L.Parkhurst, R.R. #1 Wolf Rd.,Columbia City,Ind.
KHB4506 Peg Born, 915 W. Waggoner, Decatur,Ill.
KHB4523 Billy Hibbs, Rt. 2, Box250, Sturgis,Ky.
KHC1438 Earl Stalkerr, 1817 W. Whitmer, Decatur,Ill.
KHC2075 Judges Pamela, R.R. 1, Fulton,Ill.
KHC3829 Harold Harrier,R.R. 1, Perrysville,Ind.
KHC4369 Dick Range, 76 N. Weston, Elgin,Ill.
KHC4811 Rose Sus, 1238 Michigan Blvd.,Racine,Wisc.
KHC4946 D.Hollingsworth, 705 W. Oak,Carmi,Ill.
KHC5181 Ernie Wagner, Box 64, Ashley,Ill.
KHC5248 Bill Stannard, 75 South McLean Blvd.,Elgin,Ill.
KHC5886 R.Mueller, R.R. 3-330 Etna Rd.,Columbia City,Ind.
KHG0236 R. Miller, 1944 Adams Ave.,Huntington, W. Va.
KHG2690 Jim Fay, 2019 Spencer Lane, Middletown, Ohio
KHG4945 C.Cooley, 1006 Hooven Ave.,Hamilton,Ohio
KHG9108 N.Stafford, 1325 John, Kalamazoo,Mich.
KHG9638 Dave Scherer, 38 S. Main,Waynesville,Ohio
KHH0388 Jim Owen, 1408 Garland, Flint,Mich.
KHH0532 Howard Black, 2173 Kajean Ave.,Dayton,Ohio
KHH2334 S.Kolod, 14015 Superior Rd., E. Cleveland,Ohio
KHH2673 C.Simpson, 3344 Turkeyfoot Rd., S. Ft. Mitchell,Ky.
KHH3428 Pete Owen, 4275 Tille Dr., Flint,Mich
KHH3585 Pruny, 5660 Hipp, Dearborn,Mich.
KHH4313 A. Hizer, Rt. 3, Box 338A, Clendenin, W. Va.
KHH4490 J.Weese, 456th Civil Eng. Sgn., Box 159,Beale,Calif.
KHI1077 Jess Lusby, 2316 Carlton Blvd., Jackson,Mich.
KHI1466 Jon Batley, 29803 Lake Rd.,Bay Village,Ohio
KHI1753 Lou Feldman, 656 Bagley, Detroit,Mich.
KHI2250 Al Baughman, 977 City View Dr.,Mansfield,Ohio
KHI2581 Tom Breeze, 5660 Hipp, Dearborn,Mich.
KHI2909 Vern Allen, 801 E. Court, Sidney, Ohio
KHI4500 Earl Cogar, Bolair, W. Va.
KHI5658 L.Peeples, 340 Basset Rd.,Bay Village,Ohio
KHI7619 Roy Jarstfer, 4985 Dover Rd., Claire, Mich.
KIC0172 Bob Rogers, 227 Green, Wilkinsburg, Pa.
KIC0292 Bob Ramage, 445 Peebles, Pittsburgh,Pa.
KIC1183 William Jones, RD3,Goff Rd., Corning, N.Y.
KIC2553 Thurstom Fleming, 327 Parsells Ave., Rochester, N.Y.
KIC2828 Ron Otmisks, 50 Haller, Cheektowaga, N.Y.
KIC2881 Mike Ripski, 72 Mooney Rd., Plymouth, Pa.
KIC2978 Harriet Jones, RD3, Goff Rd., Corning, N.Y.
KIC3644 Bob Dykeman, 10 Butternut, Lyons, N.Y.
KIC3788 Richard Allen, 1111 Louisa, Williamsport, Pa.
KIC3833 Robert Swihart, 425 Front Ave., Salamanca, N.Y.
KIC4126 George Gruber, 172 Joseph, Horseheads, N.Y.
KIC4127 Edward Gruber, 168 Arthur, Horseheads, N.Y.
KIC4570 Jim Walker, 2210 Jun. Gap Rd., Altoona, Pa.
KIC4675 Warren Bartlett, 6 E. State, Johnstown, N.Y.

KIC4702 Paul Gallup, 416 Oak, Ridgeway, Pa.
KIC4743 Bill Bentley, Box 571, Saratoga Springs, N.Y.
KIC5409 William Ringleben, 305 E. Elm, Hazelton, Pa.
KIC5636 John Molnar, Star Rd., Massena, N.Y.
KIC5881 Don Camp, 321 Maynard, S.Williamsport, Pa.
KIC6324 Peggy Bentley, Box 571, Saratoga Springs, N.Y.
KIC6868 Ronald Varney, Main St., Roulette, Pa.
KID0637 Howard Edgar, Box 437, Punxsutawney, Pa.
KID1294 John Grierson, 46 Kohlman, Rochester, N.Y.
KID1328 Ron Conley, 45 Murray, Rochester, N.Y.
KID1431 Louis Lemanna,10124 Frankstown Rd.,Pittsburgh,Pa
KID1445 Walt Rauhecker, 6500 Martha, Pittsburgh, Pa.
KID1668 James DeRenzo, 163 W. Genesee, Clyde, N.Y.
KID1677 Caroline Camp, 321 Maynard, S.Williamsport, Pa.
KID1704 Edward Klimaszewski, 99 Hazel Pl., Buffalo, N.Y.
KID2196 Fritz Nowak, 80 Fairfield Ave., Lancaster, N.Y.
KID2541 Bill Shagi, 6950 Shannon Rd., Verona, Pa.
KID3201 Harriet Sanderson, Scottsburg, N.Y.
KID3208 Roy Smith, Scottsburg, N.Y.
KID3388 Carl Rosser, RD 3, Box 240, Williamsport, Pa.
XM11133 Dave Farman, 5184 Joyce, Vancouver, B.C., Canada
XM11905 Garry Hunter,850 E.10th, N. Vancouver,B.C.,Canada
XM34079 James Knox, 1424 2nd Ave., Saskatoon, Canada
XM41874 Harry Wilson, 87 Thomas, Oakville, Ont., Canada
XM41964 Pat Burgess, York County, Ontario, Canada
XM66021 Charlie Smith, 261 Hamilton Ave.,St.Johns, Canada
YY5-179 Eduardo Insam,PO Box 2251, Caracas, Venezuela
Cent1328 Robert Vansteenburgh, Rt. 1, Chase, Kansas
WPE4GUP Ray Hemingway, 509 Beechwood Cir.,Greenwood, S.C.
Stephen Budesky, L47 Morey Pl., Greensburg, Pa.
William Cuthbert, 390 Ave., Bayonne, N.J.

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ANTENNAS

by ED NOLL, KCC2618
BOX 23
CHALFONT, PA.

An important objective in the business and commercial applications of citizens band radio is to direct the base station signal into the geographical area(s) of principal interest. Whenever possible it is helpful to display a minimum pick-up sensitivity in unimportant geographical directions. In so doing you employ a two-fold approach to maximum communication reliability. You improve the signal-to-interference ratio by emphasizing the signal transmitted in the desired direction and by de-emphasizing interference pick-up from undesired directions.

The directional base station antenna can provide this type of favorable performance. Reception reliability is very often improved greatly with the use of a beam antenna. However, a beam antenna is a rather mammoth affair and in the practical operation of a business or commercial enterprise the operation of a rotator can be an annoyance, particularly when the base station is operated by persons with no technical knack or interest in CB operation whatsoever.

There are other means of obtaining a directional antenna pattern. One can use more than one antenna to obtain directivity without the need for a rotating system. For example, two ordinary quarter-wave whip antennas can be arranged in various configurations to obtain a desired pattern at a given location. The next several columns will be devoted to this style of antenna.

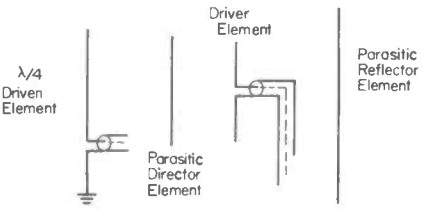


Fig. 1. Driven and Parastic Antenna Elements.

THE PHASED ANTENNA

Any antenna element to which the transmission line is attached is called a *driven element*. If, as in Fig. 1, there are other elements to which the transmission has no connection these are called *parasitic elements*. The reflectors and directors of the usual beam antenna are parasitic elements because they have no direct connection to the transmission line. However, the element to which the line is attached is a driven element.

A phased antenna uses two or more driven elements to obtain a directional antenna pattern. In addition to obtaining a desired antenna pattern, phased antennas also provide gain. Two phased antennas may provide gain up to a maximum of about 3.5 db.

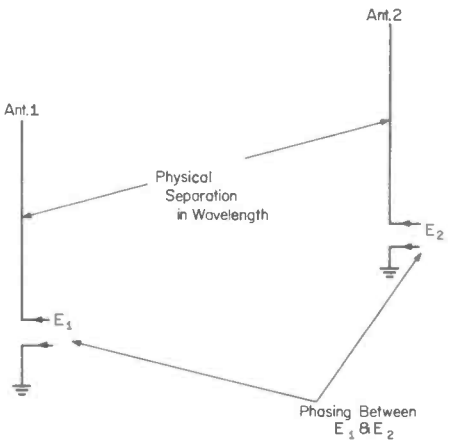


Fig. 2. Two Factors that have Dominant Influence on Pattern of a Phased Antenna.

The type of pattern and the gain are determined mainly by two factors (Fig. 2). One factor is the *spacing* between the two driven elements in terms of wavelength. Are the two elements ¼ wavelength, ¾

wavelength, etc. apart? The performance also depends on the *phasing* between the two driven elements. Are the two signals exciting the antennas in-phase, out-of-phase, 90-degree related, etc.? The antenna system derives its name of phased antenna because of the importance of the phasing between the two exciting signals.

Still another operating condition that affects the performance of a phased antenna is the relative amplitude of the two exciting signals. For practical CB operation these two signals will be of approximately the same level.

It is instructive to point out that the AM broadcast stations throughout the nation use these techniques to obtain their desired directional patterns. In this case the actual pattern depends on the number of towers, the spacing among towers, the phasing among the various tower signals, and the relative signal amplitudes.

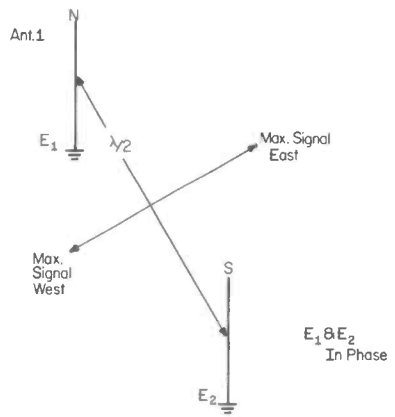


Fig. 3. Two Broadside Verticals.

Fortunately the CB frequencies are much higher than those of the AM broadcast bands. Consequently the antenna pattern control can be obtained with short antennas and a limited physical separation. A half-wave separation between two CB antennas is a matter of several yards; a half-wave separation on the broadcast band is hundreds of yards. The height difference between a broadcast tower and a CB antenna is quite obvious.

A variety of different types of antenna patterns can be obtained with only two driven elements by controlling the separation between the elements and the signal phasing. More elaborate patterns and higher gain figures can be obtained by using more than two driven elements in a phased antenna. There are three basic types of two-element phased antennas. These will be discussed in the sections that follow.

