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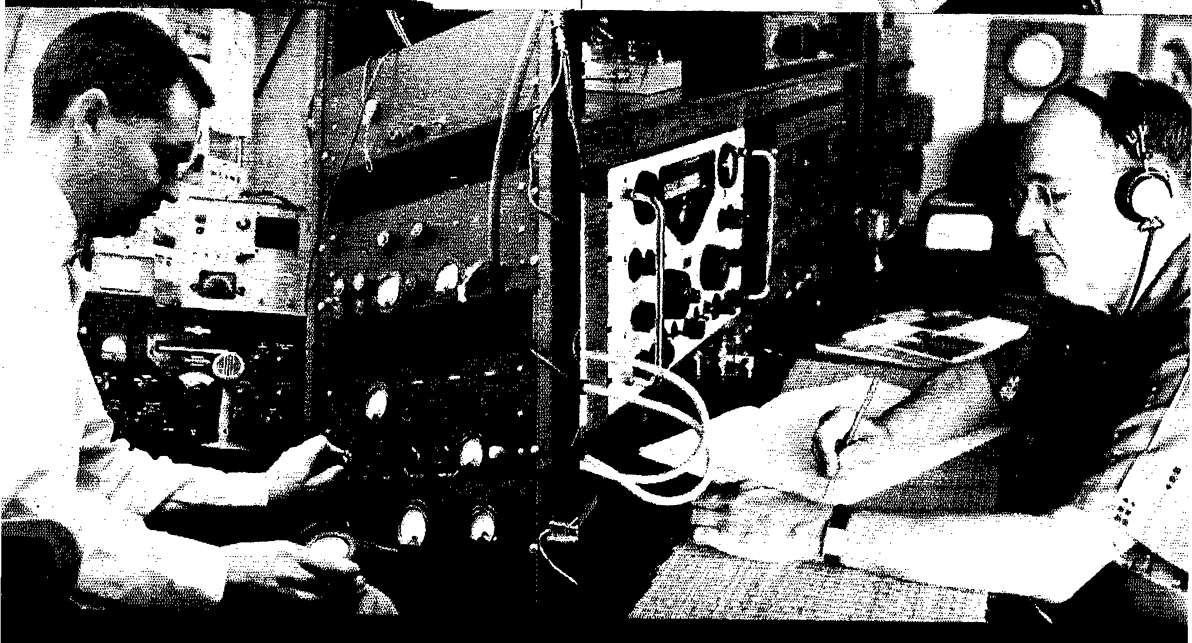
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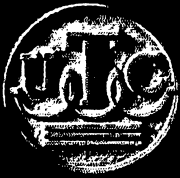
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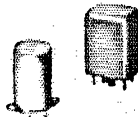


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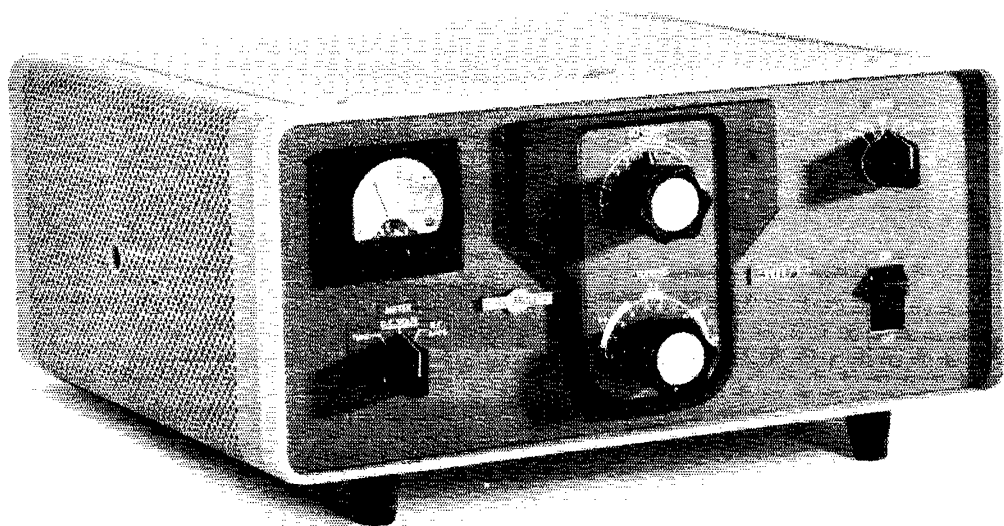
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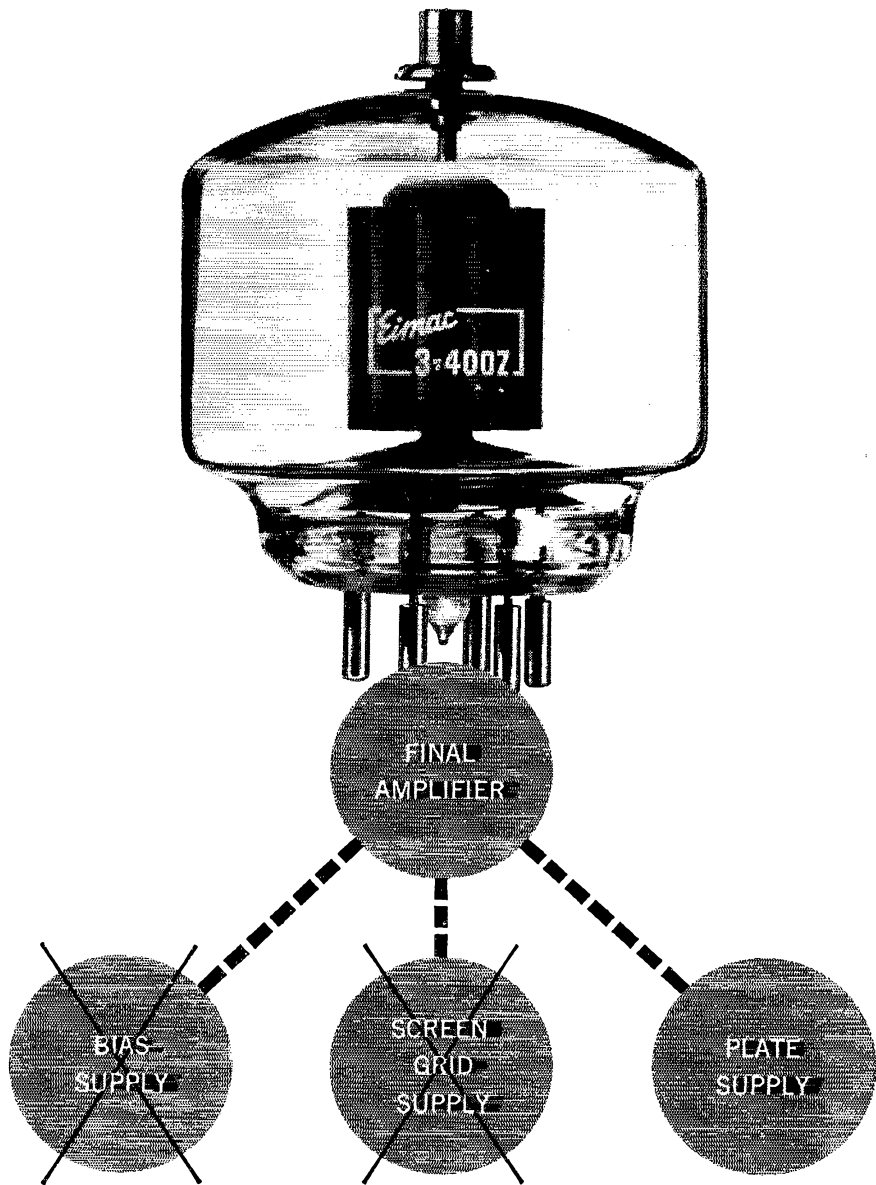
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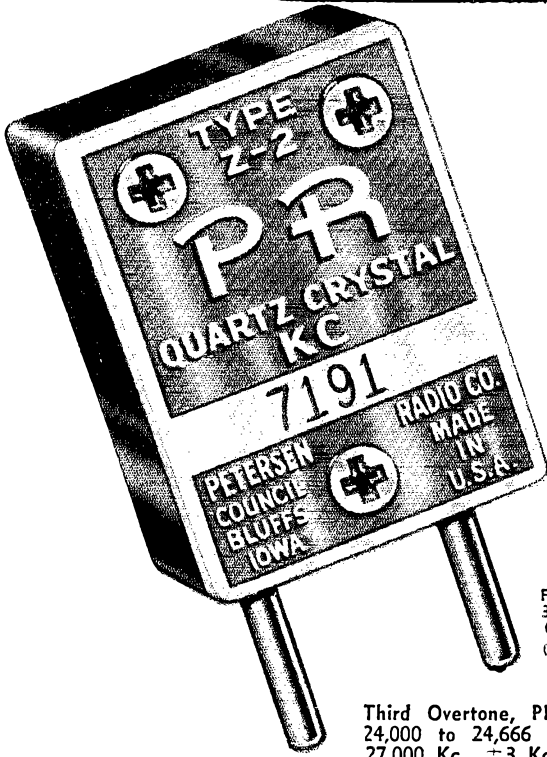
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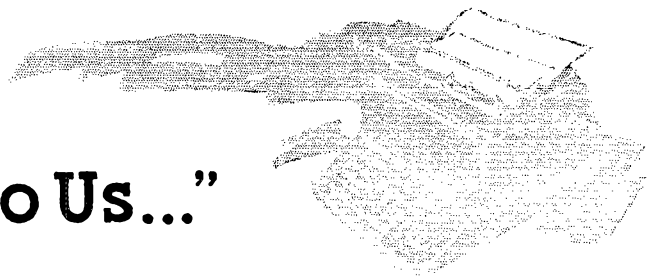
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### West Gulf Division

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# "It Seems to Us..."



## CB TVI

IT IS no news to most amateurs that Citizens Band operators at 27 Mc. often have sufficient harmonics to cause interference to television reception, especially in crowded residential sections. Because the public has heard a lot about hams, and little or nothing about CB activities, it is only natural that they blame "some ham." Thus we have a problem.

Few of us have a very high opinion of CB operations. Some of this is perhaps due to prejudice, since the operation is on what was once "our" band. Much of it is due to the poor CB operating techniques, shenanigans, and outright rule violations we daily hear when we eavesdrop at 27 Mc. But we should be careful not to let these emotions blind us; we cannot dismiss the TVI problem by simply saying it is their baby. The amateur is being blamed, however unjustly — so for us it is a public relations problem.

Most CBers are not technically competent, yet we're sure the majority are seriously interested in clean operation and a good name for their service, and would cooperate in solving the TVI problem. As we see it, the solution is not to damn the CB operators, but to work with them. Why not invite a CB man to represent the group on your TVI committee? Arrange to refer to him any complaints identified as CB, of course notifying the complainant as to what is involved and what action you are taking. And let's help them out with technical hints and kinks on TVI solutions; or get 'em to buy a *Handbook*, since most 27-Mc. problems have the same solutions as our 10-meter operations. (Remember, however, that any equipment modifications can be undertaken only by the holder of at least a second-class commercial license.) The basis for the FCC-sponsored TVI committee program is *cooperation*. Let's put aside any personal dislike we may feel for the CB service, then, for a solution is as much a help to us as to them.

And who knows? — you may make a few good hams out of the group.

WHILE on the subject of CB, we have been receiving complaints from amateurs concerning illegal operating practices in 27 Mc. The feeling seems to be that the League should "do something" about it. We have also

received offers to make tape recordings of violations to forward to FCC.

First off, let's admit that some of the CB operating is deplorable. No one knows this better than the FCC staff, which is doing its best to cope with the problem. But this is not an amateur band. And, strictly speaking, it is not the amateur's nor the League's business. We personally sympathize with the honest desire of amateur's to "clean up" CB operations by reporting violations to FCC. But there is a practical roadblock in Section 605 of the Communications Act, the "secrecy" clause. An amateur (or any other person) who publishes or discloses communications taking place on CB frequencies could be in violation of that section and subject to a felony charge — aside from license suspension. If FCC were to receive a tape recording of a CB infraction, it would probably act to discipline the CB licensee, but it is simultaneously in the embarrassing position of having to consider punitive action on the person who violated Section 605 by furnishing the recording!

Let's be governed accordingly. Reports to your district FCC office on CB violations can name specific times, frequencies and stations — but as to context, or the nature of the offense, should deal only *in generalities*. Let the field office take it from there.

## BOARD MEETING

THE annual meeting of the Board of Directors will be held commencing May 5, this year at Anaheim, California. While an old story to long-time ARRL members, let us remind newcomers that the affairs of the League are governed by a Board of Directors nominated and elected by you — the membership. Each annual meeting is the occasion for a thorough review of the progress of the League, examination and discussion of current problems, and a charting of our course for the future. To faithfully and intelligently represent membership interests, each director welcomes comment and criticism from those in his division. If you have views on League or general amateur affairs, — whether a suggestion to improve a current situation or policy, or a brand-new idea — convey them to *your* director. His address is on page 8 of this and every issue of *QST*. QST



## COMING A.R.R.L. CONVENTIONS

- May 26-29 — Southwestern Division, Phoenix, Ariz.  
August 26-27 — Central Division, Springfield, Ill.  
September 15-17 — New York State, Niagara Falls.  
October 13-14 — Great Lakes Division, Cleveland, Ohio.  
October 13-15 — West Gulf Division, Kerrville, Texas.

### SOUTHEASTERN DIVISION CONVENTION

Orlando, Florida — April 7-9

Top-rated technical speakers are planned for the Southeastern Division Convention and Orlando Radio Club Hamfest, Friday, Saturday and Sunday, April 7-8-9, according to David Hall, W1TOD, Executive Chairman. Convention site is the Cherry Plaza Hotel, overlooking Lake Eola and the Centennial Fountain at Central Avenue and Eola Place in downtown Orlando.

Among special activities are those for XYLs. Hal and Evelyn Shea, W4BKC and K4UIZ are in charge of a Royal Order of the Wouff Hong initiation and ceremony. There is to be a display of amateur equipment with attention given to a complete s.s.b. station. Swap tables will be provided for those wishing to bring gear for trade.

For all convention activities, tickets are \$5.00, with registration-only admission tickets at \$2.00. Ticket requests should be sent to the convention sponsor, Orlando Amateur Radio Club, Inc., P.O. Box 2067, Orlando, Florida.

### NEW ENGLAND DIVISION CONVENTION

Swampscott, Massachusetts — April 8-9

Expanded to two full days, the New England Division Convention, sponsored by the Federation of Eastern Massachusetts Amateur Radio Clubs, is again set for the New Ocean House at Swampscott. The FEMARA expect to break last year's convention attendance record. With a top-notch program planned, Ernest Coons, W1JLN/FOE, General Chairman, also announced there will also be special activities for XYLs.

Lectures and exhibits open at 1 P.M., Saturday, April 8, and close at 6 o'clock that evening when an s.s.b. "Dutch Treat" dinner is scheduled with prominent speakers. At 9 P.M., the ballroom will be arranged in night club style with entertainment and a dance band. No admission charge will be required, other than convention registration.

Sunday, April 9, activities begin at 9 A.M., with guest speakers, among them Bill Orr, W6SAL. Mobile hunts, other contests, net and MARS meetings will follow, including FCC exams for General and Extra Class at 10 A.M. The convention banquet begins at 5 o'clock with contest winners to be announced then.

Advance registration is \$3.00 (or \$4.00 at the door). Tickets for the banquet (roast beef) are \$5.00. Checks should be made payable to "FEMARA", and sent to Radio Convention, 15 MacArthur Blvd., Danvers, Massachusetts. Hotel reservations should be made directly with The New Ocean House at Swampscott, Massachusetts. Swampscott is located on Route 129 between Lynn and Salem.

### DELTA DIVISION CONVENTION

Chattanooga, Tennessee — April 7-9

The Delta Division will hold its annual convention at the Road House, Chattanooga, Tennessee, April 7-9. The displays will be set up Friday and the Convention officially opens at 4 P.M. Friday for registrations, informal get-together, and hospitality. Registration fee for the convention is \$3.50; for the convention and banquet, \$7.50. Special activities have been provided for the XYLs. A Royal Order of the Wouff Hong Initiation is also planned.

An excellent program of speakers has been arranged with the highlight of the Convention a talk by Dr. Werner von Braun of the National Aeronautics & Space Agency at Huntsville, Ala., at the banquet.

The Frye Amateur Radio Club is sponsoring the affair. Bert Osborne, W4MF, is General Chairman.

Ticket requests and registrations should be addressed to Joyce Lawson, K4QNI, Frye Amateur Radio Club, Box 13, Chattanooga, Tennessee. Y'all come!

### CORRECTION ON K6YDQ

March QST erroneously reported a three-months' amateur license suspension action by the Federal Communications Commission in the case of William L. Bradford, jr., K6YDQ. Actually, the matter was dismissed by the Commission, with no suspension involved. The editorial error occurred in misunderstanding the dismissal action as applying to Bradford's request for a hearing.

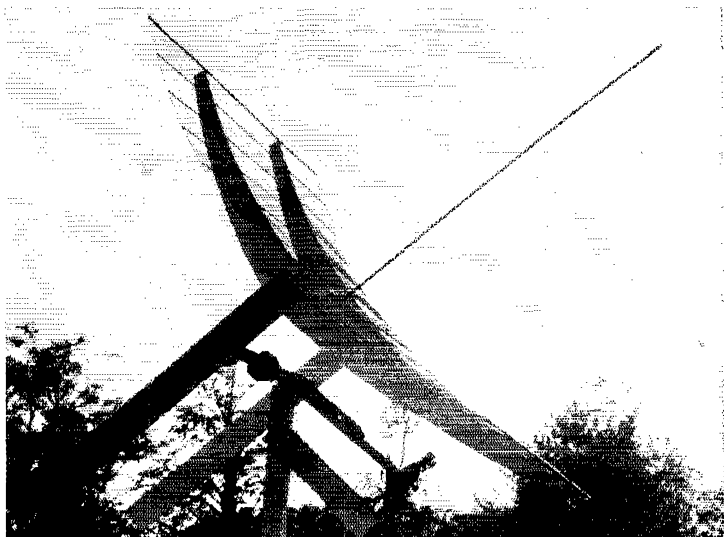
We hasten to set the record straight, and extend our sincere apologies to OM Bradford for any personal difficulties this erroneous report may have caused him.

### OUR COVER

John Chambers, W6NLZ, occupies the left-hand portion of this month's cover, while Ralph Thomas, KH6UK, is to the right. For their pioneering on the very high frequencies they were recipients of the 1960 Edison Award, as reported on page 48 of this issue.

The W1TQZ reflector for 1296 Mc., ready for the installation of its feed system. Surface is flat in the horizontal plane, and only a slight distortion of an arc of a circle in the vertical plane. Horizontal aluminum tubes are fastened to the wooden crescent-shaped arms, and the surface of hardware cloth is wired to these.

**Moon-Bounce  
Capability for  
\$99.98 or Less**



## A Home-Built Parabolic-Type Reflector for 1296 Mc.

BY FRANCIS LeBARON,\* W1TQZ

WITH all the current interest in moon-bounce efforts and satellite communication, the idea of an inexpensive parabolic-type antenna and mount seemed worthy of investigation. Considerable discussion and a few pads of paper later the following design evolved.

The basic criteria in order of importance were (1) Cost; (2) Ready availability of components; (3) Ease of fabrication; (4) Frills and refinements. With this approach, most of you can probably improve on some of the details, particularly if you have access to more sophisticated forming equipment and welding. Both have been avoided almost entirely in this design, so that any amateur willing to expend the effort and cash should be able to build this antenna system.

### *Parabola vs. Cylindrical Reflector*

Strictly speaking, this is not a parabola, but a slightly distorted cylindrical reflector. Consultation with W1FZJ brought out the point that a cylindrical parabola (section one way a parabola; at right angles to this a straight line) is only slightly inferior to a paraboloid of revolution, and the former is oh-so-much easier to construct. Mathematical investigation brought out the fact that for a focal length of ten feet and a diameter of about 16 feet, the maximum difference between a cylinder segment and a cylindrical parabola is only about 0.8 inch! At 1296 Mc. and below, this is scarcely significant.

A parabola is a curve each point of which is equidistant from a point called the focus and a line called the directrix. Mathematically it is

\* 255 East St., West Bridgewater, Mass.

described by the equation  $y^2 = 2px$ . This is roughly plotted in Fig. 1A. If we solve this equation for the focal length and up to the diameter listed above, we get the first two columns of Table I. Now a circle is nearly equivalent to a parabola for a short segment. The effective focus of a segment of a circle is one-half its radius. See Fig. 1B. Therefore, let's compare a circle of 20-foot radius with our parabola. The equation for the circle is  $y^2 + (x-p)^2 = p^2$  (You experts in analytical geometry check me!). The results are plotted in Column 3 of Table I. The difference between Columns 2 and 3 is tabulated as Column 4. This is the error resulting. From this it is apparent that the maximum range of error is only 0.84 inch. At 1296 Mc. the wavelength is about 0.23 meter or approximately 9 inches. Therefore, we have an error of less than one-eighth wavelength, or supposedly not enough to cause any cancellation, though the gain may not be up to the theoretical maximum. The layout and checking obviously are much easier with a circle.

You bears for punishment may proceed with the layout and use the error figures in Table I as offsets from the circular arcs to get a true parabolic section. Good luck to you! More conservative souls will be content either to leave well enough alone at a true (as you can construct) circle or a flattened approximation, setting each tip of the main arms  $\frac{1}{2}$  inch back of the circular position. This is in effect using each half of the reflector as a separate unit aimed at a common point, and it works out to an error of about 0.3 inch. See Column 5 in Table I.

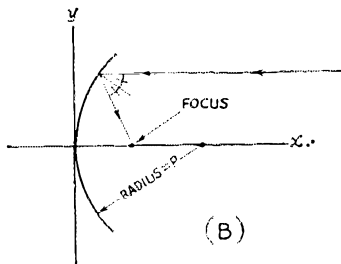
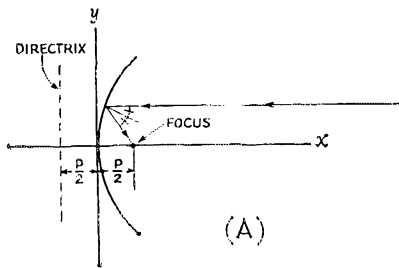


Fig. 1—Method of laying out a parabolic curve, as outlined in the text, is shown at A. For all practical purposes a reflector made by drawing an arc with a 20-foot radius, B, is identical in results at 1296 Mc.

### The Moon-Tracking Mount

The mounting is an equatorial type; that is, to follow a celestial object such as the moon it is necessary to feed in only compensation for the rotation of the earth (hour angle) for all practical purposes. An altitude-azimuth mount would be easier to construct, but how many of you have the requisite computer and fancy aiming drives required? We'll stick to the equatorial mount. To follow an artificial satellite is a problem with either type mount.

Procedure for construction of the mount is more or less like the classic recipe for rabbit stew; first get the automobile rear end! The remaining mechanism is built around it and to some extent from it. Any rear end can be used, such as a Buick, that is built with a torque-tube construc-

tion, or no universal joint at the differential and a tubular construction next to the differential.

If possible, take off the differential cover and check that the pinion gear and ring gear are in decent shape. Have a friend rotate the shaft, and check backlash and see that the pinion gear does not move up and down or in and out. If it does so, the bearings will have to be taken up, or you'd better find another one.

Pick one that uses bolts, not studs, to hold the wheels on. Police up some bolts at least  $1\frac{1}{4}$  inches long under the head, to fit the wheel-bolt holes. Find an old universal joint or other splined coupling to fit the transmission end of the drive shaft. A couple of bicycle chains, sprockets, and two or more reasonably serviceable roller skates, and you are ready to talk dollars to the junk man. If you see a worm-gear drive, get it, too. If you are on good terms with the yard man, and do some of the work involved in getting the material together, you may get the works for \$15 or less.

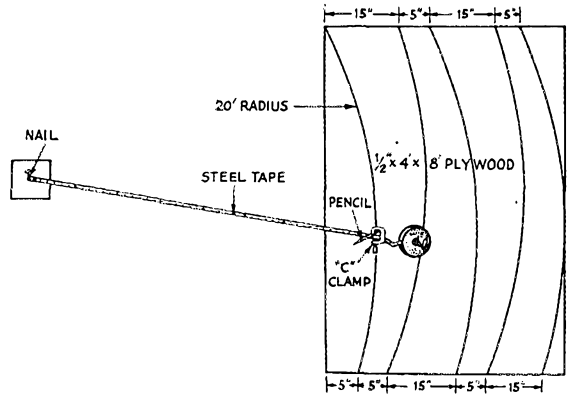
The rear end should be used with as much weight as possible removed. We removed one complete brake drum, brake mechanism, both shock absorbers and associated parts. To do this it was necessary to pull the axles, a short but messy operation. Drain the oil, open the differential cover, remove the safety pin from the spider-gear pin, remove the spider-gear pin, remove the spacer block, slide the axle inward enough to clear the locking horseshoe-shaped clips, remove the clips and slide out the axles. Remove the unwanted parts. Save the brake drum removed, as this will be the hour-angle drive pulley. The other brake assembly is left on as an elevation brake. Reassemble the axle and other parts. Mop up the inside of the case.

The differential (axles) must be locked with an absolutely rigid connection from one axle to the other. Just locking the gears is not enough, as there will be 5 to 10 degrees slop in the gears and splines, or enough to distort the dish badly. At the same time, the wheel-bolt holes must have the proper relationship from one side to the other. Also, the axle as a whole must rotate freely for the latitude drive. We recommend that you take the thing to a welder, and carefully line it up by supporting it on two bolts in each wheel hub,



Wiring on the hardware-cloth reflector. Workers are, left to right, Dave Walker, Vern Robertson, W1EGE, and Southard Lippincott, W1DDN.

Fig. 2—Marking a plywood surface for cutting to form the supporting arms for the reflector surface is done by using a pencil clamped to a steel tape at the 20-foot mark. The end of the tape is fastened in place by means of a nail, and the plywood is moved about to describe arcs in the positions shown.



with these bolts resting upon some parallel supporting edges. Then have the axles welded to the spacer block in the differential. Clean out the welding splatter and re-oil. Adjust for minimum drive-shaft slop if you wish, and put the cover on. An unchecked alternative would be to clean both axle splines and the gear splines very carefully, and attempt to lock them and the spider together with Devcon Plastic Steel or similar material.

### The Wooden Supporting Structure

The drive mechanism described above is mounted between two T-section wooden arms. To make these arms, a 10-foot sheet of  $\frac{3}{4}$ -inch plywood (see bill of material) is ripped into four 1-foot widths. These are assembled to make two T-sections 10 feet long. Unless you did a better job than we, use the two original machine-cut edges for the joint, taking advantage of their accuracy. Use a good grade of glue, and put in  $1\frac{1}{2}$ -inch screws about every six inches. Temporary clamps, or perhaps blocks, will make the alignment easier. Let the glue set sufficiently before continuing.

Measure 3 feet along the center line of one face and mark. With this as a center, place the brake drum on this face, mark and drill the holes for the wheel bolts. Use the brake drum as a jig to insure accurate alignment. Remove the drum, clamp the other T-section face to face with the first, and drill the holes. If you have aligned everything properly so far, when assembled to the rear end the arms will be parallel. But don't assemble them yet.

Now mark any other places needing clearance, such as the axle ends and the small bolts holding the brake drums on. These spots must be drilled or chiseled into the plywood to allow clearance for the parts.

### Reflector and Frame

Find a reasonably level place where you can get at least 20 feet from the corners of the sheet of  $\frac{1}{2}$ -inch exterior plywood, laid flat. With a 20-foot radius, mark off an arc of better than 8-foot length. Then following Fig. 2, mark the sheet of plywood. Use the same center for all arcs, shifting the plywood toward the center and aligning it with the original marked-off arc. Cut these

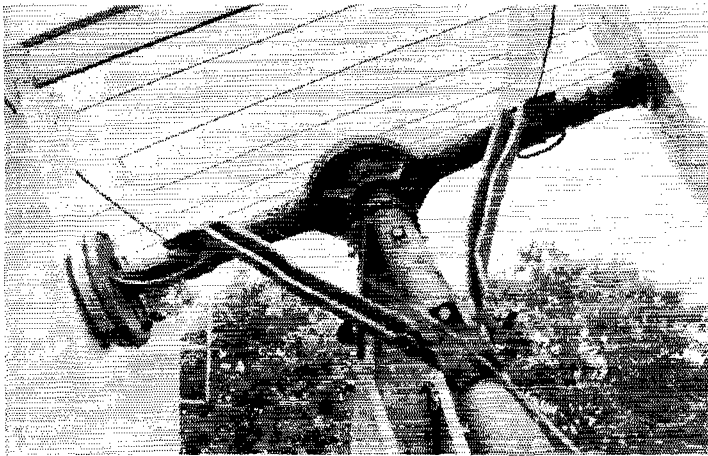
arms out. If you are really skillful and ambitious you can do it with a common hand saw, but a saber saw is a lot better and easier. The convex piece of waste forms a good gauge.

If we splice the arms with the concave faces  $\frac{1}{4}$  inch away from the ends of this curved piece, while the center joint touches the center of the piece, we have the corrected curve of Column 5, Table I. The joint between the main arms and the dish arms is the critical one. The ends of the circular segments do not butt square, and a filler piece should be made. This piece should also be plywood to prevent distortion from the differential expansion from weather extremes. All pieces must be assembled accurately. If you do not intend to move the dish to some other site, these joints may be screwed together and glued at final assembly. Our dish was bolted only; we hope to work moon bounce from the state of Vermont with it eventually.

The curved arms are set forward of the end of the T-sections by about  $1\frac{1}{2}$  inches, clamped, checked with the curved remnant as explained above, checked for equal distances from tips to end of main arm, and bolted or screwed in place. The first assembly is then turned over and the second made on it as a guide. Match mark the pieces and disassemble.

Carefully measure between the mounting surfaces of both wheel hubs. Adding 2 inches to this measurement, make a crude jig for this total, to allow drilling the aluminum tubes which will serve as supports for the reflecting surface.

Y, Feet	X, Inches Parabola	X, Inches Circle	Difference Inches, Circle — Parabola	$\frac{1}{2}$ -Inch Setback Tips; Difference from Parabola
0	0.00	0.0	0.0	0.0
1	0.30	0.30	0.0	-0.06
2	1.20	1.20	0.0	-0.13
3	2.70	2.71	0.01	-0.18
4	4.80	4.85	0.05	-0.20
5	7.50	7.62	0.12	-0.19
6	10.80	11.05	0.25	-0.12
7	14.70	15.18	0.48	0.04
8	19.20	20.04	0.84	0.34



Looking up at the torque-tube drive.

Use a drill a few thousandths smaller than the aluminum nails. Be careful to get the holes reasonably parallel. Take the curved arms and mark them every 16 inches along the front edge. About 1 inch in from the edge at each mark drill the holes for the nails that serve as anchors for the wire lacing. At each end of each curved arm cut a notch to accept the heavy tubing, which should project just  $\frac{1}{2}$  inch above the surface. If you are doing a real fussy job, cut the notches to put all elements, including the heavy ones, flush with the surface. Align the two corresponding arms from one side of the dish the proper distance apart and nail the tubing, maintaining alignment as best you can. Wire down the tubing with about four turns cross laced. Now cross-wire from under supporting tube 1 (Fig. 3) at the right arm, across to tube 3 at the left arm, crossing over tube 2 at the center. Wire back similarly from tube 1, left arm, to tube 3, right arm. Repeat the process for tubes 3, 4 and 5, resulting in two sets of cross-bracing, as seen in Fig. 3. Square up as well as you can. Make the other half of the

dish frame. Check and double-check that you have the right arm in the right place. Take the four  $\frac{3}{8}$ -inch soft tubes and carefully bend them to agree with the convex gage. Cut them to fit between the ends of the larger tubes, passing in back of the  $\frac{1}{2}$ -inch elements. See Fig. 3. Drill holes through the ends of the  $\frac{3}{8}$ -inch tubes and wire all joints. Check the alignment of the whole frame by eye. The frame is now ready to cover.

We tried running the  $\frac{1}{2}$ -inch mesh of the hardware cloth both horizontally and vertically, and concluded that horizontal is the better. Cut two pieces 4 feet by 12 feet. Lay them on top of each other, inside curve facing inside curve. Lace one pair of edges together with No. 22 wire. Carry the assembly to one frame and carefully open it up in place. Align the top edge of the wire mesh with the top  $\frac{7}{8}$ -inch tube. Wire it in place, working from the middle in both directions. We used two turns of wire every 6 inches, approximately. Carefully stand the frame up, brace as seen in the photograph, and wire on the surface, one element at a time, working from center to edge and from top to bottom. Use your judgment and keep things aligned as well as possible. Correct any errors forward of the true surface by wiring them back across the back of an arm and to another error or to the face side of the adjacent arm.

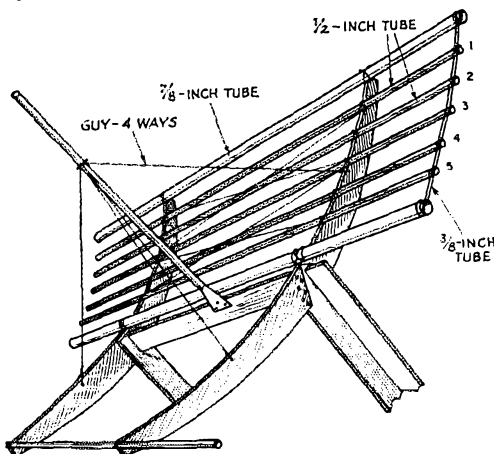


Fig. 3—One section of the reflector support, showing the aluminum tubing fastened in place. Tubes are first nailed and then wired down. Arms can be notched to the proper depth so that the tubes' inner surfaces form a smooth curve.

### Final Assembly

For the mounting, see Fig. 4. The rear axle or latitude axis should be at least 10 feet up if you wish to be able to aim at the horizon, east and west. Put at least 3 feet of post below the ground. Take the best and strongest roller skate and close it up to the shortest wheelbase possible. This probably isn't far enough, so figure out how better to close up the make that you have. Some types can be disassembled and put together backward with a shortening of about an inch. These wheels are at the upper end of the assembly and must sustain the total weight of the antenna and the mount. The wheel axles and the center of the torque tube should form no more than a 90-degree angle, as shown at the upper right, Fig. 4. As a

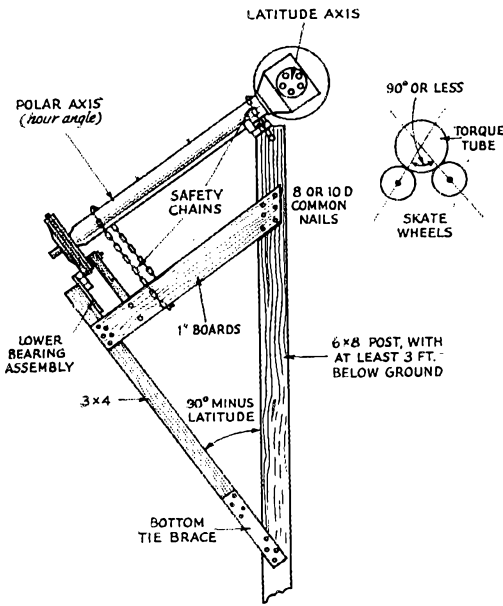


Fig. 4—Drive mechanism for the big array, before the wooden structure is mounted in place. Principle components are Buick rear end and torque-tube drive. Both ends of the torque tube turn on bearings made of roller-skate wheels. Position of the torque tube and skate wheels in the upper bearing is shown at the upper right.

last resort, build your own frame to hold the wheels.

Cut off the top of the main mounting post to an angle equal to your latitude. Secure the skate or bearing assembly to this slanted surface. Two 4-inch No. 14 screws or larger should hold it. Bore about a 1-inch hole crosswise through the post, in the center, about 6 inches below the slanting cut. This is for the safety chain.

Fabricate the lower bearing assembly as shown in Fig. 5. The misplaced brake drum rides on these bearings. Check their fit and clearance against this drum. Allow for nearly  $\frac{1}{4}$ -inch deflection and wear for the thrust bearing, before the drum bears on the wood. Cut out for the clearance if necessary. Use washers under all the bolts and nuts bearing against the wood. Make sure that the heads of the  $\frac{1}{4} \times 2$ -inch stove bolts will clear the brake drum. The slots in the plywood and those in the  $3 \times 4$ -inch timber give you about 3 inches of adjustment.