BROADSIDE ANTENNAS

Two driven antenna elements that are fed with in-phase signals and separated by one-half wavelength are said to be fed in a *broadside* manner. It obtains its name because there is maximum radiation from the antenna in a direction that is broadside to the plane of the antenna elements as demonstrated in Fig. 3. In terms of the horizontal radiation pattern (looking down on the top of the two elements) the major radiation occurs at compass angles which are perpendicular to a straight line running between the two elements.

A simple explanation, in association with Fig. , demonstrates how this type of pattern occurs. Let us assume that a given instant of time the polarity of the signal applied to antenna #1 is maximum positive or *plus*. Inasmuch as the second antenna is fed in-phase the signal here will also be maximum positive or *plus* as shown.

A radio wave in traveling through space reverses its polarity for each half-wavelength that it travels, Thus at a distance of one-half wavelength from each antenna the polarity of the radio wave will have become *minus*. First let us consider what happens to a wave traveling directly from antenna 1 to antenna 2. Since the two antennas are separated by one-half wavelength, it will arrive at antenna 2 with a maximum negative polarity. Since the polarity of the radio wave at antenna 2 at that instant is maximum positive, the two components will be out-of-phase and will cancel. Thus there will be minimum radio wave travel in the direction between antenna elements 1 and 2 and in the direction of *south* in the example.

The same condition occurs when a radio wave travels between antenna 2 and antenna 1. The two waves are out-of-phase at antenna 1 and, therefore, there is little radiation in the *north* direction.

Let us next consider the radio wave phasing along a line which is perpendicular to the center of the line between the two antennas. Now assume that two radio waves travel a distance of one-half wavelength to the point at which they cross the perpendicular line. Inasmuch as the wave from both antenna 1 and antenna 2 travel exactly the same distance of one-half wavelength they both appear at the intersection point A with a minus polarity. In other words they arrive at this point in-phase and there-

fore the two signals are additive; one does not cancel the other.

Furthermore, along any point of this line the two signals must travel exactly the same distance from antenna 1 and antenna 2. Thus they always arrive in-phase and are additive. This means there is maximum signal radiation both east and west in the example of Fig. 4.

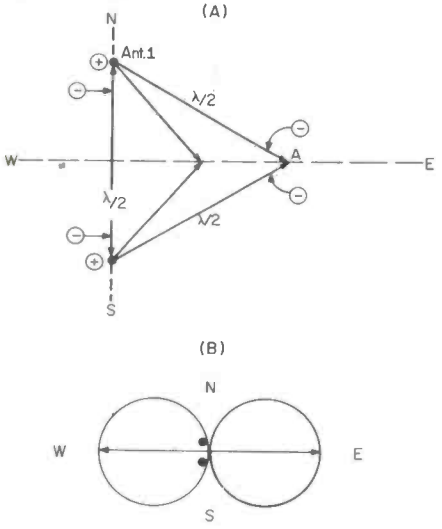


Fig. 4. Operation of Two-Element Broadside.

At radiation angles on either side of the east-west line the two signals are not exactly in-phase. Neither are they exactly out-of-phase. Thus there will be some addition of the two radio wave components although not maximum addition as along the perpendicular line. Some signal will be radiated in these directions.

The radiation pattern therefore will be circular in nature on each side of the line between the two antenna elements. This sets up the old familiar figure-of-eight-pattern as shown in Fig. 4B, showing that the pattern favors the east and west directions rather than north and south.

Of course, the figure-eight pattern can be oriented in any direction by correct positioning of the two antennas. As shown in Fig. 5, maximum signal can be directed north and south by placing the two antennas in an east-west line. If the signal is to be sent northeast and southwest the two antennas would be mounted in a southeast-northwest line.

How the antennas are fed, in-phase, out-of-phase, or at any other relative angle will be covered in the next column. The vertical radiation pattern of two broadside vertical

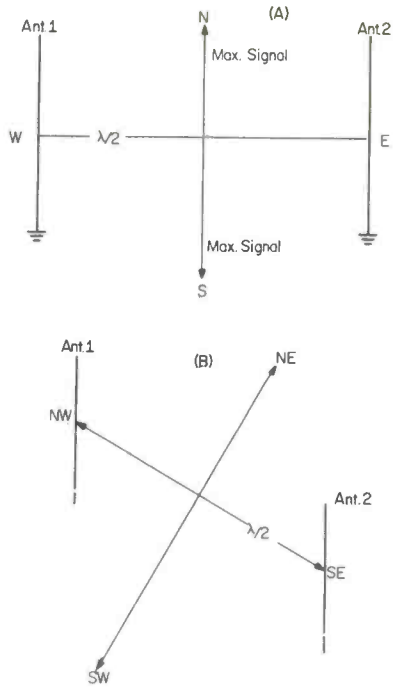


Fig. 5. Pattern Can Be Oriented By Proper Positioning of Antennas.

antennas is comparable to that which would be obtained with a single vertical. However, as shown in Fig. 6, for the example of Fig. 4, the lobes are very much weaker in the north-south direction as compared to the east-west direction.

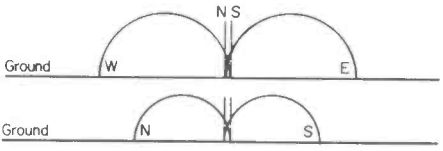


Fig. 6. Vertical Radiation Pattern for Two Phased Antennas of Fig. 3.

END-FIRE ANTENNA

It is possible to space two antennas by one-half wavelength and feed them out-of-phase as shown in Fig. 7. In so doing the figure-eight horizontal directional pattern will be shifted through 90 degrees. There will be maximum radiation north and south instead of east and west. Compare Figs. 3 and 7. It is apparent then that it would be possible to mount two antennas in a fixed position and simply by changing the phasing the figure-eight pattern could be shifted in its compass angle. No physical rotation

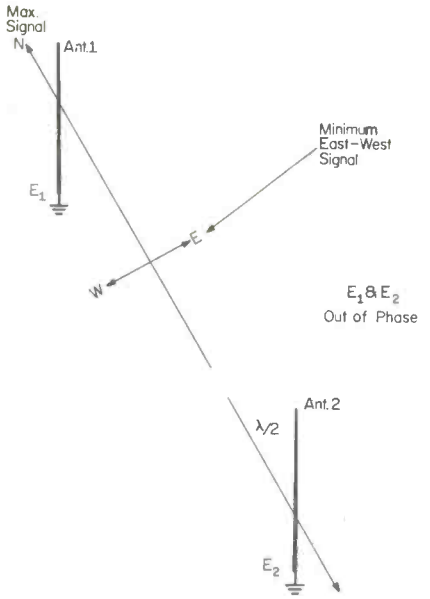


Fig. 7. Two-Element End-Fire Phased Antenna.

or change in position of the antennas would be necessary.

It is interesting to note how the antenna phasing brings this type of pattern into effect. In Fig. 8 we will assume that the polarity of the wave at a given instant of time is maximum positive (+) at antenna element 1. At the same instant of time the RF signal at antenna 2 will be maximum

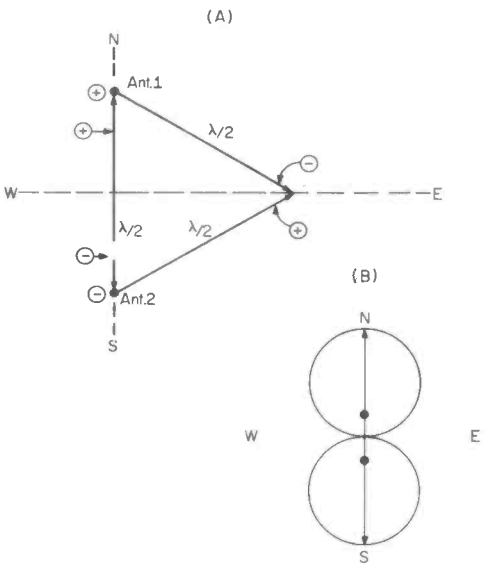


Fig. 8. Operation of Two-Element End-Fire, In-Phase.

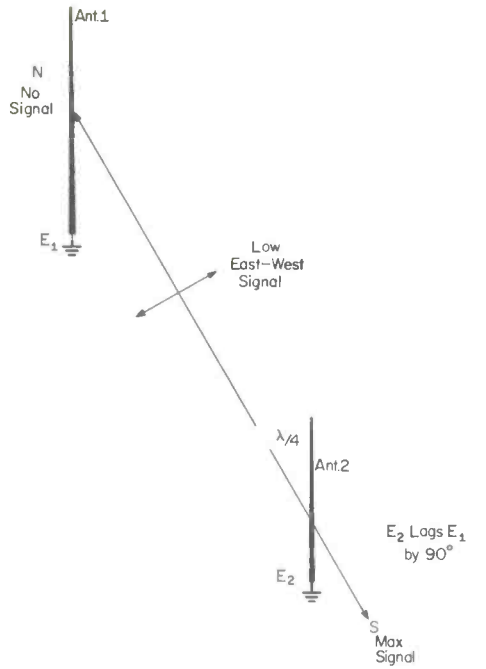


Fig. 9. End-Fire Elements Fed 90° Related.

negative (−). A radio wave in traveling from antenna 1 to antenna 2 will have shifted its polarity and therefore, will arrive negative at antenna 2. The two components are in-phase and are additive. Thus a signal will travel out in a line between antenna element 1 and antenna element 2 and on toward the south direction. Likewise a radio wave in traveling from antenna 2 to antenna 1 will be additive in the region of antenna 1. Consequently there will also be a signal traveling out in the north direction.

Let us next consider what happens along a directional line that is perpendicular to the plane of the two antennas. When two waves travel a one-half wavelength path to the intersection point of the perpendicular line tehy will arrive there with opposite polarity. One will be plus and the other minus. They will be exactly out-of-phase and radiation will cancel in the east direction.

Since the radio wave traveling from the two antennas to this perpendicular line will always cover the same distance regardless of where they intersect the line, there will always be signal cancellation. As a result there will be minimum transmission of signal along the east-west line.

Note in particular that this is just the

Continued on page 59

CB CHIT-CHAT

INDIVIDUALS AND CLUB MEMBERS!! SEND US ITEMS FOR THIS COLUMN!

TO JOHN KREJC, 2W4586

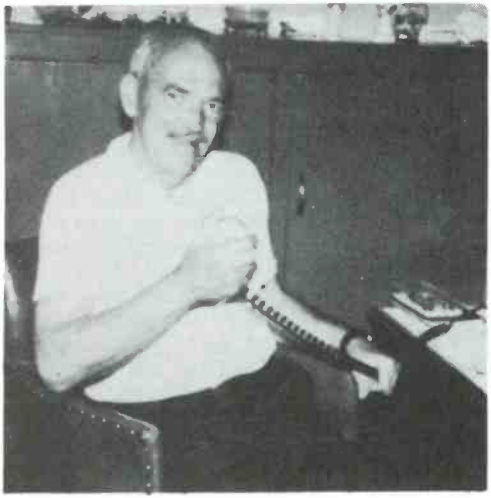
40 LANZA AVE.
GARFIELD, N. J.

S9's LION'S SHARE!

You have probably noticed that S9 runs far more CB club news and general chit-chat than any other publication, news bulletin, or newsletter. Don't let this frighten you into thinking that there is an "in group" which hogs all of the space. We print all CB news of value, from all sources. That means we are glad to hear from you with news items whether you represent a big club, a little club, or just yourself! Send in a photo of yourself at the rig, of your club's officers, or of a recent club function. Go ahead, don't be shy! We certainly aren't shy on space!