Secure a good sturdy ladder to one side of the main mounting post. Fasten a block and tackle or other lifting equipment high enough to lift the rear end assembly into place. Don't forget you are dealing with comparatively heavy weights; three hundred pounds falling from 10 feet could easily be fatal. Keep out from under! Lift the rear-end assembly into place. Bolt safety chains around it before releasing the hoist at all. Then slack off a bit and jockey the rear end into approximate position. Secure the hoist.

Toenail the  $3 \times 4$ -inch piece to the pole. Nail on the long diagonal braces and bottom tie

braces, with the  $3 \times 4$  lined up to give the proper support to the lower bearing assembly. Note that the nails are loaded sidewise, *not* in direct pull out. Large screws would be preferable if you have them. Adjust the alignment to point the torque tube at the North Star. Secure the bottom assembly. Add the lower safety chain. Tie the axle to the pole so that the torque tube cannot revolve on the upper and lower bearings. Recheck that everything is properly secured, and then release the hoist. Remove the hoist and the ladder.

Carefully rotate the axle until it is horizontal. At this point, if you have the parts it would be wise to add the drives. Their details are up to you and what you manage to promote in the junk yard. Mount the latitude drive on the lower bearing brake drum, as the most convenient spot which maintains constant angular relation to the drive shaft, as the assembly rotates about the polar axis. The universal joint and the sprockets and bicycle chain were used here, as can be seen in one photograph.

Mount the hour-angle drive at some convenient point on the supporting structure. As can be seen in the photograph, both our drives are chains driven by worm-gear reducers. The hour-angle chain is bolted to the brake drum. With the drives in place you can position either axis to suit the work to follow. We did it the hard way with ropes, the drives coming after.

Having drafted a reasonably husky bystander, and with the latitude axis horizontal, position and bolt the two wooden main arms. They should

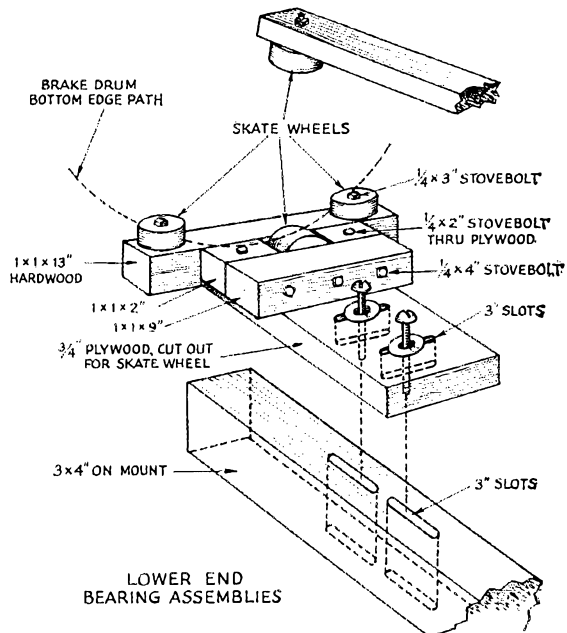
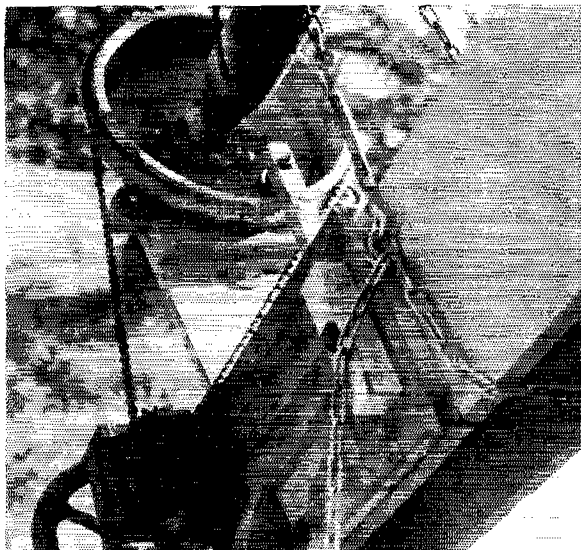


Fig. 5—Outer lower bearing assembly has four skate-wheel bearings. The brake-drum surface rides on the middle wheel, and the rim of the drum against the other two on its outer surface. It is held in alignment by another on the inner surface.



Lower end of the torque tube, showing the brake drum bearing riding on roller-skate wheels.

be parallel. Using the latitude drive, invert the arms so that their long ends are up in the air. You are now ready to mount the top piece of the dish and the main crossbar for the feed mast. Bolt these in place. The curved arms should be parallel. Now rotate the dish about the latitude axis until the main arms are about horizontal.


Swing the other half of the dish into place and bolt together.

Now stand back and get the awesome part of a 12 × 16-foot "parabola" of your very own!

To spoil a good ending, you still have the feed arrangement and final adjustments to do. Judicious use of wire on the back of the dish can remove most of the obvious errors. More wires guy the feed pole four ways, part way out from the reflector. These guy wires may not show in the photographs, but are shown in Fig. 3. Since they pass through the surface of the dish, be sure that they do so without pressing on the elements.

Carefully sight the end  $\frac{7}{8}$ -inch supports, and make sure that they are parallel with the center one. Then string a piece of No. 22 wire from tip to tip of each curved arm, on the netting side of the end supports. This wire should be 18.7 inches from the center supports, if you are using the half-inch set back, or 19.2 inches for a true circle. For you hardy souls making a true parabola, the distance is 18.5 inches. Back guys from about halfway out the arms to a point behind the axle a few inches will open the parabola, while tightening up on the feed-support pole will deepen it.

The actual radiating elements and other electronic details we will leave to the electronic experts. Construction to this point has been the job of the Mechanical Engineering Department. Any takers?

Thanks are due various members of the Rhododendron Swamp V.H.F. Society and others, some of whom are seen in the photos. Without their help, the project literally would never have gotten off the ground. Particular thanks to Sam Harris, W1FZJ, Fred Collins, W1FRR, Southard Lippincott, W1DDN, Verne Robertson, W1EGE, Dave Walker, Dick Packard, W1HLJ, Jim Grandfield, K1KXQ, and Mrs. W1TQZ. 

### Bill of Material

1 Buick or similar torque-tube rear end.
8 1 $\frac{1}{4}$ -inch screws to fit wheel-bolt holes.
1 Universal joint to mate with drive shaft.
1 sheet 4 by 8 feet, $\frac{1}{2}$ -inch exterior plywood.
1 sheet 4 by 10 feet, $\frac{3}{4}$ -inch exterior plywood.
60 1 $\frac{1}{4}$ -inch No. 12 flathead wood screws.
1 Bottle white glue or waterproof glue.
1 Large post, at least 6 inches minimum dimension, at least 13 feet long.
1 piece 3 by 4-inch fir, 5 feet long.
1 Odd boards.
1 piece hardwood, about 1 by 1 by 13 inches.
1 piece same, about 2 by 2 by 9 inches.
2 pieces same, about 1 by 1 by 2 inches.
2 $\frac{1}{4}$ by 5-inch stove bolts.
3 $\frac{1}{4}$ by 4-inch stove bolts.
3 $\frac{1}{4}$ by 3-inch stove bolts.
2 $\frac{1}{4}$ by 2-inch stove bolts.
1 Nuts and washers for above.
1 About 2 lbs. No. 22 galvanized iron wire.
1 3 $\frac{3}{8}$ by 1-inch or longer bolts, with nuts and washers.
1 Handful (100 at least) aluminum nails.
1 Handful 10-penny nails.
1 Miscellaneous nails, screws, bolts.
1 4 $\frac{1}{2}$ -inch o.d., .030-inch wall 63 ST aluminum tubing 12 feet long.
10 1 $\frac{1}{2}$ -inch same.
4 3 $\frac{1}{4}$ -inch soft aluminum tubing about 8 feet long.
1 48 feet $\frac{1}{2}$ -inch mesh 4-foot wide hardware cloth, galvanized.
1 Rough price list. All figures probably high.
1 Plywood . . . . . \$20
1 Hardware cloth . . . . . 30
1 Aluminum . . . . . 30
1 Rear end and other junk . . . . . 15
1 Welding . . . . . 5

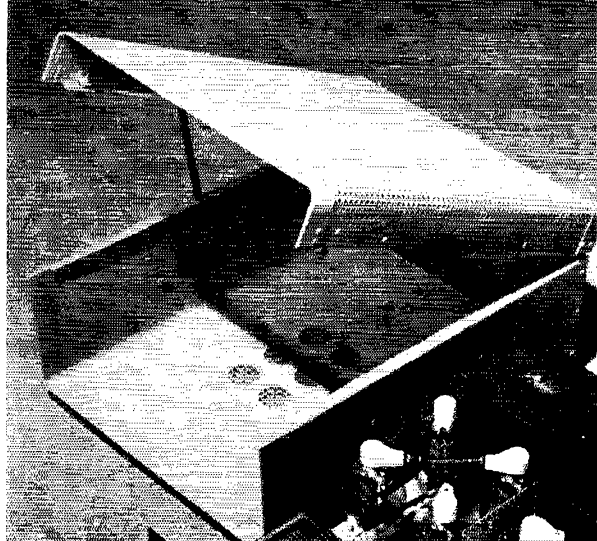
Balance to be scrounged; use your ingenuity!



One would hardly guess that this clean-looking enclosure was not a manufactured item. Similar enclosures of any desired size and shape may be simply made in the home workshop by following the procedure described in the text. (The amplifier in the foreground will be described in a subsequent issue.)

## How To Make Professional-Looking Enclosures

BY FLOYD K. PECK,\* K6SNO



# Home-Brew Custom Designing

For years, most home-built enclosures have been confined to the square-edge knuckle-gouging outline with the protruding bolt heads of the Erector-set era. Now K6SNO comes along to show us how simply the use of rivets and a few easily-made rounded corners can transform the appearance to rival the professional.

WITH the growing popularity of commercial equipment in the past decade, the appearance of many ham shacks has improved considerably. However, there are still some hardy individuals who remain "do-it-yourselfers" and build their own equipment. Quite often the difference in appearance between the home-brewed equipment and the commercial gear is quite striking. If the builder has a little bit of mechanical ability and the ordinary garden variety of hand tools in his shop, his equipment can be made to look just as good as the commercial variety, yet be distinctive and fit the nooks and crannies available.

### Shape Factor

The size and configuration of commercial ham gear does not always fit the shack or desk to best advantage, to say nothing of the automobile. The electronics industry (and hams) long ago standardized on the 19-inch panel width. Consequently most of the gear produced commercially or at home takes up 20 to 22 inches of desk-top width. A few manufacturers recently have been making equipment in smaller panel sizes. The average amateur has limited space in which to pursue his hobby. If he is fortunate, he may have an operating desk 60 inches wide by 30 inches deep. More often it may be a 42- or 54-inch desk.

\* 1352 Koch Lane, San Jose, Calif.  
Photo by Greg Bethards.

The usual array of equipment consists of a receiver, exciter, and final amplifier. If these are each 20 inches wide, they will just fit on a 60-inch desk, provided that ventilation requirements are ignored. In addition, there are usually accessory pieces of gear that are desirable to have at the operating position, such as a scope, frequency meter, s.w.r. bridge, control box, and beam-position indicator. This requires stacking the gear up, impeding ventilation, and making servicing and operating cumbersome. If the width of this equipment were compressed slightly, even at the expense of increased depth, much better use of the desk-top space would result.

A couple of years ago, the author built the "Single-Sideband Package" described by W6TEU.<sup>1</sup> However, instead of building it to the 19-inch width, the front panel was made 14 inches wide by 8 inches high and the chassis extended to a depth of 17 inches. Having acquired one of the new commercial receivers with a 14-inch panel width, the saving in desk-top space was quite revealing. The linear amplifier at K6SNO was a home-built affair consisting of four 811As with grounded grids. The amplifier and power supply was housed in a standard cabinet 21 inches wide by 13 inches high and 15 inches deep. It was considered quite a feat to get a kilowatt p.e.p. in a package of that size. However, contentment with that size was short-lived as there were other pieces of gear needed on the desk. So, it was decided to see if it could be packaged in a cabinet to match the exciter. This being the second attempt at building a cabinet of this configuration (14 inches wide by 8 inches high by 17 inches deep), the job was much easier and the results quite rewarding. It takes only a week end of time and is quite easy on the pocketbook.

Since it is not intended that this size of cabinet be used as a standard, this article will attempt

<sup>1</sup> Bigler, "A Single-Sideband Package," *QST*, June, 1958.

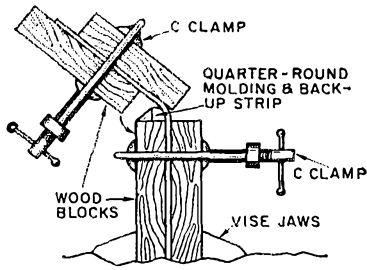


Fig. 1—Sketch showing method of making rounded corners. Procedure is described in the text.

only to describe some of the techniques used. The builder is encouraged to establish the configuration best suited to his personal needs. The use of sheet-metal shop facilities is not needed and, since the author has had no previous sheet-metal working experience, it can be assumed that anybody can duplicate the results shown in the photograph.

### Materials

While searching for sheet-aluminum stock, we ran across an unexpected source of supply. Job printing shops use sheet aluminum coated with selenium oxide for a photocopying process. After the coating is depleted, the plates are thrown away. By cautious removal of the selenium oxide (it is highly toxic) some excellent sheet stock is available. Of course, there are many other sources of suitable sheet-aluminum stock. To provide a cover that would afford adequate ventilation while providing r.f. shielding, a sheet of "do-it-yourself" perforated aluminum should be obtained. To make the cabinet for the amplifier mentioned, three sheets of the plate stock described, each measuring  $15\frac{1}{2}$  by  $20\frac{1}{2}$  inches, slightly less than  $\frac{1}{8}$  inch thick, were obtained. From the hardware store we got one  $30 \times 30$ -inch sheet of perforated aluminum (which is three times the requirements), 100 aluminum rivets, 12 inches of piano hinge, and a can of spray enamel. The total tab, including tax, was \$5.73.

### Smooth Edging

The inside dimensions of this cabinet were to be 14 inches wide by 8 inches high by  $17\frac{1}{2}$  inches deep. This accommodates a standard chassis of 13 by 17 by 3 inches. The side pieces were made first. A piece  $18\frac{1}{2}$  by  $8\frac{3}{8}$  inches was cut out. One inch of the end of this piece, to be used as the front, was folded back flat on itself to provide a finished edge of double thickness. See Fig. 2A. By putting this fold in the vise and pressing it out flat, a very neat fold can be produced to give the front edge of the cabinet a finished appearance. The vise jaws should be covered with aluminum to prevent marking the cabinet material.

### Ventilation

To provide ventilation at the sides and bottom of the cabinet, several holes were punched with a standard socket punch. A strip of the perforated

stock was riveted on the inside of the cabinet to cover those holes so good r.f. shielding was maintained while letting the air circulate. This cabinet design provides excellent r.f. shielding for TVI protection, but it should be remembered that aluminum does not shield magnetic 60-cycle a.c. fields very effectively.

### Making Rounded Corners

The sheet-metal bending jig or brake for making the rounded corners is made up of scraps of one-inch board of appropriate length. On one of these, fasten a strip of  $\frac{1}{2}$ -inch quarter-round molding with finishing nails, and countersink the heads. Back this up with a piece of scrap wood planed down as illustrated in Fig. 1. The sheet metal is clamped, as shown in the sketch, to provide the  $\frac{1}{2}$ -inch radius bends for the bottom edge of the cabinet and for the top edges of the cover. The square-edge bends are made in the conventional manner by clamping at the square edges of the boards. Fig. 2B shows the side piece with the rounded bend. A 90-degree bend is made  $\frac{3}{8}$  inch from the top of this piece to provide the lip against which the cover closes. Of course, both left- and right-hand pieces must be made. The bottom is sized to the cabinet width, allowing  $1\frac{1}{2}$  inches on each side for overlap on the side pieces. The front edge of the bottom is folded back one inch in the same manner as the sides, making this fold down and under so that it will align with the finished edge of the side piece. After aligning the bottom with the side pieces and clamping in place, drill holes about  $\frac{1}{4}$  inches apart for the rivets. Insert the rivets from the bottom and burr them smooth so the chassis may be slid in and out without catching on them.

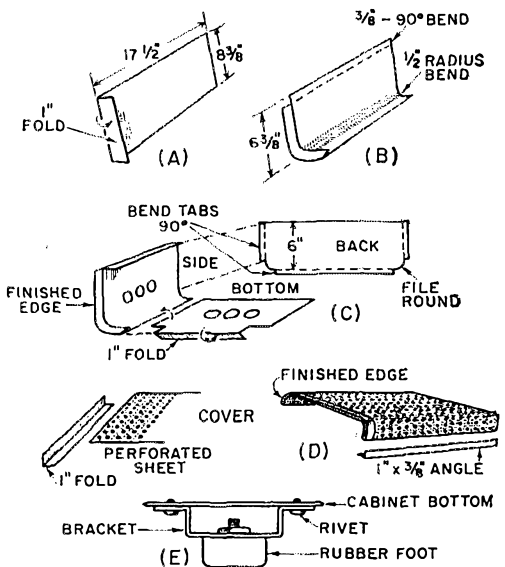


Fig. 2—Bending details. A—Forming front edge of side piece. B—Rounding bottom of side piece. C—Joining of side, back and bottom pieces. D—Forming front edge for perforated cover from angle stock, and bending side ends of cover. E—Bracket for rubber-foot mounting.

A word on use of aluminum rivets is in order. Drill the holes in the sheet metal so the rivets fit tightly. If  $\frac{1}{8}$ -inch rivets are used, drill  $\frac{1}{8}$ -inch holes. After inserting the rivet, cut off the protrusion with diagonal cutters so that only about  $\frac{1}{8}$  inch remains to be burred. A large nail set makes an excellent riveting tool and leaves a neat, smooth burr. To prevent disfiguration of the rivet head, place a piece of scrap aluminum stock between the rivet head and the anvil before welding the hammer.

### Making the Cover

Measure out the perforated aluminum stock and cut to the appropriate dimension for the cover. Before bending the rounded corners of the cover, attach a finishing strip to the front. See Fig. 2D. Cut a 2-inch strip of the solid sheet stock to the same width as the perforated stock. Fold this exactly in the center so that there will be one inch on each side of the perforated sheet. By pressing this fold over the edge of the perforated sheet in the vise a good tight bond will be obtained. Again, to prevent marking of the aluminum by the vise jaws, line the jaws with some scraps of aluminum. The back of the cover is made of solid sheet stock similar to the cabinet back. Side frames for the cover are made of  $1\frac{3}{8}$ -inch strips, bent to provide a  $\frac{3}{8}$ -inch lip to match the lip on the cabinet sides.

After the cover is bent to shape, the back piece and side frames are riveted in place. Banana plugs are fastened to the lips of the cover side frames near the front of the cabinet and they push through holes drilled in the lips of the cabinet sides to provide the cover latch and an electrical ground for the cover. See Fig. 3. The piano hinge is bolted to the back of the cover and cabinet, making sure that the electrical contact is good.

To get good natural circulation of air through the cabinet, it should be mounted on feet to provide about one inch of space between the cabinet and desk. We found some stock rubber feet at the radio-supply house. They were only  $\frac{3}{8}$  inch thick, so brackets for mounting them were made up as illustrated in Fig. 2E. By riveting the brackets to the bottom of the cabinet and smoothing out the burrs, the chassis may be slid in and out without obstruction.

### Finish

After the cabinet was completely assembled, it was given three coats of enamel. Aerosol spray enamel will give a professional-looking finish, if directions for use are followed. Several variations in finish may be obtained. In one case we sprayed the whole cabinet with a dark gray color and made the panel a battleship gray, which produced a pleasing contrast. In another case, the cover was left with the natural aluminum finish and the rest of the cabinet was sprayed with flat black. You can see counterparts of both schemes in commercial equipment.

This article will not go into all of the details of making this particular cabinet since each

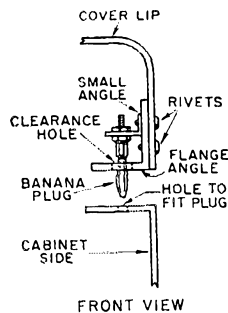


Fig. 3—Banana plugs used as cover catches.

individual will no doubt have ideas of his own. However, it may give you some idea of the techniques used and you can let your ingenuity take over from here.

### Tools

The perforated stock is quite light and easily cut with tin snips. The  $\frac{1}{8}$ -inch stock used for this cabinet cannot be cut with snips without bending and distorting the sheet stock. We used an old carpenter's saw that the junior op received in a Christmas tool chest some years ago. This saw has probably cut a thousand linear feet of aluminum with never a worry about sharpening it. The sheet stock should be clamped to the bench top to give it the required support for sawing. The edges will have heavy burrs but they are easily removed and smoothed with a file.

The basic tools used in these projects consisted of the carpenter's saw mentioned, a hammer, a square, six 3-inch C clamps, tin snips, an electric hand drill, file, chassis punch, diagonal cutters, pliers, and screwdriver. These tools, some sheet stock and a little "paper planning" should provide everything necessary for producing a custom-built cabinet that not only rivals commercial gear in appearance but offers the following advantages:

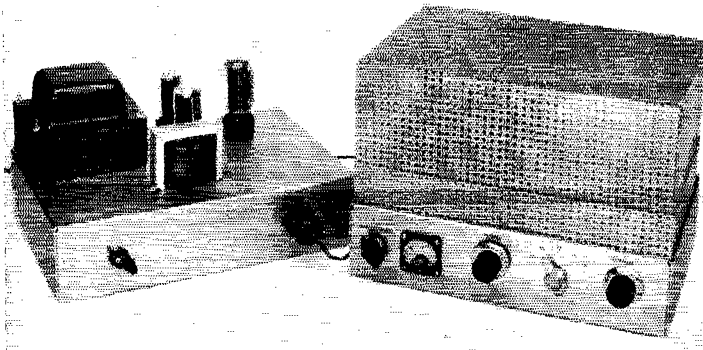
- 1) The cabinet may be designed to fit your individual space requirements, including mobile.
- 2) The cost may be kept very reasonable.
- 3) You have the pride and distinction that goes with completely home-built equipment.
- 4) It can be made "functional" — as heavy or as light as the gear requires — with good r.f. shielding if required, and built to contain as little or as much equipment as you choose.
- 5) The equipment may actually have some resale value.

QST



W4PZS says you can cut down on your pencil and paper cost at the operating position by using instead a so-called "Magic Slate." These are available in toy stores. They consist simply of a white plastic writing surface over a treated background. Heck — we don't have to explain this, 'cause you've all seen them. They only cost about a quarter.

# • Beginner and Novice —



Over-all view, both units, showing the completed power supply and amplifier. The switch on the left front of the power-supply chassis is  $S_3$ . On the amplifier, from the left, the controls are the meter switch, plate tuning, band switch, and loading control.

## Surplus Tubes + An Old TV Set = 150-Watt Amplifier

BY LEWIS G. McCOY,\* WIICP

WHEN a Novice graduates to the General-Class ranks one of the first things he thinks about is more power. If you are in this class, the unit described in this article may be right up your alley. The amplifier described here can be run at inputs up to 150 watts and can be built for about \$25.00, including power supply.

Usually the most expensive item in an amplifier is the power supply. In the unit described here this cost was held to a minimum by using power-supply components taken from an old TV chassis. As has been pointed out in two previous articles,<sup>1</sup> an old TV set is one source of low-cost parts for the enterprising amateur. The other expensive item in an amplifier is the amplifier tube or tubes. This item was taken care of by using surplus 1625s, a 12-volt version of the 807. The 1625 can be run at a maximum plate voltage of 750 and a plate current of 100 ma., or 75 watts input per tube. However, if you happen to own some 807s, they can be used instead of the 1625s merely by using five-pin tube sockets instead of the seven-pin ones required for 1625s, and putting 6.3 volts on the heaters.

### Circuit Description

The circuit of the amplifier is shown in Fig. 1. Two parallel-connected 1625s — about 35 cents each on the surplus market — are used in the unit. Another 1625 serves as a clamp tube when excitation is removed.

The grid circuit of the amplifier is untuned, and while this requires slightly more driving power than a tuned circuit, nearly any existing

*A couple of articles have shown the popularity of using old TV sets as a source for amateur parts. Here is a do-it-yourself project combining the old TV set with surplus tubes and ending up with a 150-watt multiband amplifier. The cost? — something less than 20 cents a watt!*

Novice rig will furnish more than enough drive on all bands.

When there is no drive to the amplifier the grid of the clamp tube,  $V_3$ , is at zero voltage and  $V_3$  will conduct. When  $V_3$  conducts, the screen voltage to  $V_1V_2$  is pulled down from its normal operating level of about 300 volts to less than 100 volts. When the screen voltage on the amplifier tubes drops this low, the plate-current flow through the two tubes is sharply reduced and the tubes idle at well below their rated plate dissipation. When excitation is applied, the grid-current flow in  $V_1V_2$  develops enough grid bias to cut off  $V_3$ , so that the clamp tube no longer conducts and the screen voltage on  $V_1V_2$  rises to its normal operating value.

A switchable pi-network tank circuit covering 80 through 10 meters is used in the amplifier. The network is designed to work into 50-to-70-ohm loads. The band switch,  $S_1$ , is a double-pole unit with one pole used for shorting out unused portions of  $L_4$  and the other pole for adding capacitance ( $C_6$ ) across  $C_5$  when tuning 80 meters. The output loading capacitor is a three-section variable of about 400  $\mu\text{mf}$ . per section, with all sections connected in parallel. On 80, an additional 1500- $\mu\text{mf}$ . mica capacitor,  $C_7$ , is

\* Technical Assistant, QST.

<sup>1</sup> McCoy, "75 Watts Novice — 100 Watts General," QST, Sept., 1959, and "65 Watts at Low Cost," QST, March, 1961.

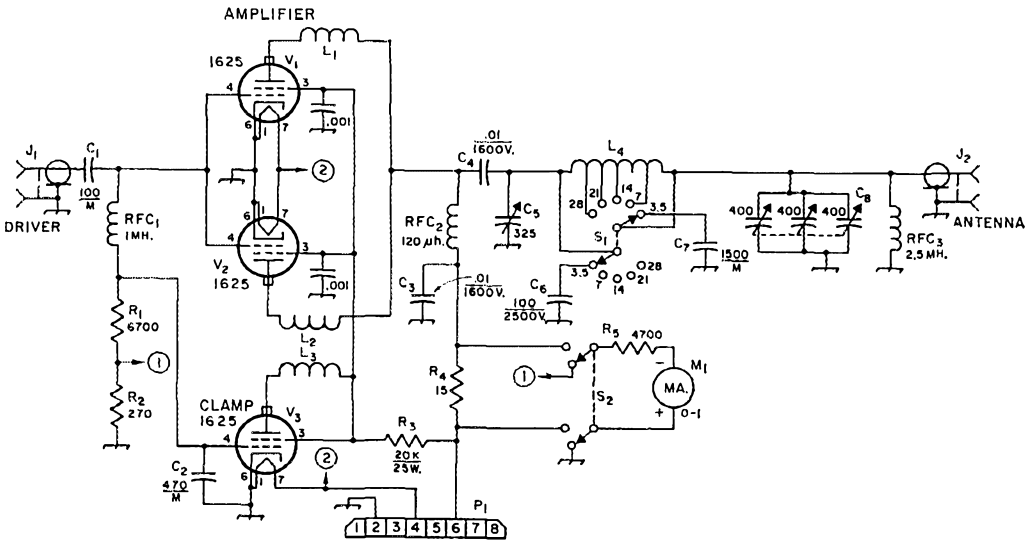


Fig. 1—Circuit diagram of the 1625 amplifier. Unless otherwise indicated, decimal values of capacitance are in  $\mu\text{f.}$ , others are in  $\mu\mu\text{f.}$ ; M = mica. Resistances are in ohms.

- $C_1$ —100- $\mu\text{f.}$  mica.  
 $C_2$ —470- $\mu\text{f.}$  mica.  
 $C_3, C_4$ —0.01- $\mu\text{f.}$  1600-volt ceramic.  
 $C_5$ —325- $\mu\text{f.}$  variable (Hammarlund MC-325-M).  
 $C_6$ —100- $\mu\text{f.}$  mica, 2500 volts.  
 $C_7$ —1500- $\mu\text{f.}$  mica.  
 $C_8$ —Three-section receiving variable, approx. 400- $\mu\text{f.}$  per section (Allied Radio 60-H-726 or Philmore 9047).  
 $J_1, J_2$ —Coax chassis receptable type SO-239.  
 $L_1, L_2, L_3$ —10 turns No. 18 enam., close-wound on a 1-watt resistor, 1000 ohms or more.  
 $L_4$ —19 turns No. 14, 1½-inch diam., 9 turns spaced 12 turns per inch, 10 turns spaced 6 turns per inch (Illumitronic Air Dux 121D6). The end of the coil with wide spaced turns is connected to  $C_5$ . 7-Mc. tap: 12 turns from the  $C_5$  end of the coil.

- 14-Mc. tap: 6 turns from the  $C_5$  end of the coil  
 21-Mc. tap: 4 turns from the  $C_5$  end of the coil.  
 28-Mc. tap: 2 turns from the  $C_5$  end of the coil.  
 $M_1$ —0-1 milliammeter, 1½ inch square, D'Arsonval movement.  
 $P_1$ —Octal plug (Amphenol 86PM8).  
 $R_1$ —6700 ohms, 1 watt.  
 $R_2$ —270 ohms, ½ watt.  
 $R_3$ —20,000 ohms, 25 watts.  
 $R_4$ —15 ohms, ½ watt.  
 $R_5$ —4700 ohms, ½ watt.  
 $\text{RFC}_1$ —1 mh. (Millen 34300-1000, National R-50).  
 $\text{RFC}_2$ —120  $\mu\text{h.}$ , 500 ma. (Raypar No. RL-101).  
 $\text{RFC}_3$ —2.5 mh. (Millen 34103, National R50).  
 $S_1$ —Ceramic rotary, 1 section, 2 poles, 5 positions (Centralab PA-2003).

connected across  $C_8$  by means of  $S_1$ .  $\text{RFC}_3$  is a safety precaution to short-circuit the d.c. to ground in the event the plate blocking capacitor,  $C_4$ , should short out.

A 0-1 milliammeter, connected as a voltmeter, is used to measure either the plate or grid current. It does this by measuring the voltage drop across shunts of appropriate resistance,  $R_2$  in the grid circuit and  $R_4$  in the plate. The full-scale current is 20 ma. when the meter is switched across  $R_2$  and 300 ma. when connected across  $R_4$  in the plate lead.

### Power Supply

A bridge rectifier circuit, Fig. 2, is used in the power supply in order to obtain the highest possible +B voltage from the transformer. The circuit consists of a pair of 6DE4s and a 5U4G rectifier with a choke-input filter. The choke,  $L_5$ , is a 2-henry job taken from the TV set. Two 30- $\mu\text{f.}$  500-volt electrolytic capacitors are connected in series to provide a working voltage of 1000 volts. The +B voltage can be turned on and off with  $S_{3B}$ . Another section,  $S_{3A}$  of the same switch, is used to turn the supply on and off.  $P_2$  is a fuse-in-plug unit with  $F_1$  and  $F_2$  being

used to protect the supply in the event of overload.

Nearly all TV transformers have at least two 6.3-volt filament windings. These windings can be connected in series to provide the required 12.6 volts for the 1625 heaters. The 6.3 volts required for the 6DE4s is taken from one of the two 6.3 windings; use the winding with the heavier current rating (heavier wire) for this purpose if there is a choice.

In our case, the TV power transformer came from a 1950-vintage TV set. This particular transformer is rated at 365 volts a.c. each side of center at about 300 ma. In addition to the two 6.3-volt windings there is also a 5-volt winding that is used for the 5U4. The +B voltage you end up with will, of course, depend on the transformer used in the TV set you scrounge. In any event, the d.c. voltage out of the filter should run somewhere between 550 and 750 volts. The latter figure is the maximum plate voltage rating for the 1625 or 807.

### Construction Details

The amplifier was built on a 3 × 8 × 12-inch aluminum chassis, with the power supply as a

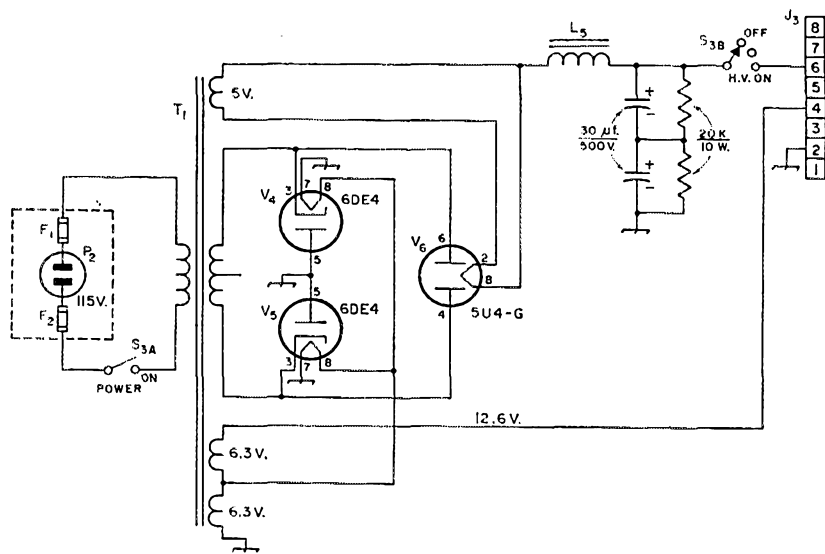


Fig. 2—Circuit diagram of power supply.

F<sub>1</sub>, F<sub>2</sub>—3-amp. type 3AG.

J<sub>3</sub>—Octal socket.

L<sub>5</sub>—Approx. 2 hy., taken from TV set.

P<sub>2</sub>—Line plug, fuse-in-plug type.

separate unit. If desired, the builder can combine both units on a single chassis, but a larger one would, of course, be required.

The bottom-view photograph will show you most of the layout details. The three 1625s are mounted at one side of the chassis and most of the rest of the room is taken up with the tank circuit components. An Air Dux 1212D6 coil assembly is used for L<sub>4</sub>. This assembly is supported on the chassis by two 1¼-inch high isolantite standoff insulators. The tap leads for the various bands are brought forward to S<sub>1</sub>, which is mounted on the chassis front between C<sub>5</sub> and C<sub>8</sub>.

If TVI is likely to be a problem in your area, then the amplifier should be shielded to reduce harmonic radiation. The shield shown in the photographs was made from Reynolds do-it-yourself perforated aluminum stock. The shield shown with the unit is made to slip down inside a "fence" that runs around the chassis top. The fence is made from two sections of the perforated stock, 2 inches wide and 21 inches long. The perforated stock comes in a 36 × 36-inch piece, so it is impossible to get a single length long enough to go around the entire chassis. The completed fence is 1¾ inches high with a ¼-inch lip which is secured to the chassis by machine screws and nuts. The two sections are each formed into an L shape measuring 1 × 8 × 12 inches, the one-inch portion being used at two of the corners as an overlap to fasten the two sections together with screws and nuts.

Two pieces of the stock measuring 6½ × 20¾ inches before folding are used for the sides of the shield. The side dimensions of the two pieces after folding are 7¾ and 11¾ inches; the extra inch is used for the overlap to connect the two

S<sub>3</sub>—Single-pole, four-position with a.c. switch on back (Centralab 1465).

T<sub>1</sub>—Power transformer taken from TV set; see text.

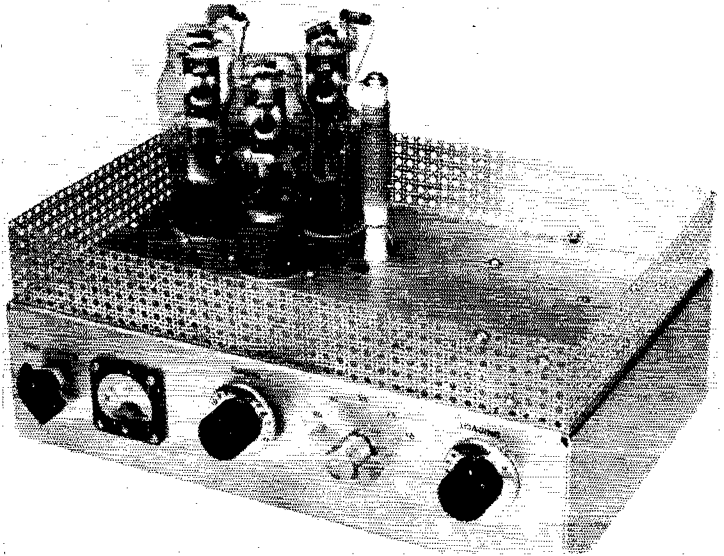
pieces together. A one-inch flange is folded in around at the top so that the over-all height is 5½ inches. The top is made from a piece of stock 7¾ by 11¾ inches, and is secured to the top flange with nuts and screws. The completed cover can be slid down inside the fence and flush with the chassis. The overlap of the fence and sides should prevent harmonic leakage if care is taken to see that the two have a snug fit. To complete the shielding a bottom plate should be installed on the chassis.

As it comes, the coil L<sub>4</sub> has more turns than are needed. Remove 17 turns from the close-wound end of the unit, which will leave a total of 19 turns. In order to prevent shorting out turns when installing the 40-meter tap, the turns adjacent to the 40-meter tap point should be bent in toward the center of the coil. The remaining taps are on portions of the coil where the turns are not so close together so there shouldn't be any danger of shorting turns when making the taps. See Fig. 1 for additional information on the coil.

The coils L<sub>1</sub>, L<sub>2</sub> and L<sub>3</sub> in the plate leads of the three tubes are for v.h.f. parasitic suppression. These coils should be mounted directly at the plate caps. The coils are wound on one-watt resistors, with the resistors only being used for forms so any resistance value greater than 1000 ohms is suitable.

When wiring the power supply, just "tack" the 6.3-volt heater connections together. If you should connect the two windings the wrong way, the voltages will buck each other and instead of getting 12.6 volts you'll get zero. You can make the permanent connection once you find out which way is correct. The simplest way to do this is to connect the power supply to the amplifier and try the supply. If the heaters on the 1625s light

Amplifier, top removed. The three 1625s are shown at the left-hand side of the chassis in this top view. Note that the parasitic suppressors  $L_1$ ,  $L_2$ , and  $L_3$  are mounted directly at the plate caps. The coil to the right of the tubes is  $RFC_2$ .



up then you know you have the connections correct. When the supply is completed you are ready to test the amplifier.

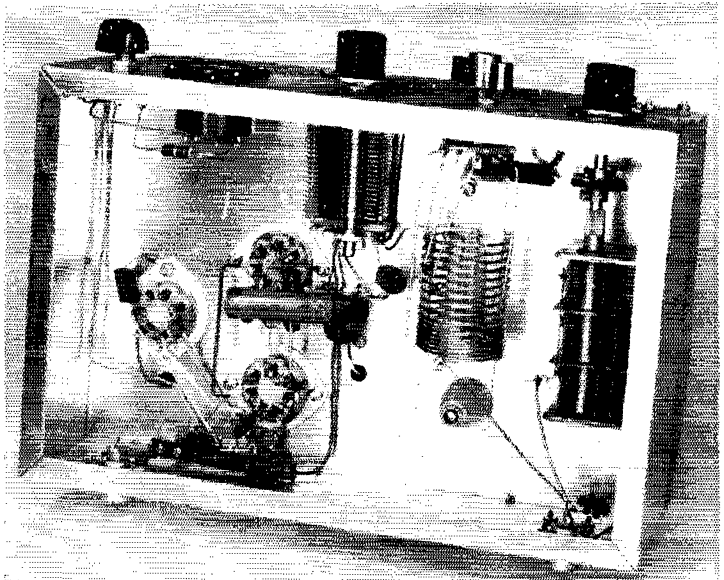
#### *Testing and Tune Up*

Connect the power supply and your exciter to the amplifier. You can use a short length of coax cable — either the 50- or 70-ohm type is suitable — between the exciter and amplifier, but keep the length of coax as short as possible. You should use a dummy load on the amplifier and a 100-watt lamp bulb will be suitable. Turn on the power supply, but leave the +B off (second position of  $S_3$ ) and let the heaters warm up. Switch the

exciter and the amplifier to 80 meters and turn on the exciter. With the amplifier meter switched to read grid current, tune the exciter for a grid reading of 8 ma. You'll probably find that your exciter is very lightly loaded when you get the 8-ma. grid current. Next, switch the amplifier meter to read plate current, set  $C_8$  at maximum capacitance, plates fully meshed, and turn on the +B voltage. Resonate the amplifier by tuning  $C_5$  for a dip in plate current reading. You can now start to load the amplifier by decreasing the capacitance of  $C_8$  and retuning  $C_5$  for a dip as you continue to increase the plate current. The lamp load should light up and increase in

*(Continued on page 148)*

Bottom view. Here are the works below deck. The clamp tube socket is at the far left in this view, with the two amplifier sockets to the right. The  $L_4$  assembly is mounted on two standoffs, the assembly being positioned between  $C_8$  on the left and  $C_5$  at the right. On the back of the chassis  $J_1$  is at the left side and  $J_2$  at the right-hand side, in this view.







The 75-meter s.s.b. transceiver behind this pleasingly-simple panel measures only 13 by 10 by  $5\frac{1}{2}$  inches, but its construction does not require a watchmaker's skill. The s.s.b. signal is generated by means of a filter using surplus FT-241A crystals.

*Compact Filter Rig for Fixed,  
Portable and Mobile*

## A 75-Meter S.S.B. Transceiver

BY HOUSTON TAYLOR, JR.,\* K8BUQ

**T**HIS project started out to be a mobile single-sideband transceiver, but a last-minute car trade (compact car with not-so-compact air conditioner) has necessitated a new designation. The rig will henceforth be referred to as a *portable* 75-meter s.s.b. transceiver, lower sideband.

Let me say that an undertaking of this sort is not an overnight project and also not the sort of thing a beginner should plunge headlong into. In other words, this is written for those who have had some experience in building receivers and excitors.

This is the pilot model and changes are constantly being made and tried. However, armed with the ideas and suggestions presented here, a workable transceiver can be produced. Those who are a little more astute in the ways of the electron may find improvements waiting to be made in some of the circuitry.

The design is about as straightforward as possible with no fancy frills. In describing the circuit, a sequence will be followed; we will go from input to output, first in the transmitter and then in the receiver section.

### *Carrier Generator and Balanced Modulator*

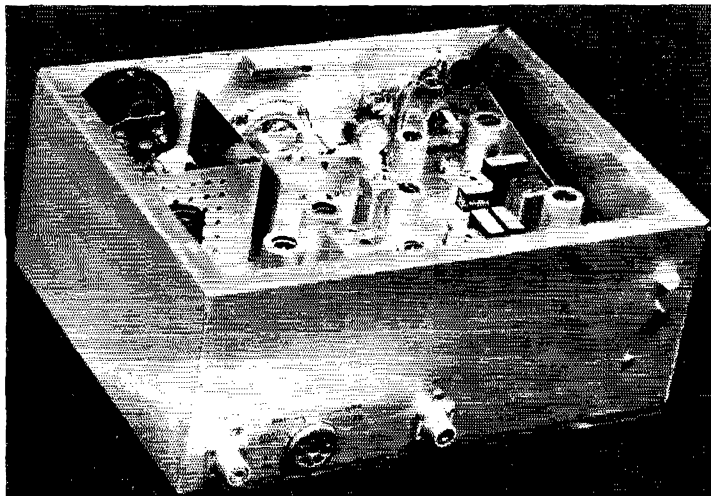
$V_1$  serves two purposes — first, it is the r.f.

\* 1206 Porter Road, Route 4, Fayetteville, Arkansas.

*S.s.b. transceivers not only make for convenient operation (one knob tunes the receiver and sets the transmitter frequency) but also cut down the parts list by having many stages do double duty. This neat  $5\frac{1}{2} \times 12 \times 10$ -inch version uses an inexpensive surplus-crystal filter and simple circuitry throughout.*

source for the sideband generator; and second, it is the b.f.o. for the receiver. One half of the 12AU7 is a crystal oscillator, and the reason for using this particular oscillator configuration is simple — it just plain works well for me. The oscillator output is fed into  $V_{1B}$ , which gives push-pull r.f. output for the balanced modulator. Trimmer  $C_2$  is used to balance the amounts of r.f. appearing on the plate and cathode of  $V_{1B}$ .

The push-pull r.f. is then fed into the balanced modulator which can be either a 1N35 or a pair of 1N34s. It is not imperative that a 1N35 or a closely-matched pair of 1N34s be used, because a random pair of 1N34s works almost as well. Speech amplifier  $V_2$ , a 12AX7, provides more



The components on the chassis in this inside view can be identified by comparing the picture with Fig. 4. The final amplifier is in one corner, boxed in by an L-shaped shield. Power-supply connections are made through the octal socket on the rear cabinet wall. Antenna send-receive switching is done externally.

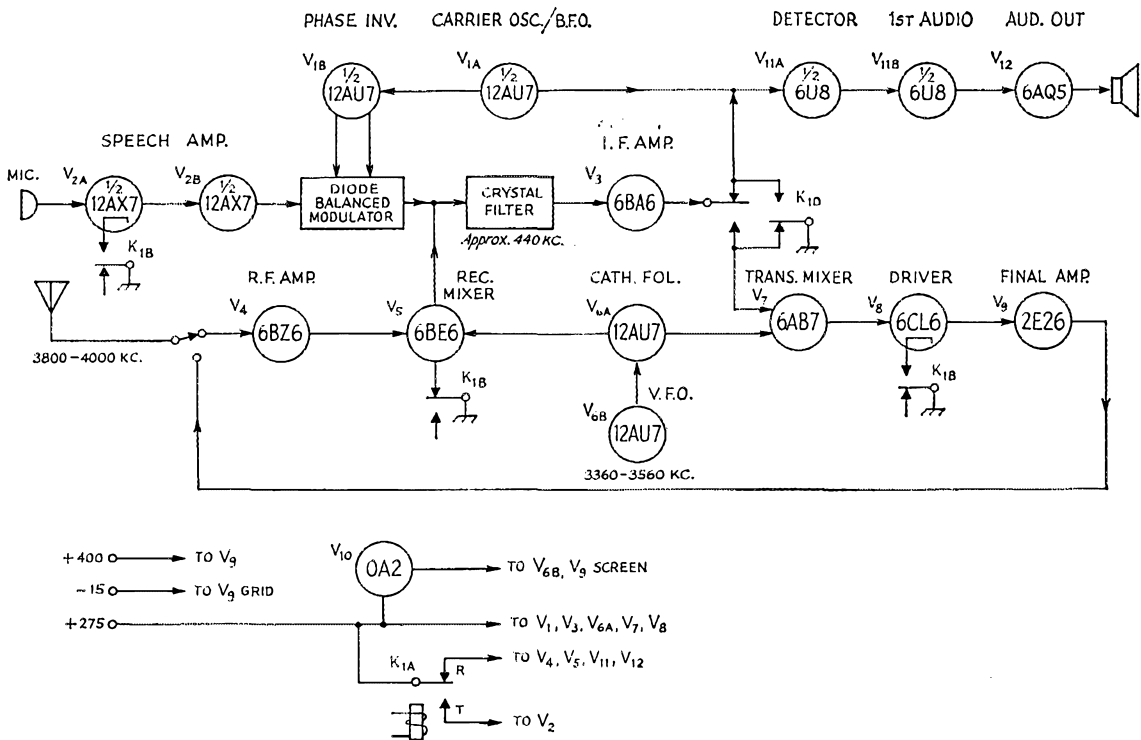


Fig. 1—Block diagram of the 75-meter s.s.b. transceiver. The switch and relay contacts are in "receive" position. Everything shown here, except the antenna switch, mike and speaker, is built into the unit described.

than ample audio for the balanced modulator. The modulation or matching transformer,  $T_1$ , is one of the surplus units popular in phasing-type exciters.

$R_1$  is a panel-mounted balance control. This is adjusted for minimum carrier, and a good quality potentiometer (Ohmite AB or equivalent) should be used to assure smooth operation.

At the junction of  $R_2$  and  $C_3$  will be a double-sideband signal at the frequency of  $Y_1$ . Effective shielding around the oscillator is important for good carrier suppression.

### The Sideband Filter

Here is the heart of the rig, yet it is perhaps the simplest part of the whole transceiver. The filter consists of two replacement-type i.f. transformers and four cheap and easily-obtainable surplus low-frequency crystals. Technically speaking, the filter is a single half-lattice with two shunt crystals. Notice that this filter is turned around backwards from the way you usually see them; this is to achieve better matching to the low-impedance balanced modulator and the high-impedance receiver mixer.

The selection of crystals  $Y_1$ - $Y_5$  is strictly a matter of preference and availability, but if they are too far from 455 kc., the transformers will have to be padded. The crystals that were chosen for the original rig are:

$Y_1, Y_2, Y_4, Y_5$  Channel 38 (440.74 kc.)  
 $Y_3$  Channel 37 (438.89 kc.)

Any co-channel selection around this frequency

will work very well. Just make sure that each crystal is a good one, although they not need be exactly matched.

The i.f. transformers are not critical as to type, but I found that the  $\frac{3}{4}$ -inch-square Miller replacements specified gave a little less filter loss than others that were tried. This is important because you do need a little signal getting through (and that is *through*, not *across*) the filter.

After a little screw-twisting on the i.f. transformers, there should be a single-sideband signal at  $T_3$ . Then comes  $V_3$ , a stage of i.f. amplification. This is a lightly-loaded stage, so all wiring precautions should be taken to make the 6AB6 as stable as possible. Once again, i.f. transformer  $T_4$  is not critical, but a good quality unit should be used.

### The V.F.O.

$V_6$  is another 12AU7, half of which is the variable-frequency oscillator and the other half a cathode follower. This combination provides oscillator injection for both the transmitter mixer and receiver mixer. Mixing can be either additive or subtractive, and in this case the additive alternative was chosen. For example, assume the generator frequency is 440 kc., and a frequency of 3800 kc. is desired; the injection frequency should then be 3360 kc.

Since this rig is for 75 phone, only 200 kc. of bandwidth is needed or desired. The general idea is to start with a good, sturdy, double-bearing capacitor of about 100  $\mu\text{f}$ . for  $C_6$ , a

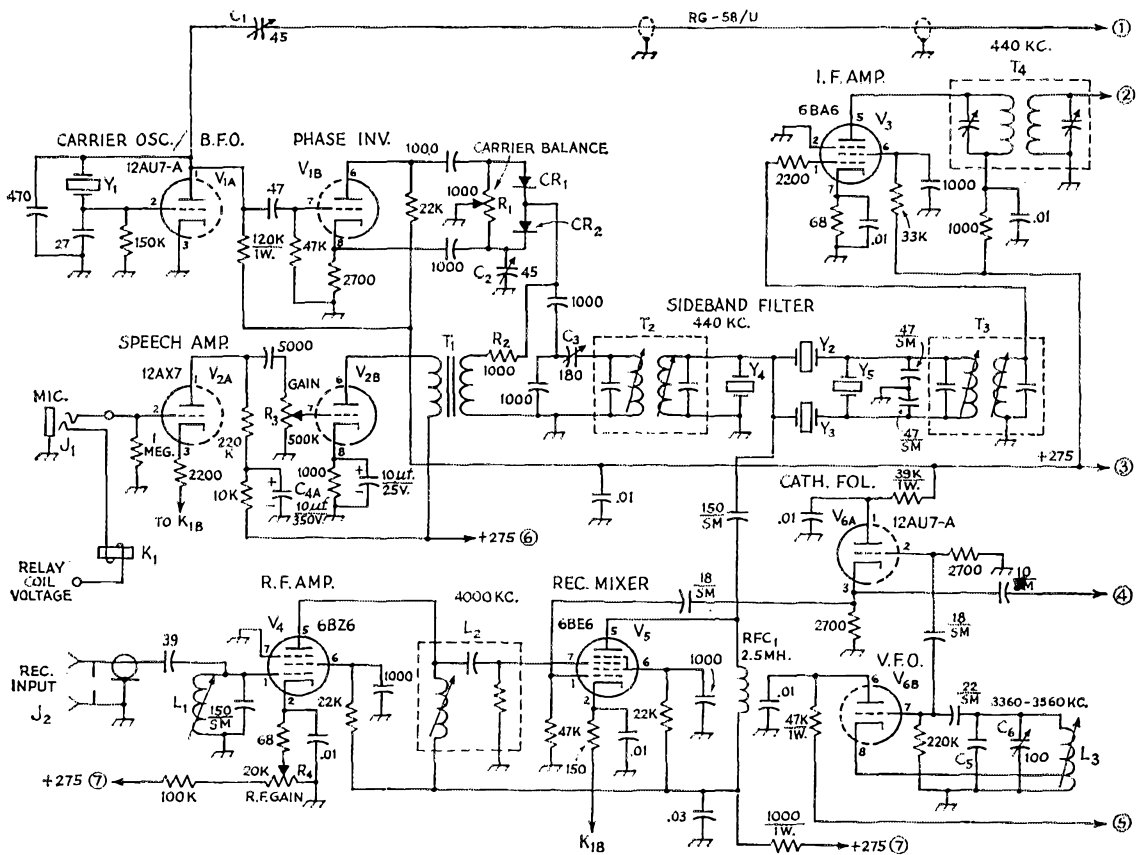


Fig. 2—Schematic diagram of the transceiver. The contacts of  $K_1$  are shown in "receive" position. A 12-volt filament hookup is shown; if 6 volts is available, the heaters can be wired in conventional fashion and the 39-ohm resistor eliminated. Resistances are in ohms, and resistors are  $\frac{1}{2}$  watt unless otherwise indicated. Capacitors marked "SM" are silver mica; those marked with polarity are electrolytic; all others are disk ceramic, except as specified below.

- $C_1, C_2$ —7-45- $\mu$ f. ceramic trimmer, neg. temp. coef. (Centralab 822-BN).
- $C_3$ —9-180- $\mu$ f. mica trimmer.
- $C_4$ —10/10/10- $\mu$ f., 350-volt triple-section electrolytic (Cornell Dubilier CO210).
- $C_5$ —App. 600  $\mu$ f., silver mica (see text).
- $C_6$ —100- $\mu$ f. air variable, double-bearing (similar to Johnson 100L15).
- $C_7$ —App. 120  $\mu$ f., mica (see text).
- $C_8$ —25- $\mu$ f. air variable (Hammarlund APC-25-C).

- $C_9$ —100- $\mu$ f. air variable (Hammarlund HF-100).
- $CR_1, CR_2$ —Germanium diodes, 1N35 matched pair or separate 1N34s.
- $J_1$ —3-conductor microphone jack.
- $J_2, J_3$ —Coax receptacle (SO-239).
- $K_1$ —4 p.d.t. relay with coil to match control voltage available (Potter & Brumfield GA17 series or similar).
- $L_1, L_5$ —App. 45 turns No. 30 enam. close-wound on  $\frac{1}{4}$ -inch diam. iron slug-tuned form (CTC LS-3 or similar).  $L_5$  adjusted to desired range; see text.

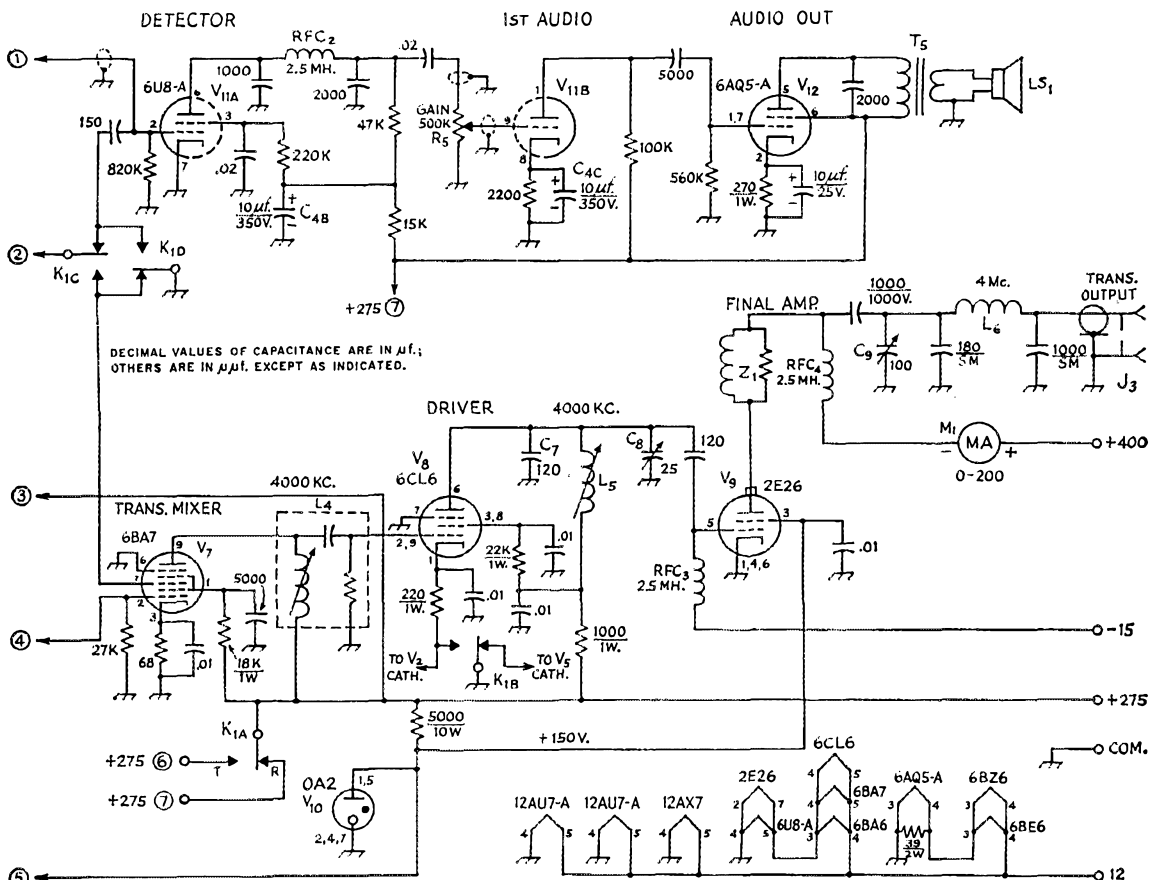
total of about 600  $\mu$ f. for  $C_5$  (which is several smaller capacitors in parallel), and  $L_3$  wound as specified. Then sit down with a grid-dip meter and a receiver and go to work juggling capacitance and pruning turns until the desired coverage is obtained. The tap on  $L_3$  should be about one third of the way from the cold end.

The dial assembly is a surplus item found in just about every junk box—the velvet vernier from a BC-375 or 191 tuning unit. Of course, a new National AM dial will work as well. The reference line is scribed on a piece of plastic which is spaced out from the panel enough to clear the rim of the dial.

### Transmitter Mixer and R.F. Stages

The transmitter mixer stage,  $V_7$ , uses a 6BA7. The only precaution here is to ground the signal grid in "receive" position with  $K_{1D}$ . Otherwise there is enough feed through in  $K_{1C}$  to excite the tube, thereby setting up complications.

The driver stage is a 6GL6 operating Class A. These tubes have a tendency to "take off," but the shielded  $L_4$  coil assembly, lifting the cathode off ground during "receive," plus liberal shielding between this stage and the final, seem to have settled it down very nicely. In the plate circuit, a little "pink ticket preventive" was applied in the form of restricted tuning range.  $L_5$



- $L_2, L_4$ —4.5-Mc. TV sound i.f. coil assembly (Meissner 17-1071).  
 $L_3$ —App. 12 turns No. 20 enam. close-wound on  $\frac{3}{4}$ -inch diam. iron slug-tuned form (National XR-72), tapped 4 turns from ground end. See text.  
 $L_6$ —22 turns No. 24 finned, 1-inch diam.,  $\frac{11}{16}$  inch long (B & W Miniductor No. 3016).  
 $LS_1$ —Externally mounted speaker, any size.  
 $M_1$ —0-200-ma. d.c. meter.  
 $R_1$ —1000-ohm control, linear taper.  
 $R_2$ —1000 ohms,  $\frac{1}{2}$  watt.  
 $R_3, R_5$ —0.5-megohm control, audio taper.  
 $R_4$ —20,000-ohm, 2-watt wire-wound control, linear taper.  
 $RFC_1, RFC_2, RFC_3$ —2.5 mh., 75 ma. (National R-50 or similar).

- $RFC_4$ —2.5 mh., 125 ma. (National R-100U or similar).  
 $T_1$ —Plate-to-line audio transformer, approx. 20,000 ohms to 500-600 ohms (Stancor A-3250, ARC-5 receiver output or similar).  
 $T_2, T_3$ —455-kc. slug-tuned i.f. input transformer (Miller 12-C1).  
 $T_4$ —455-kc. trimmer-tuned i.f. output transformer (Miller 112-C4).  
 $T_5$ —Output transformer, approx. 5000 ohms to voice coil.  
 $Y_1$ — $Y_5$ , inc.—FT-241-A surplus, approx. 450 kc. See text.  
 $Z_1$ —6 turns No. 18 finned spaced wire diameter on 47-ohm 2-watt resistor (may not be required; see text).

is first adjusted to resonance using a 150- $\mu\mu\text{f}$ . capacitor in place of  $C_7$  and  $C_8$ . This capacitor is then removed and replaced with a 120- $\mu\mu\text{f}$ . fixed capacitor and a 25- $\mu\mu\text{f}$ . variable as shown. The little variable will tune the coil between 3.8 and 4.0 Mc., but not to any of the other signals coming out of the mixer.

The final was an accident; that is to say, the intention was to use a 6DQ6, but when everything was finished the plate cap of the 6DQ6 stuck up above the top of the cabinet. Rather than submount the socket, a little rewiring allowed the use of a 2E26. This tube operates with 15 volts of bias and 150 volts on the screen,

and is driven into Class  $AB_2$ . The parasitic suppressor,  $Z_1$ , is optional but good insurance. Once again, the tank is restrictively tuned. The pi-net values were calculated for a 50-ohm load using the *Handbook* formulas. No mismatch here, please — the coil stock used for  $L_6$  melts.

### Receiver Operation

The receiver starts off with a 6BZ6 r.f. amplifier,  $V_4$ . This stage has high gain and is a possible source of instability, but adequate bypassing and shielding should be sufficient to keep it in hand.

An antenna-peaking capacitor was omitted in favor of panel simplification.

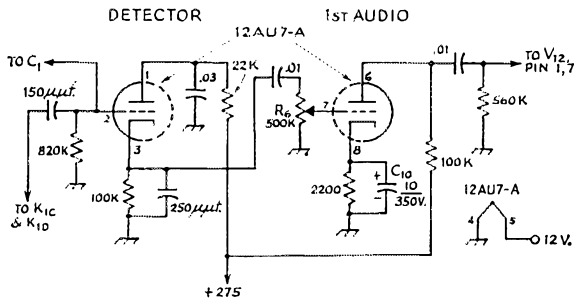


Fig. 3—Circuit of an infinite impedance detector and first audio stage which can be used in place of  $V_{11}$  in Fig. 2. Resistances are in ohms; fixed resistors are  $\frac{1}{2}$  watt, and  $R_6$  is a 0.5-megohm control with audio taper. Capacitances are in  $\mu\text{f.}$  unless otherwise indicated;  $C_{10}$  is electrolytic (same as  $C_{4C}$ , Fig. 2); other capacitors are disk ceramic

The mixer,  $V_5$ , is a 6BE6. Oscillator injection comes from the v.f.o., putting the receiver and transmitter on exactly the same frequency. B voltage for the r.f. and mixer stages is switched by  $K_{1A}$ . It is also necessary to lift the mixer cathode off ground on "transmit," to prevent "tails" on the transmitted signal.

After conversion to the intermediate frequency the signal goes through the crystal lattice which, if properly tuned, passes only one sideband. This is then amplified in the i.f. amplifier and fed to the detector.

The grid-leak detector shown in Fig. 2 was selected because of its high gain. The infinite impedance detector diagrammed in Fig. 3 is now being used; although not as sensitive, it has greater signal-handling capabilities. Notice that there is a tube change when using the alternate circuit. B.f.o. injection is at the control grid and is adjustable with  $C_1$ . The lead from  $C_1$  to the detector *must* be well shielded to prevent carrier leakage around the balanced modulator and filter.

The triode section of the 6U8 (or one section of the 12AU7) is used as the first audio stage. The only precaution here is to shield the volume-control lines. The audio output stage, a 6AQ5, gives more than adequate volume. The speaker used with the original rig is mounted in the power-supply unit.

### Construction

The chassis and cabinet were homemade as shown in Fig. 5. A standard utility box or cabinet could be substituted if you don't mind increasing the over-all size somewhat. If you are ambitious you will want to perforate the top, so tape a piece of graph paper on the top panel, punch the

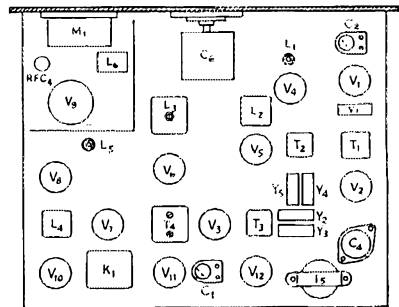
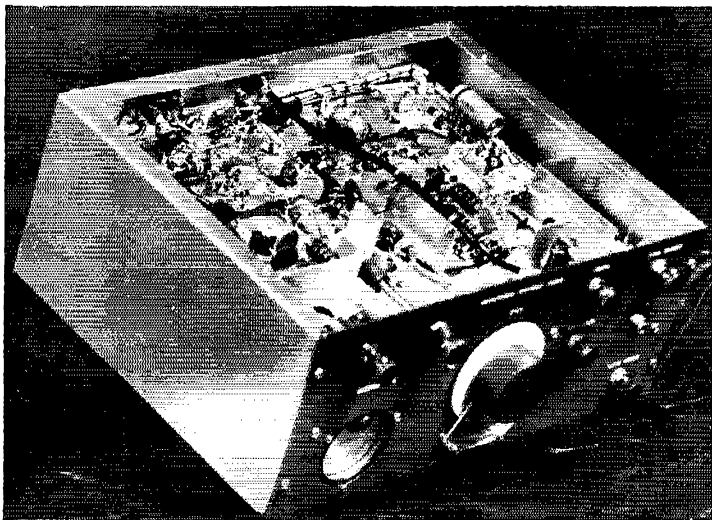


Fig. 4—Layout of the transceiver chassis looking from the top. Chassis size is 10 by 12 inches.

centers and get on with the job. The top on the rig shown has 448 holes! When all drilling has been completed and the aluminum sections have been cut out and bent to shape, they should be etched in a lye bath and washed with plenty of water. Then clean the pieces off with alcohol,



This below-chassis view shows that the small components are readily accessible. Baffle shields help in reducing coupling between circuits that might have a tendency toward setting up self-oscillation.

put on decals and spray the outer surfaces with clear plastic.

After laying out the components and punching the chassis and panel, the best place to start wiring is the v.f.o. After it is working properly the receiver section is put together and debugged. This gives an opportunity for preliminary alignment of the filter. The carrier generator and balanced modulator should be wired next, and the b.f.o. injection wired to the detector. At this point the receiver can be aligned for copying sideband.

Before adjusting the filter, I would suggest you consult *Single Sideband for the Radio Amateur* for much better instructions than I can give here. Don't be disappointed if the filter doesn't do very well at first, for it takes a good deal of practice to really know what you are trying to achieve. If, however, you can get the receiver sounding good and passing only one sideband, that is also about how your transmitted signal will be.

The next trick is to make the transmitter work. Since the oscillator and balanced modulator are already completed, wire the audio, run this and the balanced modulator output through the filter, and check the 440-kc. sideband signal. Now couple the v.f.o. to the transmitter mixer, and a 75-meter sideband signal should be realized. The driver and final amplifier stages are then wired and checked out.

After the receiver and transmitter each work

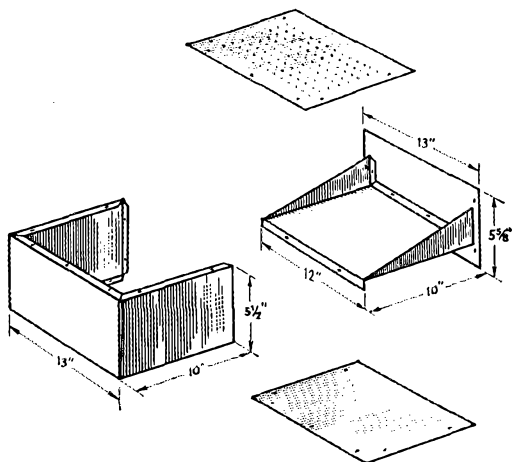


Fig. 5—Exploded view of the homemade chassis and cabinet used by K5BUQ. The chassis, front panel, and top and bottom plates are 0.051-inch aluminum, and the back cover on the left is 0.040-inch stock.

by themselves, the switching relay should be wired in and the final de-bugging should take place. (If you are lucky, not over half the stages will be oscillating!) Since each stage is wired and tested separately, there is no big final "smoke test." The final alignment is merely a touch-up of the preliminary alignment. **QST**

## U.S.S.R. Contest

This contest is being held from 2000 GMT on April 29, 1961, to 2100 GMT on April 30, 1961. Although logs are solicited for the entire 24-hour period, only contacts made over a continuous 12-hour period will count for score. So you can work as much as 24 hours, but pick your best 12-consecutive-hour stretch in figuring your score. Contacts should be established on 28, 21, 14, 7, or 3.5 Mc., c.w. only. The contest call is "CQM" (M being the first letter of the Russian word for World). The exchange consists of a six-digit number made up of RST and QSO number, starting with 001. Your first exchange might be 599001. Work as many different countries as possible. Stations may be contacted only once per band; stations may be worked again on different bands. Contacts with stations of one's own country will not be credited; the ARRL Countries List shall be the official list of countries for the contest. Scoring: Each completed contact counts one (1) point. Final score is the number of contact points multiplied by the number of different countries worked on all bands, not the sum total on

each band. A single discrepancy on a contact will void that contact. Awards: Award winners will be from each country for both single-operator and multiple-operator scores. Winners will also be determined for single-band entries for both 7 and 3.5 Mc. Single-operator awards of a certificate and contest badge will be awarded to the five highest scoring single-operator entries from each country. Multiple-operator awards of a certificate will be awarded to the five highest scoring entries from each country with a contest badge to each operator. All participants who establish contact with 100 different Soviet operators will be awarded a "W100U" award; all participants who establish contacts with six continents will receive the "R6K" award; and contact with 150 different countries will merit the "R150S" award. QSLs are not necessary; logs are sufficient. Each participant, irrespective of the number of points scored, should make a report following the sample below, not later than May 15, 1961, to Chief, Judging Board, Post Office Box 101, Moscow, USSR.

### U.S.S.R. INTERNATIONAL TELEGRAPHIC CONTEST, APRIL 29-30, 1961

Call Sign ..... Name .....

Address .....

Country ..... Transmitter Input Power .....

Receiver ..... Antenna .....

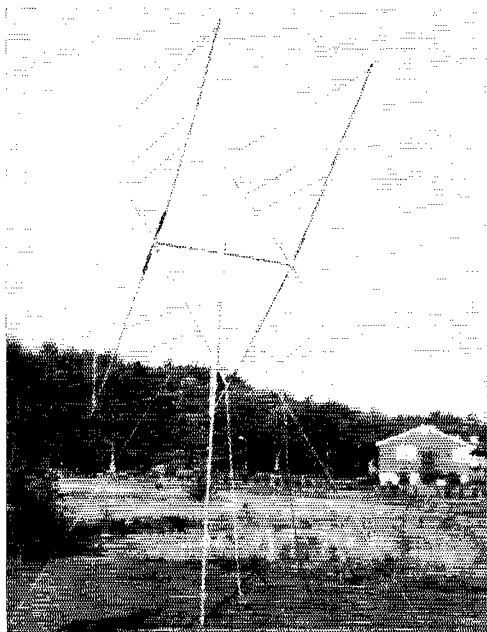
Date	Band	Time GMT	Station Worked	Control Number Received	Control Number Sent	Points	Jury's Notes
1	2	3	4	5	6	7	8
April 29	14 Mc.	2103	OK1AX	569003	579001	1	
April 29	14 Mc.	2106	UR2AA	579002	589002	1	

Number of Points for Contacts ..... Number of Countries .....

Total Number of Points .....

May ....., 1961 Operator's Signature and Call .....

# Three-Band Quad for Field Day



After fabrication of a few simple components, this three-band quad can be put up by two or three men in a matter of minutes.