A.P.R.E. PROFILE

ROBERT M. FORSTER, KEJ5806
6226 Lindsey Ave.
Pico Rivera, California



Until recently, when the title of "S9 Bob" was bestowed upon him R. M. Forster, (Bob), KEJ5806 was known as the "Grey Ghost" of Pico Rivera, California, seemed to hear all, but seldom was heard. While not a native Californian, he has resided in the greater Los Angeles area for the past 36 years. Bob was born in Faifax, Minnesota, Oct. 29, 1902. At an early age, his parents moved to Seattle, Wash., where he received most of his education. At the tender age of 13, he was a member of the 2nd Washington National Guard, and at 15 enlisted in the Marine Corps. Several years ago, during a state wide contest, Bob was listed as the youngest World War I veteran in the State of Calif. During his younger days R.M.F. was quite active in all forms of sports, even trying his hand at professional football. He received his first Private Pilot's License in 1929, which he held until Pearl Harbor. After the end of hostilities in the Pacific, he renewed his license and he and his wife flew their own airplane until 1954. In 1943, while Director of Civilian Defense for the City of Bell, he made the mistake, during a "blackout," of stepping in front of a speeding auto. After 10 operations in 12 months, Bob resumed normal life. No inactivity for this man. In addition to working every day, CB activities and traveling many miles for club contacts for S9, Bob and his charming wife Kay, are trailer and camper enthusiasts. They own their home in Pico Rivera, where they have lived for the past 14 years. Bob has two children, four grandchildren, and NOW two great-grandchildren. Hats off to a swell guy. Bob has worked conscientiously and energetically for S9. Your club editor can not express in words the feelings he has to the MAN, R. M. FORSTER. Forgot to mention that Bob is an ardent Dodger and Ram fan.

Members of the 19-20 CB Club participated in the unsuccessful rescue of a ten-year old boy from the Shenango River recently. Using KIC0187's base station as the center of operations, within 10 minutes after the first alarm hit, a total of four motors and boats were on their way to the scene. Dave, KIC4735, head of the local Red Cross, deserves much credit in his participation in this tragedy. As is usual in events of this nature, much has been learned as to what can and can not be expected of CB Radio. It proved we should spend more time in practice, indeed.

With in presence of the summer weather the **Western New York Emergency Net** has been as busy as ever. Numerous grass fires have been reported and quite notably three members went 20 miles mobile to an out of state trucker, who was stranded. Paul Szalay, KID2094, Net monitoring at base, first heard the call and relayed it to the mobile. The trucker from Conn., was quite surprised that their members went so far out of their way to help him. But the Net was formed for this purpose and all members try to help in what ever way possible. The members who were active in this incident were Bob Hughes, KIC2794, Net President, Chuck Di Rosa, KIC3732, Vice President and Roger Podsiadlo, KIC6773.

Lyle Adams, APRE, KID1014, was presented a plaque from the Seneca District of Otetiana Council for his aid he has donated to the group. Adams was asked by Michael J. Marshall, president of the Monore County Emergency Net to help and to work with the Council using the communications apparatus surrounding his bed in the attic room. Adams wife calls the "crows nest." Mr. Adams is faced with a bedridden life because of a accidental fall 9 years ago, which forced him to stay in bed, victim of nerve damage and neck fracture. According to his wife, his morale is always high, and that his radio has been a Godsend. Hats off to a great guy.

The Lehigh Valley Chapter of the CB RRL is proving its worth to community projects as one demand after another comes rolling in. The latest effort by the club which received high praise by Bethlehem city officials was its participation in "Operation Greenfoot," believed to be one of only a few such projects in the country. "Operation Greenfoot" was a mass community effort, on the part of the citizens, to re-forest over 2,000 acres of watershed timberland, which had been burned off during a raging forest fire in April. More than 12 LV-CBRRL members were stationed in the burned out area, at critical points to relay needs and assistance to those at central control.

LV-CBRRL member, Earle W. Harpel, KCC2997, calls for more evergreen seedlings, such as the one held by Bethlehem's Director of Public Works, Raymond Snyder. Part of the burned out watershed can be seen in the background.

Louise Welch, KEJ1102, Editor of the El Camino Real CB Club Bulletin, is also a member of the Hi-Desert CB Radio Club in Joshua Tree, California. The club has announced the resignation of Jake Schipper as Treasurer, Lauren Welch was appointed to fill the office for the balance of the year.

The Pomona 11 Meter Club meets the first Tuesday of each month, 8 P.M. at the Montclair Recreation Center. All CB'ers in the Pomona area are invited to attend.

NEW REACT UNIT—A group of CB'ers in the Whittier, Pico Rivera and Montebello area, have been certified by REACT headquarters as the official Unit in these areas. They will monitor channel 13. Secretary of the new unit is May Grant, KFA1399, and Gene Grant, KEJ5806 is the Communications Officer at present. Good luck.

Late in 1961, a group of men gathered in a quaint little home on East St., Brockton, Mass. for the purpose of forming a communications club. This club was to be organized for the purpose of aiding those

OFFICERS OF THE HI-DESERT CB RADIO CLUB: Left to Right—Kay LeSaulnier; Vice President—Jes Englehart; Treas.—Betty McCormick; Asst. Sect'y—Wayne Hanselman; President—Norma Bechtold; Sect'y Joshua Tree, California.

in distress, to respond to any emergency calls, locally or nationally, and to educate all persons having a common interest in a mutual radio service. As a result the Plymouth County CB'ers of Brockton, Inc. was formed. A charter was approved by Secretary of State, Kevin White and the formal presentation was made to the club by Mayor Milton McGrath of Brockton. President of the club is Everett Mattson Sr. Thus the CB'ers of Brockton became the first civic organization of its kind in the State of Massachusetts.

At a recent meeting of the Alaska 49'ers CB Association, Ray Williams, KJB0035, resigned as president and the position is presently being filled by Ken Asplund, KJB0092, until the annual elections of the club are held in July.

On Memorial Day week-end the Alaska 49'ers, provided safety communications for Sports Car Races which were held in Palmer. CB'ers were located at several locations around the speedway and in the pits. It is reported that they were successful in safety and traffic control. After the racing events, two of the members were Deputized by the Chief of Police of Palmer to assist in the local traffic problem.

An old club located in the Palmer area, the 49'er 5 Watters of Alaska, has come back to life. This club just about died out some time ago and through the spark plug efforts of Harold Forslund, 23Q0013, has restimulated enough interest in the area to get things going again. Most of the CB'ers in this area operate on channel 11, and say that they will gladly help any tourist coming through.

A new club has started in the Anchorage area due to a split in the membership feeling of an existing club. Director of the S9'ers, Clyde Bloker, KJB0231, says the membership is made up mostly of business people and that the membership is steadily growing. The club will gladly help any CB'er get started and on the right track, provided they have a real need for CB Radio Communications. It is said that the club does not condone Ham type operations on CB frequencies.

The Midwestern CB Club, Box 883, Kokomo, Indiana, will exchange papers with all and any clubs. The club monitors channel 11, and can be seen by the orange antennas on all their mobiles.

CORRECTION—The Mississinewa CB Club of which Ray Phips, 18Q1501 is president, is NOT in Kokomo, Ind., but in MARION, Ind.

A new club has sprung-up in the area. It has been in the planning stages since Feb., but now it is a full fledged and boasts a membership of approximately 60. The Tri County Sonic Boomers, base headquarters is the Bunker Hill Air Force Base, of Bunker Hill, Ind.

Its purpose stemmed out of a need for a liaison set-up with the B.H.A.F.B. for weather reports and any help needed for downed planes in the area, or any emergencies that occur. Membership was not limited to only base personnel, but extended also to any interested CB'ers in the district. President of the newly formed club is "Big" Bill Percy, 18Q5367. The club is proud to announced that 75 people registered at their last meeting of May 19th.

A big thanks should go out to the CB and CD units in the Matthews, Marion, Swazee, Montplier, and Hardford city areas for their splendid job they did in holding back on-lookers and sight see'ers in the recent Hardford City, Ind., train derailment wreck. It is times like these that public citizens begin to realize how helpful and skillful their CB-CD silent units are in the time of need.

The Tri County Citizen D Banders Inc., Radio Club are the oldest club and largest in the northern panhandle of N.E. West Virginia. News of the club comes from James E. Belch, 4W0921, (that's a real old one). Looking to hear more from Jim, after their elections.

On Sunday, May 19th, the Gaston County CB Radio Club Inc., held their annual Jamboree at Crawford's Lake in historic Kings Mountain Battleground Park, North Carolina. There were 9 States, 18 CB Clubs and Gastonia Town officials, including Gastonia Mayor, Vic Phillips attending. The Park Rangers said that according to their count, there were over 4,500 people in attendance in the park, with 95% of them CB'ers. Entertainment was furnished by the Country Ramblers Band of Gastonia. The Jamboree was presided over by the President of the Gaston County CB Club, Lawrence Almond, 5W3327. The event was a huge success. Everyone enjoyed it thoroughly.

On June 2nd, the Hartwell, Ga. CB Club held their annual Jamboree and get-together at Hartwell, Georgia. Attending were over 2,800 CB'ers. The entertainment was by the Dixie Dew Boys of Hartwell. The Grand prize of a Hallicrafters CB-3A was won by W. H. Proctor, KCI5178, of Charlotte, N. C. There were 32 other valuable prizes that were donated by the good merchants of Hartwell. President of the club is George Walters.

COMING EVENT—The Quincy Area CB Club will hold their Jamboree, August 25th at Eagles Alps, 2 miles north of Quincy, Ill. This is the first Jamboree for CB'ers in this area. Quincy, known as the "Gem City of the West," located on the mighty Mississippi River, was chosen "All America City" for 1963, and local CB'ers are going all out to make this an outstanding and enjoyable event.

The Capital District CB Radio Club Inc., has just successfully completed their first big job of 2 way radio communications in the Hudson River Pleasure Craft Marathon from Albany, N. Y. to NYC. Gil Randall, Chairman of Communications of Troy, N. Y.,

2W4027 and Harry Oathout, KBG7918, of Albany worked long hours, traveled a bit over the Hudson River route, getting the CB'ers prepared. The cooperation was tremendous especially the Electric City Club of Schenectady, N. Y. The C.D.C.B.R.C. recently assisted in the Boy Scout Camporee in Rensselaer, N. Y. President of the club is Lilian D. Boos, 2Q5500.

JAMBOREE REPORT—The Fresno CB Radio Club held their Jamboree June 15th and 16th at Kearney Park, Fresno, California. The Jamboree opened officially Saturday afternoon with registration, getting acquainted and much QSL card swapping. Attending were over 250 CB'ers and their families. Clubs from nearby cities and as far away as San Jose, Watsonville, Santa Clara, Mt. View, Sunnyvale, Seaside, Saratoga and several others were represented. The main attraction on Sunday was a Bar-B-Que chicken dinner, and of course the drawings for the many "goodies". The club had between 65 and 70 prizes which were supplied by merchants and friends of the Fresno club. "Cookie" Armando did a wonderful job preparing the chicken. The entire affair was well organized and the club should be proud of the officers and their many helpers for a job well done. President of the club is Jim Rachel, 12W3826. RMF thanks Mike and Betty Duffy, KFD0907 for there hospitality. RMF. . . .