*Although the quad antenna described in this article was designed specifically with portability in mind, we have a strong suspicion that more than a few will be tempted to try it for home-station use. It should be well suited for both purposes.*

## *Transportable Array for 10, 15 and 20 Meters*

BY ERNEST H. ADOLPH,\* K1DRX

FIELD DAY always brings out innovations in antenna arrays. One answer to this need is a cubical quad — a three-band quad that can be assembled and dismantled with ease and which is collapsible to a size that is readily transported in a car. This seemed like an impossibility at first, but it was decided that an attempt would be made anyway.

For quick assembling and dismantling, it was obvious that it should not be necessary to re-strain the six wire loops each time. This problem was solved by using stranded wire for the elements and fastening them permanently to the spreaders. The spreaders, with the element wires still attached, may be formed into two neat bundles when the spreaders are detached from the mounting spiders. The elements, being semi-flexible, are not damaged by this process. The mast is cut into two sections, and the remaining components are small enough to present no problem.

### *The Spider*

The mechanical heart of any quad antenna is the spider — the mounting for the spreaders. These were made as shown in one of the photographs. One 4-foot length and two 2-foot lengths of  $1\frac{1}{4} \times 3/16$ -inch aluminum angle are welded, at right angles and face downward, to one face of a  $6\frac{1}{4}$ -inch square, of  $\frac{1}{4}$ -inch aluminum sheet. At the center of the square on the opposite side, a  $4\frac{1}{2}$ -inch length of aluminum tubing is welded. This tubing has an outside diameter of 2 inches and a wall thickness of 0.25 inch. The outside diameter is shaved down so that it will make a

snug fit inside the end of the boom. This construction makes a very rigid support for the spreaders and will take the strain of hauling the quad up and down. All material should be grade 6061-T6.

### *Spreaders*

The spreaders are 12-foot bamboo poles. They are fastened in the spider legs, by means of stainless-steel strap-type clamps, in such a position that the butt ends of diagonally-opposite spreaders are separated 18 inches. To facilitate rapid assembly, a paint mark at the point where each butt should rest will be helpful.

### *Elements*

The sketch of Fig. 1 shows the dimensions of the elements which are made of stranded aluminum clothesline (about  $\frac{1}{8}$  inch in diameter). The driven elements and the parasitic elements have the same physical dimensions. The reflectors, however, are tuned to a lower frequency by inserting a loading coil in each. The dimensions of the elements and the loading coils are based on frequencies centered on what have proven in the past to be the most productive segments of the three bands in Field Day operation. These segments are the c.w. section of the 20-meter band, the entire 15-meter band, and the phone portion of the 10-meter band. The three driven elements are connected together at the feed points, as indicated by the dashed lines in Fig. 1, and are fed by a single coaxial line.<sup>1</sup>

After the spreaders have been mounted on the spiders, the distances shown in Fig. 1 are marked

<sup>1</sup> Hess, "Single-Line Feed for Tri-Band Quads," *QST*, August, 1959.

\* 42 Brooksbie Rd., Bedford, Mass.



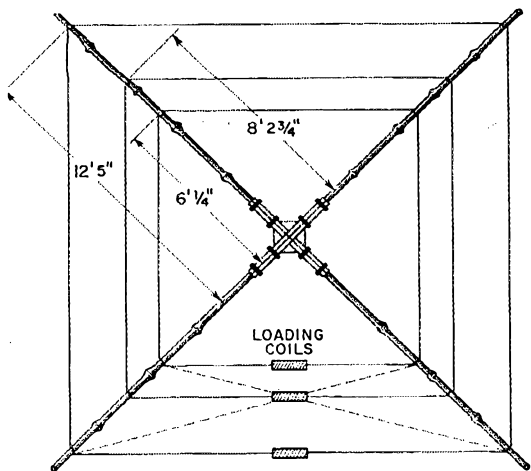


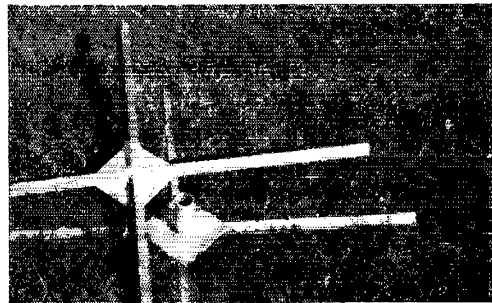
Fig. 1—Sketch showing the dimensions of the parasitic elements. Dimensions for the driven elements are the same, but there are no loading coils and the bottom ends are brought to a common feed point as indicated by the dashed lines.

oil and  $\frac{1}{8}$ -inch holes are drilled through the bamboo. The clothesline is fed through the holes, and then the spreaders are squared up. To preserve this alignment, stainless steel tie wires are used which prevent slippage of the clothesline in the holes. See Fig. 2. The ties should be given a coat of epoxy, and the bamboo poles may be protected against weather by applying boat resin.

A  $1 \times 3$ -inch piece of  $\frac{1}{2}$ -inch Plexiglas is drilled to form the insulator at the feed point of the 15-meter driven element. The open ends (feed points) of the 10- and 20-meter driven elements are brought to this same insulator where all three elements, and the RG-58/U transmission line, are connected in parallel. In each of the parasitic elements, the free ends of the clothesline are brought to the respective loading coils.

### Boom and Mast

A 30-foot length of 2-inch aluminum irrigation pipe (0.05-inch wall) is cut up into three sections—two sections of  $10\frac{1}{2}$  feet each for the portable mast, and one of  $8\frac{1}{2}$  ft. for the boom. The ends of the boom are slit for a short distance, and clamps are used to secure the connection to



A pair of sturdy quad "spiders" made from aluminum stock. The supporting arms of angle and the tubular boom coupling are welded to the square plate.

the spider. Care should be taken to keep the inside surfaces of the boom ends, and the outside surfaces of the short sections of tubing welded to the spiders, free from burrs or grit of any kind, since these may cause the joint to freeze up, making it difficult to detach the spiders from the boom. It is a good idea to coat each of the surfaces with heavy grease, such as DC-4.

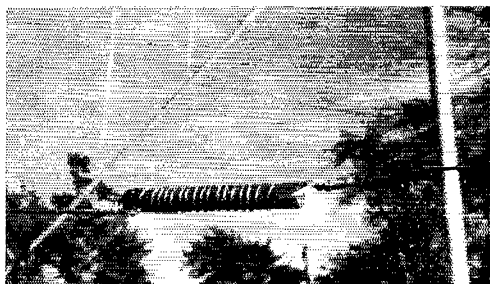
The two sections of the mast are joined together by a dowel insert which makes a snug fit



The butt ends of the spreaders are fastened in the grooves of the spider arms by means of stainless-steel clamps.



The driven elements are fed in parallel by a single transmission line of RG-58/U coax. Stainless-steel washers on stainless steel screws separate the copper of the line and the aluminum of the elements.



The loading coils for the parasitic elements are wound on 6-inch lengths of  $\frac{3}{4}$ -inch phenolic rod, all to a winding length of  $4\frac{1}{2}$  inches. The conductor is one strand of the aluminum clothesline used for the elements. The 20-meter coil has  $16\frac{1}{2}$  turns, the 15-meter coil 16 turns and the 10-meter coil 14 turns for the design frequencies used by the author. After winding, the coils should be coated with boat resin or varnish.



The quad "package." The boom, and mast sections, with guys wrapped around the upper section, are in the foreground. To the rear are the spiders, and spreaders wrapped in a protective covering.

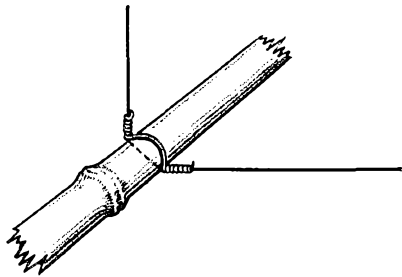


Fig. 2—Sketch showing the manner in which the element wires are tied to prevent slipping at the spreaders.

inside the tubing. Wood screws are used to fasten the tubing to the insert, and the joint is reinforced with adjustable clamps on either side.

At a point about 3 feet down from the top of the mast, a clamp made of  $\frac{1}{8}$ -inch aluminum is fastened to the mast. Immediately above the clamp is a spacer about 2 inches long made of aluminum tubing that will slide easily over the mast. The clamp serves as a stop for the guy ring, and the spacer keeps the guys clear of the clamp.

Three guys of nylon rope are used. A total of about 100 feet will be adequate. Nylon rope has great tensile strength, but it will not stand up well under abrasion and therefore must be protected from chafing against sharp edges. The holes in the guy ring are fitted with metal "thimbles." The guy rope is looped around the thimble and the free end is tied back on the standing part of the rope with twine.

There are several ways in which the boom may be attached to the mast. One method using a metal plate and U bolts is shown in Fig. 3.

#### Putting the Antenna Up

In erecting the quad, a few pointers may be helpful. With one set of spreaders and elements mounted on a spider, lay the assembly flat on the ground with the boom stud of the spider facing upward. Hold the boom vertically and fasten it to the spider. Assemble the other set of elements and likewise place it flat on the ground. Then swing the boom with the first set of elements attached up into an inverted position and fasten the second end of the boom to the second spider. Assemble the mast and attach it to the center of the boom. Then raise the mast to a vertical

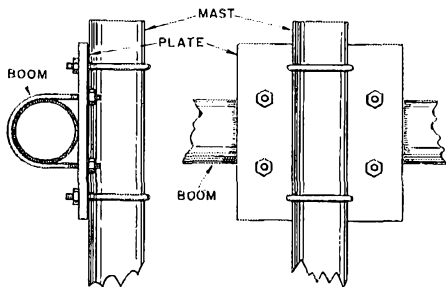
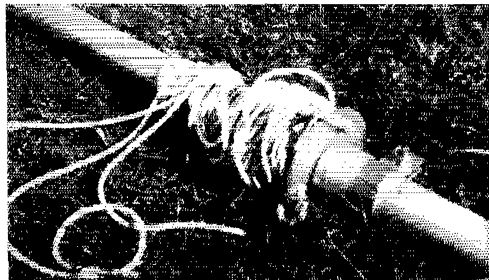


Fig. 3—A metal plate and four U bolts may be used to attach the boom to the mast.



A hardwood dowel joins the two sections of the mast.



Guying ropes, guy ring, spacer and clamp.

position and anchor the guys. The total weight, including the mast, is only 47 pounds, so two men can easily hold the mast vertical while the guys are being secured.

#### Adjustment

The reflector loading coils were adjusted for maximum front-to-back ratio using a field-strength meter. In doing this, the quad was mounted close enough to the ground so that the 20-meter loading coil could be reached. Then a stepladder was used to reach the other two loading coils. When the antenna was raised to its full height, the adjustments of the 10- and 15-meter elements were found to remain satisfactory. However, the frequency of maximum front-to-back ratio on 20 increased by about 50 kilocycles, so it is probably advisable to make the initial adjustment for a frequency somewhat lower than the target frequency on this band.

#### Packing for Transport

To avoid any possible confusion, it is a good idea to code the four spreader poles in each element with numbers. In dismantling the antenna, use the reverse of the procedure described for assembling. Lower the assembly so that one element lies flat on the ground; detach the mast. Then disconnect the boom from the element lying on the ground, invert the boom, placing the other element flat on the ground, and remove the boom. On each element, remove the spider, without disturbing the positions of the spreaders. Fold one spreader arm back over on top of the opposite one. Swing the two remaining arms parallel to the first pair, keeping the element wires reasonably taut. Then roll the two side spreaders toward the center pair, winding up the wire on the spreaders as you go. Wrap the bundle in a protective wrapping (I used tar paper because it was handy) and secure with twine. With a maximum length of 12 feet, the quad in knockdown form can be easily transported in a station wagon or on a ski rack.

(Continued on page 150)

# An Evaluation of the Nuvistor

## Comparing the 6CW4 with Conventional Tubes at 50 to 450 Mc.

BY EDWARD P. TILTON,\* WIHDQ

BY now most v.h.f. men who build their own receiving gear, and some who don't, have been wondering about the Nuvistor, a radically different type of tube introduced some time ago by RCA. Advance information indicated that the 6CW4 should be a very good performer in the v.h.f. range,<sup>1</sup> and perhaps even at 420 Mc. As the tube is now becoming available commercially, and at moderate cost, we wanted to find out just what it would do in comparison with the tubes we've been using in v.h.f. front ends for some years. Some finished models of v.h.f. converters using Nuvistors will be ready for description in *QST* before long, but meanwhile here are bits of evidence as to what can be expected from them.

The quickest way to see what Nuvistors would do was to start with converters of conventional design and known performance, and install Nuvistor r.f. stages in them. Our family of v.h.f. converters appearing in the *Handbook* for the past several years served as the guinea pigs for this experiment. We will discuss them in the order in which they are described in the *Handbook* text.

### 50 Mc.

Optimum converter performance at 50 Mc. is no problem, at least as far as noise figure is con-

\* V.H.F. Editor, *QST*.

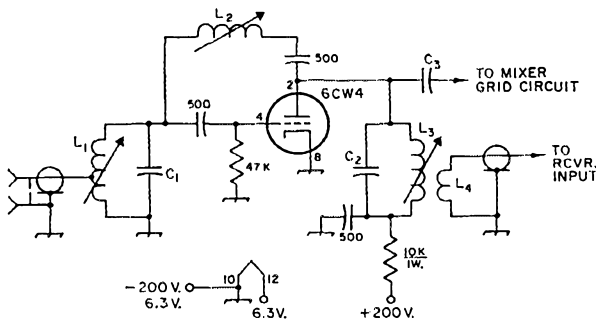
<sup>1</sup> "The Nuvistor as an R.F. Amplifier at 144 Mc.," *QST*, Sept., 1960, p. 38.

cerned. External noise being what it is at this frequency, almost any tube will give a better noise figure than is needed. Our *Handbook* 50-Mc. converters have for some years featured pentode r.f. stages, admittedly having higher noise figure than the better triodes. We even threw away some more noise figure in the most recent model by putting in extra tuned circuits in the r.f. stage, with the idea of improving its freedom from overloading by TV and other strong signals on frequencies adjacent to the band.

As expected, the Nuvistor provided far lower noise figure at 50 Mc. than the 6CB6 used in the original design. A single 6CW4 neutralized stage, as shown in Fig. 1, gave more than enough gain to override mixer noise. The circuit is the same as would be used in the first half of a cascade stage, but the second triode is omitted. (You could get a still lower noise figure by using the second tube, but why bother when one 6CW4 gets down to 4 db. or so easily?) The stage was first used with the tuned circuits exactly as shown in the *Handbook*, except for the addition of a neutralizing coil. It was also tested using the single-tuned input circuit, as in Fig. 1. Naturally, this gives a broader response, and somewhat less attenuation of out-of-band signals than the double-tuned circuit of the *Handbook*.

Next a 6CW4 was installed in the mixer. This gave lower mixer noise than the pentode it replaced, and brought the over-all noise figure down to about 3 db. This is several decibels bet-

Fig. 1—Circuit diagram of a neutralized triode r.f. amplifier using the Nuvistor. Capacitor values in  $\mu\text{mf}$ . Values of components not given depend on frequency.  $L_4$  is used only in a separate preamplifier.



$C_1$ —50 Mc.: 10- $\mu\text{mf}$ . fixed ceramic.

144 Mc.: 8- $\mu\text{mf}$ . trimmer.

220 Mc.: 5- $\mu\text{mf}$ . trimmer.

$C_2$ —10- $\mu\text{mf}$ . fixed ceramic for 50 Mc.; not used on 144 and 220.

$C_3$ —1 to 2  $\mu\text{mf}$ . May be made by twisting plastic-covered No. 18 wires together about 1 inch.

$L_1$ —50 Mc.: 11 turns No. 24 enam., close-wound on  $\frac{1}{4}$ -inch iron-slug form. Tap at 3 turns.

144 Mc.: 4 turns No. 18,  $\frac{1}{4}$ -inch diam.,  $\frac{1}{2}$  inch long, air-wound. Tap at  $1\frac{1}{2}$  turns.

220 Mc.: 3 turns No. 18,  $\frac{1}{4}$ -inch diam.,  $\frac{1}{4}$  inch long. Tap at 1 turn.

$L_2$ —Iron-slug coils, nominal inductance given.

50 Mc.: 3.3  $\mu\text{h}$ .

144 Mc.: 0.68  $\mu\text{h}$ .

220 Mc.: 0.22  $\mu\text{h}$ . (Miller 20A336RBI, 20A687RBI and 20A227RBI, respectively).

$L_3$ —50 Mc.: Same as  $L_1$ , but no tap.

144 Mc.: Same as  $L_1$ , but 5 turns, no tap.

220 Mc.: Same as  $L_1$ , no tap.

$L_4$ —50 Mc.: 3 turns around  $L_3$ .

144 and 220 Mc.: 2 turns.

ter than you'll ever need, so adjustment is a breeze. Just peak the circuits for maximum response at the portion of the band you favor, or stagger-tune them for broader response across the band. Either way you'll have a front end that is a lot better than you can use. To prove this for your own satisfaction, put a 50-ohm resistor across the input, and observe the noise. Now put your antenna on, and watch the noise shoot up at least 4 db. This is your margin of performance, beyond which you gain nothing in weak-signal reception by tinkering with the front end.

If you have one of the commercial receivers that tunes 50 Mc., but does so with less than optimum front-end performance, a Nuvistor r.f. preamplifier like the one shown in Fig. 1 will make it "come alive" in a fairly convincing manner. Follow the circuit, but drop  $C_3$  and add  $L_4$  around the plate coil,  $L_3$ , to couple into coax running to the receiver input terminals.

#### 144 Mc.

We spent more time on 144-Mc. Nuvistor circuits than with those for the other bands. With the help of WIDXE, we tried grounded-grid, series cascode and conventional cascode stages, in several different converters. There seemed to be little choice between them, except that the cascodes were easier to tame. In the *Handbook* converter, substitution of a 6CW4 for the first 6BC4 netted an appreciable improvement in noise figure. The circuit was similar to Fig. 1, except that the plate coil was resonated with the tube capacitance only, and air-wound coils were used instead of slug-tuned ones. The capacitor across  $L_1$  was made a sleeve-type trimmer.

An interesting complication was encountered with the series cascode: the second (or grounded-grid) half of the cascode oscillated very readily. This can be confusing; you assume that oscillation must be in the first stage, and you knock yourself out trying various sizes of neutralizing coils, to no avail. After several frustrating hours of this it dawns on you that the trouble is in the grounded-grid portion. Oscillation in grounded-grid stages usually comes from the fact that unless the grid is actually grounded directly it will not perform its intended function of isolating the input and output circuits. In the series cascode, the grid must be bypassed to ground, and many capacitors are none too good at this and higher frequencies. Button-type or feed-through capacitors are likely to be best for this purpose. Try tunable bypasses or series-resonant circuits in troublesome cases.

The net result of our work on 144 Mc. to date is that the 6CW4 shows up as the best low-cost tube available for r.f. amplifier service. It is ahead of the 6BC4, 6AM4, and the like, and it is as good as all but the hottest 417As. It is almost certain to be better than the "retired" 417As that most hams have available—and it very likely will last longer than the new ones.

#### 220 Mc.

It was on this band that the 6CW4 really be-

gan to pay off. Here we are almost completely above the frequency where external noise is a factor in weak-signal reception. We are also above the optimum working range of most available tubes. The compact structure and high transconductance of the Nuvistor make for real improvement in 220-Mc. reception, compared to conventional tubes.

First we made a trough-line grounded-grid r.f. amplifier with a 6CW4. This was a duplicate of the one in the *Handbook* converter for 220, except for the circuit differences shown in Fig. 2. When installed in place of the 6AM4 amplifier originally shown, it dropped the noise figure by nearly 3 db., a marked improvement in weak-signal reception, with a converter that was already fairly good, as 220-Mc. converters go.

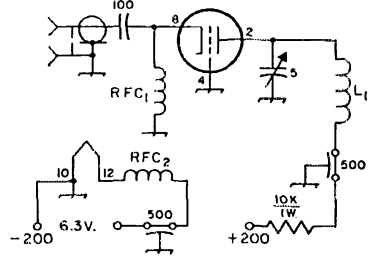


Fig. 2—Circuit diagram of the Nuvistor 220-Mc. grounded-grid amplifier.

$L_1$ —Inner conductor of trough line. See *Handbook*, 1958–1961.

RFC<sub>1</sub>, RFC<sub>2</sub>—1.1- $\mu$ h. solenoid r.f. choke (Waters C1001), or 22 turns No. 26 enamel close-wound on a 1-watt resistor.

The next step was a preamplifier using essentially the circuit of Fig. 1. This was a surprise, in that it turned out better than the grounded-grid stage, as far as ease of adjustment was concerned. Used ahead of a commercial 220-Mc. converter having a 6BZ7 cascode front end, it made a 5-db. improvement in noise figure. This is enough to make easily-readable signals out of some that were all but buried in the noise before.

#### 432 Mc.

To date, the only Nuvistor stage tried on 432 Mc. is a preamplifier similar to that shown in the *Handbook*, where a 6AJ4 or 6AM4 is used. This is intended for use as a separate preamplifier, ahead of a converter such as those presently using no r.f. stages. Though not completely stable in its present form, it does not oscillate when it is heavily loaded by the succeeding stage, and by the antenna. As might be expected where regeneration is present, the gain is very high. Used ahead of an excellent crystal-mixer converter having no r.f. stage, it makes an observable improvement in weak-signal reception. We have more work to do before we can say that we have an entirely satisfactory 6CW4 r.f. stage at 432 Mc., but initial results certainly are promising.

#### Some General Observations

The Nuvistor is a low-voltage device, compared to conventional vacuum tubes. Typical operation

calls for a plate voltage of 70. It is recommended that this be taken from a supply of higher voltage, with a relatively high value of dropping resistor, as shown in our diagrams. This gives better characteristics as to overloading than running the stages with a supply voltage of 70. Up to 300 volts may be used, provided a sufficiently large value of dropping resistor is employed.

The cathode is normally grounded instead of running it to ground through a bias resistor, as is done with most tubes. The grid can be operated in two ways. Where it is desirable to ground the grid directly, as in Fig. 2, the plate voltage should be adjusted by means of the dropping resistor so that the plate dissipation is held to under 1 watt, maximum. This will mean that the voltage at the plate may have to be 60 volts or less, to avoid excessive input. Where a grid leak and blocking capacitor are used, as in Fig. 1, plate current will be lower, and the permissible plate voltage higher. The maximum of one watt of plate dissipation is the point to watch in either case. Nuvistors work well with as little as 40 volts on their plates.

In grounded-grid circuits there is a marked tendency to oscillation, due to the grid not being completely at ground potential. Even with the grids connected to ground with the shortest possible leads, our 220- and 432-Mc. trough-line stages are a bit more touchy than they should be. As mentioned in connection with the 144-Mc. cascode stage earlier, watch the capacitor used to bypass the grid, in stages where the grid is above ground for d.c. We found that a type of mica capacitor, not generally available in stores handling the usual parts lines, was very good for this purpose. It had a silver-plated flat housing that could be soldered directly to the chassis, and a wide flat lead to the capacitance element. The capacitance was 260  $\mu\text{f}$ . When connected to the grid of W1DXE's wildly-oscillating second

half of a series-cascode amplifier, it calmed it down beautifully, and made it work as a grounded-grid stage should. The little disk ceramics are not much good as bypasses at 144 Mc.

We have not yet completely tamed the 220- and 432-Mc. trough-line amplifiers. These have the grid pins of the sockets connected directly to the copper troughs, but they're still hot for r.f. Possibly a series-resonating tuned circuit would do the job better, but we've been waiting for a different type of socket before trying this. Several types of sockets have been made for Nuvistors, including some having paralleled lugs for the r.f. circuit connections. Possibly these would make the grid lead inductance low enough to bring the stages closer to true "grounded-grid" status. The sockets have not yet become available, so we'll have to wait to find out.

For reasons cited above, we now lean toward neutralized stages like that of Fig. 1. If the neutralizing coil  $L_2$  is made variable, adjustment of the stage is done very easily. Simply set up the converter for normal operation, but with the plate voltage disconnected from the stage to be neutralized. Feed a strong signal into the antenna jack, and adjust the core of  $L_2$  for *minimum* signal. This should be done with the converter or r.f. amplifier in the position in which it will ultimately be used, and with all shielding in place. Now apply voltage and adjust all circuits except  $L_2$  for maximum signal, at the middle of the range you expect to work over. Disconnect the plate voltage and reset  $L_2$  for minimum signal again. Reconnect the plate supply, and adjust the input circuit for best signal-to-noise ratio, which is not necessarily the same as for maximum gain. Now relax — you've got an excellent r.f. stage going for you, in the never-ending struggle to hear something that your friends miss. QST

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## NEW BOOKS

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**Radio Control for Model Builders**, by William Winter. Published by John F. Rider Publisher, Inc., 116 West 14th St., New York, N. Y. 220 pages, including index, 5½ by 8½ inches, paper cover. Price, \$4.25. Cat. No. 235.

Radio control of models can probably be considered a parallel hobby to amateur radio. Whether you are a full-time radio-control enthusiast or have only an academic interest, this book will make interesting reading and serve also as a good reference manual. Covering all the facets of the hobby, the author presents the material in an easy-to-understand manner yet covers the latest intricate systems. Transmitters, receivers, control systems, power supplies, meters, and relays are just a few of the subjects. Also described are complete systems for the radio-controlled airplane, boat, car, and truck. A glossary of radio control terms is included at the rear of the book.

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**Fundamentals of Semiconductors**, by M. G. Scroggie. Gernsback Library Book No. 92. Published by Gernsback Library, Inc., 154 West 14th St., New York 11, N. Y. 160 pages, including

index. 5½ by 8½ inches, paper cover. Price, \$2.95.

This is a good beginner's book, yet detailed enough for the technician already familiar with the basic theory of semiconductors. Beginning with the atomic theory, the book works its way through energy and matter to junctions, diodes and rectifiers, transistors, photocells and other semiconductor devices. It explains theory and discusses the development, functions and possibilities of semiconductors. Also, described are some of the latest semiconductor devices, such as thermistors, varistors, masers, mavars, and tunnel diodes.

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**Transistor Projects**, by the Staff of Gernsback Library. Published by Gernsback Library, Inc., 154 West 14th St., New York 11, N. Y. 5½ by 8½ inches, 160 pages, paper cover. Price, \$2.90.

Here is a manual written for the man who isn't particularly interested in the theoretical side of transistors but merely wants to have some fun working on weekend transistor projects. A lot of interesting gadgets are described — electronic compass, electronic counter, solar powered radio, sine-square-wave generator among them. Also included is a section of hints which discuss some of the more common misconceptions concerning transistors.

# All-Transistor Walkie-Talkie for 28 Mc.

## A Practical Portable

BY ROBERT G. THOMAS,\* W3QZO

**T**HE value of a walkie-talkie in emergency communications is certainly far more important than its role as an electronic curiosity. Therefore, when the design of a walkie-talkie is contemplated, first consideration should be given to factors affecting long and reliable service, communications range, and operating convenience. All too often the tendency in the past has been to minimize the importance of these factors for the sake of compactness, resulting in a design that is "cute" but has little practical value. Micro-powered transmitters combined with broad-band superregen receivers typify this class. This is not to say that compactness should be given no consideration at all—certainly it is an important factor in portable gear—but the temptation to sacrifice dependability for size reduction should be resisted.

Naturally, any portable equipment designed today should exploit the efficiency of transistors wherever possible. Transistors suitable for receiving circuits at 30 Mc. and higher have been available for some time but with power ratings so low that their use in portable transmitters of reasonable output has not been practical. The recent introduction of the Texas Instruments 2N1143, with a maximum collector rating of 750 milliwatts and cutoff frequency of 480 Mc., has made it possible to build a portable transmitter

\* Mayfair House, Apt. 1406, Lincoln Drive at Johnson St., Philadelphia 44, Penna.



This is the receiver end of the W3QZO walkie-talkie. The speaker behind the circular cutout can be turned on or off with the slide switch beside it. The vernier dial is for receiver tuning, and the other knob is on the combined volume control and power switch. The small aluminum tabs on top of the box at each end are for a carrying strap.

*Not so tiny that performance is compromised but small enough to carry anywhere, this self-powered station is full of interesting ideas like combining a homemade converter with a cheap b.c. set to get a good-working double superhet. This model is for 10 meters, but there's no reason why it couldn't be adapted to 6 or 2.*

with respectable output at a reasonable price, even for the two-meter band.

### Frequency and Form Factor

Ten meters was selected for the rig described here principally because of the activity promoted on that band in the Philadelphia area by the Phil-Mont Mobile Radio Club. This group has an active program providing communications for sporting events, parades, and civil emergencies. Past experience by members has shown that a portable rig is most convenient to use when it employs a telephone-type handset in conjunction with a case containing transmitter, receiver, batteries and antenna. This is in contrast to the single-unit handie-talkie configuration in which all components, including the antenna and microphone, are mounted on a single box which must be held near the head of the operator when in use.

The preferred arrangement offers several advantages over the single-unit approach: When operating at a fixed position, it is far more convenient to manipulate a single handset than a complete transmitter, receiver and antenna assembly. Since the size of the case is then of secondary importance, large batteries may be used with a corresponding increase in service life. When operating while on foot, the case is easily carried at the operator's side by means of a strap slung over his shoulder. In this instance, the case provides a stable base for the antenna and handset cradle, leaving both of the operator's hands free when not transmitting. A loudspeaker is also provided so the operator is not forced to continually hold the handset to his ear during receiving periods. This feature has proved invaluable for net operations where the operator does more listening than transmitting. It also heightens interest for any spectators in the vicinity by allowing them to hear both sides of the QSO.

### What Kind of Receiver?

When it comes to receivers, there are several possibilities. The simplest, of course, would be a superregen. The main reason for rejecting this

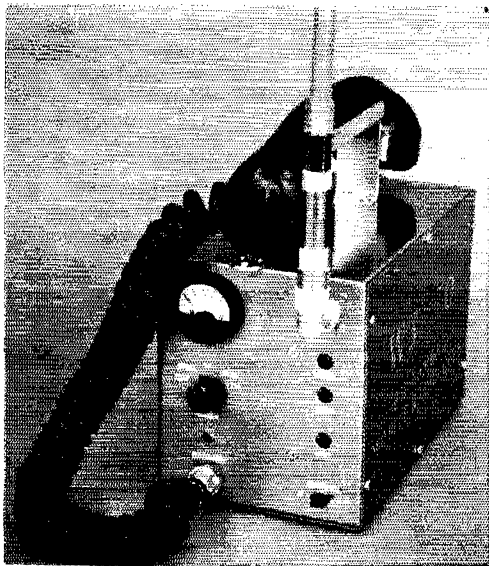
type is its poor selectivity, not to mention problems dealing with radiation, capture effect (strong signals "taking over"), rushing noise on standby, and the need for a regeneration control in order to realize maximum sensitivity. A superhet with a superregenerative detector might provide satisfactory performance on six or two meters, but in view of conditions encountered on the 10-meter band, nothing short of a full conventional superhet will provide the desired performance. This requirement is actually not as bad as it may seem at first, since a receiver of this type can be assembled very simply by using one of the many low-priced transistor broadcast receivers coupled to the output of a crystal-controlled converter. Coverage of the ham band is then accomplished by tuning the b.c. set.

The broadcast receiver shown in the photographs was obtained in kit form from one of the large mail-order houses for about \$13, less transistors. Although it does not have an r.f. stage, it does have an air dielectric tuning capacitor, push-pull audio output, and a self-contained speaker. Similar receivers, completely assembled, are now available for less than \$20. Regardless of the type of receiver used, it should be thoroughly tested on the broadcast band before attempting to use it with a converter so that any tendency toward instability may be eliminated by suitable circuit modifications.

#### Converter Circuitry

The converter design (see Fig. 1) is based on an RCA data sheet for "drift" transistors. It consists of a 2N1396 r.f. amplifier, 2N1396 mixer and 2N384 crystal-controlled oscillator, all stages using the common-emitter configuration.  $C_1$  and  $C_2$ , in addition to resonating  $L_1$  to the signal frequency, form a capacitive voltage divider that matches the antenna impedance to the input circuit. The position of the tap on  $L_1$  is selected to provide optimum signal transfer consistent with reasonable loading of the tuned circuit by  $Q_1$ . Similarly, the collector is tapped down on interstage coil  $L_2$ , but the relatively high output impedance of the grounded-emitter amplifier does not require a tap as far down as on the input coil.

The receiver consists of a transistor broadcast set constructed on the printed wiring board in the background and a crystal-controlled converter. Converter components are mounted on the side of the chassis in the foreground. From left to right are the crystal (and behind it, oscillator coil  $L_5L_5$ ), oscillator transistor  $Q_3$ , mixer output transformer  $L_3L_6$ , mixer  $Q_2$ , interstage coil  $L_2$ , r.f. amplifier  $Q_1$ , and input coil  $L_1$ .



The walkie-talkie as seen from the transmitter end. The three holes under the homemade base-loaded whip allow access to the tuning and loading capacitors. The slide switch selects either of two crystals. All currents of interest, plus the battery voltage, can be checked with the meter and switch on the left. Microphone, audio output and push-to-talk connections to the handset are made through the jack at the lower left.

The interstage coupling circuit,  $C_3L_2$ , has a high  $L/C$  ratio to achieve a bandwidth great enough so that no retuning is necessary across the entire 10-meter band.  $R_1$ ,  $R_2$  and  $R_3$  furnish stabilizing bias for  $Q_1$ .

The oscillator may be placed either above or below the signal frequency. One point to keep in mind with any double-conversion superhet using a broadcast receiver for a tunable i.f. is that image rejection diminishes as the b.c. set is tuned toward the low end of its range. Therefore, the oscillator frequency should be selected so that the end of the ham band used most often is heterodyned to the high end of the broadcast band. Operation at W3QZO is almost exclusively on the high end of 10, generally on the Phil-Mont



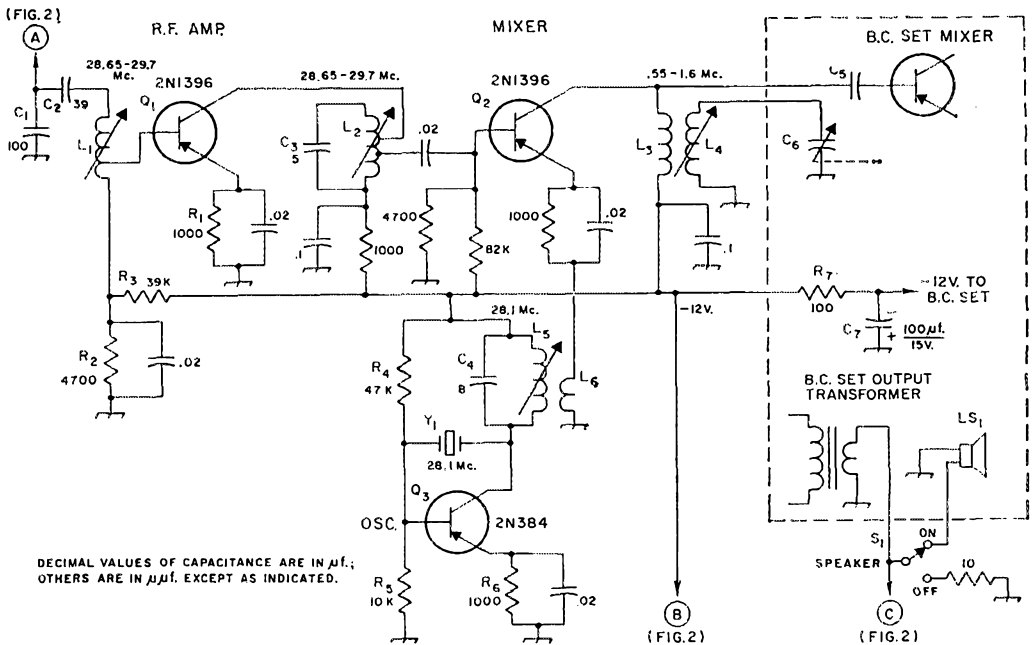


Fig. 1—Circuit diagram of the crystal-controlled converter used with a transistor b.c. set for 10-meter reception. Resistances are in ohms, and resistors are  $\frac{1}{2}$ -watt composition. Capacitors are 50-volt disk ceramic except as specified below.