COMING EVENT—The Bergen County Citizen Banders Chapter of M.C.E.U. will hold their Jamboree, Sept. 8, 1963 at the Sundance Lodge, Route 46, Caldwell, N. J. Remember the one last year! ! ! ! ! Should be bigger and better this year.

COMING EVENT—The North Jersey Chapter of M.C.E.U. will hold their annual beef-steak Sept. 7th at the D.A.V. Hall, Crooks Ave., Clifton, N. J. Chairman of this event is Mike Borisuk, 2A5880.

President of the Five Watters of Monterey County, Inc., Seaside, Calif. is Bobby Wood, KFC1867. The club's new mailing address is P.O. Box 986, Seaside, California.

New York Metropolitan area CB clubs, need a clever speaker at your next meeting???? Speakers, demonstrations, do-it-yourself help or anything in that line are available from Electronic Servicenter of N. Y., 65-37 Queens Blvd., Woodside 77, N. Y. Call IL 7-7733. Just tell Irv that S9 sent you and there's no charge!

The newly formed Monroe County CB Rangers in Mississippi were featured in an article appearing in three newspapers and on one radio station, telling of the club's cooperation with local CD officials. President of the club is Len Mixon. The club recently held a fish-fry for members and families. The organization is 15 strong, with some 25 units owned by members.

Subscription form between pages 48 and 49!

Recently members of the **Cee Banders Club** volunteered the services of their radios and automobiles for transportation from the Bankhead Hotel to the Municipal Auditorium for the Annual Wheelchair Convention.

The Monmouth County Emergency Aid Network held its first election recently and elected S. W. Burdge, KCC0647 as president. The club boast a membership of 34, and hold their meetings the second Tuesday of each month. Anyone wishing to attend one of their meetings may call **KCC0647**, channel 11, when entering Freehold, N. J. The Helping Hand is the name of their club emblem. Emblem will be shown in the coming issues.

The Pioneer Valley REACT, located in Monson, Mass., was organized in Jan. 1963 with Jack Tucker, **KBA4348**, as Network Director, assisted by Ralph Weldon, **KBB0365**, and Fred Veber, **KBA7310**. The Organization has its headquarters in Monson, Mass., and will serve Pioneer Valley in any emergency or any other way it can. To date, they have 56 active members representing some 14 communities. The members have at their disposal an unlimited variety of equipment ranging from first aid kits to heavy construction equipment, plus the know-how. Their net is set up to monitor channel 11, 24 hours on weekends and at least to midnight on all other days.

The West Texas CB Radio Club is the only CB club in El Paso, and their membership presently stands at 32 active members and is expanding rapidly. The club is registered with the El Paso police dept. and the Red Cross. The club also has a first-class emergency radio network and their members have assisted the police dept. in several searches for children who was lost in the mountains or desert, aided in traffic control and offered assistance to motorists in flooded areas. Recently, they served as the communications network at the sport car races in Deming, New Mexico, sponsored by the Sports Car Club of America. President is Al Dawes, **KEG4062**.

Edd Russell, **KEH1065**, member of the **Ark-La-Tex Club** helped with communications recently in calling for boats to help in rescue operations for a drowned person. A demonstration, later that night was given at the local police station in order to show them how effective the club can be at the time of an emergency.

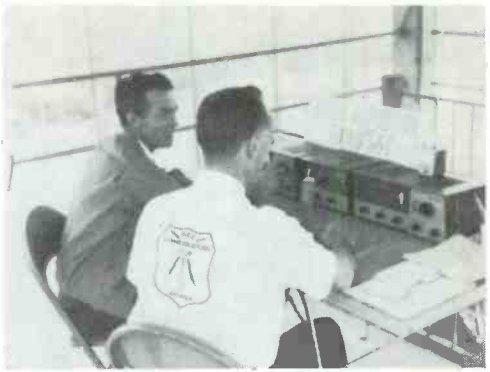
Thanks to Bill McLearn, **KBC3598**, for his letter of an experience he came across. More on this at a later time.

The Memphis Radio Citizens Band Club, congratulates Ma Cherie Cox, **6W5282** on being selected Mrs. Courtesy at their meeting recently. She was cited for her outstanding work during the collections that their Rescue Unit assisted in recently.

Communications for the Boy Scout Canoe Marathon were supplied by the **CRL Chicago** and **CRL Northlake**. The units were placed at every bridge and were covered by 38 CB units.

The **14W Association of Seattle** was organized specifically to provide the coordination necessary in selection and use of frequencies in order to minimize interference and promote efficient use of the authorized facilities. Other objectives of the Association provide for expansion of uses of the service, exchanging of technical information, liaison with the **FCC**.

Early in 1960 a club was organized in Decatur, Georgia, which was named the **Dixie Communications Club**. About a year later they were chartered and became incorporated. In 1961, the State of Georgia purchased a huge rock formation 17 miles east of Atlanta, known as Stone Mt. On the very top an observation tower was to be built, so this is where lies the antenna. As a state CD unit they asked for and received permission to install a CB base station. The station as an easy range of 50 miles to mobile units and 100 miles to base stations. The club has been assigned the call letters of **KDD0547**. They monitor channel 9 and 15. This should be a comfort of knowing help is near anytime the traveling mobile unit needs it. Mailing address of the club is: **Dixie Communications Club, Inc.**, P.O. Box 136, Decatur, Georgia. Thanks to Mel Welch, **KDB0264**.



CONTROL ROOM OF THE DIXIE COMMUNICATIONS CLUB, ATOP STONE MOUNTAIN.

The Central South Carolina Citizens Radio Club held a club outing on Lake Murray at the home of Lee Stuckey, **6W5981**. Boat rides, water skiing, and fishing were enjoyed by all. The club enrollment now stands at 52 and growing. Their club channel is 4. The club meets the 3rd Friday of each month. President of the club is Howard Doble, **KDB6084**. Any club wishing to trade papers write: P.O. Box 1803, Columbia, S.C.

REACT in Hagerstown, Md., has been reorganized with the resignation of Chief Coordinator, Russ Rhinehart, **KCF1492**, who is no longer associated with **REACT** in the Hagerstown area. Members present at the last meeting passed a new set of By-Laws and elected 4 coordinators. These were: Troy Cosner, **KCF1944**, filling the first spot, and assisted by Ken Michael, **KIC1265**, Bruce Campbell and Bob Sowers, **KCF2156**. Due to the reorganization of the **REACT** team in Hagerstown, it will be known as the **REACT RADIO PATROL**. Many plans are under way to build better public relations with local and state officials concerning the availability of CB mobile units. Members recently attended picnics at the Queen City 5 Watters in Cumberland and the CB Jamboree in Brunswick, Maryland areas.

The Chatter Box, club paper of the **CB Socialites**, N. H. tells that voting time is near. The club expects to have a good turn out this year. Chairman of the club at this writing is Bob Greenlaw, **1Q0195**. Editor of their fine paper, Karl Moulton, **1A2111**. Any club wishing to exchange papers write: Karl Moulton, Main St., Plaistow, N. H.

From Oconomowoc, Wisconsin, comes the slick **Heterodyne Herald**, which is the club paper of the **Waukesha County CB Club, Inc.**

Recently, the **Crystal Wizards Club**, sponsored a dance for the Anne Oltz Cancer Fund. A lot of people had the idea that the club was holding the dance, they couldn't have been more mistaken. Actually, the dance was the brainchild and hard work of a group of Anne's friends. Some were members of the club, and some were not, but all were CB'ers. The Crystal Wizards merely sponsored the benefit dance.

The Fox Valley Citizen Band Sentinels, was formed about 1½ years ago. The club holds a non-for-profit charter from the State of Illinois. Its purpose is to provide services to the community and to improve the use of CB Radio. Membership is open to any nearby resident who holds his own station license from the FCC for a CB station. Membership at the present time numbers about 55. The clubs members assist anyone in

More than 1,000 persons watched the presentation of a Pearce-Simpson CB "Companion" to Mr. T. Asterino (L.) at the recent CB convention in Xenia, Ohio. Doing the honors is Pearce-Simpson representative, Dick Johnson.

the need of help. This is particularly true of motorists. The members very frequently aid a stranded motorist or report an accident. The club meets every first Friday of the month at the First Federal Room of the First Federal Savings and Loan. The meetings are open to the guest of the members. President is Richard Fairchild, 18B3530. Thanks to Jim Hattendorf, KHA8613, Publicity Director.

To all the members of the Southern California 11 Meter League, who assisted SCERT—Southern California Emergency Radio Team in apprehending the young culprits who were cluttering up the 11 Meter Band. SCERT is very proud of the fact that within 12 minutes after SCERT was in force, they had the culprits apprehended, and waiting for the law. SCERT, again expresses their thanks to the Southern California 11 Meter League.

During the Hi-Desert Radio Club Steak Fry, held the first part of June, "Windy" Spencer, KEJ1576, was surprised with a large birthday cake. The entire group joined in singing "Happy Birthday" and wishing him many more. (Cakes or birthdays.)

El Camino Real Club held another of their successful "Coffee Breaks," June 22nd at the J & M Donut Shop in Charter Oak, California. Approximately 70 CB'ers attended. QSL cards were swapped and new friendships were made.

The new REACT Unit of Whittier-Pico Rivera-Montebello Net is now in service. The Unit monitors channel 13, 24 hours a day.

REACT, South Western Los Angeles County, held a "coffee break" June 22nd, at the Crown Cafeteria in Long Beach. Many members of the 11 Meter League of Southern California attended and made it a party, for one of their members, June, KEJ1492. The units secretary reports, that it was good to have the visitors and everyone enjoyed the evening. REACT is planning a "Chris Coffee Break" in the near future. Time and details at a later date. This is a memorial to a young lady of 16 years, who recently passed away as the result of a most unfortunate accident. The "Break" will be to raise funds in order to make a contribution to the Children's Leukemia Ward of the City of Hope in Duarte, Calif.

News from the Waukesha County CB Club. Recently the Emergency Unit held a practice alert, which was a success. Also, 30 members of the club met at the Club Point Restaurant, at East Troy, for a family style dinner. Public Relations Chairman of the club is A. E. Bluhm, 18Q7676.

The North Area Emergency Radio Team recently enrolled in the Salvation Army Disaster Unit and Harvey Bates, 17W0654, was elected Chairman of the Branch. N.A.E.R.T. monitors channel 21, 24 hours to give emergency information and aid to anyone in the K.C. area. Thanks to S. Schaaf, KGH1666.

The following is from Gene and May Grant, and their traveling mobile. The couple traveled far and wide and brought back the following news: Pikes Peak Area Citizens Band Radio, REACT Unit, Colorado Springs, Colorado. The club has 26 active members at present. One-third of these are men from the Air Force Academy. The club monitors channel 11, 24 hours a day. They work with and assist the local authorities on all 10-33's. They helped in directing traffic and provided communications during the Pikes Peak Road Race. Also, from the Grant's——

The Denver Metropolitan Radio Club, meets the first Tuesday of each month, with all CB'ers welcome. Membership is approx. 80. The club did a terrific emergency communications job, during the major flood that struck Denver recently. The membership turned out 100% and worked in 24 hour shifts. The merchants of Denver also deserve a great big "thanks" for the food and hot coffee served to the club members and the many others that helped during the flood disaster.