$C_1$ —100- $\mu$ f. mica.  
 $C_2$ —39- $\mu$ f. mica.  
 $C_3$ —5- $\mu$ f. tubular ceramic.  
 $C_4$ —8- $\mu$ f. tubular ceramic.  
 $C_5$ —Part of b.c. set, originally connected to loop-stick antenna.  
 $C_6$ —Mixer tuning capacitor (part of b.c. set).  
 $C_7$ —100- $\mu$ f. 15-volt electrolytic.  
 $L_1$ —10 turns No. 26 enam., wound 16 turns per inch on  $\frac{3}{8}$ -inch diam. iron slug-tuned form (CTC PL55/B, Miller 4400); tap 2 turns from bottom.  
 $L_2$ —Like  $L_1$ , but 10 turns close-wound and tapped 2 and 8 turns from bottom.  
 $L_3$ —24 turns No. 29 enam., random-wound on top of  $L_4$ .  
 $L_4$ —About 300–800  $\mu$ h., slug-tuned (North Hills P-120-J, Miller 4412).  
 $L_5$ —Like  $L_1$ , but 20 turns close-wound and not tapped.  
 $L_6$ — $\frac{3}{8}$  turn No. 26 enam. on cold end of  $L_5$ .  
 $LS_1$ —Speaker of b.c. set.  
 $R_1$ — $R_7$  inc.—See text.  
 $S_1$ —S.p.d.t. slide switch.  
 $Y_1$ —28.1-Mc. overtone type.

net frequency of 29.493 Mc. An oscillator crystal on 28.1 Mc. places this frequency at 1393 kc. on the b.c. receiver and allows coverage of all but the lower 150 kc. of the 10-meter phone band.

The oscillator circuit is analogous to the Pierce, with a third-overtone crystal in the feedback path from collector to base.  $R_5$  provides temperature stabilization and bias for protection of the transistor in the event that oscillation stops.  $R_4$  and  $R_5$  are part of the stabilizing network and furnish forward base bias to ensure starting. Oscillator output is link coupled to the emitter of the mixer,  $Q_2$ . The small link provides adequate current for proper mixer operation without introducing excessive degeneration in the mixer emitter circuit, thereby maintaining satisfactory conversion efficiency.

Signals amplified by the r.f. stage are capacitively coupled from a low-impedance tap on  $L_2$  into the mixer base. The mixer output, appearing across  $L_3$ , is fed via  $C_5$  to the input of the b.c. receiver.  $C_5$  originally connected to a tap on the loop-stick antenna, which must be removed. The section of the variable capacitor in the b.c. set that formerly tuned the loop antenna is now used to resonate  $L_4$ , which is coupled to  $L_5$ . The

mixer collector circuit is thus made to track with the oscillator in the b.c. receiver for maximum selectivity and rejection of interference. The physical size of  $L_3L_4$  should be quite small, to inhibit pickup of local broadcast stations. It was necessary to add a decoupling network,  $R_7C_7$ , in the 12-volt lead of the b.c. set to prevent motor-boating. These components are mounted in an unused area of the printed wiring board.

### Transmitter and Modulator

The r.f. portion of the transmitter is quite simple, consisting only of an overtone crystal oscillator and a common-base amplifier. Before arriving at this arrangement, diagrammed in Fig. 2, all manner of oscillator-multiplier-buffer combinations were tried, but all suffered in various degrees from low efficiency, excessive complexity and inadequate drive capabilities.

The only difference between the converter local oscillator and the transmitter oscillator is that the bias network of the latter is designed to operate the transistor at the higher power level needed to drive the final amplifier. The input to the transmitter oscillator is approximately 200 mw. Although a receiving-type transistor such



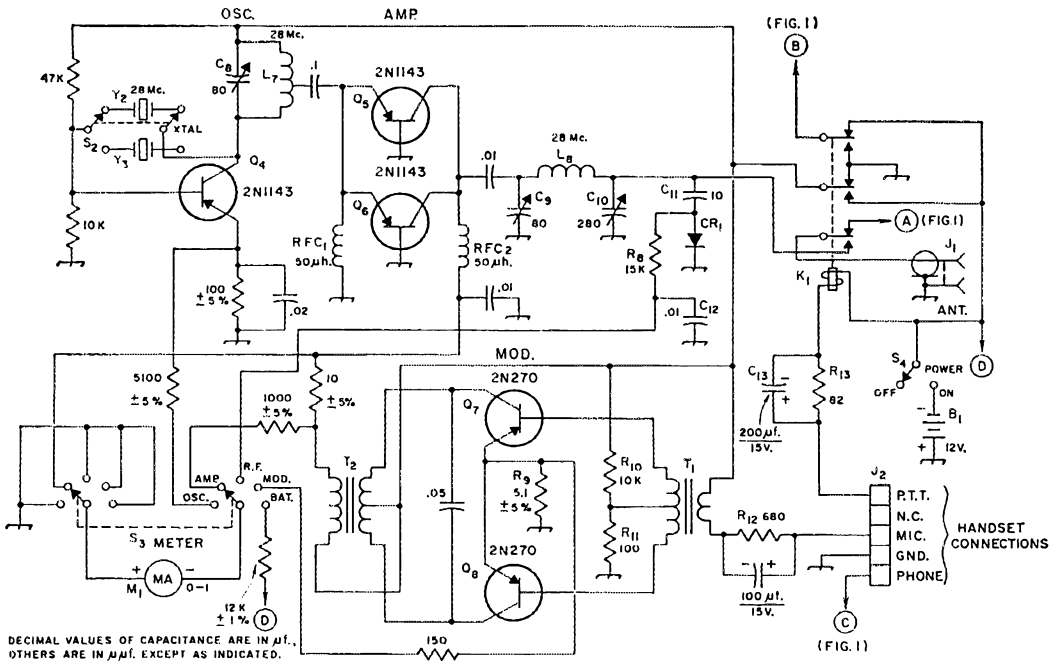


Fig. 2—Diagram of the walkie-talkie transmitter, modulator and switching circuits. Resistances are in ohms, and resistors are 1/2-watt composition. Capacitors marked with polarity are electrolytic; others are 50-volt disk ceramic except as specified.

- B<sub>1</sub>—2 6-volt lantern batteries with coil spring contacts (Burgess F4H) in series.
- C<sub>8</sub>, C<sub>9</sub>—5–80- $\mu$ f. mica trimmer.
- C<sub>10</sub>—25–280- $\mu$ f. mica trimmer.
- C<sub>11</sub>—10- $\mu$ f. tubular ceramic.
- C<sub>12</sub>—0.01- $\mu$ f. disk ceramic.
- C<sub>13</sub>—200- $\mu$ f. 15-volt electrolytic.
- CR<sub>1</sub>—1N34 or equivalent.
- J<sub>1</sub>—Coax receptacle (SO-239).
- J<sub>2</sub>—Miniature 5-pin receptacle (Amphenol 126–218).
- K<sub>1</sub>—3p.d.t. subminiature relay, 12-volt coil (Potter & Brumfield KM14D).
- L<sub>7</sub>—11 turns No. 20 finned 3/8-inch diam., 16 t.p.i. (B & W Miniductor 3007 or Airdux 516T); tapped 6 turns from bottom end.

- L<sub>8</sub>—Like L<sub>7</sub> but 7 turns and not tapped.
- M<sub>1</sub>—0–1 d.c. milliammeter, miniature type.
- R<sub>8</sub>–R<sub>13</sub> inc.—Composition.
- RFC<sub>1</sub>, RFC<sub>2</sub>—50  $\mu$ h. (National R-33 or similar).
- S<sub>2</sub>—D.p.d.t. slide switch.
- S<sub>3</sub>—Subminiature ceramic rotary, 2 poles, 5 positions, 1 section, nonshorting (Centralab PS-105).
- S<sub>4</sub>—Part of volume control (see text).
- T<sub>1</sub>—Driver transformer, 500 ohms c.t. to 5000 ohms c.t. (Stancor TA-4); use half of primary.
- T<sub>2</sub>—Output transformer, 500 ohms c.t. to 200 ohms (Thordarson TR-66).
- Y<sub>2</sub>, Y<sub>3</sub>—10-meter overtone type.

as a 2N1396 might be used in this application, its collector dissipation would be running too close to maximum for good reliability. Therefore, a 2N1143 was used here, allowing a generous margin of safety. The tank coil, L<sub>7</sub>, is tapped at the point that provides optimum power transfer to the final-amplifier input.

The final amplifier uses two parallel-connected 2N1143 transistors in a common-base amplifier. This configuration does not produce quite as much power gain as a common-emitter amplifier. It is inherently stable, however, and requires no neutralization or tricky tuning, even though it is operating straight through. Collector current flows only when the stage is driven, providing automatic protection in the event of oscillator failure. A pi network matches the collector impedance to the load. Sufficient range is provided by the mica tuning and loading capacitors, C<sub>9</sub> and C<sub>10</sub>, to match most likely-to-be-encountered

whip antennas or transmission lines. The collector is shunt fed through RFC<sub>2</sub>. RFC<sub>1</sub> provides a d.c. ground return for emitter current. Power input to the final is about 0.75 watt. The transmitter tuned circuits are broad enough so that no retuning is required for frequency shifts up to  $\pm 150$  kc.

There is dubious theoretical advantage in paralleling common-base amplifiers; nevertheless, doing so increased the output substantially, and it was thus felt to be worthwhile. The same two transistors in push-pull would probably produce more output than is presently obtained, but lack of time has prevented experimentation along these lines. Such a possibility should be considered by anyone developing this type of equipment.

The modulator consists of two 2N270 transistors, Q<sub>7</sub> and Q<sub>8</sub>, in a Class B push-pull amplifier. Stock transistor-type transformers are used for

input and output coupling.  $R_{10}$  and  $R_{11}$  supply a small amount of forward bias to reduce crossover distortion.  $R_9$  is inserted in the common-emitter return to reduce the possibility of thermal runaway. Sufficient output is available from the carbon microphone element of a surplus TS-13-E handset to fully drive the modulator without any need for additional amplification. Button current is regulated by  $R_{12}$ .

### Metering and Switching

A miniature 0-1-ma. meter is used with appropriate multipliers and shunts for measuring several voltages and currents. Oscillator emitter current, final collector current, relative r.f. output, modulator emitter current, and battery voltage can all be metered according to the setting of  $S_3$ . A peak detector connected to the transmitter output rectifies the r.f. which is then filtered by  $R_8C_{12}$  and applied to the meter. The r.f. output and modulator current scales are arbitrary. Full scale on the oscillator and final-amplifier ranges corresponds to 50 and 100 ma., respectively. In the battery check position, full-scale deflection indicates 12 volts.

Push-to-talk operation by means of a switch on the handset contributes to convenient, snappy operation. It is accomplished with a miniature three-pole relay that switches the antenna and the collector supply voltage when energized by a butterfly switch built into the TS-13-E handset. The d.c. switching contacts in the relay are arranged to eliminate feedback resulting from slow decay of the supply voltage when going between receive and transmit.

A paradox often encountered in transistor gear is that a control device may consume more power than the total useful output from the equipment. This is avoided to some extent in the case of the push-to-talk relay by two expedients. First the restoring spring is over-stretched somewhat to weaken its tension, thus reducing

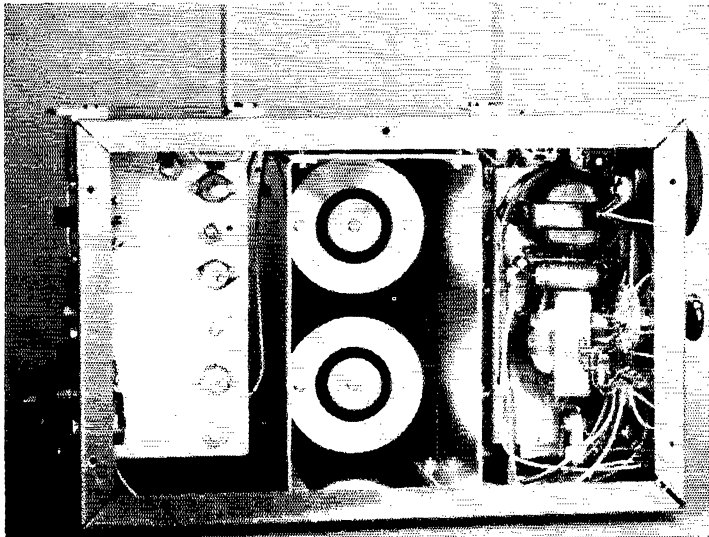
the coil current required for pulling in and holding the relay armature. Second, a network consisting of  $R_{13}$  and  $C_{13}$  is placed in series with the relay coil. When the coil circuit is initially closed, pull-in current is normal; because the large capacitance of  $C_{13}$  cannot charge quickly, it effectively short-circuits  $R_{13}$ . When  $C_{13}$  becomes fully charged, current is reduced by the presence of  $R_{13}$  in series with the coil, but by this time the relay is closed and requires only a small holding current. Thus, while transient operation is unchanged, the steady-state power consumption is cut almost in half.

### Construction

The converter chassis is a piece of aluminum about 5 inches high bent into an "L" shape  $3\frac{1}{4}$  inches on one leg and  $2\frac{7}{8}$  inches on the other. One hole of the diameter required for the speaker and another for clearing the variable-capacitor shaft are drilled in the longer leg. Additional small holes are also drilled in this leg for screws which fasten the chassis to the b.c. receiver printed wiring board. A strip of brass is riveted across the chassis between the speaker and shaft holes. Two holes drilled and tapped through this double layer of strip and chassis take screws used for fastening the completed receiver assembly to the main box. Self-tapping screws can be used if riveting facilities are not available.

Converter components are mounted on the other leg of the "L" chassis near its edge, to avoid interference with b.c. set components. Small parts are wired point-to-point, using miniature insulated turret standoff terminals where required.

As seen in one of the photographs, the transmitter is built on a second "L"-shaped aluminum chassis about 5 inches high. One leg of the "L" has notches at the corners to clear the crystal socket assembly and coax antenna jack. Modulation and microphone transformers are mounted on



The walkie-talkie with one side cover removed. The receiver compartment is on the left, the homemade battery box is in the center, and the transmitter section is at the right. The rings and disks on the far side of the battery box make contact with coil spring terminals on the batteries. This view shows the transformer side of the transmitter chassis, the meter switch wiring, and the crystal sockets mounted on the slide switch in the lower right corner.

one surface of this leg, and the mica tuning capacitors on the other surface. All transistor sockets are mounted on the other leg of the "L." A small shield separates the oscillator and final circuits. As in the converter, all small components are wired directly, using miniature insulated standoff terminals where necessary.

A heat sink for the output transistors is made from  $1\frac{3}{4} \times 1\frac{1}{4} \times \frac{1}{4}$ -inch piece of aluminum. Two  $21/64$ -inch holes, spaced the same distance as the transistor sockets, are drilled through the aluminum. These holes fit over the transistors which are secured lightly with set screws. The capacitance between the heat sink and the chassis makes up part of the total tuning capacitance in the final-amplifier collector circuit.

The receiver and transmitter are mounted at opposite ends of a  $5 \times 6 \times 9$ -inch utility box. The receiver assembly is fastened with two screws that pass through the box into the tapped holes in the receiver chassis. The speaker grille, a small piece of perforated metal, is sandwiched between the chassis and the inside surface of the box where it is held firmly when the mounting screws are tightened. The only precaution necessary when mounting the receiver is to ensure that the tuning capacitor shaft lines up with the bushing on the miniature vernier knob (Lafayette F-348). The volume control and switch unit supplied with the b.c. receiver will probably be of the printed wiring variety and not lend itself to panel mounting. It should be removed and a standard 5000-ohm control and s.p.s.t. switch combination mounted on the end of the box. Wires are then run from the new unit to the former connection points. The switch is wired into one battery lead as shown in Fig. 2. In addition, leads to the audio-output transformer secondary and the speaker are connected to the speaker switch,  $S_1$ .

The transmitter is mounted at its end of the box by means of a narrow flange on one side of the chassis. Holes in the end of the box line up with the three variable capacitors, providing

access for tuning. The meter, meter switch and crystal switch are mounted on the transmitter end of the box. The crystal sockets are mounted by soldering their terminals directly to the switch terminals. The complete crystal switch and socket assembly is then mounted in a corner of the box with two short leads connecting the switch to appropriate points in the oscillator circuit. Most metering components are mounted on a terminal strip below the meter switch.

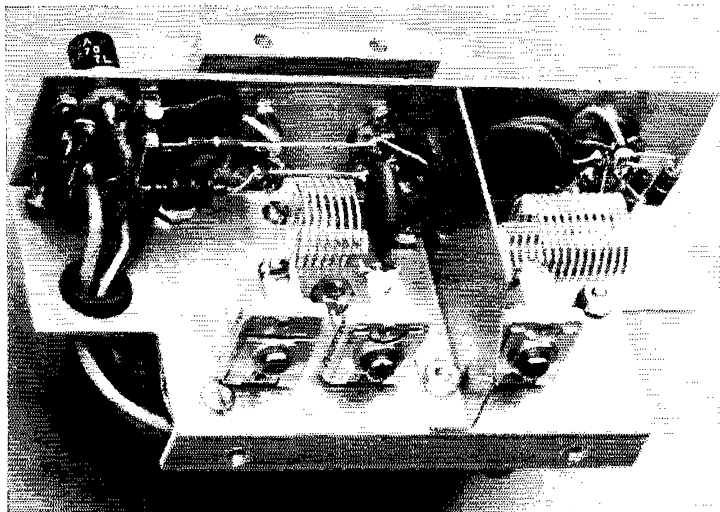
Between the transmitter and receiver is a box constructed of aluminum for housing two lantern-type batteries that come equipped with coil-spring terminals. The interior view shows one end of the battery box open for receiving the batteries. At the other end of the box there is a bakelite plate to which disk and ring terminals are attached with small screws. These screws also hold solder lugs on the other side of the bakelite plate for making connection between the walkie-talkie circuits and the battery box. The disks and rings are cut out of  $1/32$ -inch brass with a hole cutter.

To change batteries it is only necessary to remove a side cover of the walkie-talkie, tilt the box to eject the old batteries, and slip new batteries in place. Compression of the battery spring terminals and a sponge-rubber pad inside the side cover automatically compensate for dimensional variations and ensure good contact. Haywire, loose connections, and the possibility of getting polarity mixed up are completely eliminated.

A combination carrying handle and handset cradle made of aluminum is mounted centrally on the top of the box. For carrying ease, a surplus web strap with swivel snap connectors at each end may be fastened to the small aluminum brackets screwed to each end of the walkie-talkie.

Small disks of  $1/8$ -inch sheet rubber are cemented to the bottom of the box near the corners to prevent marring surfaces on which the unit is placed. Using this material rather than conventional rubber feet eliminated screws that would

The transmitter subassembly. The shield partition separates the oscillator section on the right from the amplifier components on the left. One edge of the aluminum heat sink which fits over the 2N1143 amplifier transistors is visible just above the L-shaped chassis. The sockets for the modulator transistors are on the far left, and the audio transformers are mounted on the other side of the chassis and hidden in this view.



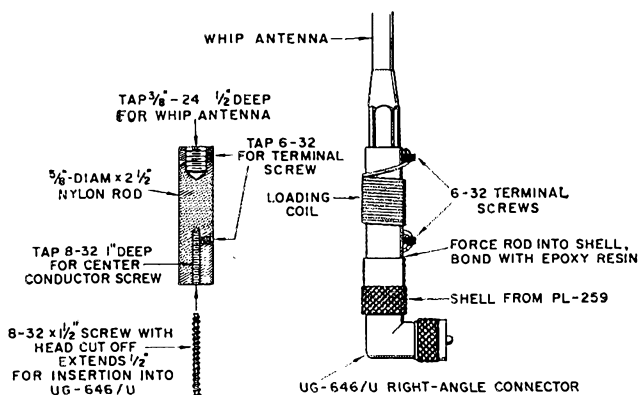


Fig. 3—Construction of the base-loaded whip used with the walkie-talkie. Tighten the 6-32 screws against the whip and the 8-32 center conductor screw. Then cut the heads off both terminal screws and use them to hold the ends of the coil. The inductance of the coil should be adjusted for resonance with the particular whip used.

have protruded into the box and interfered with various components.

### Making the Antenna

The antenna shown in the photographs was made from a surplus Fiberglas helical whip for 40 Mc. A loading coil at the base lowers the resonant frequency of the whip to 29 Mc. Construction details are shown in Fig. 3. The coil form is made from a  $2\frac{1}{2}$ -inch length of  $\frac{5}{8}$ -inch-diameter nylon rod, drilled and tapped at one end to receive the whip. The other end is tapped for an 8-32 screw. The outer shell from a PL-259 coax plug is screwed onto a UG-646/U right-angle connector and the form is jammed into the end of the shell. Epoxy resin is used to cement the nylon in place. The 8-32 screw projecting from the end of the coil form rod makes contact with the center conductor of the right-angle fitting. Small screws fitted radially at the top and bottom of the coil form make contact with the whip and 8-32 screw, respectively, and also serve as terminals for the loading coil. Similar construction may be used with other whips; the only requirement is that the loading coil be adjusted with a grid-dip meter for resonance near the desired operating frequencies. The finished assembly is simply screwed onto the coax jack on the rig.

### Adjustment

Start off by using a grid-dip oscillator to set all the tuned circuits in both converter and transmitter to the proper frequencies. Then apply power to the converter and b.c. set and check to see that  $Q_3$  is oscillating, using the g.d.o. as an indicating wavemeter. At this point, you should be able to hear signals (or a signal generator) and peak up  $L_1$ ,  $L_2$ ,  $L_4$  and  $L_5$  for maximum output. Rock the b.c. set tuning capacitor and adjust  $L_4$  for proper tracking over entire range.

The transmitter is tuned by simply adjusting  $C_8$ ,  $C_9$  and  $C_{10}$  for maximum output as indicated by the built-in r.f. voltmeter. The oscillator-emitter and amplifier-collector currents are checked for reference only; they are typically 20 and 60 ma., respectively.

### How Far Will It Work?

In field use the walkie-talkie has demonstrated

the desirable, though often frustrating, characteristic of a receiving range which is far greater than its transmitting range. Distances consistently covered from a field location over average terrain are limited by transmitter power to about two miles to a mobile in motion and five miles to a fixed station. Good locations will extend the range. For example, stations about twelve miles away are worked consistently from inside an apartment building at the author's QTH, using only the whip antenna shown in the photographs. Needless to say, TVI is not a problem with this rig!

Receiver sensitivity equals that of typical commercial communications sets, ground-wave range being on the order of 30 or 40 miles with the whip. While the selectivity does not stack up with that obtained with exotic i.f. systems, it has been more than adequate for conditions encountered so far. Shielding provided by the metal box prevents b.c. signals from leaking directly into the broadcast receiver, but there is a tendency for h.f. commercial stations to cause cross-modulation in the input stage. A more sophisticated input circuit with a band-pass network might eliminate this problem, but it has not been serious enough so far to warrant such a complication.

It would be nice at this point to include a discussion of battery life, but after four months of use the original cells show no sign of deterioration. The average receiver drain is only 18 ma., and even considering the 130-ma. total load on transmit it appears that one set of batteries can be counted on for about a year of normal use, after which they should be replaced on general principles anyway. Since the batteries cost only 72 cents each, the operating cost is negligible—something that cannot be said for tube equipment of a similar nature.

This walkie-talkie has been described not with the thought that it will be copied but rather to relate a few ideas that may assist others with similar projects. Regardless of mechanical or circuit details, rigs of this type share one characteristic: They all provide unlimited enjoyment for their owners.

The author wishes to acknowledge the many suggestions offered by W2HBE during the development of the transmitter r.f. circuit. QST

# Multiband Antennas Using Loading Coils

BY WILLIAM J. LATTIN,\* W4JRW

MANY amateurs operate from locations at which it is impossible to put up a full-length doublet antenna for 80 meters. A doublet antenna can be shortened as much as desired by the use of loading coils. The effect of loading coils is discussed very completely, with graphs and formulas, in *Bureau of Standards Circular C74, Radio Instruments and Measurements*, published in 1924 and reprinted in 1937. (Many an old-timer in radio will remember this as a standard reference book back in the '20s and '30s.) It is shown that in addition to decreasing

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*Two-band operation can be obtained by using plain loading coils, with considerable constructional simplification as compared with the equivalent trap arrangement. This article discusses the principle, and gives dimensions for several 3.5-7-Mc. combinations.*

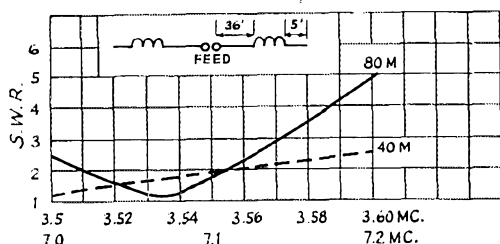


Fig. 1

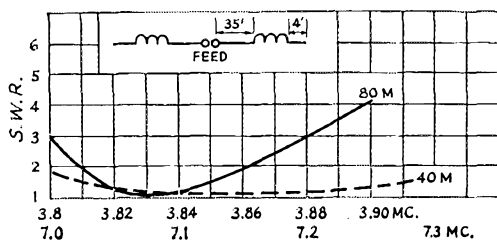


Fig. 2

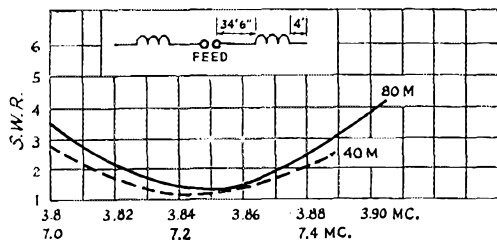


Fig. 3

Fig. 1-3, inclusive—Three two-band antenna configurations using 120- $\mu$ h. loading coils, showing effect of small variations in the lengths of the straight portions of the antenna. Dimensions and construction of the sides to the left of the feed terminals are identical with those shown to the right. Standing-wave ratio measurements made with RG-8/U cable (52 ohms) and Micromatch.

the natural frequency of an antenna, the use of loading coils results in the fact that "the harmonic frequencies are no longer integral multiples of the fundamental as in the case of the simple antenna." In Fig. 62, page 76 of the *Circular*, a graph shows how the next higher resonant frequency differs from the fundamental in one particular setup.

An antenna for 80 and 40 meters was made up according to this principle. A few trials with various values of loading inductance indicated experimentally that with 120-microhenry coils placed as shown in Fig. 1, resonance occurred near the lower ends of both bands. With a small change in lengths, as shown in Fig. 2, an antenna which resonated higher in both bands was obtained. Another small change in lengths resulted in the antenna shown in Fig. 3, which is more satisfactory for phone operation. This antenna is 77 feet long, plus the lengths of the coils and insulators.

The coils were close-wound with No. 18 Nyelad wire on bakelite tubing  $\frac{3}{8}$  inch in outside diameter, 14 inches long. A winding length of 12 inches was used. These coils measured approximately 120  $\mu$ h. Some other coils were tried, 80  $\mu$ h. being the lowest value. Resonance in both bands was again obtained but with longer lengths of wire. If the inductance of the coils is too low, the resonance at 40 meters may be too high in frequency, although the 80-meter resonance can be gotten with longer lengths of wire on the ends. With various values of coils and lengths of wire, antennas can be made for 80 and 20, 80 and 15, 80 and 10, 40 and 20, and similar combinations.

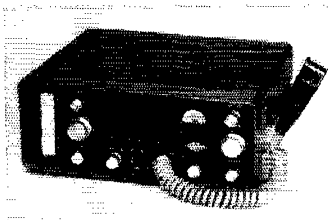
As an antenna is made shorter it has sharper resonance. This may not be too much of a handicap for hams who operate over only 100 kc. or so in the 80-meter band, as many s.s.b. addicts do. The antenna of Fig. 3 is actually just slightly longer than a regular doublet at 40 meters, up to the loading coils, and can be operated over the entire 40-meter band with a fairly low s.w.r. on the feeder. The advantage is two-band operation with an antenna 77 feet long without traps.

This antenna has been used on the air for

(Continued on page 148)

## • Recent Equipment —

### The Communicator IV

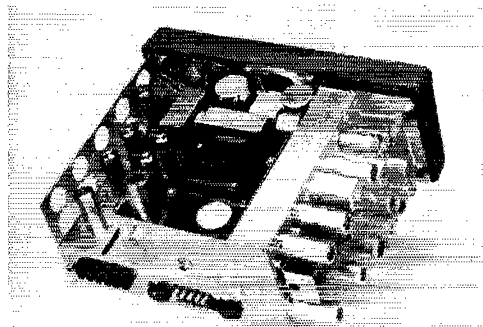


**E**XCEPT for its familiar name and basic concept — a complete v.h.f. station for home or field use, in one package — the Gonset Communicator IV is a complete break away from the tradition of the Communicator family. In this the history of the line is not unlike that of a certain well-known make of automobile. The Communicators I and II were the Model Ts: simple, effective, completely functional — and tremendously successful and popular. We joked about them but we bought them by the thousands. Very likely the first one ever made some ten years ago is still going strong, and Communicators of any vintage rate high on the used-gear market.

The Communicator III was the Model A: a bit more complex, but a better performer in some respects; still instantly recognizable as a member of the family. The Communicator IV is the V8: beautiful, far more finely engineered, completely new in styling — and more expensive, naturally.

The extra cost buys some nice features. The receiver is greatly improved over previous Communicators, as to selectivity and stability. The transmitter gives nearly twice the output, with little more drain from the battery supply. Modulation quality and effectiveness are improved. The completely new styling has obvious advantages for mobile installation over the cubical shape of its predecessors. And there is an addition to the family, a first in v.h.f. equipment of the ready-made variety — a Communicator IV for 220 Mc.

We will be concerned here mainly with the 144-Mc. model, the only one of the three avail-



Interior of the 144-Mc. Communicator IV. Transmitter components are at the left, the receiver at the right, with power supply and audio assemblies in the middle.

able for examination at this writing. We have circuit details of the 220-Mc. version, but the 50-Mc. model is undergoing design modifications that may delay its appearance somewhat.

Just as with the Model T, we all knew how to improve on the early Communicators, and scores of modifications have appeared in *QST* and elsewhere over the years. The designers knew how to improve their product, too, and here are some of the features they put into the IV. The receiver has triple conversion, with the first oscillator crystal-controlled for maximum stability. Selectivity is considerably improved through the use of two 455-ke. i.f. stages. In the transmitter the exciter circuits are adjusted for flat response across the band, and no operational retuning is required except in the final plate and antenna loading circuits, even when changing frequency from one end of the band to the other. Six crystal sockets are hooked up to a selector switch, and there is provision for external v.f.o. The modulator is now push-pull, Class AB<sub>1</sub>, giving audio quality superior to earlier versions.

#### Receiver Design

Previous Communicators have had single- or double-conversion receivers, with single-conversion in the 144-Mc. models. A fairly high intermediate frequency was thus necessary in order to give satisfactory image rejection. This resulted in broad i.f. response, and some trouble with interference between stations in areas where activity is high. The 50-Mc. Communicator used double conversion, but its second i.f. was 1500 ke., which still left something to be desired in the matter of selectivity. These relatively broad i.f. characteristics made for easy tuning, however, and they imposed no very severe restrictions on receiver oscillator stability.

Going to higher selectivity, now needed with today's almost universally high activity levels, demanded much improved stability in the oscillators, and made better dial mechanisms mandatory. The triple-conversion receiving system of the Communicator IV also called for some considerable care in the elimination of birdies and spurious responses — design and production problems that go a long way toward explaining the hike in the Communicator price tag with the introduction of the new models.

The r.f. amplifier and mixer in the 2-meter version are 6ER5s (6FY5s in the 220-Mc. model) for low noise figure and high r.f. gain. The plate

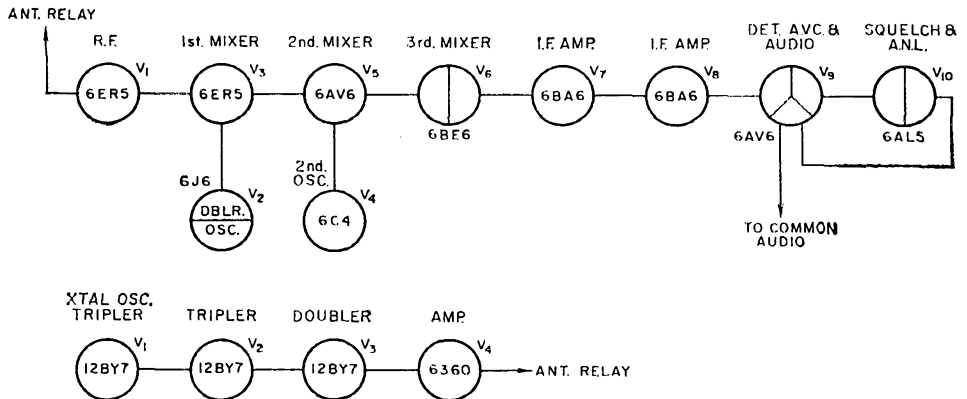


Fig. 1—Block diagram of the Communicator IV receiver and transmitter r.f. portions. The 144-Mc. tube lineup is shown. The 220-Mc. receiver has 6FY5s for  $V_1$  and  $V_2$ , and a 7059 dual tube at  $V_4$ . This is used to give a choice of tunable or crystal-controlled second oscillator, the latter for fixed-frequency CD work. The 220-Mc. transmitter has a 6939 tripler at  $V_4$ .

circuits of the r.f. stage, the first mixer, the tunable second oscillator, and the grid circuit of the second mixer are all tuned by sections of the main tuning capacitor, though they are on three different frequencies. This enables the designer to make them selective circuits, a great help in keeping down spurious responses.

The first oscillator is one half of a 6J6, crystal-controlled on 64.5 Mc., with the second half doubling to 129 Mc. The output frequency of the first mixer is 15 to 19 Mc., depending on the signal frequency. The second oscillator is a 6C4, tunable from 12.7 to 16.7 Mc., to give a 2.3-Mc. output from the second mixer, a 6AV6. This is followed by a 6BE6 third mixer and oscillator, which converts the signal to 455 kc., after which it is amplified in two 6BA6 i.f. stages. These are followed by conventional noise limiter, a.v.c., squelch, detector and audio stages. Receiver selectivity is purposely flat-topped to 10.3 kc. at the 6-db. points, to conform to OCDM specs, but it can be sharpened to about 8.5 kc. by removing the 2- $\mu$ f. coupling capacitors in each of the three 455-ke. i.f. transformers. No readjustment is needed after doing this.

Receiver controls are at the operator's left: an automatic noise limiter and squelch threshold at the top, the main tuning in the middle, and volume control at the bottom. As might be expected with the higher selectivity of the Model IV, tuning a four-megacycle band is a critical business. This is alleviated in models later than the one we examined by the installation of a dual-ratio planetary drive. Unfortunately, there is one control you won't find: a means of receiving side-band or c.w.; though we understand that a b.f.o. conversion kit may be offered as an optional accessory later, at extra cost.

#### Transmitter Features

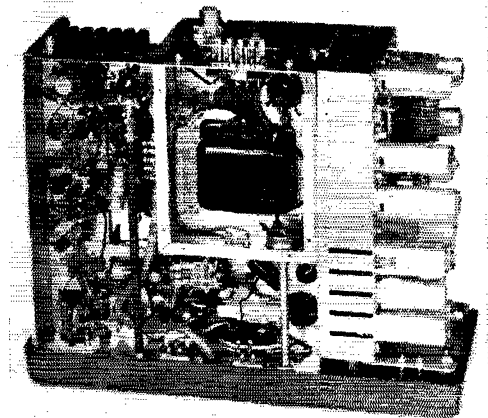
The exciter portion of the Communicator IV uses three 12BY7s as crystal oscillator-tripler, tripler and doubler. Either 6- or 8-Mc. crystals may be used, and an external v.f.o. may be plugged into any of the crystal sockets. The final

stage is a 6360 dual tetrode, running up to 20 watts input, giving a substantial increase in power output over earlier members of the Communicator family. Only the 6360 plate circuit and the antenna loading adjustment need be changed in changing frequency, and even the latter will require but little readjustment when the final looks into a 50-ohm nonreactive load.

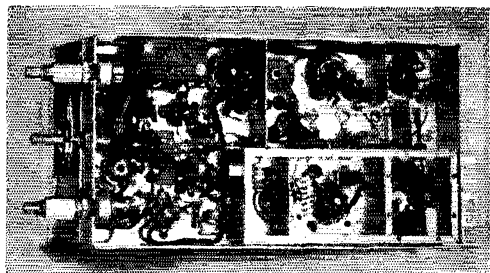
The modulator uses a pair of 6RQ5s, Class AB<sub>1</sub>, delivering about 10 watts of audio. It is driven by a 7059 pentode-triode speech amplifier and phase inverter. The modulator also doubles as the output end of the receiver audio system. The power supply uses two 2N1554 transistors and four 1N1763 selenium rectifiers, and operates on 12 volts d.c. or 115 a.c. merely by changing power cords. The 12-volt installation must have negative ground, and no provision is made for 6-volt operation.

#### Styling

It is in this department that the most obvious



Bottom view of the new Communicator, with the transmitter at the left, as in the previous picture.



Bottom of the receiver subassembly of the Communicator IV. The crystal-controlled first oscillator and multiplier stages are in the lower right compartment, the tunable second oscillator at the upper right. The r.f. and first mixer stages are in the two other small compartments at the bottom of the picture. Intermediate frequency and audio components are in the large area at the left.

changes were made when the Communicator IV was launched. The new low-wide-deep form factor is well adapted to mobile installation, and special hardware for dash and fire-wall mounting is available. The fire-wall brackets are adjustable, enabling the operator to tilt the case to suit his preference. The case and mounting method are shared with other Gonset units of similar size, such as the G-76 and MSB-1 transceivers.

The first units, of which our sample was one, made provision for controlling the send-receive operation only by means of a thumb-operated switch on the microphone. The latter was also wired directly into the circuit. This has now been modified for more flexible control. In the upper right corner of the front panel is now a send-receive switch, though the microphone switch may also be used. The microphone is now equipped with a plug, so that it can be detached at will. These changes also required another that will be welcomed by Communicator owners: the meter is switched between the trans-

mitter and receiver with the send-receive switch, so that it indicates transmitter tuning or strength of the received signal automatically. Other panel controls are the spotting switch (on-off), the 6-position crystal switch, the antenna loading (lower right), the final plate tuning (center right), and, to the left of the microphone connector, the power and lamp on-off switches.

The top and upper portions of the sides of the case are perforated metal, as is the speaker grill in the middle of the front panel. A clip for holding the microphone is provided, and this can be fastened in any of the cabinet holes that may suit the operator's convenience. The carrying handle is on the right side of the case, when the unit is in the normal operating position. The back of the Communicator has the v.f.o. control jack, the crystal sockets, the power-supply transistors, earphone jack, S-meter control, and power and antenna connectors exposed to view and use.

Tuning range of the Communicator IV is 143.7 to 148.3 Mc. Kits that include suitably colored cases and other accessories for CAP or CD use are available. — E. P. T.

**QST**

#### Communicator IV

Height: 5 inches.  
Width: 12 1/2 inches.  
Depth: 11 inches.  
Weight: 25 pounds.

Power Requirements: (Transmit) 12.6 volts d.c. at 10.3 amperes or 117 volts a.c. at 110 watts; (Receive) 12.6 volts d.c. at 7.2 amperes or 117 volts a.c. at 87.5 watts.

Price Class: 2-meter model \$375; 220-Mc. model \$400.

Manufacturer: Gonset Division, Young Spring & Wire Corp., Burbank, California.

## Strays

Thirty Veterans Administration hospitals now have ham stations on board. These stations are used for manual arts therapy, as a means of bolstering the morale of the patients, plus all the customary uses of ham radio. Some of the stations have already participated in emergency disaster communications, such as during Hurricane Donna, and have been cited for this work. The stations also handle third-party traffic between patients and families. The various FCC-assigned call signs include K1BRN, K1MDM, K2CWX, WA2LRA, WA2MAA, WA2MAH, K2YCU, K3GXP, W4LDW/2, K4RKY, W4RMX, W4RWZ, K4UCD, W5BAF, W5BBX, K5BLW, WA6NWL, K7NFX, W7NZP, W7PYL, K8UZW, K8VLF, K9WFN, K9ZEA, W0AYB, W0AYC, W0BLV, W0BSC, K0WXP, and K0ZPF.

Work any five of the 45 active members of the Southern Counties Amateur Radio Association

(New Jersey) and receive a little certificate published for them by the publicity bureau of Atlantic City. Send the five confirming QSLs to Irv Cohen, K2YYB, 2504 Shore Rd., Northfield, N.J.

During April the Third Army MARS training net (Fridays at 1900 local time on 5850 kc.) will listen to W4HHK discuss v.h.f. and u.h.f. converters, transmitters, and antennas.

A suggestion for radio club programs. Have you toured local military communications facilities? Some of these can be mighty interesting, and a little detective work will locate the fellow who can show you around. We're reminded of this by a report that W3WXW sent in, on the visit of the Radio Club of Tacoma to a Flight Simulator at McChord Air Force Base, Washington. The club members had a chance to see beaucoup fascinating electronic gear.





# Hints and Kinks

For the Experimenters



## BREADBOARD TRANSISTOR HEAT SINK

A SIMPLE and safe method for experimenting with stud mounted transistors without actually mounting them is to place thin flat washers of two different diameters on the mounting stud. Alternate the two sizes of washers as you place them on the stud. A nut of the proper size and thread will secure the washer stack, resulting in a heat sink that will increase the heat dissipation of the transistors during breadboard design.

— Clair E. Kirk, jr., W6ORS

## INCREASING DUMMY LOAD DISSIPATION

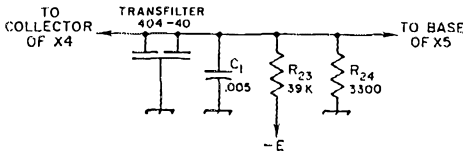
DISSIPATION ratings of dummy loads, such as the one shown on the cover of *QST*, March 1960, can be increased many times by immersing the loads in a bath of oil. Transformer oil or quenching oil used in heat treating steel are good types for the purposes.

My dummy load consists of a coax fitting mounted on the metal lid of a glass jar with the non inductive resistors suspended in about a pint of oil.

— David Smith, K2CDY

## IMPROVING GC1-A SELECTIVITY

TO obtain more selectivity in the Heath GC1-A receiver, W6TNS suggests placing a 0.005- $\mu$ f.



Mohican selectivity is improved by adding capacitor C<sub>1</sub>.

disk ceramic capacitor, C<sub>1</sub>, across the Transfilter, as shown in Fig. 1.

— Monty Hart, VE3TA

## CARRIER WARNING LIGHT

THE GSB-100 transmitter requires some carrier insertion when tuning up or when changing hands. Often, I find myself forgetting to remove the carrier in the s.s.b. mode and finally hit upon a scheme to remind me to do so.

I removed the 1000-ohm carrier level potentiometer and replaced it with a 1000-ohm potentiometer-s.p.s.t. switch combination. The original potentiometer would not accommodate a switch section.

The switch is wired so that when the control is advanced it turns on a pilot lamp as a reminder that carrier is inserted. Power for the lamp can be obtained from the transmitter's dial lamp power supply.

— Kermit Slobb, W9YAIZ

## LINE CORD HOLDER

WHEN storing test equipment and electric tools, it is always a problem to keep the line cord from unwinding after it has been wrapped around the unit. I found a gadget in the local five-and-dime store which solves the problem. Called a Magnetic Cord Grip, and made by General Electric Company, it is designed for house appliances and holds the plug end of power cords to the side of the appliance. The line plug is inserted into the Cord Grip; then the cord is looped around the appliance or test equipment and held in place by the magnet. The Cord Grip has a set of prongs which mate with the 117-volt wall socket so that it is not necessary to remove it when plugging in the line cord to the wall socket.

— Jonathan S. Lee, W9MWR

## NEW PANELS FOR OLD

ALUMINUM or steel panels that have been discarded because of heavy scratches or small holes may be repaired by placing a sheet of Con-Tack adhesive plastic sheet over the panel. The Con-Tack adhesive plastic sheet is designed for covering kitchen tables and shelves and comes in several designs and colors suitable for radio panels. Twenty-five cents worth of the material will usually cover an average sized panel.

— Don Hutchins, K3DMZ

## TRANSFORMER SAW

I TRIED using fine pitch coping saw blades to cut through the windings on some transformers. However, the blades broke easily and would bind up in the small wires. I found that the Tyler Spiral blades available at most hardware stores do the job with ease. These blades will not catch on the wires or cut your fingers, and one hand can be left free so that you can hold the material adjacent to the blade.

— Gene Fry, K2CW

## PLUGGING PANEL HOLES

TO cover up unwanted holes in a panel, place the panel face up on a thickness of cloth padding and pour molten lead solder into the hole. After the solder has cooled, beat both sides with a ball-pen hammer so that the solder plug expands and makes a snug fit. Also,peen the edges of the plug so that they protrude slightly over the surface of the panel. Now grind the plug flush with the panel with an abrasive wheel and finish off with fine sandpaper. A coat of paint will restore the panel to a factory finish. This method has been used to fill holes up to 1/2-inch diameter in steel and aluminum panels.

— Jay F. Helms, W6HHT/2

# 1960 Edison Award to W6NLZ and KH6UK

**T**HE annual Edison award by the General Electric Company, presented each year to a radio amateur for outstanding public service, went this year jointly to John Chambers, W6NLZ, and Ralph Thomas, KH6UK, whose trans-Pacific experiments on 144, 222, and 432 Mc. have made so much v.h.f. news in recent years. (For these details we refer you to the following issues of *QST*: Sept., 1957, p. 62; Aug., 1959, p. 68; Sept., 1960, p. 78.)

It was the first time the award had been granted jointly to two amateurs, and it was the first time that the award had been made for a scientific achievement. Presentation of the awards was made at a banquet in Washington, D. C., on Feb. 23, at which FCC Chairman Frederick W. Ford was the principal speaker. Commissioner Ford's remarks were such a fine tribute both to the award winners and to amateur radio that we are reproducing them in full herewith.

## *Address by Commissioner Ford*

. . . I can recall instances of the occurrence of a noteworthy event, such as this occasion, when I would have liked to express my thoughts in tribute to a particular person or deed. Unfortunately, I wasn't always given the chance. It was with considerable pleasure, therefore, that I accepted the opportunity to speak this evening. For the Amateur Radio Service, and especially that aspect of amateur operation which caters to the function of public service, is to my mind one of the most important communications activities practiced today. Although not so apparent to the general public, or even to the radio amateur himself, technological advances discovered and developed by the amateur are just as important to the public interest as are the more publicized amateur message-handling services to remote places and for emergencies occasioned by natural disasters.

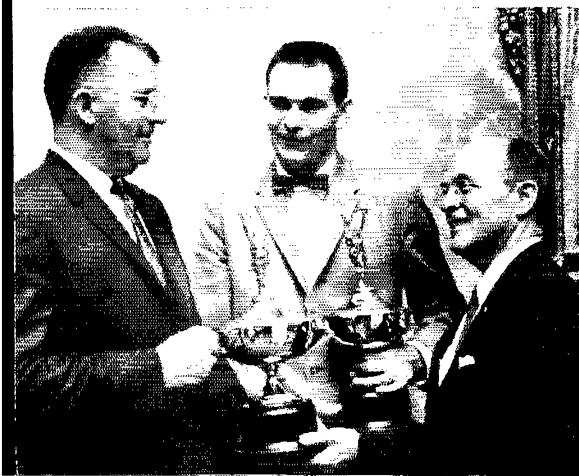
The potentials of the public service function of amateur radio were not always recognized in the past and, even today, in my opinion, are not accorded the recognition truly deserved. Here let me pause to pay tribute to the General Electric Company for its service to the public in

providing the means of recognition of the radio amateur and of that great "amateur" in his field, Thomas A. Edison.

Possibly some of you here tonight can remember when a radio station was a crude assembly of home-made components, a "wireless" phenomenon that was put together only after weeks or months of diligent labor and testing, with which, to the amazement of his friends and relatives, the amateur was able to talk to another station on the other side of town with mysterious dots and dashes. In the beginning, Federal regulation was non-existent or haphazard at best, and the thought that an amateur operator was entrusted with a public and personal responsibility was slow in coming. In fact, as many of you know, the early so-called "milestone" of Federal regulation treated the amateur mistakenly as a nuisance because of his interference to government and commercial stations. Thus, due to the crude equipment, the absence of adequate allocation of "wavelengths", and the lack of appreciation of his inherent potential, the amateur was relegated to that mysterious and supposedly useless graveyard of the radio spectrum known as "200 meters and down."

Everyone else who "knew" anything about "wireless" believed that this was the end of the amateur "experimenter". It is a tribute to the indomitable spirit of the radio amateur that he refused to give up—he refused to admit the "impossible".

Thus, soon, through development of better working equipment and increased operating experience, the cross-town range on 20 meters was stretched to hundreds of miles and an occasional exchange of communications over a thousand-mile hop had been accomplished at this so-called useless wavelength. By this time, the amateurs had organized into a league whose original primary purpose was to provide a system for relaying messages around this country. At the end of World War I, the existence of this organization, the well-known American Radio Relay League, was indeed fortunate for the survival of amateur radio. It was primarily the efforts of the League which prevented the enactment of prohibitive legislation and persuaded the government



L. Berkley Davis, left, General Electric vice-president, presents Edison Award trophies to John T. Chambers, W6NLZ, and Ralph E. Thomas, KH6UK, at ceremonies held in Washington, D.C., on February 23.

**QST for**

to lift the wartime ban on amateur activity, which would have otherwise spelled the doom of amateur radio.

Again having survived a crisis, the amateurs resumed their efforts to improve and stretch the range of their 200-meter equipment. Being confirmed optimists they began trying for transatlantic transmissions and by late 1921 a test was conducted by the League during which some thirty stations were heard in Europe. I understand that three of the amateurs whose stations were heard across the Atlantic in those days may be among the guests here tonight, (E. B. "Ed" Redington, W4ZM; H. H. "Robby" Robinson, W3RE and E. M. "Mac" Williams, W3ER).

In the next two years, many tests and experiments resulted from the exciting prospect of possible two-way transatlantic communication revealed by the one-way tests. Continual exploration revealed that the lower the wavelength the better the results and, finally, late in 1923, two-way transatlantic amateur communication was accomplished at 110 meters.

In a short time, commercial communications followed the amateur down to 100 meters and again interference became a serious problem. Fortunately, a more enlightened government this time properly recognized the worth of the amateur. In cooperation with the League a frequency allocation conference earmarked the 80-, 40-, 20- and 5-meter bands for amateurs. Soon the 40-meter band was found to be highly useful for night-time communication with far-away places such as New Zealand and Africa, and such long distance communication became an expected rather than an exceptional occurrence. Then, an unheard-of property of the "short waves" was discovered — the practicality of the 20-meter band for long distance daylight communications was established and amateur operation came into its own! Finally, once he had "discovered" the short waves (below 30 megacycles) he did not stop there. Amateur effort to push the frequency threshold ever higher was encouraged by the early allocation, in the 1920's, of the 5-meter band and has continued unabated to this day.

I have attempted to sketch a portion of the history of amateur radio appropriate to this occasion. Many other perhaps less sensational but none-the-less equally important "discoveries" and developments were made by the amateur. As a result, I believe that the radio amateur is undisputedly the true pioneer in the field of radio wave propagation.

I have mentioned the Government's role in the development of amateur radio only incidentally, and the phrase "only incidentally" probably best describes the Government's attitude and interest in amateur operation in those early years. But just as the amateur became enlightened as to the possibilities and potential of his activities, so did the Government become aware of the importance of the amateur radio fraternity. The amateur's function in disaster communications and civil defense activities, his potential as a highly qualified military or commercial radio

operator, and his unique role as emissary of the United States in international relations could not be ignored or replaced. Thus, the Government, which was originally unsympathetic to amateur radio, today encourages and wholeheartedly supports amateur operation. And, although Federal regulation has its critics, it is my feeling that such regulation has served to strengthen and improve the amateur service. The comprehensive examination requirements have reasonably assured the proficiency of all amateur radio operators. The enforcement of regulations prohibiting such things as commercial communications, spurious emissions, and improper language have resulted in a communications system which is a source of pride to all amateurs. In addition, the rules in their entirety have been, and will continue to be, formulated to encourage adherence to those principles of public service and technical development which have been exemplified by the achievements of the former Edison Award winners and the two amateurs to whom we pay tribute tonight.

Turning now to the specific purpose for which we are all here tonight, I noted that the basis of the Edison Award is "the benefit of the public service to a group or individual and the amount of ingenuity and sacrifice put forth in performing the service". This is an appropriate criterion.



FCC Commissioner Frederick W. Ford

That perseverance and sacrifice, in the performance of a public service or the achievement of a technical development, have keyed the accomplishments of these remarkable amateurs is apparent. Included in the achievements of past winners since 1952 have been the establishment of emergency hurricane communications on the Gulf Coast, and during a tornado in Arkansas; the organization of emergency communication networks in Cleveland and in San Diego; the processing of messages and radio dispatched mail for personnel in the Arctic, Antarctic and other far away places; the development of electronic testing devices for the blind; and finally, in 1960, a significant addition to our knowledge of radio wave propagation.

But, perhaps almost as notable as the achievements themselves is the type of individuals who have comprised this roster of Edison Award winners. We have had a businessman and a railroad dispatcher, an electronics teacher and a blind night school teacher, a food broker and a

*(Continued on page 152)*

# More-Sock-for-Cents Antenna

BY JAMES F. VAN DETTA,\* WA2FQZ

EVERY ham seems to have a favorite band, whose virtues he extolls with solemn dedication and intense conviction. Regardless of what your favorite amateur band is, however, you must admit that the bands tend to become more and more crowded; and at times the resulting QRM can reach the distressing proportions of a head-shattering crescendo, particularly on the lower bands. It is somewhat disappointing to find that the usually imaginative and resourceful ham has somehow failed to provide the obvious solution demanded by the situation: greatly improved, inexpensive, easy-to-construct antennas. Some greatly improved antennas have been designed; but they are, unfortunately, expensive and/or difficult to construct. Most hams today are inclined to run down to the local amateur radio supply store and purchase a commercial kit whenever they have need for an antenna, instead of putting real thought and effort into designing something really worthy of our fine hobby. In case you have forgotten, OM, one of the reasons the FCC granted you that call was for the "... extension of the amateur's proven ability to contribute to the advancement of the radio art." (§12.0)

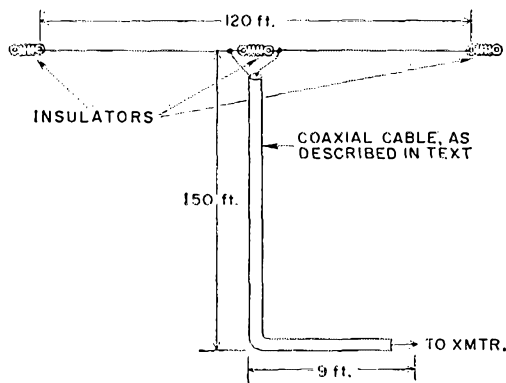


Fig. 1 — The author's antenna.

A moment of reflection upon some technical aspects of antenna information reveals some worth-while facts. As any ham worth his ticket knows, a decibel (db.) is a unit used to indicate the relative loudness of signal strength. A gain of 6 db. is equivalent to increasing the power factor by 4. Thus, an antenna with a 6-db. gain would cause a 75-watt signal to assume the authority of a 300-watter; a 10-db. gain would make the 75-watter kick out a signal like a 750-watter! And — get this! — a 20-db. gain would give the little 75-watter a signal comparable to a 7500-watt station! — and it's legal, because your input would be a legal 75 watts! If you have a

\* P. O. Box 525, Schoharie, New York.

General License and wanted to run a full 1000 watts, your commanding signal would, of course, be comparable to a 100,000-watt station! Obviously, the practical answer to the relentless search for more "signal sock" is a better antenna installation. We shall, therefore, present a rewarding little project that can be completed in about an hour some Saturday afternoon while the XYL goes downtown to do a bit of last-minute week-end shopping. Even if you, like we, have a below-average junk box, you'll get more sock for cents with the antenna system described here.

Fig. 1 illustrates the More-Sock-for-Cents Antenna. At first glance, some skeptics are apt to growl impatiently, "Nothing but a halfwave dipole!" Such a cynical attitude of disparagement is going to mellow into keen interest when the antenna is given a bit more study. But let's begin at the beginning.

The antenna is cut for your favorite frequency by using the formula:

$$\text{Length of antenna (ft.)} = \frac{468}{F_{\text{req.}} (\text{Mc.})}$$

Since we like the friendly, intimate contacts of 75 phone, we decided upon an antenna resonant at 3900 kc., the middle of the 75-meter phone band.

Good quality antenna wire is an absolute necessity for a superior antenna. It just stands to reason: the more suitable the antenna wire, the more suitable the antenna. Here at WA2FQZ, we happened to stumble upon 279 feet of 75-ohm RG-144U coaxial cable coiled up in a corner of the junk box; so we just stripped 120 feet of it and used the center-conductor section for the antenna. The center-conductor section is silver-coated copperweld and thus provides a mechanically strong, electrically efficient radiator. Furthermore, this wire is very appropriate because the length/diameter ratio results in a rather low  $Q$ . This means, of course, a broad response that is especially good for QSYing.

It is strongly urged that you use an additional 159 feet of RG-144U as feed line, which length, incidentally, avoids exact resonance at all frequencies in all amateur bands. It should be found that the 75-ohm RG-144U, which has a velocity factor of .695, provides an exceptionally fine match to the impedance of the antenna. Nine feet of the feed line is allowed to run from the transmitter to the nearest window or feed-through point. The remaining 150 feet, as you will be pleasantly surprised to learn, will go straight up to the center feed-point of the antenna.

At this point in the construction of the antenna, we found our usually reliable junk box

(Continued on page 160)

The tri-band, reinforced with polyethylene rope guys, is in place on the SS Hope's mizzenmast, 125 feet above the water. Bill Green (W6BYS) and a Hy-Gain engineer erect emergency vertical trap antenna.

## The Voyage of the S.S. Hope

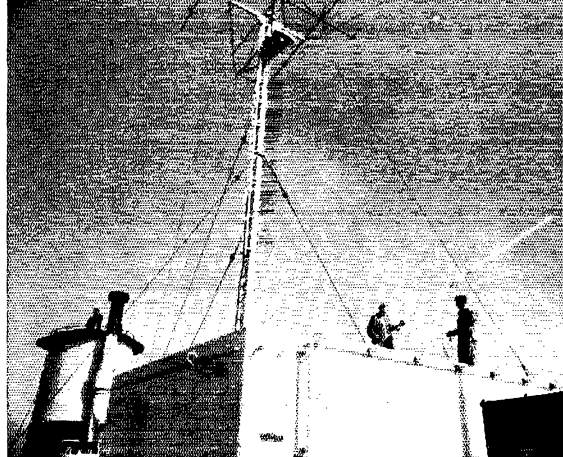
BY RALPH C. CHARBENEAU,\* WSOLJ

At the very outset the odds against the *Hope* ever sailing at all were probably a million to one. It was Dr. William B. Walsh, a prominent Washington, D. C. physician, who conceived the idea of a hospital ship to share the health knowledge of the people of the United States with less fortunate people in newly developing countries of the world. Through the Herculean efforts of this dedicated doctor and with the support of a broad cross section of American industry, the U.S.S. *Consolation*, a Navy hospital ship used last in the Korean War, was taken out of the moth-ball fleet and refitted as a floating medical center. Its purpose? . . . to train, with treatment only incidental to the prime mission, that of making a lasting contribution to needy peoples in the form of knowledge and understanding of better health. It was hoped that such sharing of the fruits of our free system, on a *people-to-people* basis, would leave a lasting impression of the American people's genuine concern for the comfort and well-being of people everywhere. The whole concept of Project Hope remains devoid of governmental processes or authority and the S.S. *Hope* goes only where people of other nations through their medical societies invite it.

The first invitation came from the medical society of the new Republic of Indonesia, a country made up of thousands of islands and fortunately ideal for a ship to visit. The need for medical and public health people in Indonesia is critical. In this nation of over 70 million population, there is only one doctor for every 70,000 people, compared to one doctor for every 1000 people in the United States.

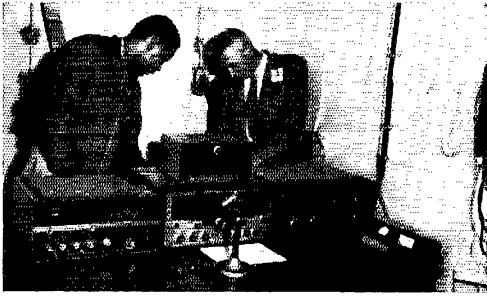
The needs for the project were many and varied. Of paramount importance was the need to tell the American people about the noble mission and earn their support of it. (Operation of the *Hope* requires \$3.5 million annually). A documentary motion picture for private audience and television presentation was needed to communicate this story with all of its impact upon our international relations. The writer's company offered to contribute such a communications tool.

\* Director of Public Relations, The Ex-Cell-O Corp., Detroit, Mich.



Ham radio entered the picture quite logically when the writer pointed out the real public service nature of amateur radio and the selfless communications assistance radio hams regularly give in the public interest. Certainly amateur radio was the ideal *people-to-people* communications system for such a *people-to-people* activity as Project Hope. The ARRL Board of Directors agreed and voted unanimously to support the role of amateur radio in the project. Hallicrafters graciously donated two complete 1-kw. amateur stations, one to serve as a spare in order to guarantee no interruption of communications. FCC agreed to permit the use of 14-Mc. phone all the way across the Pacific to Indonesia. This action insured reliable voice contact with the U.S. mainland instead of being at the mercy of the frivolous 21- and 28-Mc. bands.

Many segments of American industry and just plain people in all walks of life contributed what they could to outfit and support this unique experiment in humanitarianism. But there was one thing Project Hope lacked . . . its goal was noble, all agreed, but it had no performance record . . . it was still just a wonderful theory. The result was an understandably hesitant public, which, while sympathetic with Project Hope's aim, held back full support until this grand idea had proved its effectiveness. In other words, financial support of Project Hope just wasn't coming in fast enough. The writer's company agreed to meet the urgent need by extending its support of the project to include a documentary of direct radio reports from the S.S. *Hope* as it proceeded across the Pacific and began its work in Indonesia. We would need a strong voice signal from the S.S. *Hope* and professional taping of it back in the States. But all radio communications equipment except a 250-watt c.w. rig had been removed! There were no suitable marine band s.s.b. units available in the United States. Just a few days prior to the *Hope's* sailing, the writer took the problem to the FCC in a last desperate attempt to accomplish the task. FCC's John J. McCue, Chief of the Public Safety and Amateur Division, assisted by Bill Grenfell, W4GF, conferred with their legal experts and a plan was agreed on. Radio Corporation of America had agreed to tape



Tommy Coit (W6RTC) and Bill Green (W6BYS) put finishing touches on SS *Hope's* only voice radio facility, W8OLJ/MM.

signals from the *Hope* if such signals were available. W8OLJ/MM on the *Hope* was given permission to make direct contact with the RCA point-to-point communications stations in the Asian service located in California. W8OLJ/MM would simultaneously be in contact with an amateur station (W6BYS). RCA would tape W8OLJ/MM and these reports would be gathered together for broadcast use. Thus both the spirit and the letter of the law were satisfied. FCC once again demonstrated its capacity and willingness to serve the public interest.

Hy-Gain contributed a Thunderbird Tri-band beam. With mixed emotions the boys at the Hunter's Point Naval Shipyard agreed to install it atop one of the *Hope's* masts, 125 feet off the water. Cornell-Dubilier contributed a HAM "M" Rotator. Bill Green, W6BYS, a Hunter's Point supervisor, volunteered to install the station. Navy Warrant Officer Charles Unfried, K6IGJ, and Tommie Coit, W6RTC, assisted.

Radio amateurs and other listeners who heard "WMH-56 this is W8OLJ maritime mobile on the S.S. *Hope* calling" will now understand. It is to the everlasting credit of those thousands of radio amateurs, U. S. and others, that they stood by and kept the channel clear to permit the voice of *Hope* to get through. Many times we operated under extremely adverse conditions and listeners may not have realized the vast amount of preparation that went into our daily transmissions of these public service reports. Jim Vinnal of radio station WJR, Detroit, interviewed members of the hospital staff and crew of the S.S. *Hope* en route to Indonesia. He also interviewed officials of the Indonesian Government and the Indonesian Project Hope committee . . . and these taped interviews, plus "live" commentary were beamed back to the U. S. A. RCA's west coast staff, including many hams, (W6FCE, W6JB, and others) taped these reports for editing and later release to U. S. broadcast stations and the Voice of America.

More orthodox transmissions from the S.S. *Hope* included routine ham contacts with every state in the Union and with other amateurs all over the world. The spirit and mission of the S.S. *Hope* seems to be "catching" wherever people

are exposed to it. Good wishes and commendation flowed into the S.S. *Hope* amateur radio center from around the globe. The sincerity of these people was emphasized repeatedly as many, *even in distant lands*, sent in financial support to Project Hope, Washington, D. C. In addition hams handled much administrative traffic from the S.S. *Hope* those first few weeks, traffic which was of vital importance to Project Hope's success.

When the S.S. *Hope* was approximately 100 miles north of Djakarta in the Java Sea, a message was taken by W6BYS for the White House, only to find that the President was in Detroit. A message was relayed by W8BXO from Captain Jack Windas, skipper of the S.S. *Hope*, to the President, announcing the safe arrival of the S.S. *Hope* in Indonesia. A few days later, W8OLJ/PK, W6BYS and K6IGJ were in QSO again — this time arranging for a recorded transmission of the President's reply to the S.S. *Hope*. Suddenly there was a loud jamming signal on our frequency. It persisted with obvious intent every time W8OLJ/PK came on the air for the next two days. On the third day, W8OLJ/PK was in contact with Washington, D. C. headquarters of Project Hope. Dr. William B. Walsh, president of Project Hope, was at the W8OLJ/PK mike trying to ignore the jamming which had just come on again. Project Hope headquarters, eager to learn of the reception of the S.S. *Hope* by the Indonesians, asked, "How are you being received by the Indonesian people?" The jamming stopped to hear the reply from Dr. Walsh. He reported the wholehearted, warm reception being given to the S.S. *Hope* by the Indonesian people. Dr. Walsh also referred to the very hospitable and warm greetings to the S.S. *Hope* and all its personnel extended editorially in Indonesian newspapers. The jamming stopped, never to return!

It appears the communists have quite a dilemma on their hands in Project Hope. Communist criticism of our government, our system, our capitalists is abundant, but as we know, they do love to wave from our balconies, hold friendly press conferences and otherwise solicit the American *people*. How then, do they now simultaneously criticize and woo the very same people (in this case, Americans and Indonesians) now living and working together on the S.S. *Hope* in the interests of world peace?

The *Hope* left for Amboina (Molucca Islands) in February. In April, she stops in Singapore en route to Saigon, South Vietnam. W8OLJ/S.S. *Hope* expects to be on the air s.s.b. 28,650 and 21,445 while maritime mobile on the high seas and 14,320 and 14,065 c.w. while in Indonesia or South Vietnam territory. Contrary to some reports, W8OLJ has not operated and has no intention of operating ashore. There has been no amateur radio in PK-land since 1940 and we are so very grateful to be permitted on the air at all from Indonesia, that we have no intention of pressing the matter further. The portable indicator "PK" is employed because the station is in fact operating within Indonesian territory,

frequently at a dockside. The indicator "Maritime Mobile" is appropriate only when on the high seas, outside of sovereign territory. Indonesian authorities are supplied with operating frequencies for W80LJ/PK in case they desire to monitor our transmissions.

Project Hope has presented amateur radio with another grand opportunity for service to the public. In this there is real satisfaction to those who participate in handling traffic and to those who cooperate by keeping the channel free of QRM. You can never really know the human value of this cooperation until you are thousands of miles from home and a *clear channel* means you will hear the voice of your loved ones! In such public service as in the case of Project Hope, radio amateurs find the best hope for continued public understanding, respect and *support* of our hobby. ARRL, as our official organization, may then readily cite such examples of constructive and frequently irreplaceable assistance rendered by radio amateurs in the public interest.

The image of amateur radio in the public mind and in government circles both at home and abroad, has not yet, in the writer's judgment, attained its deserved stature. The state of the art has advanced to a point where radio amateurs may be accurately defined as far more than a group of hobbyists or tinkerers.

Today's definition includes an awesome and all too often overlooked responsibility. We have truly become roving ambassadors, *each of us*, representing his own beloved country. After many, many hours of short-wave listening from innumerable points around the world, the writer cannot avoid a strong conviction that amateur radio is today a much more potent force in the molding of international relations than has yet been realized! With today's beam antennae and sensitive receivers in use throughout the world, *please be assured* that *YOUR* signal may be heard in the most remote areas! Regardless of the frequency you use, it would be a rare case in which your signal could be guaranteed to "stay home" that is, within U. S. borders.

I have eavesdropped on many a QSO when the participants, I am sure, did not realize how well they were being heard in some far-off spot. I may tell you frankly that I have frequently shuddered over the impressions of America received over my traveling receiver. Crude comparisons of foreign and U. S. living standards, indiscreet comments on racial problems, arguments about who had the frequency first, opening up with tests and CQs with obvious disregard for who is in the way and of course, the discourtesies so often employed in trying to raise that rare DX station. May I propose an amateur radio watchword on behalf of America's reputation abroad? We may all exercise our freedom of speech and still do it with good manners. I suggest an on-the-air watchword: "MUM's" the word (MIND UR MANNERS!) The result will be a much better impression of America and Americans, if we are



Cliff Dow (W6ZB) puts in a ship-to-shore call for Hope physician. Multi-Products' citizen band equipment is used for communication with field hospital units, two jeeps and captain's gig.

alert to the opportunity of projecting *what we really are* to our international radio friends.

In Project Hope, we do no propagandizing or selling of any ideology. As plain people, we just practice normal courtesy and be ourselves. This very sincerity and genuineness is what "gets through" . . . it's what people "feel" from other people. This is the stuff which creates that mutual trust, so essential to peace.

Let our deeds, not our words, be the example made by our amateur stations. Can you move frequency a little, to let the other fellow on the air too? Do you inquire "Is anyone using this frequency?" before you open up with a CQ or a test? Remember, these air manners show we are a considerate people, willing to share, not dominate. (MUM's the word, "Mind Ur Manners"). It will help to counteract the vicious propaganda being waged world-wide against us! In every radio transmission we make, each of us represents America over a much wider area than our log book indicates. Let's be good ambassadors and reflect credit on our country and on our hobby!

QST

## Strays

Want to join another club? The Flying Hams' Club is being organized by K6BX, and it'll cost you one buck for life membership. There'll be awards too, at a dollar each, if you work enough other members of the FHC.

### FLASH — CONELRAD DRILL

FCC requests the amateur radio service to participate, on a voluntary basis, in the 30-minute Conelrad drill commencing at 2100 GMT (4 P.M. EST) Friday, April 28, 1961. ARRL urges full cooperation by all amateurs in maintaining complete radio silence during the drill. RACES stations will proceed in accordance with plans and rules for that service during an alert.

# World Time Keeping

## A Discussion of GMT

BY WILLIAM H. CURRY, JR.,\* W4RXY

RECENTLY the ARRL Board of Directors unanimously recommended, and *QST* through the columns of "Operating News"<sup>1</sup> has advocated, the use of Greenwich Mean Time (abbreviated GMT) in station operation. Since any system that is not understood cannot be used to best advantage and, worse, will not gain wide acceptance, this article is offered to the reader to acquaint him with the reasoning, history, and facts that make GMT the universal time standard for radio work throughout the world. It is hoped that better understanding of GMT will lead to its acceptance as a standard by the amateur everywhere.

Our first step is to make sure that the reader understands certain ideas and definitions. Our definitions will not always be scientifically exact, but they will be exact enough for the purposes of this discussion.

The first convention we are going to observe is to eliminate the use of A.M. and P.M. in keeping time. The reason for this is simplicity and elimination of a possible source of error. Instead of using the convention of writing the time of day as 9:45 A.M., or 9:45 P.M., (which we will call the "civil time convention") we will use throughout this article the twenty-four hour convention so common to the armed forces and professional communication systems. It is strongly recommended that this system be adopted by every log keeper. If you are not already familiar with the system, study Table I. Notice that time is always written as four numbers in the 24-hour system, and that the civil and 24-hour systems are basically the same from midnight through

1:00 P.M. But at 1:00 P.M. the 24-hour system continues counting hours consecutively from midnight. In effect we have 13 o'clock for 1:00 P.M., 14 o'clock for 2:00 P.M., 1500 (spoken "fifteen hundred") for 3:00 P.M., and so on. 6:30 P.M. becomes 1830 (spoken "eighteen thirty"). If you do not have one already, devise a mental rule for shifting from system to system. One is "add twelve to the civil time on and after 1:00 P.M." Remember that twenty-four hour times are always written as four numbers, the first two digits referring to the hour and the second pair to the minutes of the hour. (Zero is used where necessary.) The twenty-four hour system is most convenient when we start adding and subtracting times as we will be doing later in computing GMT.