When Gene and May Grant, KEJ6251 and KFA1399, stopped in Denver on their vacation, there was a "coffee break" in progress at the home of Dean Cowgill, KGB0884 in nearby Englewood, Calif. Dean insisted that the Grants stop in and with a little air time, it was advertised that a "Californian" would be present. 30 CB'ers dropped in to greet and chat with the folks from Pico Rivera, California. The host served coffee and donuts. (Sounds like a great way to enjoy a vacation as well as reduce the food cost. Howabout it Gene?) RMF

COMING EVENT—The 1963 Maumee Valley CB Roundup has been planned for Sept. 22nd, at Hessen Cassel Recreation Hall, just south of Fort Wayne, Indiana, on Highway 27. Hours of the Round-up will be from 9 to 6. There will be no admission or registration fees for those attending, and plenty of free parking is available.

COMING EVENT—The Seacoast Citizens Radio Club of Ventnor, N. J. will hold their Jamboree, September 8th at Lake Lenape Park in Mays Landing, New Jersey. The rain date will be Sept. 15th. The price is $2.00 per adult and children under 12 will be admitted free of charge. There will be prizes galore. Starting time—7 A.M.

COMING EVENT—The Galveston County CB Assn. will hold their annual Jamboree Sept. 28th and 29th at Runge Park, Arcadia, Texas. There will be a dance and eye-ball QSO Saturday evening. Bar-B-Que dinner and games Sunday evening. Lots and lots of prizes to be given away. The president of the newly reporting club is Earl Guidry, KED0244.

Norma Bechtold, Secretary of the Hi-Desert Radio Club, reports that their first July meeting was a "Pot Luck" supper. Norma also reports a steady growth of the club membership.

An organized group of CB'ers in Pico Rivera, California, serves the city by providing emergency communications for the Sheriff's Dept. We notice that one of the well known CB'ers in this area, Chuck Spaulding, KEJ5225, is sporting sergeants stripes in this group.

From Mathilda R. Schaper, KFJ0247, Editor of the CB Minutemen News, official voice of the C-B Minutemen of Washington comes the news that the organization is the largest in the Great State of Washington, presently boasting some 165 paid members within the Greater Metropolitan Seattle area. The club has found that CB Radio is worth its weight in gold in handling of boating emergencies. Also, it has to date served as a priceless help in traffic emergencies, lost children,

Continued on page 61

ELECTRONICS 'N STUFF

by DON STONER, 11W1507
BOX 7388
ALTA LOMA, CALIF.

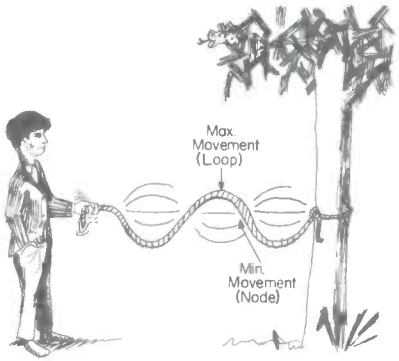
ALL ABOUT SWR

Jerry Jones sauntered into the See Bee Service Saloon shortly after Sam had returned from his midday repast of soup, coffee, and a slightly greasy hamburger.

"How goes the battle," Sam greeted his somewhat anxious looking friend. "If you weren't bigger, I'd accuse your installations of lasting just past the guarantee period," Jerry growled.

"What seems to be the trouble, Sport?" Sam chuckled, looking out beyond Jerry to his beat up MG roadster. "My 90 days were up Friday, Sam, and the rig conked out Sunday during the Rural Ratters Road Rally. We had it made until that bucket of bolts gave up the ghost," Jerry confided. "Do you mean the rig or the car, Jerry?" Sam laughed as he slapped Jerry on the back. "Okay, wise guy. With friends like you, who needs enemies?" Jerry wondered out loud.

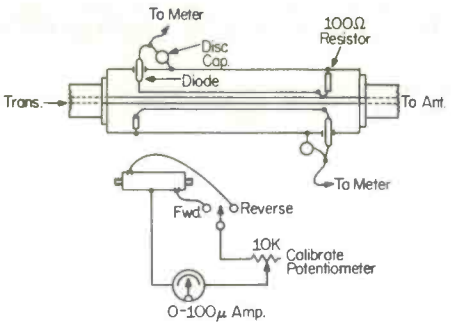
Having learned that the rig still worked after a fashion, but the range had dropped to much less than a mile, Sam decided to check the antenna system. He compressed his bulk into the mobile moustrap and felt around behind the rig for the antenna connector. Sam inserted a mysterious looking box into the circuit and furiously began to flip switches. "Hmmm," he mused, "the SWR's out of this world. Must be something wrong with the antenna." "How did that box tell you that?" Jerry wondered. "This SWR indicator tells about the tuning and performance of your antenna," Sam said, thrusting the mysterious box under Jerry's nose. "Fine, except for one thing, what the heck is an SWR? Or does it stand for Sam's Wonderful Repairs?", he laughed for the first time. "We're even," Sam said, wetting his finger and making an imaginary line in the air.



Standing waves on a rope.

S.W.R. means "Standing Wave Ratio" and indicates how well the antenna is matched to the transmitter through the transmission line. As you know, the transmitter generates a "train" of sine waves called oscillations. This radio frequency energy is coupled to the antenna through the "radio hose" which we call the transmission line. If everything is working right the antenna will "suck" the energy out of the transmitter and propel it out into space. However, if the antenna is not tuned correctly some of the power sent to it will be rejected and returned to the transmitter.

These waves or oscillations in either direction are called standing waves. The amount of waves sent up to the transmitter versus the amount returned are called the standing wave ratio. The ratio consists of



An SWR bridge and meter you can build.

the amount of waves that are sent up to the antenna versus the amount that are actually radiated through space. Thus an antenna that is perfectly tuned and matched is said to have an SWR of 1 to 1. The poorer the antenna, the higher the SWR. Most normal CB installations will have an SWR of around 1.5 or 1.7 to 1, since it is seldom possible to get a perfect match in most installations. Generally speaking, a reading of 2 to 1 is considered about the worst SWR that should be tolerated in most installations. Above 2 to 1 the transmitter becomes different to tune and modulation charity deteriorates rapidly. The waves bounced back or rejected by the antenna can add to the radio frequency voltage already in the transmitter output circuit and create voltages high enough to damage components. This is the reason transistor CB rigs must be operated into a well matched antenna system. Unlike tubes, transistors have a very low maximum voltage rating. If the voltage exceeds this rating—poof—out goes the final. In tube rigs the most likely failure point is the capacitor in paralleled with the final tank coil. It may short out if the voltage goes too high.

The rejected waves which travel back down the line meet the upcoming waves and play all kinds of havoc. They also continue on down to the transmitter output circuit. It doesn't want the rejected energy either and these homeless waves are once again forced back up the transmission line. This random bumping of the waves causes radio frequency confusion and it doesn't take an electronic genius to figure out that this condition causes weak and often distorted signals to be radiated by the antenna.

One important reason for using a half wave length of line, as I mentioned to the club last month, is that the rejected waves will be right in "step" with the outgoing wave. Even though there may be a high SWR on the transmission line, the half-wave "hides" them and as a result the transmitter "sees" a low SWR antenna system. If you insert an SWR indicator into the line it will not detect the "hidden" SWR and will indicate a low reading. This is why several mobile antennas supply a specific length of line which usually turns out to be an electrical wave (about 12¼ feet). These antennas *actually* have a high SWR. They usually perform poorer than an antenna with a low *actual* SWR.

If you add two or three feet of coax to the line, the indicated SWR will go into orbit. Incidentally, this is a good test of your antenna installation, either mobile or fixed. Measure the SWR, then add several feet of coax to the transmission line. If the SWR doesn't change appreciably you're "in" like the proverbial bandit.

"How does the SWR indicator tell the difference between the waves that are coming and going?", Jerry interrupted. Sam continued, "Inside the SWR indicator is a little gadget called a directional coupler. It consists of two fine wires paralleled to, and on each side of, the center wire which is fitted inside a metal tube.

One wire has a crystal diode detector on the transmitter end and a resistor on the antenna end, while the other wire has a matching resistor on the transmitter end and a diode on the antenna end. (See figure 1.) A small amount of energy going up to the antenna will be coupled to the wires. In one wire the energy will be completely absorbed by the resistor but in the other wire, it will appear across the detector diode. The detected radio frequency energy makes the meter read when the switch is in the *forward* direction.

Energy coming back down from the antenna will have exactly the opposite effect. It will be detected by the wire which absorbed the signal going to the antenna and visa verse. Thus when the meter is switched to the *reverse* position it reads the reflected wave. To use the meter, set it to *forward*, adjust the calibrating potentiometer until the meter reads full scale, then switch to *reverse* and read the SWR directly from the meter.

CB CASEBOOK

by LEE AURICK, 2W2870
MT. PLEASANT RD. RFD 1
COLUMBIA, PA.

WOULD YOU LIKE TO READ ABOUT YOUR COMMERCIAL USE OF CB IN S9? IF SO, WRITE TO US.

"The greatest satisfaction I have is when my investigations have been helpful to my client. Sometimes it is a negative report that I have to make, and at other times it is a complete and detailed account of everything that I have been able to learn." Your S9 reporter was talking to Paul Schappert, KCD 0704, the only licensed private detective in Lancaster County, Penna.

Retired last year after twenty-five years on the Pennsylvania State Police, the former corporal decided to put his quarter century of police experience to work for others.

"CB radio has been of tremendous help to me since I went into business on my own. It certainly saves me a great deal of time, and time to me is precious. To my clients it is downright costly. My fee is five dollars per hour during the day and seven dollars and fifty cents at night. Therefore, just one evening's work of ten hours means an expense of seventy-five dollars to my client. This is in addition to other expenses that I may incur in the course of my work, and does not include travel expense or the use of my cars."

"I maintain a CB unit in each of my cars, and a base station here in my office. On many occasions it has been very helpful for me to call the base station for more detailed information or to check some facts. Often, it would be very difficult, if not impossible, to reach a telephone, and it would certainly mean that I would lose contact with an often rapidly-changing situation."

"Perhaps the most difficult assignment a real-life detective has to contend with is following people. Fictional 'private-eyes' make it look too easy, and they rarely lose their man. As a matter of act, it can be the most boring activity I know. Countless hours may be spent in waiting for the object of my investigation to emerge from a movie or hotel. Then there is always the possibility that the person being followed will realize that he is being followed, and the danger that he may then resort to violence in an effort to rid himself of the person following him."

"It is in following people that I most often have occasion to use my CB radios between cars. It is helpful to alternate cars while keeping a person under surveilance, and thereby prevent him from becoming suspicious from seeing the same car near him at all times. Our radios permit us to relieve one another without arousing suspicion, and to exchange information as to the case in progress."

"I often turn down potential clients who come to me and ask that I undertake an investigation for them. Sometimes the information they want me to obtain for them is to be used in some kind of future court action. Frequently, they don't know just what it is they want to know. The first thing I ask them is 'What does your lawyer say?,' and if they tell me that they do not have one, I advise them that at the moment they may need a lawyer more than they need a detective. A lawyer can instruct me in detail as to the specific kind of information he will require. In the long run it will save the client money and time, and permit me to work more effectively in his best interests."

Your reporter was curious as to how KCD

Subscription form between pages 48 and 49!

0704 came to be the first licensed private detective in the county.

"Though there have been numerous requests for a license by many people in the past, none where ever granted. My license was issued on the basis of my experience on the State Police. Without a license about all you can do is investigate simple accidents. A license permits me to investigate every type of activity, even murder. Furthermore, my testimony is valid in court where I qualify as an 'expert' in the matter of investigation This permits me to be of even greater value to my clients."

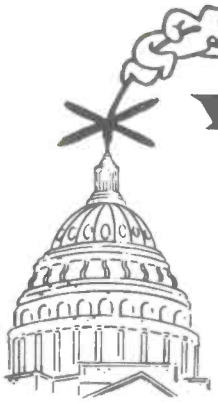
"Though local and State police have investigative responsibilities, their activities are frequently and necessarily limited to determing whether a crime has been committed. Furthermore, and understandably, their time is limited. They have a great number of cases on which they work simultaneously. When it is required, I can put all my time at the disposal of a client."

"Believe it or not, I do enjoy watching 'private eye' shows on TV. Even though it is usually possible to figure out in advance just what the outcome will be, they are so far from the daily run of things as I find them that they still make for an enjoyable program. I just wish they could be a little more varied in their presentation. Many times too, the detective will start off on his own, becoming personally involved in the case. This just doesn't happen. When I start on a case it is because I've been retained by a client who wants some information or proof. And I can't afford to become personally involved. It would remove the objectivity that I try to bring to each case."

"CB has been a big help to me, and I believe it will continue to offer additional 'legs' and 'ears' for me. I do have one gripe though. Why do some people feel they have to use it as a private telephone? There is one woman in my town who feels it is her solemn obligation to pass on to anyone who will listen, every kind of recipe you can think of. While some of them are mouth watering, it does interfere with my business use of the air, and doubtless with many others who would prefer to get this kind of information from a cookbook."

"If I ever get some spare time, this is one investigation I'm going to do on my own."

S9



WASHINGTON OUTLOOK

Many CB'ers in the New York City area have been surprised to open their mail boxes and find therein an FCC citation sent to them by the local New York City FCC office. Inasmuch as the FCC does not maintain a monitoring station in the New York area, such notices are (or at least *were*) rare birds. At the request of many S9 readers who called our offices to ask what was going on, we sent out our staff of well trained snoops to lurk in dark corners and come up with a suitable answer, especially since this could be a coming trend for all "local" FCC offices.

We found out that it is becoming common practice for the fellows who work in the FCC offices to do a little monitoring from their homes or cars while "off duty." The New York area, in particular, seems to be monitored by Dave Popkin, 2W2836, of Englewood, N. J. From what we have been able to find out, Popkin is "officially an employee of the FCC and is therefore authorized to monitor and issue citations." However it seems that Popkin's sole function for the FCC is to monitor from his home and car, he is apparently *not* one of the regular office staff. How he was chosen for this monitoring duty, or what his qualifications are, was not obtainable. It also would seem that the New York FCC office is looking for a likely candidate to be set up for a monetary forfeiture as an "example."

There is a good chance that CB'ers throughout the U.S. can expect the above type of "informal" FCC monitoring to be coming from most local offices in the future. One of our *exclusive* Washington sources of information told us that in a recent stepped up drive to "clean up" CB of rule breakers, more citations were issued in a single week than are normally issued in an entire month. This created a minor problem at the monitoring stations because the monitors had to spend an excessive amount of time preparing the citation forms, which took them away from their regular monitoring duties.

On the "homebrew" monitoring front, we learn that there is a bill floating around Washington which would modify Section 605 of the Communications Act to permit *anyone* to monitor CB just like Ham or broadcasting stations. Insiders tell us that the bill probably will *not* make it through the Senate this trip.

Here are the CB'ers who received the sad news from the FCC during recent weeks:

4W0152, Warren J. Currence, Elkins, W. Va. The FCC denied his petition for reconsideration of the April 30th FCC decision which revoked his CB license, and the actual revocation order of June 22.

4W2864, Guy A Merritt, III, Severna Park, Md., was directed to show cause why his license should not be revoked for repeated failure to respond to notices concern alleged violation of 12.91(f).

7W2383, Allison E. Newhall, Tampa, Fla., directed to show cause why his license should not be revoked. Reason not available at press time.

9Q0034, C. H. Grubb, Houston, Texas, license revoked for repeated failure to respond to FCC notices concerning alleged violation of rules 19.24(a)(1) and 19.62. Revocation date was July 30.

11Q0501, Keyzers Bros. Ornamental Iron, Stanton, Calif., license revoked for repeated failure to respond to official notices concerning alleged violation of rule 19.33. Effective August 6th.

11Q2045, Bobby E. Edwards, Los Angeles, Calif., license revoked for repeated failure to respond to official notices con-

cerning alleged violation of rule 19.33.

11Q5268, William P. Wilson, Santa Ana, Calif., hearings terminated on his Show Cause notice as to why his license should not be revoked.

11W3134, Paul W. Behne, North Hollywood, Calif., directed to show cause why his license should not be revoked for repeated failure to respond to official notices concerning alleged violation of rule 19.61(a).

11W6163, George H. Harper, Sr., Los Angeles, Calif., directed to show cause why his license should not be revoked for alleged violations of Title 18, United States Code, Section 1464, and rule 19.61(a).

11W8013, Thomas J. Gadd, Lancaster, Calif., license revoked for repeated failure to respond to official notices concerning alleged violation of rule 19.61(a).

18A6916, Merrill Miles, doing business as Maywood Garage, Hammond, Ind., license revoked for repeated violations of Section 1.76 of the rules and Section 308(b) of the Communications Act. Effective July 24.

19A5837, Leonard W. Mountford, Grosse Pointe, Mich., hearing on Show Cause notice terminated and certified to the Commission for disposition.

19A9099, Ralph Samuel Maddox, Taylor, Mich., license revoked for repeated failure to respond to official notices concerning alleged violation of rules 19.24(b) and 19.61(a), effective July 22.

20Q1133, Walter W. Chick, Sr., Auburn, N. Y., hearings terminated on his Show Cause notice as to why his license should not be revoked.

KBA5393, Robert G. Maskell, Stoneham, Mass., directed to show cause why his license should not be revoked. Reason not available at press time.

KBG3066, Marc L. Feld, Brooklyn, N. Y., directed to show cause why his license should not be revoked. Reason not available at press time.

KCI1496, Gino Turchiaro, Bronx, N. Y., directed to show cause why his license should not be revoked for alleged violation of rule 19.61(a)(f) and (g).

KDB3880, Coastal Cab Co., Savannah, Ga., directed to show cause why its license should not be revoked. Reason not available at press time.

KDB7250, Thomas W. Clements, East Point, Ga., hearings terminated on his Show Cause notice as to why his license should not be revoked.

KDD1134, William A. Wilson, Marietta, Ga., sent a notice of apparent liability dated June 26, imposed forfeiture totalling $100. Licensee was given 30 days from June 26 to answer. Reason was repeated and/or willful violations of rule 19.61(a) (unauthorized communications).

KED2105, Charles E. Slaughter, Austin, Tex., hearings terminated on his Show Cause notice as to why his license should not be revoked.

KEJ0426, Sharon K. Flippen, Norwalk, Calif., hearings terminated on her Show Cause notice as to why her license should not be revoked.

KEJ1194, Donald K. Fisher, Sherman Oaks, Calif., directed to show cause why his license should not be revoked. Reason not available at press time.

KEJ2617, Hal Rountree doing business as Property Maintenance & Repair Service, San Diego, Calif., license revoked for repeated failure to respond to official notices concerning alleged violations of rule 19.61(c), effective August 14.

KEJ2825, Edwin J. Squire, Jr., Long Beach, Calif, hearings terminated on his Show Cause notice as to why his license should not be revoked.

KEJ5209, David R. Coughlin, Whittier, Calif., hearings terminated on his Show Cause notice as to why his license should not be revoked.

KEJ7142, Waymond Taylor Hendershot, San Pedro, Calif., hearings terminated on his Show Cause notice as to why his license should not be revoked.

KGE0146, Carl F. Swanson doing business as Bob's Auto Repair, St. Paul, Minn., hearings terminated on his Show Cause notice for license revocation.

KHH1359, Donald R. Cowles, Madison Heights, Mich., license revoked for repeated failure to respond to official notices concerning alleged violation of rule 19.61(a).

Several CB'ers on the Island of Guam have complained to the FCC about a dead carrier on CB Channel 12 which they feel is being placed there deliberately to jam communications. They want the FCC to seek out the mystery station and revoke its license.

While on the subject of CB interference and jamming, the Perma-Power Company,

of Chicago, Ill., has filed a petition with the FCC which claims that Class D stations are causing grief to the operations of the automatic garage door openers which they manufacture. Even though their equipment operates on Class C frequencies, they feel that Class D stations are deliberately operating on the Class C frequencies or perhaps we are just plain "off frequency," or maybe we are overmodulating or possibly we are using more transmitter power than allowed. At any rate, whatever the reason, we are supposedly giving a rough time to their garage door openers and the company wants FCC sanction to shift its garage door operations to non-CB frequencies to solve the problems. S9

KBG4303 RIDES AGAIN

Continued from page 7

publicity to the members, so it isn't even too difficult for them to walk off with an election.

Is it possible that belonging to a CB club could "cost me" my license with the FCC?

This is strictly my own opinion, but I have a feeling that some CB'ers will be shocked when they see their applications for renewals of their CB licenses turned down by the Commission.

The FCC has a catchy little phrase hidden away in many CB license revocation actions, it says (in effect) that had the Commission known, at the time of the original application, that the applicant was "predisposed" to disregarding FCC regulations, it would have never issued the original license in the first place. So if you belong to a club which is making a lot of noise about "working skip" and doing all manner of other anti-Part 19 and anti-FCC things, it is not beyond the realm of possibility that old Fox Charlie Charlie is, like Santa Claus, "making a list and checking it twice, they're gonna find out who's naughty and nice." If you're on the list of persons "predisposed to disregarding FCC regulations," you may not get your license renewed. Be careful which causes you back, and which clubs you join. Don't say that you weren't warned well in advance!

Where does S9 get it's stories and articles?

We have lined up just about every "CB authority" in the country to write for S9. These include full time professional authors and also engineers who write for the sheer love of it. Articles are also frequently accepted from non-professionals—readers of S9 who feel that they have something of interest to tell other S9'ers. This includes construction articles, experimenter's circuits humor, cartoons, general interest CB stories, etc. S9 pays the top rates in the field for all articles published. Articles should include complete schematics and glossy photographs whenever possible. Got something to say? Write an article for S9!

Does S9 give away anything to clubs?

S9 gives, free of any charge whatsoever, our famous "Wall Certificates." The "Wall Certificates" are available in any reasonable amount to bona fide CB clubs who request same on their club letterhead with the request signed by an officer of the club. Individual certificates are available free to any S9 reader who requests one and sends a self-addressed and stamped envelope. The colorful 5½" by 8½" lithographed certificates are attractive additions to the wall of any CB shack. Personal CB calls can be professionally block lettered on the certificates when the request for the certificate(s) is given at the cost of 25¢ each. For clubs wishing personalized lettering of 10 or more certificates there is a 20% discount.

We also give an official S9 Press Card to the Secretaries of all clubs who furnish our Club Editor, John Krejc, with material on a regular basis.

Part 15 registration, is, as usual, free to all S9 readers whether or not they belong to CB clubs.

Perhaps the best free gift of all is the publicity which S9 provides for all legitimate and worthwhile CB clubs. S9 reaches more CB'ers and so does your club publicity when it appears in S9.