Another "arrangement" we want to make is to inform the reader that although we are aware that the earth revolving on its axis is responsible for the sun "rising" and "setting," to us on earth the sun appears to move so we will often refer to it as such. Thus, we will talk about the sun "crossing overhead", "moving" from east to west, etc.

Now for a few definitions:

1. *Meridian* — an imaginary line drawn from the north pole to the south pole on the earth's surface. We will speak often of the meridian "passing through" a certain location on the earth. For example, the Greenwich meridian or the West Hartford meridian.
2. *Longitude* — for the purposes of this article "longitude" and "meridian" are synonymous.
3. *Noon* — the exact instant the sun is directly over the local meridian.
4. *Midnight* — the time at the meridian directly opposite (on the other side of the earth) the meridian at which it is NOON as defined in (3) above. Notice that the MIDNIGHT meridian is always 180 degrees from the NOON meridian.

It should be noted at this point that the meridian at which it is noon by our definition is constantly moving across the surface of the earth as the sun progresses from east to west. This movement applies to the midnight meridian as well.

There is one other concept that must be understood before we proceed further. It is the basic concept underlying time zones, and is the explanation of the fact that it is 1600 hours local time on the East Coast when we sit down at the TV receiver to watch the Rose Bowl game in California where it is only 1300 local time. This is the concept that time is "earlier" to the west and

TABLE I

CIVIL	24 HR.	CIVIL	24 HR.
1:00 A.M.	0100	1:00 P.M.	1300
2:00	0200	2:00	1400
3:00	0300	3:00	1500
4:00	0400	4:00	1600
5:00	0500	5:00	1700
6:00	0600	6:00	1800
7:00	0700	7:00	1900
8:00	0800	8:00	2000
9:00	0900	9:00	2100
10:00	1000	10:00	2200
11:00	1100	11:00	2300
12:00	1200	12:00	2400 or 0000
12:01 P.M.	1201	12:01	0001 A.M.

\* LTJG, USN, c/o USS Ely, FPO, New York, N. Y.

<sup>1</sup> *QST* March, August and November 1960.



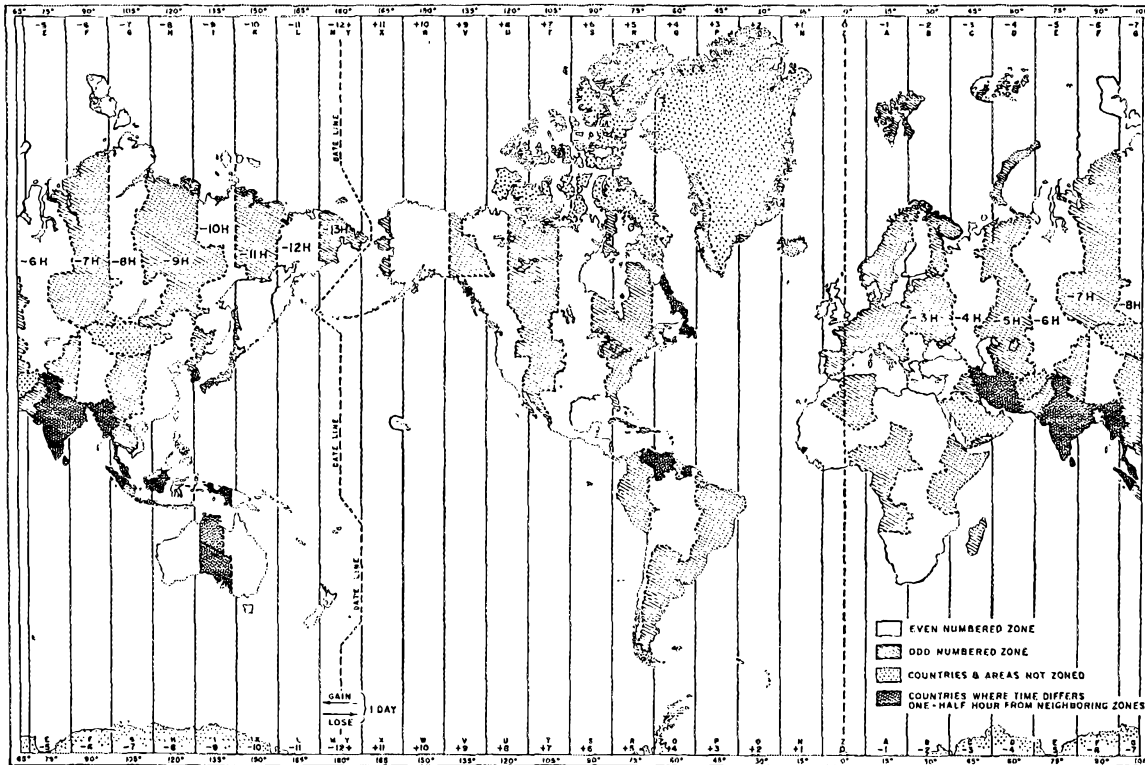


Fig. 1—This chart was derived from H.O. Chart No. 5192. Unfortunately, our space limitations do not permit us to do justice to the original chart, and much of the detail is lost. However, if you get a chance to inspect H.O. Chart 5192 you will find that it is in itself a compelling argument for the adoption of GMT, because you will find so many zones where the time difference is 20 minutes or 30 minutes or 45 minutes, and where the local time zone does not agree at all with the meridian zones. Yep, GMT is much simpler!

“later” to the east of any particular place on the earth. In other words, if we were in a position in space and could look down and see clocks on the face of the earth, we would notice that the time indicated by the clocks became earlier as we looked westward, and later as we looked eastward. This is so because the sun rises in the east and crosses the sky to set in the west. The sun therefore crosses the meridian at New York (that is, it is noon at New York), before it is noon in San Francisco. Since when it is noon in New York it is before noon in San Francisco, then it is morning in San Francisco and thus is earlier than it is at that instant in New York. It is very important that the reader understand this concept. Once this concept is mastered calculating GMT becomes a logical process.

### Greenwich

Greenwich, England, a suburb of London, became prominent in the seventeenth century when the Royal Observatory was established there. England was becoming the leading maritime nation of the world, and her ships needed accurate charts. The observatory furnished the observations necessary to establish the English charts as the best in the world at that time. These charts came to be used and copied by almost all maritime nations. The British cartographers naturally

began using the observatory at Greenwich as the starting point for their meridians, that is, it was used as the “zero” meridian, and they divided the world east and west from Greenwich into 180 meridians or degrees. The 180th meridian was thus placed half-way around the world from Greenwich, and luckily was located for the most part in the vast Pacific Ocean. We say “luckily,” for the 180th meridian is also the International Date Line. We will discuss the significance of the Date Line later. Despite several attempts to establish other “prime” or “zero” meridians (the United States made an important attempt to replace Greenwich with Washington, D. C. in 1810) Greenwich weathered the test of time and finally at an international conference in Washington, D. C., in 1884, twenty-five nations officially agreed to establish Greenwich as the prime meridian. Today Greenwich is recognized universally as the “zero” meridian.

### Greenwich Mean Time and the Time Zones

The establishment of Greenwich as the prime meridian meant also that it was the accepted standard for computing time. This is a logical development, for the measurement of the time of day at any location is directly related to the meridian of that location. The meridian is measured from Greenwich, therefore, so is the time.

Actually, Greenwich establishes the date, for it provides for the location on earth where the date changes, that location being the 180th meridian, or International Date Line. More on the date line later. Right now let's investigate the influence of Greenwich on the *Time Zones*.

Remember that we defined noon as the time when the sun was directly over the local meridian? If watches were set on this basis all watches on any particular meridian would be set exactly the same, but a watch only a few miles to the east would be keeping later time, and a watch a few miles to the west would be keeping earlier time. It is easy to imagine the chaos that would result from such a system of time keeping. Actually, in this country's not too distant past, there was no standard for setting clocks and each little community set its clocks as the city fathers saw fit. There was, in fact, chaos, and a poor traveler making his way across country found keeping up with the clock changes an impossible task, for the clocks were not changed according to any set system or pattern. The "Iron Horse" finally forced the issue, so that in 1883, largely as a result of a one-man effort by a Yale-trained educator, Mr. Charles Dowd, Congress finally adopted the "standard time" system in use today in the United States. Mr. Dowd's system divided the country into four time "zones" with the time in each zone uniform throughout, and the time between adjacent zones differing by one hour.

Let's investigate the reasoning behind the time zone system, and at the same time establish the zoning system as it is used today by international agreement (see Fig. 1).

We know that the earth rotates once in 24 hours, so that the sun appears to circle the earth once in the same length of time. If the sun "moves" around the earth once in 24 hours, how far does it "move" in one hour? Since once around is 360 degrees the sun moves

$$\frac{360 \text{ degrees}}{24 \text{ hours}} = 15 \text{ degrees per hour}$$

To put it another way, if we move 15 degrees across the face of the earth the time will change exactly one hour. Fifteen degrees to the west it will be exactly one hour earlier and fifteen degrees to the east it will be one hour later. Therefore, if we establish a time zone every fifteen degrees across the face of the earth, each zone will differ in time from that adjacent to it by exactly one hour, and according to the "earlier-west-later-east" rule. If we start at Greenwich with zone "zero" and then move seven and one-half degrees each side of the Greenwich meridian we can mark the meridians that are the boundaries for the fifteen-degree-wide "zero" time zone. Thus we have what is called Greenwich Mean Time ("mean time" means, basically, "clock time") of the 15-degree zone centered on Greenwich. From these boundaries we continue westerly and easterly establishing time zone boundaries every fifteen degrees.<sup>2</sup> As we proceed westerly, at each succeeding zone the time becomes one hour earlier. We label each zone

and assign it a plus or minus sign, so that by applying the zone number with its corresponding sign to the local zone time the result is Greenwich Mean Time. For example, the first zone westerly from Greenwich is labeled plus one, for since the time in the zone is one hour earlier than GMT, we must add one (1) to the zone time to get GMT. Similarly, proceeding easterly from Greenwich we number the first zone minus one, for the time in this zone is one hour later than that at Greenwich and we must subtract one (1) to get GMT. All signs east of Greenwich will be minus and all signs west of Greenwich will be plus. If we proceed in this fashion around the world we find we arrive at the 180th meridian in the twelfth time zone. The sign on the east side of the 180th meridian is plus and on the west side of the 180th meridian is minus. Before we talk more about this 180th meridian let us work a few time zone problems. (Refer to Fig. 1 for zone numbers.)

Problem 1. You are at a Field Day location on Tip-Top Hill in New Jersey. The time is 0830. What is the GMT?

local time	0830
zone	plus 5
GMT	1330

Problem 2. You call CQ on twenty meters at 1330 GMT and a VK in Sydney answers. What time is it in Sydney?

Before we ask the VK what time it is, let's see if we can figure it out. Since we established the zone number such that by applying it to the local time we get GMT, if we apply the zone number with *reversed* sign to GMT we should get the local time.

GMT	1330
zone	-(+) 10
local time	2330

A check with the VK should verify the results. Now let's investigate a problem which contains a change in date.

Problem 3. What is GMT when local time is 2230?

local time	2230
zone	+ 5
GMT	2730

2730 goes over the allotted 24 hours to the day, so by inspection we might assume that actually the GMT was 3 hours and 30 minutes into the next day. Thus GMT is 0330. (2730 - 2400 = 0330). If we apply logical reasoning to the problem we will arrive at the same solution. We reason as follows:

If it is 2230 at our local QTH, and, by the earlier-west-later-east rule we reason it is later

<sup>2</sup>In actual practice, time zones in land masses are usually established by national legislation and conform to geographical and political boundaries, rather than to the actual straight lines of longitude. See Fig. 1.

toward Greenwich, then it must be so late at Greenwich that it is past midnight and therefore is the next day.

Problem 4. It is 0130 at our QTH in New Jersey as we QSO a W6. What is his local time.

$$\begin{array}{r} \text{GMT} \qquad \qquad \qquad 0630 \\ \text{zone} \qquad \qquad \qquad (+) - \underline{8} \end{array}$$

Since we can't subtract 8 from 6, we suspect a date change. There are several ways to approach the problem. One is to add a day to GMT, thus:

$$\begin{array}{r} \text{GMT} \qquad \qquad \qquad 0630 \\ + 1 \text{ day} \qquad \qquad \qquad \underline{2400} \\ \hline \qquad \qquad \qquad 3030 \end{array}$$

Now we can subtract the zone number.

$$\begin{array}{r} \text{GMT} \qquad \qquad \qquad 3030 \\ \text{zone} \qquad \qquad \qquad (+) - \underline{8} \\ \hline \text{local time} \qquad \qquad \qquad 2230 \end{array}$$

Applying the same type reasoning as in problem 3, we deduce that it is 2230 local time of yesterday (from our viewpoint) at the W6 QTH. Another way of viewing the problem is to think of the midnight meridian as being between the two QTH's. By adding 24 hours to Greenwich we have in effect put it one day ahead of the W6 QTH, as, in fact, it really is.

Of course, in actual practice we would rarely have time to stop and figure all this out. However, if we have a world map zoned and mounted on the shack wall so that it is visible from the operating position the problem becomes a little easier, and if we keep GMT on the station clock the problem can easily be solved mentally. An excellent large size world map marked with the time zones is published by the U. S. Navy Hydrographic Office, and is available for a price of sixty cents (\$.60) (plus mailing costs) at any one of the Hydrographic Office's many authorized agents. These agents are located in many of the seacoast cities, and some twenty-odd foreign countries. Two agents and addresses are listed at the end of this article. When ordering, ask for H. O. Chart No. 5192. It is a worthwhile addition to any ham shack.

### The International Date Line

The day, that is to say, the date, changes at midnight, therefore there exists at any one instant two different dates on the earth. (There is an exception to this, when it is noon at Greenwich the date is the same throughout the world.) The meridian where it is midnight is the dividing line for the two dates: on the one side of midnight it is one date, say X for example, and there exists on the other side of the midnight meridian at the same instant a different date, Y for example. Since the two dates X and Y do not overlap anywhere on the earth, there must exist another boundary somewhere on the earth where the dates X and Y meet and stop. There is. The International Date Line. If we cross the Date Line, we cross from one date to the other. But notice that the date line is contained in the

twelfth time zone, and that the sign of the zone is different on each side of the Date Line. Since the zone numbers are the same on either side of the Date Line, the clock time is the same on both sides, but the date is different. Thus if we cross the date line we don't have to change our watches, only the calendar!

Earlier we mentioned briefly that there was an exception to the statement that at any instant two different dates exist simultaneously on the earth. This exception occurs when it is noon at Greenwich, for at that time the two date boundaries coincide. (The midnight meridian coincides with the 180th meridian, which is the International Date Line.) So when GMT is 1200 hours, the date is the same all over the world. This situation does not last long, however, for in the next instant a new day is born.

### Zone Letters and Message Handling

Another convenient method of designating individual zones is to letter rather than number them. This system is used extensively because it is easily adapted to the date-time groups of messages. Notice in Fig. 1 the lettered time zones. The Greenwich time zone is designated with (Z) as it is the zero time zone. Adjacent zones are then lettered easterly (skipping the letter J) to the Date line, ending in the minus twelve zone with (M). (N) is resumed adjacent to the Greenwich meridian to the west, lettering of the zones continuing westerly to the date line, where plus twelve is lettered (Y). This system is used by message handlers as follows: suppose you have a message filed at your station located in Denver, Colo., at 1200 hours on the 5th of December. Take the time of filing and prefix to this the day of the month (for days 1 through 9 a zero must be added so that there is always two numbers in the date. Thus 5 becomes 05, 1 would become 01, 2 becomes 02, etc. . . .). To these six numbers suffix the letter designating the zone time used. The letter designating the zone for Denver is (T). The date time group is therefore 051200T. (spoken "zerofive twelve hundred Tango" if you are using the ICAO phonetic alphabet.)

Let us convert this to GMT. The zone for Denver is plus 7:

$$\begin{array}{r} \text{local time} \qquad \qquad \qquad 1200 \\ \text{zone} \qquad \qquad \qquad + \underline{7} \\ \hline \text{GMT} \qquad \qquad \qquad 1900 \end{array}$$

The date time group in GMT is therefore: 051900Z (spoken "zero five nineteen hundred Zulu.") Notice that the month need not be designated for the message would probably be handled and delivered in a matter of hours so that there would be no chance for confusing the month. If there is a possibility of doubt regarding the month, such as might arise when referring to the message several months later, the month concerned can be suffixed to the date time group. For example "reference my 051900Z Dec."

This system is used extensively by the armed forces and is very handy and efficient.

(Continued on page 152)

# Simulated Emergency Test—1960

## *The Amateur Radio Emergency Corps in Action*

BY GEORGE HART,\* WINJM

Now that SET reports have about stopped coming in, let's see how we made out. The nominal deadline for receipt of reports was Nov. 15, but we always allow much longer than this. A good thing, too. Some of our better ECs are not famous for their promptness in reporting, and without their reports our showing is far below what it would otherwise be.

First, for the benefit of the casual reader, we want to explain just what the Simulated Emergency Test (SET) is and why we have one every year. No, it isn't just another ARRL dog-eat-dog contest. In fact, it's not really a contest at all in the sense that one individual competes with other individuals, or clubs compete with each other. Actually, each group competes with itself by trying to better the score it made the previous year.

The SET is the annual emergency communications exercise of the Amateur Radio Emergency Corps (AREC). It is set up locally and implemented by our appointed Emergency Coordinators of which there are about 1500 in existence. Although it is strictly an amateur activity testing the amateurs' own emergency communications facility, naturally there are a number of to-be-served agencies involved, especially the Red Cross and civil defense. American National Red Cross Telecommunications in Richmond, Va., sends out special notifications to each of their chapters throughout the states, requesting chapter disaster chairmen to contact local ARRL Emergency Coordinators to arrange for the test, and various RC amateur stations are activated to receive messages. At c.d. operational headquarters in Battle Creek, Mich., and the eight OCDM regional offices arrangements are also made to have representative stations on the air to receive messages from c.d. directors nationwide. But in the main, the test is a local affair,

\* National Emergency Coordinator, ARRL.

using simulated situations characteristic of the locality involved, or problems suggested by ARRL headquarters in a pre-test bulletin. Each EC who participates then reports the results to headquarters on a form provided for that purpose.

### *Innovations*

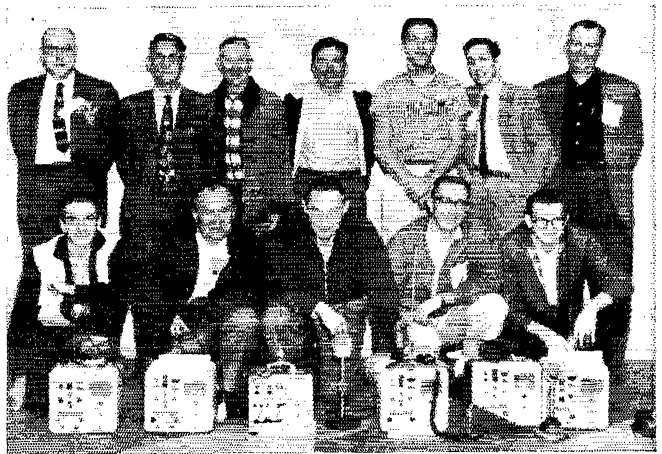
In previous years, each AREC member who took part in the test originated a message to ARRL headquarters indicating his participation, and each EC also originated a message to ARRL briefly summarizing the results. Along with Red Cross and civil defense traffic, this made for a terrific load of traffic during the prescribed week end of the test and was objected to by many traffic men as being not realistic of any situation that might develop. Emergencies, they contended, were usually of a nature restricted in locality, and therefore most of the simulated emergency traffic should be handled on a somewhat more local basis. Realizing they had a point, in the 1960 test we instructed AREC members to originate traffic to their Section Emergency Coordinators instead of to ARRL headquarters; this had the advantage of cutting down the load on long haul facilities in addition to giving the SECs something definite to do as their part of the test.

The other innovation was an increased element of competition. We have already said that the SET is not a contest, but we also have found that amateurs, long imbued with the spirit of competition in ARRL operating activities, just will not participate in great numbers in any activity without some kind of competitive incentive. In the test itself, comparative score must remain secondary; we want results, not score; our primary objective is improvement of emergency potential. The only comparison that has any real significance is that of one year's score with a previous year's score for the same



Six mobiles were used in the Terry County, Texas, SET, on Oct. 9. From the license plates, we can identify all but one: K5TMQ, W5JMS, W5FBM, K5LFI, W5NFO.

The problem in Schuylkill County, Pa., was providing communications for a parade of firemen. That's the parade marshal standing on the left. The rest are all AREC amateurs. Left to right, standing: W3DUI (SEC), W3ORK, W3DGX, K3KNO, W3CUK, W3ZRQ (SCM); kneeling: K3KNL, KN3KNJ, K3KNP, W3FWG, KN3KNM.



group. Nevertheless, it may enhance interest to list the scores from high to low so that, almost at a glance, it can be shown whether or not any particular group is placing where it *should* place compared to other groups of approximately the same size. Thus, in the tabulation of the 1960 AREC groups in the SET, the listing will be by sections in order of the total scores contributed to the national total, and by AREC groups within each section in order of their scores as well as their standing nationally.

#### Red Cross Participation

The American National Red Cross is really pushing its relations with radio amateurs these days, under the able and energetic ramrodding of W4PHL, a long-time member of the Red Cross Telecommunications staff and a very active amateur. The first issue of the quarterly *AMCROSS Hamtalk* describes results of the 1960 SET as "the best yet." Red Cross-amateur stations and volunteer individual amateurs at their own stations all over the country completed a grand total of 6,891 message handlings, some of which were simply messages being relayed to destinations other than Red Cross. The "big three" Red Cross Stations: W3PZA in Washington, W9DUA in Springfield, Ill., and W6CXO in San Francisco were active, along with W2KCR and his RTTY net, K4IWT in Miami and W4PHL/W4BJH in Richmond. Many chapters also conducted local nets. It was a great week end for the Red Cross.

#### Civil Defense

Not much has been heard about how the various stations representing OCDM operational headquarters and the eight OCDM regions made out during the SET. All but one of the eight regions promised to have one or more stations on the air to receive this traffic. We hope they were used to good advantage. Our only report comes from Region 5, where 23 messages were received on the North Texas Traffic Net: 17 from North Texas, one from South Texas and 5 from Oklahoma.

#### ARRL Traffic

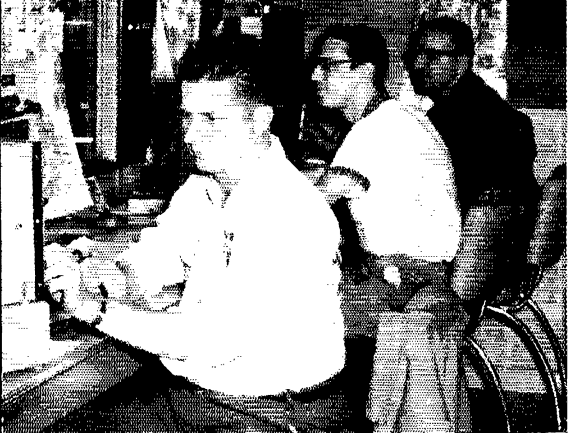
There was a great deal less of this than in previous years because in 1960 only the EC was instructed to originate a message to ARRL. We received 116 messages from ECs, 42 from individual participants, ten from v.i.p.'s (mostly mayors), and eight from SECs. A few miscellaneous messages in connection with the SET also were received. W1AW did the bulk of the receiving, as usual, but this year received only 79, compared with 835 in 1959. The boys at W1AW like the new system fine! Others delivering traffic to ARRL were W1NJM (27), W1BDI (26), W1EKJ (9), W1KGF (7), W1EFW (5), W1DGL and W1YBH (3), W1FTE (2) and W1EOR and W1IVR (1). Messages were received from the governor of Oklahoma; mayors of Miami Springs, Titusville, Palm Bay and Eau Gallie, Fla.; the mayor of Oak Ridge, Tenn.; the manager of the Red Cross Chapter at Miami, Fla.; the OCDM Director for Region 1; and the state e.d. director of Oklahoma.

#### Local Activities

When you come right down to it, the meat of



Outside the Genesee County, Mich., trailer, K8IOP and W8MHE take messages from the public for transmission by amateur radio.



The Genesee County, Mich., AREC took part in the annual Fire-a-rama in downtown Flint, on Oct. 10, as their SET exercise. Shown above are AREC members operating inside the trailer of the Genesee County Radio Club. W8RUV operates 10 meter control, W8HIT is at the two meter position and K8AJW supervises two meter activity.

any SET is at the local level. What went on there can hardly be characterized as Red Cross, civil defense or ARRL, because it may have been one or two of them or all three. It is AREC activity, that's for sure, and there was a great deal of it in the 1960 SET, some on the suggested week end of Oct. 8-9 and some at other times within a month before or after. In 1960, mail reports were considerably up, "hearsay" reports almost non-existent. Some of the data exceeded the 1959 figures, some of it showed a decrease. The total point score for the nation was slightly under the 1959 score, largely a result of lack of scores submitted by large cities. We compliment the AREC gang of the following large city areas for adding materially to the total point score: San Francisco, Denver, Miami, Louisville, New Orleans, New York (Kings, Queens and Nassau Counties), Toronto, Philadelphia (Montgomery County), Memphis, Houston, Washington (Arlington & Fairfax Counties & Alexandria, Va.) and Spokane. Some of the others sent radio reports only — which is fine, but doesn't help the total score much.

Here are some of the comments on the 1960 SET:

Out of 151 messages ECs reported they sent us, 28.5% were not received at ARRL. This is a tremendously high percentage, seems to us. Of course we don't know how many of this number intended to do so but never actually sent one, but even if this factor brought the percentage of deliveries down to 20%, it is still far too high. Surely, gang, we can do better than this?

We want to apologize to all concerned for failing to put more than one report form in each pre-SET bulletin. This made it rather difficult to send a copy to the SEC and another copy direct to headquarters, as instructed. Probably rather than going to the trouble of making the extra copy, some ECs sent the one copy to either one or the other — and since there are still some do-nothing SECs in our appointment ranks, this probably resulted in our not receiving some of the mail reports at all. We want to make reporting as easy as possible and we'll try to do better this year.

Here are some comments and observations in connection with the 1960 SET:

Missouri SEC K0LTP forwards a full report in which he states that 24 of 26 Mo. ECs were active with more than 500 AREC members, plus members of RACES and MARS. An

estimated 5000 messages were handled during the two-day week end; EC W0HUI of Springfield turned in the most outstanding group performance.

The Oklahoma AREC organization is to be congratulated on a fine performance. SEC W5UYQ (now Vice Director of the ARRL West Gulf Division) submitted a complete report of activities during the SET week end. Note the section's high standing in the tabulation below.

We want also to acknowledge detailed reports received from the following SECs: W9SNQ (Ind.); W0SCT (S. Dak.); W6ZRJ (SCV); W3DUI (E. Pa.); K8CSG (for W. Va.). Also a report from W6JWF, EC for San Francisco, who was in charge of W6CXO, collecting station for the Pacific Area, American National Red Cross; 371 messages to Red Cross chapters were filed, 98 replies received at the time of the report.

The AREC gang in Nueces County (Corpus Christi), Texas, conducted their SET in the middle of a real storm emergency (see Jan. QST, p. 91). This requires a bit of doing, but they did it, and a good job it was.

"The SET Bulletin was very helpful, but received too late. Looking forward to a more comprehensive exercise locally here next year." — K6BNB, EC Sacramento Area, Calif. "We find that 160 is excellent if there is no ITV, but today there was plenty as the World Series was on. However, 6 meters was fine, cutting through loud and clear; it was also loud and clear in my own TV set, as well as those of the neighbors, I am sure." — W9SXL, EC McLean County, Ill. "QRM made it almost impossible to copy signals on 7000 kc. We seem to forget that we hold this air we use for the service we render, not the noise we can make." — W9VWJ, EC Montgomery County, Ill. "My AREC gang are asking for another drill soon!" — K9HEL, EC Floyd County, Ind. "We feel we had a very 'true to life' exercise and learned a great deal." — W9BVR, EC Marion County, Ind. "I sincerely hope we can do better, should an emergency strike." — W4BAZ, EC Louisville, Ky. "Will make 100 points or bust next time!" — W3BUD, EC St. Mary's County, Md. "Main thing found, same as last year, is that we need more qualified c.w. operators; they are needed badly in this AREC before we will ever have a smooth emergency team." — W3CVE, EC Prince George's County, Md. "This SET was very small compared with Hurricane Donna, but our boys did a fine job." — W1JSA, EC Waltham, Mass. "All was well planned except the weather." — W0MZR, EC Nobles County, Minn. "The local Red Cross director received notification of the SET a week before I did. If we are going to cooperate with these agencies, we should know about what's going on before they do." — K7CVT, EC Great Falls, Mont. "There is continuing and growing need for small, inexpensive, easily-carried, self-powered, complete 2, 6 or 75 meter fone/c.w. stations for rapid establishment of emergency circuits." — W7HJ, EC Boulder City, Nevada. "RACES is firmly entrenched in Monmouth County and we were lucky to get official recognition from the CDDC for this AREC net." — K2VVL, EC Middletown & vic., N. J. "We had lots of hard work, lots of fun and next year we will have a better SET." — W2TFL, EC Delaware County, N. Y. "Cooperation was terrific and Pembina County now knows that the hams are available and capable if needed to furnish emergency communications." — K0HOZ, EC Pembina County, N. Dak. "Red Cross did not wish to participate in test or cooperate in any way." — K8PPD, EC Van Wert County, Ohio. "Great fun, even with sobering thought of actual emergency possible." — W5BNP, EC Bryan County, Okla. "This is the first time that any c.d. official was interested enough to put in an appearance." — W3WRE, EC Cambria County, Pa. "Auxiliary non-licensed members are trained to put messages in proper form, answer phone, and sort messages." — W0DVB, EC Lawrence County, S. Dak. "Many thanks to all, including my XYL who watched the World Series and didn't say a word about all the noise, even TVI on the monster." — K4OUK, EC Anderson County, Tenn. "I am in favor of local SET being ahead of national, so all information on local SET can be sent in immediately following national SET." — K5AIR, EC Harris County, Texas. "This is a suggestion. ECs were requested to gather messages from AREC members and send the SEC a message stating how many stations were participating in their SET drill. This kept the message traffic to the SEC condensed. All non-AREC participants should send their messages to the SEC. This would contain more useful information than the present system of reporting." — W4QDY, EC Norfolk, Va. (also SCM Va.). "Cooperation in this area seems very excellent.

Drills held once each week." -- W70IV, EC Puyallup-Summer, Wash.

### The Summary

The data below are gleaned, with much tearing of hair and gnashing of teeth, from the EC reports received. Despite the fact that regular forms are provided, many reports are non-standard and have to be worked into the analysis as best we can. This year we are listing them in order of "rank" by sections, and by AREC groups within each section. The former are based on number of reports received and total score contributed, the latter by score alone. Take a look, see if your section or AREC group is where it ought to be in the standing.