You have previously stated that S9 is a member of The Communications Equipment Manufacturers Association (CEMA). Elsewhere I heard that the President of CEMA has promised the backing of that organization to the American Citizens Band Association (ACBA). Since S9 has expressed rather strong feelings against the tactics and policies of the ACBA, how is it that S9 is a member of an organization which backs

a club which is obviously out to "get the FCC." Isn't this hypocritical?

This is a compilation of partial facts which would appear to paint a rather puzzling patchwork quilt of S9 policy making.

The background of this story is that outgoing CEMA President pro tempore (that means "temporary president"), John Artesani, attended an ACBA meeting not long before the CEMA elections. We understand that at that meeting, without having consulted the members of CEMA, he extended some form of CEMA recognition, affiliation, and/or backing to the ACBA. We at S9 learned of this with considerable shock and dismay, and we were considering S9's immediate resignation from CEMA but decided to wait until the May 19th CEMA elections in Chicago.

Len Haas, of Pearce Simpson, was elected the 1963-64 President of CEMA and promptly stated that, as far as he was concerned, no ACBA affiliation *of any kind* was under consideration by CEMA, and that none should be anticipated unless the members of CEMA vote to approve such action. Haas told S9 that he has informed FCC officials of this.

A recent published interview with Ivan H. Loucks left me with the impression that the FCC is encouraging the ACBA and might extend official recognition to the club. If this is true, why have you criticized the ACBA?

Well, because, for one thing, *it isn't true.* We at S9 speak to Mr. Loucks quite frequently in the normal course of our trying to keep readers on the right track.

We asked Mr. Loucks about the possibility of FCC relationships with a national CB club and he told us that the FCC would like to see a national club formed which was representative of the majority of CB'ers in the country, and was also representative of all the various interests in CB (this means the commercial users, boating interests, emergency and Civil Defense, etc.).

Now it stands to reason that the FCC will never extend encouragement to a group comprised of a handful of "far out" hobby users, and would never give this recognition of which Mr. Loucks spoke.

What is the most gratifying thing that has happened with S9 since it has been in existence? Also, what is the most disappointing thing?

Worst things first. I was rather disappointed at the CB'ers lack of interest in the forthcoming CB license fees. We have received huge mountains of mail on every other editorial stand we have taken, but this one drew relatively little. When you have to start shelling out the loot for your CB license, I hope that you will remember our July editorial.

Perhaps the most gratifying thing is the fact that in a little over a year we have brought S9 far to the front in CB circulation. This wasn't an easy job and we're not through with "big things" for S9. We have some exciting expansion plans on the editorial drawing board for the very near future. As things stand right now, S9 carries more paid CB advertising, has more CB pages each month, has more CB articles, has more top-notch CB authors, and a larger CB circulation than any magazine, anywhere, anytime. We look forward to the continuing support of CB'ers through your subscriptions.

SPECIAL GUEST EDITORIAL

by Frank Karcher, KDD1150
S9 Area Public Relations Editor
Spruce Pine, N.C.

WHAT HAPPENED IN KINGSPORT: A FIELD REPORT

I attended the ACBA's Kingsport Jamboree on June 28th, 29th and 30th.

On Saturday, the *American Citizens Band Association* held two meetings; one during the afternoon and one in the evening. I attended the afternoon session along with about only 40 other CB'ers, a rather sparse showing. The meeting was interesting, however I felt, from the questions being asked by the other CB'ers, that I was in a crowd of habitual FCC rule offenders.

After the talks by several ACBA members, it seemed as if there was a contest as to who had run up the most FCC violation notices. One man boasted 14 such notices and it was my impression that he still has his CB license.

While I always enjoy myself when I get together with other CB'ers, there was an entirely different attitude there than the one which prevailed at the Kings Mountain-Gastonia or Hartwell, Georgia, Jamborees. Both of these Jamborees seemed to put you more at ease and the people were more hospitable.

The most dissapointing thing of all was the fact that it had been advertised in the direct mailings and in CB Horizons (which runs the ACBA) that there would be many manufacturer displays on hand. This was misleading because during my en-

Subscription form between pages 48 and 49!

tire stay I failed to see *even one* of these displays materialize.

My opinions of the ACBA didn't change much, and from the opinions of the other attending CB'ers to whom I spoke, I judged that the ACBA *lost* more friends than it made from the "just curious" who dropped by to see what all the shouting was about.

Comments and opinions in the Guest Editorial are strictly those of it's author and do not necessarily coincide with the opinions of S9 Magazine.

READER MAIL

Continued from page 4

and enforcing same, will be the manner in which the majority of licensed operators use the allocated frequencies. No amount of yelling about "good deeds," loud and boisterous protests of denial of rights, or (to borrow your phrase) formation of a national anti-FCC club will bring any consideration or even tolerence from the FCC.

I was happy to see that you did not consider lowering yourself and your standards by appearing at the recent meeting of the anti-FCC American Citizens Band Club, despite their "open challenge."

Please keep up the good work in your well organized magazine which will in turn help all CB'ers to prevent making a mockery of the privilege that they now have and enjoy.

Your CB Chit-Chat pages interest me very much. May I suggest that if the format were changed to group the articles by call areas, the presentation might be more effective and interesting.

(name withheld by request)
South Carolina

Several other S9'ers have asked that we give a geographical grouping to the items in our CB Chit-Chat column. We kicked it around with John, S9's Chat-Chat and CB Club Editor, and he said he will give this idea a whirl for a few months to see how it works out. We always appreciate constructive comments from readers and discuss each at our staff meetings. S9

WEATHER AID

Continued from page 27

area where the 14R7, a 14A7, and the two IF transformers used to be. The filter chock is the primary of the old output transformer, mounted just where it was. The speaker is mounted on the front panel behind a 3" diameter hole cut where the dial used to be. As may be seen from Fig. 6, the bottom view, it is necessary to cut away some of the chassis to clear the magnet assembly of the speaker. The silicon rectifier is supported between one lug of the terminal strip and the lug of C_{4A}.

This simple conversion can be made quite economically if you already have the loctal tubes or can junk something containing them.

Next month, Part II, converting the BC-1206-C for your 12 volt mobile unit. S9

ANTENNAS

Continued from page 45

opposite of the radiation condition for a broadside antenna. Maximum radiation is off the ends of the line between the two antenna elements; hence, the name end-fire antenna.

There is one very special case of end-fire phasing of two antenna elements. If two elements are spaced by 90 degrees (quarter wavelength) and fed 90 degrees out-of-phase it is possible to obtain a broad unidirectional pattern as shown in Fig. 9. This often referred to a cardioid pattern.

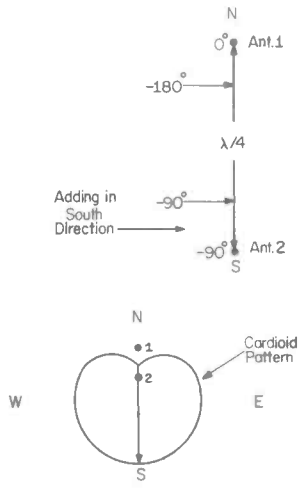


Fig. 10. Operation of 90° End-Fire Elements, Ant. 2 Lags Ant. 1 by 90°.

It is interesting to note how this pattern is formed (Fig. 10). Again let us assume that antenna 1 is a reference. We will assume that the phase of the signal at antenna 1 is zero degrees. Antenna 2 will now be fed with a lagging 90 degree signal. This means that it rises to a maximum value 90 degrees after the antenna 1 signal.

Let us now follow a radio wave as it travels between antenna 1 and antenna 2. Since the path length between antenna 1 and antenna 2 is 90 degrees there is a 90 degree lag of the signal. This means that it is arriving at antenna 2 in-phase with the RF signal present at antenna 2 because antenna 2 has been fed 90 degrees behind antenna 1. Thus the two RF components are additive and there is a strong signal sent out in the south direction .
9 on 9—

The situation is quite different for a signal traveling between antenna 2 and antenna 1. First of all the signal as it leaves

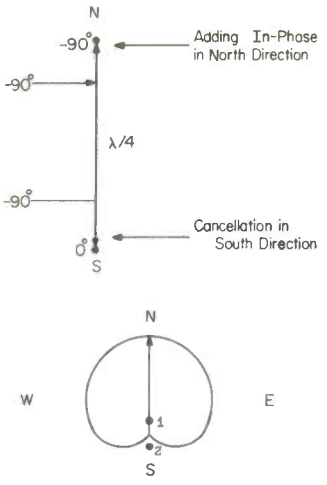


Fig. 11. Operation When Ant. 1 Signal Lags that of Ant. 2 by 90°.

antenna 2 is already lagging by 90 degrees the signal at antenna 1. In traveling the quarter-wave distance between antenna 2 and antenna 1 there is an additional 90 degree time-delay or lag. Thus it arrives at antenna 1 180 degrees behind the signal present at antenna 1. Therefore the two components are out-of-phase. As a result there is minimum signal radiated in the north direction.

The advantage of this type of end-fire antenna is apparent because its radiation and pick-up sensitivity is in only one major direction.

The pattern can easily be reversed if desired by feeding antenna #1 90 degrees behind antenna #2. In this case, there would be maximum signal sent out in the north direction and no signal in the south direction as shown in Fig. 11.

Of course, any desired angle could be selected by proper angling of the two antenna elements. The two antennas must be placed in line in the given direction with the front antenna being fed 90 degrees behind the back antenna.

COLLINEAR ANTENNA

The final basic phasing method for two driven antenna elements is the collinear arrangement of Fig. 12. In this case one antenna is placed above the other. The feed points are separated by 180 degrees and, as in the case of the broadside antenna, are fed in-phase. Modifications of this style antenna are already available as base station types for class D operation.

The advantage of the collinear antenna in addition to a gain improvement, is that it concentrates the vertical radiation pattern at a low angle. This is of importance for CB operations which is dependent upon line-of-sight propagation.

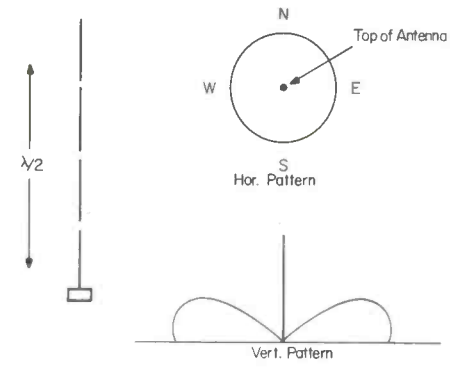


Fig. 12. Two-Element Collinear.

The collinear antenna however is not directional in terms of its horizontal pattern. The horizontal radiation pattern is circular just as that of a single antenna element.

It should be stressed at this point that it is possible to combine the various types of phased antenna into groups o ffour or more elements. For example, it would be possible to combine two collinear antennas in either a broadside or end-fire grouping. Actually there would now be four antenna elements and a directional horizontal pattern could also be obtained. More on this in a later column.

Phased antennas are likely to become an important part of CB installations. CB installation and repair shops should be aware of the possibilities of phased antennas. At the very high CB operating frequency there is usually available roof space for the erection of this style antenna system. A phased combination can afford an inexpensive way of obtaining a directional pattern tailored to a specific CB operation and geographical location.

CB CHIT CHAT

Continued from page 50

brush fires, etc. The club also has a club paper, write: Mathilda Schaper, KFJ0247, 7519 Empire Way South, Seattle, Washington—Zip Code 98118.

An S9 Exclusive—Steve Harding, 13Q0901, A.P.R.E., S9, wishes that CB'ers and Clubs in the 13th district send him their news for publication in S9. Steve's address is 5605 N. Atlantic Ave., Portland 17, Oregon.

From the **Newsgram**, club paper of the South-Lynd Radio Club, Lyndhurst, Ohio—Be it resolved that we, the members of the South-Lynd Radio Club, hereby pledge ourselves to create a better understanding of Part 19 of the regulations of the F.C.C. and to promote and educate to the best of our ability the pleasures and benefits of radio communication among our members. We shall exchange information and impart general cooperation to promote radio knowledge, fraternalism, and individual operating efficiency. We shall conduct club programs and activities to advance the general interest and welfare of radio communications in the community. WELL WRITTEN——

COMING EVENT—The Five-Eleven Radio Club, Inc., of Pittsburgh, Pa., will hold their Annual CB Picnic, Sept. 8th, Sunday, White Swan Park, Parkway West, Allegheny County, Pa. This is near the Greater Pittsburgh Airport, the same park where they held it last year.

COMING EVENT—The Aurora Highlighters Club, will hold their Jamboree, August 25th, at Phillips Park, Route 30, Aurora, Ill. There will be refreshments, and many various displays. For further info contact: Jack Craven, 112 Pleasant St., Sandwich, Ill.

Due to an oversight, we neglected to mention that our excellent June "antenna" cartoon cover was drawn by Henry Projansky.

LAB REPORTS

Continued from page 36

Now all this may sound like "too much" to expect from a piece of gear which sells for such a "real CB" price (less than $45), at least without having some of the features "compromised." This is not so because the S9 lab and some "on the air" tinkering really put the Port-A-Lab through its paces and it performed like a trouper.

The first test we put it through was to check the accuracy of its RF power meter. We first pumped some 27 mc/s signal into a lab precision wattmeter just to see what the particular rig was putting out; it rated the unit at 3.4 watts. Next, the same rig was fed into the Port-A-Lab and we obtained a rating of 3.5 watts, a one-tenth of a watt difference which equals about a 3% accuracy, well within their specified tolerance.

Next, we tried out the ruggedness of the dummy load. No matter how long we ran a CB rig into the Port-A-Lab's dummy load there seemed to be no adverse effects on the gear. At 50 watts, the resistors began warming up and after a solid 5 minutes of 50 watts the enamel on the resistors began to discolor.

The modulation metering function of the Port-A-Lab was checked against an oscilliscope and was found to show what was, essentially, the same reading.

The Port-A-Lab currently in production is a slightly modified verision of the one which was originally brought out by *e.c.i.* The present model has a built-in whip antenna, where the previous model employed a whip which was clipped on the rear of the unit when not in use and inserted in a socket on the unit when required. This was a worthwhile modification because the whip on the rear of the older unit could fall off or become otherwise separated now and again, causing great consternation when the *field strength meter* function was desired.

The Port-A-Lab has the now well known "*e.c.i.*" look, black satin finish with mirror-like chrome, aluminum knobs.

Our opinion: it will enable you to have the functions of several pieces of test equipment, and do a most acceptable job, at a most acceptable price. If you want more details, or the name of your nearest dealer, drop a card to Irwin Sussman at *e.c.i.*, 325 North MacQuesten Parkway, Mt. Vernon, N. Y.

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.

New "Audio-Aid-All" Clipper-Filter kit, fits any transceiver, boosts modulation, aids reception, $10.99. Hy-Gain Mark II Colinear, $29.95. Omni-Topper, $10.97. Best buy: DP = 2 BC/CB antenna coupler, $4.99. Noisejector, NJ-7, $4.49. Postpaid! For Heathkits, our preamps double reception! SK-3 Preselector kit fits GW-10, GW-11, $8.99. SK-4 Preselector kit fits GW-12, $8.99. Wired, $11.99. Postpaid! HOLSTROM ASSOCIATES, Box 8640-S, Sacramento, California, 95822.

3-D QSL CARDS. Don't miss out! Acclaimed everywhere! Brightest, most up-to-date cards of all! Samples free! 3-D QSL, Box 345-C, Covina, Cal., 91724.

QSL's—Quality—Immediate Service—Reasonable 6-color Rainbows—Cartoons—Etc. Samples 10¢ Refundable. Harms—KDI1143—905 Fernald—Edgewater—Florida.

QSL Cards, 100 two color Glossy, $2.50, postpaid. Samples dime. Ramsbottom Printing, Box 2373, Kirksville, Missouri.

WALKIE-TALKIE RADIOS: CITIZEN BAND EQUIP.; INTERCOMS; RADIO-TV PARTS—FREE CATALOGUE—ALLEN ELECTRONICS, 4142A Main, Flushing 55, N. Y.

CHEAP! CHINTZY! RUN OF THE MILL QSL's, but what do you want at 1¢ each? Send 10¢ for wild samples. Save your money for a Rainy day! Nussbaum, 1440 54th St., Brooklyn, N. Y., 11219.

CB QSL's, 100 for $3.00, samples 25¢, Redbird Printers, Freedom, Indiana.

1000 personalized gummed name and address labels 2" x ¾" in plastic box, $1.00 postpaid. Ramsbottom Printing, Box 2373, Kirksville, Missouri.

CB QSL cards. Samples free. Paul, 7701 Tisdale, Austin, Texas.

WANTED! Your CB card—Need wall paper badly—will exchange! KBA8553 Bill Jones, 127 Grove St., Putnam, Conn.

When experience counts, it's S9 every time!

CITIZEN BANDERS . . . Control Labs' Hi-Gainer fully transistorized—compressor—clipper—amplifier. Tremendous audio punch. Penetrate the noise level. Far greater transmitting distance. No modification—complete ready to use. Does not violate FCC regulations. $22.95. For nearest dealer write: Data Components Corp., 215-32 Murdock Ave., Queens Village 29, N. Y.

QSL's 100-$1.50. Samples-10¢. Bill, 545 Palmetto Lane, Aiken, S. C.

ATTRACTIVE CBL's. Large variety of styles; cartoons, colors. Samples 25¢ (deductible). Levin K2MTT, Dept. CB, 1460 Carroll St., Brooklyn, N. Y., 11213.

QSL'S Class D & Part 15. See our NORTHERN 880 QSL in this month's Part 15 Korner. Four nutty styles, you put in your own call. Cards navy blue on white hi-quality matte stock. Lowest prices for highest quality: only $1 for 100. Samples 10¢. Nussbaum, 1440—54th Street, Brooklyn, N. Y., 11219.

CB QSL's—BROWNIE W3CJI/3W1974. 3111D Lehigh, Allentown, Pa. 18103. Catalogue with samples 25¢.

PRINTED FELT IDENTIFICATION PATCHES, stamp brings sample, information, large or small orders, rapid service. ALSO—BUMPER STICKERS, day glow background, weatherized. Groton Specialty Co., Groton, Mass.

James Knight Crystals, for Johnson's $2.50 each. Del. No C.O.D. Ira Lee, Henager, Alabama.

CB QSLs. Glossy, two colors $2.00 per 100, postpaid. Free sample. Hobby Print Shop, Umatilla, Fla.

NEW 1964 CB CALL AREA MAPS in dazzling red-on-white, big 8½" by 11" size, see next year's call prefixes NOW! Only 25¢ from "Wall Certificate," % S9 Magazine, 300 West 43rd St., New York 36, N. Y.

CALL CARDS—BADGES—DECALS—"GOODIES." ILLUSTRATED LITERATURE WITH SAMPLES 25¢. 1W6216 % Errol Engraving, Westfield, Mass.

Full six month warranty on all repairs. Only first class tickets service your two-way. Full service facilities for communications, industrial, consumer electronics. Ship prepaid, returned express collect. Audio Video Service, 805 So. Minnesota Avenue, Sioux Falls, South Dakota.

LOOKING? SHOPPING? TRADING? Trying to save money? Write Bob Graham for special deals on new and reconditioned used gear. Cash or Budget. Graham Radio, Dept. E, Reading Massachusetts, Tel: 944-4000.

WE PRINT WHAT YOU DRAW—glossy card stock black ink—1,000 for $15.00 postpaid. Other QSL's from $1.75-100 PP. Reed Advertising, 546 Pond Run Road—Raceland, Kentucky.

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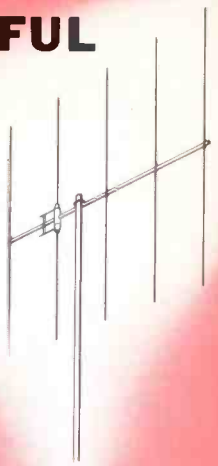


hy-gain's All New LONG JOHN 5-Element Beam

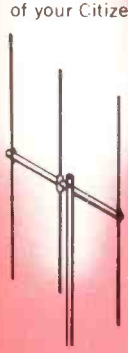
- Delivers Tremendous 12.7db Forward Gain
- SWR at Resonance 1.05:1
- Rotates with Heavy Duty TV Rotator

Now...base station-to-mobile or point-to-point, you can multiply your power 10 times – give your CB transceiver the effective radiating power of a 50-watt rig – with the installation of Hy-Gain's a l new Long John 5-element beam. Check the phenomenal performance figures developed by the Long John when vertically installed: 12.7db forward gain; 25db front-to-back ratio; 40db front-to-side ratio. Receiving or transmitting, the Long Lohn is positively the highest gain directional antenna system commercially manufactured for Citizens Band.

Here's an important consideration...Hy-Gain subjected the Long John to exhaustive field tests just as they do with all of their products. It was determined that a vertically polarized installation on 27 to 30 Mc delivers performance far superior to that attainable with a horizontally polarized installation. On Hy-Gain's 5.5 mile test range, vertically polarized installations proved as much as 25db stronger than horizontally polarized installations. This performance difference is due to ground absorption losses and other accumulative ground effects. Where circumstances require, the Long John is adaptable to horizontal installation without modification. However, maximum performance and range can be attained only when it (or any other beam) is installed vertically.

Structurally, the 30 pound Long John has five 16'6" heavy wall aluminum elements which are mounted on a 24'x 2" O.D. heavy gauge boom. Vertical turning radius is 12'; horizontal 15'. Insulators are of high impact cycolac plastic and all steel parts are iridite treated to MIL specs. The Long John features Hy-Gain's exclusive Beta Match and comes to you factory pretuned for 52 ohm feedline. SWR at resonance is 1.05:1. For much improved signal-to-noise ratio and lightning protection, the driven element of the Long John is at DC ground.

Easy to assemble and install, the incomparable Long John will vastly extend the coverage and readability of your Citizens Band signals. It's reasonably priced, too...Hy-Gain's Model 115B...only **$69.95** Net.



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Expressly designed to develop maximum performance in minimum space...16'6" elements on a 9' boom with a vertical turning radius of 4½' and a horizontal turning radius of 8'. Weighs only 15 lbs. Has same quality construction and features found on the Long John... gain is slightly less due to reduced size. Will positively out-perform any beam of comparable size at only...**$31.50** Net.

STACK 'EM FOR ADDITIONAL RANGE

Stacking two 115B's or two 113B's will give you an additional 3.5db gain literally re-doubling the power increase you get from installing a single unit. Complete instructions for stacking included with every Hy-Gain beam.

See them today at your favorite Hy-Gain Distributors or write for the name of the Hy-Gain Distributor nearest you.

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