Here are the totals (last year's totals in parentheses):

Total reports received: 219 (256)

By mail: 181 (145)

By radio: 113 (137)

By hearsay: 7 (57)

AREC members represented: 6053 (6556)

Total known participation: 2050 (2997)

Mobiles & portables: 952 (990)

Fixed stations on emerg. power: 149 (159)

AREC messages to SEC: 1657 (1594)

EC radio reports sent to ARRL: 150 (100)

Per cent not received: 23.5

Total points compiled: 23,526 (23,733)

AREC units also heard from in 1959: 89

AREC units bettering 1959 score: 33

#### Area of Jurisdiction

	Reported By	Points
<b>1. INDIANA (14 reports)</b>		1344
7. Marion County <sup>28,30</sup>	W9BVR	346
23. Vanderburgh County <sup>28</sup>	K9GEO	210
53. Muncie, Delaware Co. <sup>28</sup>	W9FYC	151
70. Cass County <sup>28,30</sup>	K9GMH	129
120. Hancock County <sup>28</sup>	W9DZC	74
120. Jackson Co., Seymour <sup>28</sup>	W9RTH	74
125. Orange County <sup>28,30</sup>	W9QYQ	70
128. Porter County <sup>28</sup>	W9QHW	69
137. Floyd County <sup>12</sup>	K9HEL	63
137. Monroe County <sup>13,28</sup>	W9NZK	63
148. Howard County <sup>27</sup>	W9AOJ	48
150. Decatur County <sup>28</sup>	K9TJJ	47
172. Madison County <sup>27</sup>	W9FWH	...
172. Pike County <sup>27</sup>	K9ELE	...
<b>2. EASTERN FLORIDA (9 reports)</b>		1498
2. Dade County <sup>8</sup>	W4OLV	537
28. Lake County <sup>28</sup>	W4SXJ	195
37. Orange County <sup>30</sup>	W4NKD	178
55. Polk County <sup>10</sup>	W4DPD	147
63. Brevard Count <sup>11,28</sup>	W4BWR	137
80. Hillsborough County <sup>28</sup>	K4YOQ	118
96. Collier County <sup>9</sup>	W4ACT	98
104. Manatee County <sup>28</sup>	K4ILB	91
172. Volusia County <sup>27</sup>	K4VJW	...
<b>3. ILLINOIS (11 reports)</b>		1010
33. Champaign & Douglas Cos. <sup>5,28</sup>	K9MUH	185
43. McLean County <sup>30</sup>	W9SXL	166
64. Greene, Jersey & Calhoun Counties <sup>28,30</sup>	W9IFA	136
68. Montgomery County	W9VWJ	131
76. N. Madison County <sup>29</sup>	W9DJG	120
108. Rock Island & Mercer Cos.	W9RYU	88
115. McDonough County <sup>28</sup>	K9BIV	83
118. Fulton County	W9MUL	81
171. Monroe County	W9ICF	20
172. Cook County <sup>27</sup>	W9HPG	...
172. Massac County <sup>27</sup>	W9GJN	...
<b>4. VIRGINIA (9 reports)</b>		953
41. Norfolk	W4QDY	168
48. Lynchburg <sup>28</sup>	K4MKO	161
50. Alexandria <sup>28</sup>	W4JXD	157
60. Fairfax County <sup>8</sup>	W4RHC	143
62. Scott County	W4MCZ	138
93. Appalachia & vic.	W4KRX	100
139. Buena Vista	K4CHA	61

163. Bristol <sup>28</sup>	W4THM	34
169. Arlington County <sup>28</sup>	W4OYB	25
<b>5. OKLAHOMA (17 reports)</b>		782
24. Tulsa County	K5KTW	208
91. Pittsburg County	W5UAO	102
103. Cherokee & Adair Co. <sup>28</sup>	W5BNU	92
124. Okmulgee County <sup>28</sup>	W5WAF	70
128. Garfield County <sup>28</sup>	W5MFX	69
133. Bryan County	W5BNP	66
140. Ottawa County <sup>28</sup>	K5JOA	60
154. Hughes County	W4ADC	43
156. Beckham County	W5ZZP	42
167. Woods County, Alva	K5UHP	30
172. Greer County <sup>27</sup>	W5JKQ	...
172. Kay County <sup>27</sup>	K5QEF	...
172. Muskogee County <sup>27</sup>	W5WAX	...
172. Oklahoma County <sup>27</sup>	W5ORH	...
172. Pottowatomie County <sup>27</sup>	K5LZF	...
172. Stephens County <sup>27</sup>	K5IGZ	...
172. Washinta County <sup>27</sup>	K5HPW	...
<b>6. IOWA (8 reports)</b>		853
11. Polk County <sup>28</sup>	W0MJH	296
31. Linn County	W0GQ	192
40. Story County <sup>28</sup>	W0III	172
101. Des Moines County <sup>30</sup>	K0AFN	94
142. Audubon County <sup>28</sup>	W0VAU	57
156. Buena Vista County	K0EVC	42
172. Burlington County <sup>27</sup>	W0QVA	...
172. Fayette County <sup>27</sup>	W0VQX	...
<b>7. MICHIGAN (7 reports)</b>		844
9. Genesee County <sup>8,30</sup>	W8DTZ	319
12. Shiawassee County <sup>28,30</sup>	W8UOQ	291
85. St. Clair County	W8QFQ	110
108. Emmet & Sheboygan Cos. <sup>28</sup>	W8RHD	88
162. Hillsdale County <sup>28</sup>	W8IUC	36
172. Berrien County <sup>37</sup>	W8QQO	...
172. Kalamazoo County <sup>27</sup>	W8EMD	...
<b>8. NEW YORK CITY-LI (4 reports)</b>		1815
1. Nassau County	W2FI	1387
16. Kings County <sup>28</sup>	K2OVN	264
47. Queens Co., IOM <sup>16</sup>	W2IAG	164
172. Queens County <sup>27</sup>	W2L GK	...
<b>8. OHIO (7 reports)</b>		641
58. Stark County <sup>30</sup>	W8AL	145
82. Seneca County	K8SNG	113
83. Clermont County	W8WYS	112
86. Van Wert County <sup>28</sup>	K8PFD	109
95. Lawrence Co., Ironton <sup>28,30</sup>	W8EPJ	99
156. Franklin County <sup>11,30</sup>	W8TSE	42
170. Cadiz, Harrison Co.	K8LGA	21
<b>10. EASTERN MASS. (7 reports)</b>		631
21. Winthrop <sup>8</sup>	W1BB	229
75. Fall River <sup>28,30</sup>	W1YHY	121
120. Waltham <sup>8,28</sup>	W1JSM	74
124. Groveland	W1MRQ	72
130. Somerville <sup>28</sup>	W1OFK	68
131. Quincy <sup>8</sup>	W1ACB	67
207. N. Reading <sup>31</sup>	W1AWA	...
<b>11. SANTA CLARA VALLEY (4 reports)</b>		1144
5. So. San Francisco <sup>28,30</sup>	W6QIE	437
10. Redwood City, Atherton & Menlo Park <sup>28</sup>	W6DEF	306
13. San Jose	W6HZU	282
78. Palo Alto <sup>28</sup>	K6BBF	119
<b>12. MD.-DEL.-D.C. (5 reports)</b>		669
15. Prince George's County	W3CVE	269
20. Anne Arundel County	W3NAE	230
98. St. Mary's County <sup>28</sup>	W3BUD	96
154. Carroll County <sup>8,28</sup>	W3FVK	43
168. Calvert County <sup>28</sup>	W3ZNV	31
<b>13. EASTERN PA. (4 reports)</b>		970
4. Montgomery County <sup>19,28,30</sup>	W3AWH	449
8. Schuylkill County <sup>2,20,28</sup>	W3ZRQ	337
36. Lehigh County <sup>28</sup>	W3BPZ	184
213. E. Northumberland Co. <sup>1</sup>	K3JSX	...
<b>14. WESTERN N.Y. (6 reports)</b>		555
24. Steuben County <sup>27</sup>	W2YIY	208
89. Delaware County	W2TFL	105
93. Cortland County <sup>4,28</sup>	K2MTU	100
106. Chemung County <sup>28</sup>	K2DNN	89
144. Orleans County <sup>17</sup>	K2JKM	53
172. Clinton County <sup>26,28</sup>	WA2DAC	...
<b>14. SOUTHERN TEXAS (4 reports)</b>		912

6. Houston, Harris Co. <sup>29</sup>	W5AIR	385	29. NORTHERN TEXAS (3 reports)		312
14. Nueces County <sup>4,28,30</sup>	W5AQK	281	45. Abilene, Taylor Co. <sup>28</sup>	W5ANK	165
71. Bayshore Area <sup>23</sup>	K5PEQ	124	55. Brownfield, Terry Co.	W5NFO	147
73. Lower Rio (Grande Valley	K5KTX	122	172. Rusk County <sup>27</sup>	K5PHT	...
14. WASHINGTON (5 reports)		567	31. GEORGIA (3 reports)		253
24. Pierce County	WTHMQ	208	51. Floyd, Bartow & Chattooga		
29. Spokane Area <sup>24,30</sup>	W7WIL	193	Counties	K4YRL	155
43. Puyallup-Sumner	W7OIV	166	96. Lamar, Pike, Spalding Cos. <sup>23</sup>	W4FYC	98
172. Benton County <sup>28</sup>	W7YFO	...	172. Lincoln County <sup>27</sup>	W4DDY	...
172. King County <sup>27</sup>	W7RDL	...	32. KENTUCKY (2 reports)		352
17. WISCONSIN (5 reports)		520	27. Louisville area <sup>11</sup>	W4BAZ	198
22. Dane County <sup>25,28</sup>	W9UGT	221	52. Daviess, Hancock, McClean		
64. Brown County <sup>16</sup>	W9HDV	136	& Muhlenberg Cos. <sup>11</sup>	W4VJV	154
90. Eau Claire County <sup>28,30</sup>	W9BEW	103	33. IDAHO (3 reports)		182
140. Washington County <sup>28,30</sup>	W9SAA	60	91. Bannock County	W7GCO	112
172. Milwaukee County <sup>26</sup>	K9KJT	...	146. Latah County	W7VQC	51
18. KANSAS (5 reports)		460	168. Bingham County <sup>30</sup>	K7GHX	29
17. Zone 16 <sup>30</sup>	K9JWS	253	34. NEW MEXICO (2 reports)		236
106. Zone 15 (McPherson, Reno &	W9BBO	89	67. Eddy County, Carlsbad	K5DAB	133
Rice Cos.) <sup>14,25</sup>			102. Chaves Co., Roswell	W5VC	93
114. Zone 10 (Cowley, Sumner,	K9TNW	84	35. NEBRASKA (2 reports)		219
Harper & Kingman Cos.)	K9EWV	34	57. North West Nebr. <sup>28</sup>	K9RRL	146
163. Zone 18	K9BXF	...	123. Chadron & N.W. area	W9GCP	73
172. Zone 5 (Johnson-Wyandotte		...	36. NORTHERN NEW JERSEY (2 reports)		192
Cos.) <sup>26</sup>		290	83. Middletown & vic.	K2VVL	112
19. SOUTH DAKOTA (7 reports)		87	119. Wood-Ridge, Bergen Co. <sup>30</sup>	W2DAJ	80
112. Brookings County	W9MZJ	87	37. ALABAMA (4 reports)		
117. Lawrence County <sup>22</sup>	W9DVB	82	207. Colbert & Lauderdale Cos. <sup>2</sup>	K4AUP	...
153. McPherson County <sup>3,28</sup>	K9LOW	14	207. Mobile County <sup>2,3</sup>	W4WHW	...
163. Meade County	W9ZWL	34	207. Morgan County <sup>2</sup>	W4PKA	...
165. Brown County <sup>21</sup>	W9NWM	33	213. Walker County <sup>1</sup>	W4CIU	...
172. Tripp County	K9BMQ	9	38. EAST BAY (2 reports)		153
213. Deuel County <sup>1</sup>	K9TAM	...	115. Berkeley-Albany	K6EDN	83
20. COLORADO (5 reports)		359	125. Vallejo & So. Solano Co. <sup>4,28</sup>	K6VXM	70
18. Denver Metro. area <sup>3,30</sup>	W9SIN	245	38. SOUTHERN NEW JERSEY (1 report)		
136. Montrose County <sup>23</sup>	K9EGJ	64	19. Camden County	K2MBD	240
147. Gunnison County <sup>28</sup>	K9PVN	50	40. CONNECTICUT (3 reports)		92
172. Pueblo County <sup>27</sup>	K9BOH	...	143. Southington	K1CSY	54
207. Boulder <sup>31</sup>	K9CEZ	...	161. Newington	W1NJM	38
21. SAN DIEGO (3 reports)		785	172. Danbury <sup>27</sup>	W1ADW	...
3. San Diego Sec. <sup>30</sup>	W6LYF	513	41. WESTERN PENNA. (2 reports)		130
45. E. San Diego Sec.	W6KUU	165	69. Cambria County <sup>4,28,30</sup>	W3WRE	130
88. No. San Diego County <sup>28</sup>	K9RYT	107	172. McKean County <sup>27</sup>	W3MEY	...
22. MINNESOTA (5 reports)		280	41. SACRAMENTO VALLEY (1 report)		
61. Ramsey County <sup>28,30</sup>	W9THY	139	42. Sacramento Area <sup>3,30</sup>	K6BNB	167
108. Winona County <sup>30</sup>	K9GIW	88	43. MONTANA (1 report)		
144. Nobles County <sup>15</sup>	W9MZR	53	53. Great Falls area	K7CYT	151
172. Rochester <sup>27</sup>	K9CPW	...	44. SAN FRANCISCO (2 reports)		111
213. Redwood County <sup>1,28</sup>	K9EPT	...	135. Fortuna <sup>6</sup>	K6EKC	65
23. MISSOURI (5 reports)		259	151. Eureka area	W6SLX	46
29. Springfield, Greene Co. area	W9HUI	193	45. NORTH DAKOTA (1 report)		
133. Miller County <sup>28</sup>	K9MMR	66	59. Pembina County <sup>18,30</sup>	K9HOZ	144
172. Buchanan County <sup>27</sup>	K9BER	...	46. WYOMING (1 report)		
172. Marysville <sup>27</sup>	W9YOI	...	64. Natrona Co., Casper <sup>28</sup>	W7LKQ	136
207. Harrison County <sup>31</sup>	.....	...	47. ONTARIO (1 report)		
24. TENNESSEE (3 reports)		547	72. Metro. Toronto (VHF) <sup>5</sup>	VE3AIB	123
33. Hamilton Co., Chatta-			48. NEVADA (1 report)		
nooga <sup>23,28</sup>	W4JVM	185	80. Boulder City <sup>28</sup>	W7HJ	118
33. Oak Ridge & Anderson Co. <sup>28</sup>	K4OUK	185	49. ARKANSAS (1 report)		
39. Memphis & Shelby Co.	W4WBK	177	98. Grady County	W5PHP	96
25. EASTERN N. Y. (3 reports)		357	50. Louisiana (1 report)		
37. Schenectady County <sup>28,30</sup>	K2HNV	178	100. New Orleans, Westside		
104. Ramapo, Rockland Co. <sup>3</sup>	W2ZTZ	91	Area <sup>3,28</sup>	W5INL	95
108. New Rochelle, Westchester			51. RHODE ISLAND (1 report)		
Co. <sup>14,28</sup>	K2SJM	88	113. Newport <sup>28,30</sup>	W1JFF	86
25. WEST VIRGINIA (3 reports)		432	52. SAN JOAQUIN VALLEY (1 report)		
32. Kanawha County <sup>5</sup>	K8CSG	190	131. Tulare County <sup>28</sup>	W6ARE	67
73. Barbour & Taylor Cos.	K8CRM	122	53. ALL OTHER SECTIONS (no reports)		
76. Cabell County <sup>28,30</sup>	W8FUM	120			
27. EASTERN NEW YORK (3 reports)		357			
37. Schenectady County <sup>28,30</sup>	K2HNV	178			
104. Ramapo, Rockland Co. <sup>3</sup>	W2ZTZ	91			
108. New Rochelle, Westchester					
County <sup>14,28</sup>	K2SJM	88			
28. OREGON (4 reports)		251			
78. Lane County <sup>28,30</sup>	K7CJB	119			
148. Josephine County	W7DEM	48			
152. Clatsop County	W7GWC	45			
160. Jackson County	K7JQS	39			
29. LOS ANGELES (5 reports)		150			
87. San Bernardino Co. <sup>9</sup>	W6HKD	108			
156. San Gabriel	K6VNX	42			
172. Los Angeles <sup>27</sup>	W6CSS	...			
172. Pasadena <sup>28</sup>	W6ORG	...			
172. Redlands <sup>27</sup>	K6GGS	...			

<sup>1</sup> No test held. <sup>2</sup> Report via SCM only. <sup>3</sup> Oct. 16. <sup>4</sup> Oct. 4. <sup>5</sup> Oct. 15. <sup>6</sup> Sept. 30-Oct. 1. <sup>7</sup> Oct. 10. <sup>8</sup> Oct. 7. <sup>9</sup> Oct. 9. <sup>10</sup> Oct. 22. <sup>11</sup> Oct. 31. <sup>12</sup> Oct. 25. <sup>13</sup> Oct. 11. <sup>14</sup> Oct. 9. <sup>15</sup> Oct. 24. <sup>16</sup> Oct. 21. <sup>17</sup> Oct. 21. <sup>18</sup> Nov. 8. <sup>19</sup> Oct. 13. <sup>20</sup> Oct. 7-8. <sup>21</sup> Oct. 6. <sup>22</sup> Oct. 19. <sup>23</sup> Oct. 23. <sup>24</sup> Oct. 22-23. <sup>25</sup> Oct. 19. <sup>26</sup> Mail report, no score breakdown. <sup>27</sup> Radio report only. <sup>28</sup> Report received by both mail and radio. <sup>29</sup> Sept. 18. <sup>30</sup> Bettered last year's score. <sup>31</sup> Hearsay, EC not heard from directly.

### Strays

W9AYL is a YL. (K5BBA thought we could probably make a subtle stray out of this. How did we do, Bill?)



# The World Above 50 Mc.

1215-1300    2300-2450    3300-3500    5650-5925    10,000-10,500    21,000-22,000    30,000-9

CONDUCTED BY SAM HARRIS,\* W1FZJ

I AM always surprised when I find someone who doesn't know as much about our hobby as I do. I am even more surprised when the information which he is lacking is basic to the pursuit of the hobby. My recent dissertations on parametric amplifiers, coaxial filters, etc., have brought a wealth of replies. The majority of these inquiries evinced a desire to learn some of the details of a new art. A surprising percentage of them, however, demonstrated a complete lack of understanding of the process of receiving radio signals.

Now you don't have to be an engineer to know that a converter is a device for extending the useful range of an existing receiving setup. The converter does not improve the selectivity of the receiver, nor does it necessarily improve its sensitivity. Its only purpose in life is to extend the frequency coverage of the following receiver. It has become the accepted practice for v.h.f. converters to be fixed tuned, generally with crystal control on the local oscillator and band-pass tuning on the r.f. stages, so that the use of the converter requires no external tuning controls. This is not necessarily the best approach, as the band-pass characteristic of the converter leaves the front end of your receiving system wide open to interference from strong signals far removed from your operating frequency.

The two basic differences between the v.h.f.-converter-low-frequency-receiver combination and the straight v.h.f. receiver as normally found in a transceiver type installation are stability and selectivity. These two differences go hand in hand. As you increase the selectivity of your receiving system, it is necessary to increase the stability of your high frequency local oscillator. The conventional v.h.f. converter/low frequency receiver combination will generally have selectivity capabilities anywhere from 10

kc to 100 cycles. Obviously, if the high frequency local oscillator is unstable, it will be impossible to keep a given signal tuned in to the i.f. pass band. Transceiver type receivers, in general, are experiencing bandwidths on the order of 50 to 100 kc. Small changes in local oscillator frequency, while they detune the signal slightly, do not remove it from the pass band, and as a result are not noticed.

There are several reasons why such a receiving setup is advantageous for strong signal-type communication. For instance, it is not necessary to carefully tune in a station, as anywhere in the general vicinity will be close enough; secondly, slight changes in oscillator frequency in either the transmitter or receiver are not noticed as a change in the audible signal. Furthermore, with a wide-band i.f. system, it is much easier to tune the whole band as the selectivity characteristic is such that signals can be heard as much as 200 kc. away, and if they are strong enough to override the attendant noise, can be read as you tune, so that no stopping and careful tuning is required. In general, the prime disadvantage of wide-band type receivers lies in the considerable additional interference experienced. Obviously, if your receiver responds to the signals over a 100 kc. spectrum, then a loud signal 50 kc. away from the signal you desire to hear can completely block out the desired signal. Interference of this kind is particularly severe in urban areas where activity is high.

A second disadvantage of wide-band i.f.'s is the considerable loss taken in signal-to-noise on a given signal with a given front end sensitivity. If your receiver, for instance, has 100-kc. pass band, a phone signal which was just equal to the noise in this receiver, would be 13 db. over the noise in a receiver having a 5-kc. pass band. Now the kind of selectivity which is obtained in the i.f. or intermediate frequency amplifiers of your receiver is independent of front end noise

\* P. O. Box 334, Medfield, Mass.

Nice lay-out at QTH of K2QWD.



or selectivity. Interference resulting from front end overloading is an entirely different matter. If we take the example of the signal which was 50 kc. away and blotting out your contact, and narrow down the i.f. pass band of your receiver, we will eliminate the offending signal from your i.f. system. This does not, however, mean that you will have eliminated all the interference possible from this signal. It is, for instance, entirely possible that this signal may be of sufficient strength to overload the front end of your receiver and cause what is commonly termed as cross modulation. This type of interference is generally evidenced by hearing the interfering station modulating all the signals in the band. This type of interference can only be cured in the front end of the receiver.

In extremely low noise and high sensitivity type receivers, it is sometimes very difficult to achieve a compromise between low noise and high overload. Selectivity which can be built into the front end of the v.h.f. receiver is generally in terms of two or three hundred kc. rather than that 2 or 3 kc. as can be achieved in the i.f. Tuneable front ends, therefore, can provide protection for overloading signals removed 200 or 300 kc. from the received signals, but can do little or nothing for signals which are within the pass band of your r.f. stages. Now if you want the ultimate in your v.h.f. receiving setup, it should be obvious that you need some of the good points of both. A crystal-controlled converter with tuneable r.f. stages feeding a stable and selective intermediate frequency receiver is probably the best solution. Now, when you find that tuneable crystal controlled converters are as scarce as bustles in a nudist camp you will understand why we talk about coaxial filters. A coaxial filter is nothing more than a highly selective tuned circuit which, when connected in series with your converter and your antenna, prevents unwanted signals from reaching your converter input. It isn't a cure-all, but if you latch onto a good one it will do wonders in eliminating cross modulation type interference. It won't do a thing for you if your interference is in your i.f. pass band. You can cure this type of interference in only two ways. Sharpen up your i.f. or use a highly directional antenna system. (Moving to the country or cutting the other guy's feedline are not considered sporting.) There is one thing you can be sure of — if that loud guy with a kw. is blanking out half the band for you, it's almost sure to be your own fault. And you can fix it if you try!

### Here and There on 6 and 2

Seems an error was made in this column in the December issue and it's about time it was corrected. LU3DCA, Mike, informs us that he definitely does not have 50 Mc. WAS, not even when he receives W7QNV's QSL. At the present writing (February) Mike has 30 states worked with only Massachusetts not coming through with a QSL. (Shame on you, Russ!) According to him no one living south of the Rio Grande has worked more than 40 states on 50 Mc. with the possible exception of NE1GE. We haven't heard from Geoff lately either, so can give no information on that score. HP1RJ was worked during November to make country number 30 with 30 confirmed.

## 2-METER STANDINGS

W1REZ	32	8	1300	W6WSO	15	5	1390
W1AZK	28	8	1205	W6NLZ	12	5	2540
W1KCS	24	1150	W6DNG	9	5	1040	
W1RFH	24	1120	W6AJF	6	5	800	
W1AJR	24	1130	W6HJL	5	5	1400	
W1AMN	21	7	1090	K6GTF	2	9	800
W1HDQ	22	6	1020	W6MAM	3	2	950
W1IZY	20	7	1180				
K1CRO	19	6	800	W7JRG	13	4	1040
W1AFO	17	6	920	K7HKD	11	5	950
K1AFA	17	5	450	W7CJM	5	5	670
				W7JHL	4	2	1050
W2NLX	37	8	1390	W7JLJ	4	2	253
W2CXY	37	8	1360	W7JUC	4	2	
W2ORI	37	8	1320				
K2GQI	37	8	1200	W8KAY	38	8	1020
W2AZL	29	8	1050	W8SDJ	37	8	1220
K2LEJ	27	8	1060	W8PT	37	9	1260
W2B1V	30	8	1020	W8TDX	35	8	980
W2AMJ	25	6	960	W8LOF	33	8	1060
W2D1VJ	23	6	860	W8LFC	32	8	1040
K2HOD	23	7	950	W8RHM	32	6	910
W2PAU	23	6	753	W8GHL	32	8	1180
W2ALR	23	7	960	W8SVL	30	8	1080
W2RXG	23	8	1200	W8BHW	30	8	860
W2RMLX	23	7	1090	W8LOF	29	8	850
K2CEH	22	6	940	W8VFN	29	8	960
K2AMQ	21	8	1160	W8BAX	22	8	960
W2LW1	21	6	700	K8AXU	29	8	1050
K2K1B	21	5	900	W8NOH	26	8	975
W2ESX	21	6	750	W8D1C	26	8	720
W2WZR	19	7	1040	W8LFC	25	8	800
W2LTH	19	7	880	W8AWV	25	8	940
W2ELG	19	6	720	W8WNM	25	8	900
K2RLG	17	6	980	W8GFN	23	8	540
				W8LCY	22	7	680
W3RUE	33	8	1100	W8BLN	21	7	610
W3GFP	31	8	1180	W8GTF	17	7	550
W3SGA	31	8	1070	W8NRM	17	7	550
W3DFE	31	8	1125				
W3KCA	28	8	1110	W9KLR	41	9	1160
W3SGA	31	7	700	W9WOK	40	9	1170
W3EPH	22	8	1000	W9GAB	34	9	1075
W3BYF	28	8	1070	W9AAG	33	8	1050
W3LNA	21	7	720	W9REM	31	8	850
W3KMI	20	7	750	W9GAI	30	8	830
W3LZD	20	7	650	K9AJJ	29	8	1070
				W9LVC	27	8	950
W4HJQ	38	8	1150	W9EQC	27	8	820
W4HHK	37	9	1280	W9BHP	27	8	820
W4ZXT	34	8	950	W9GJJ	26	8	910
W4LTV	34	8	1160	W9ZLL	25	8	700
W4AO	30	8	1120	W9BHV	25	7	1030
W4MKJ	33	8	1149	K9AQF	24	7	900
W4UMF	28	8	1110	W8LFC	22	7	825
W4VLA	26	8	1000	W9KFS	22	7	690
W4ATB	25	8	1320	W9CUX	21	7	800
W4MPL	25	8	1040	W9MNF	19	6	800
W4WNH	24	8	850	W9ALU	18	7	800
K4EUS	24	6	785	W9BJJ	37	9	1350
W4JJC	22	6	725	W9SMJ	29	9	1075
W4RBU	21	7	1080	W9LHD	31	8	1030
W4VFE	21	6	720	W9LFF	28	7	1050
W4LTV	20	6	1000	W9DPE	25	7	1300
W4KZ	20	6	720	W9RTF	23	7	900
W4OLK	20	6	720	W9INT	21	6	830
W4CPZ	18	6	650	W9TGC	21	7	870
W4RFR	18	7	820	W9RYG	20	8	925
W4MDA	17	6	750	W9G	19	7	1245
K4YUX	18	8	830	W9ALD	19	6	150
W4LNG	18	7	1080	W9JAS	18	6	130
				W9AZT	17	6	1100
W5RCH	35	9	1215	K9AQT	16	6	1120
W5AJG	30	9	1360	W9WFS	16	6	1100
W5WFL	25	7	1150				
W5DFH	28	9	1300	VE3DIR	30	8	1330
W5LFG	25	7	1000	VE3AB	28	8	1340
W5PZ	27	8	1300	VE3PQN	29	7	790
W5EYZ	26	9	1160	VE3DER	17	8	1340
W5KTD	24	8	1200	VE3AOG	18	8	1300
W5ML	16	5	700	VE3HW	17	7	1350
W5ESC	12	5	1390	VE2AOK	13	5	550
W5HYZ	12	5	1250	VE3BP	14	6	715
W5CVW	11	5	1180	VE2ABE	9	1	680
W5NDE	11	5	625	VE7FJ	2	1	365
W5VY	10	3	1200				
W5WV	10	3	600				
W5UNH	6	3	1200				
W5VYO	4	3	1330	KH6UK	1	2	3540

Word from another Geoff, VE2AIO, says that he enjoyed working the January v.h.f. Contest but deplors the lack of c.w. activity. Large gaps in his log although he could hear weak carriers most of the time; if these carriers had only been c.w. stations Geoff would have had more contacts than he could have handled. The aurora and sporadic E openings helped with contacts but should have had many more. Schedules have been resumed on 50.085 Mc. nightly with K1LZM at 0300Z, and have been quite successful.

Way back in November 1960, mention was made in this space of a signal heard by VE2AIO on 50.196 Mc. We made comment at the time that PEGJ calling PCH94 was probably a harmonic from a ship station. Now you just can't say that hams aren't cooperative; we've recently heard

from George, VK3ZCG, from whom we'll quote: "Here is info from *Alphabetical List of Call Signs* 17th edition, October 1955. The fixed station is PCRH4 Scheveningen Radio, Holland — transmits on 17237.6 kc., listens on 16712 to 16774 kc. The ship calling could have been PEGJ/Gertruida (Dutch)." George went on to say that all states in Australia have been highly v.h.f.-minded this season with a great amount of activity although there have been few openings. Only one excellent opening to ZL land. VK3ZFQ-8 did have some contacts on 50 Mc. to VK5, VK3 and VK2, but in general the sporadic E openings have not been as good as the two previous seasons. As for F2 openings, two occurred in VK land, the first on October 8th, second on November 18, 1960. The opening of the 18th of November was the strongest George has ever heard into JA1, JA7, and JA9. As to auroral openings, only one was observed and that on November 13, 1960, the first since the auroras of February and October 1958.

Floridians are keeping up their v.h.f. activity in fine style according to Dick Jones, K4BPB. Dick has been on six meters for about six months and finds activity high. Using a Seneca V.H.F.-1 to a 10-element antenna about 50' high and receiving on an NC-109 with converter he consistently works about 200 miles with S9 signals. A new call being heard in that area (Venice) is K4DU, ex-W9EQC, and from reports received Dick puts out a wallupin' signal. Activity from the southern states (both on the air and with the pen) seems to be doing quite well. K4HKG, Steve, in Lexington, North Carolina, tells us that on 12/8/60 he worked WA6FTZ; on January 5, 1961 he worked VE3CIA and VE1LT, on the 7th he worked CO2GX and CO2ZX, ending up that particular period by working K7CIN in Arizona on January 9 during an excellent opening.

Seems that sideband is slowly advancing on 50 Mc. After several months of successful schedules, W4CIN, K4EFM and K4VTA have terminated their experiment, reaching the conclusion that 50 Mc. work between the Atlanta and Birmingham areas can be highly dependable at power levels of 50-100 watts and 5-element beams, using average receiving gear. Next efforts along this line will be carried on by W4CIN using s.s.b. of about 100 watts input, same antenna and receiving gear. Object — to determine if improvement in propagation is great enough to make it popular as well as practical using this method. One more step forward for the v.h.f.ers who want to know! Another s.s.b. rig is being built by K3ADS/3 in Washington, D. C. Larry says his 800-watt p.e.p. sideband rig for 50 Mc. is nearing completion. TV is also working for 50 Mc. (?). Seems that K3CWG will soon (probably by this time) have slow scan TV on six meters, and that W3PFD has a partially completed TV using 5527 icon. These two boys are comparing notes and undoubtedly will come through.

From the seldom heard states of Maine and Vermont we hear that W1GTK is mobile on 50 Mc. at Northfield, Vermont, between sessions of study at Norwich University; and that W1CFJ/1 in Bridgton, Maine has installed a new rotor on the 50 Mc. beam. W1CFJ. 1 uses a TBS-50D on six. One more interesting bit of news, this time from John, W7MAH, sez that there are now two more 50 Mc. stations operating in the Reno, Nevada, area; K7JTV, Craig, and K7JUW, John. Hope we all hear a lot from those three. A comparative newcomer to the v.h.f. bands is Butch, K0QPA, who uses a modified Globe Hi-band with 55 watts on six and two meters and is experimenting on 220/432 Mc. with modified home-brew and surplus gear. Butch is planning to increase power via a linear amplifier either using 4 832-A's or a 4-250B on both six and two meters, with the idea of using this for band openings and ground wave only. (No comment.)

We decided to line up the reports of openings in one list to find out just who was having (or hearing) them on the same days. The opening on January 2, 1961, was reported by seven stations including four call areas. K2UOQ reported hearing an opening to the south and southwest; WA2BPE sez "an opening"; WA2BDP to the W4 area; WA2JGC-W4 area. K3CWG reports Opening, mostly Texas; K8SUJ sez-Alabama and Florida; K9TFJ sez-4 land. That's the list for January 2. According to the foregoing, there just must have been some 4's and 5's hearing skip also, but no reports received from them. K8BGZ reports an opening on January 3 to Florida and Texas; the only report received for that day. WA2BDP, WA2BPE, K3CWG and K3MDL report an opening on the 4th to VE1 land. K3MDL also heard W1's, 5's, 6's and 8's on that date.



"Worked All Rochester" award, just a-waitin' for you to claim it.

K1CXX, the only New England station reporting for that day, was hearing Pennsylvania, Maryland, Delaware, and was hearing stations as high as 52 Mc. K4KYL in Tennessee was hearing Florida, Texas, Nova Scotia, Massachusetts, Rhode Island and Maine. On the 5th of January K4KYI, K2UOQ and W1RJY all heard VE1QY in Nova Scotia; K4KYL was also hearing all of New England, New York and New Jersey; K2UOQ heard skip stations to the south and west. K1CXX was hearing Pennsylvania, Maryland and Delaware, while K9TFJ and K8SUJ heard W1's and 2's; and K8BGZ was hearing 1's, eastern New York and Pennsylvania. The opening of January 8 was reported from five call areas: for W1EXZ (Vermont) it was open to Minnesota, Illinois and Indiana while for W1IAU the band was open to the 4th and 5th call areas from his QTH in Massachusetts. W6IEY was hearing W7's on that particular day, 7's in Washington, Oregon and Idaho; and W7MAH in Nevada heard the 5's. K9TFU worked W1OXQ in Rhode Island and K9PNP found the band open to the east coast. Final report for January 8 was from K0GIC hearing Arizona, Idaho and California. During the January V.H.F. Sweepstakes, January 7, W1EXZ and K1KUY, both had short skip to the south and southwest, from Florida to Tennessee. K2UOQ sez South and West on the 7th; K3CWG was hearing 5's for a short period, and K4KYL heard New England, New York and Pennsylvania. W6IEY had an opening once more to 7 land on January 7, and K8SUJ heard Oklahoma, Texas and Missouri while K8BGZ heard Florida and Georgia. W9EET completes the report for this date by hearing Virginia, North Carolina and Texas. Seems like one of the things this listing is doing is assuring us all that all openings cannot be caught by many of us. On the 9th, K4KYL heard Texas, Oklahoma, Colorado and Kansas, and W7MAH had the band open to 5 and 0 land. K6SIX is also hearing 5's and 6's plus the 7's in Washington and Oregon. K9PNP was hearing east coast stations while K9TFJ and W9EET were hearing and working Texas. W9EET needs only Nevada, Hawaii and Alaska for WAS on 50 Mc. K0GIC did the best of anyone we've heard from for that day, hearing Tennessee, Alabama, North and South Carolina, Florida, Texas, New Mexico, Louisiana and Nevada. K9PNP was the only one to report an opening on January 6, when the band was open for him to the W1, 2, and 3 call areas; also the only one to report an opening on the 10th of January to 6's and 5's. On January 20, K4KYL reports the band open to Texas, and on the 21st K9FFJ sez he was hearing the 4's. The foregoing is a complete list, at time of writing, as to openings reported for specific dates in the first month of '61. For the month in general W9PNE had two openings to W0 and one to W7 lands; K8AEM sez that six-meter openings were poor during January. WA6BFC reports six meters dead, while K4DZP had good openings with at least one of them to Mexico. W4CIN had a good month with openings to Cuba, South America, Mexico, northeastern U. S. and northwestern U. S. although he says that the openings are not as plentiful nor as good as last year. From the W2 area, K2TWL reports 50 Mc. poor except for a couple of days around 10:00 a.m.

Information of note received from VK3UM has it that Australian amateurs have a temporary extension of the use of 50 to 54 Mc., and presently are able to use both this band and 56 to 60 Mc. They also have 144 to 148 Mc., at least on a temporary basis.

## Clubs and Nets

"The Rochester V.H.F. Group" presents an award to v.h.f. operators on the bands above 50 Mc. known as the "Worked All Rochester Certificate". You are eligible if: You are located within 25 airline miles of the intersection of Main St. and Clinton Ave. in Rochester, New York and have worked 25 or more Rochester v.h.f. stations since January 1, 1949 from a single fixed location. Or—if you are located at a distance greater than 25 airline miles from the intersection of Main Street and Clinton Avenue in Rochester, New York, and have worked 15 or more Rochester V.H.F. stations since January 1, 1949 from a single fixed location. To obtain same send for "WAR" certificate application to Harold C. Smith, WA2KND, 153 Mason Avenue, Rochester 15, New York. To date 125 certificates have been issued, all in the "ground-wave" area.

Word has been received of formation of a new v.h.f. group in North Carolina. On January 29, 1961, the "Carolina V.H.F. Society" was formed.

K9QPA, K9TSU, K9ZMZ, and K9ZTP have started a local net in Chicago called "The Perfect-Copy Rag-Chewers Net of Chicago". This is purely a "rag-chew" net with only requirement being membership in "RCC" Net meets at 2000 CST on 50.450 Mc.

### 144 Mc.

Hardly anyone is claiming any new or startling contacts for last month. One measly little aurora opening netted a new state for John, W2LSX, with K1CXX in Maine. This opening went out to W9 land and John logged W9QXP, W9EGH, VE3DIR, K4VVE, W8BAX and many others, but nothing from W6 land or from the "deep" south. Incidentally, John operates c.w. on 144.013 around 2200 EST and is looking for schedules. Speaking of schedules, G3LTF, G3CCH and G5YV are out after some m.s. schedules. Any Europeans or North African 144-Mc. operators please note. I don't suppose they would turn down a W or VE sked if it were offered.

We also received a request for information leading to a schedule with a 144-Mc. station in Mexico. W5UQR is particularly interested in tropo skeds, along, around or over the Gulf of Mexico.

Speaking of the sunny south, we received notice that the Syracuse V.H.F. Roundup will be held October 14, 1961. Same place, same time. Chuck, K2TXX, promises a real "do" this time and hopes to top them all. The Syracuse V.H.F. Club, in addition to holding their yearly "Roundup," are also active as a contest club. Their SS score was up this year by 12,000 points. While we are on the subject, we note that the Southern California V.H.F. Radio Club whipped up an aggregate club score of 55,020 points. Quite an effort for any location. Speaking of California K6BX (Certificate Hunters' Club) tells me that George, W3FEY/W1UIZ was the first ham to make the Certificate Hunters' Club on v.h.f. alone. In view of the fact that v.h.f. net certificates do not count, this is quite an accomplishment. If you are interested in how tough it is, you might drop Cliff, K6BX, a line at Box 385, Bonita, California.

We (Helen and I) expect to be in attendance at the Delta Division ARRL Convention in Chattanooga, Tennessee on April 7, 8, 9, and at the Dayton Hamvention in Dayton, Ohio on April 29 and 30. Sure looking forward to meeting you there.

### 220 Mc. and Up

Just received a copy of what is claimed to be the first amateur RTTY contact on the 1215-Mc. band. W6TJP completed a solid 30-minute contact with W6CG and followed it up with another contact with K6OWQ. Equipment consisted of converted APX6's feeding corner reflector antennas. A.f.s.k. was used by all. W9OKB and W9MJJ are having contacts on 1225 Mc. using APX6's. They are looking for any other APX6 stations in the Chicago area. And from Wheaton, Illinois, Jerry, W9QXP, sends a status report on Project Moon Bounce. Seems like Jerry and Dave (K9CNN) have really been working. Their 16-foot dish is completed. The dish is horn fed and the supporting mast for the horn is also the feedline. The feedline is homemade, using 2-inch aluminum irrigation tubing for the outer conductor and 3/4-inch copper tubing for the inner conductor. The equatorial mount for the dish is still in the planning stage. Converter and parametric amplifier are completed. The final amplifier uses a 6L6283 and is complete except for silver plating. Jerry and Dave (and their long suffering wives) are finding out the same thing that W8LIO discovered; moon bounce via the home-made route isn't easy and it isn't cheap, but it is possible.

### Tape Lecture on V.h.f. Propagation

Looking for radio club program material? If your club is affiliated with ARRL you can have a tape-recorded talk on v.h.f. propagation by Edward P. Tilton, WIHDQ, V.h.f. Editor of QST.

This popular tape has been revised to include all known forms of long-distance propagation on the frequencies above 50 Mc., with an explanation and short representative samples of each. Tropospheric bending, sporadic-E skip, auroral propagation, worldwide F<sub>2</sub>-layer DX, reflections from meter trails, tropospheric and ionospheric scatter, night-time transequatorial propagation and moon-bounce signals are heard. The samples are all from *on-the-air tests or communication*, and they include some of the great moments of v.h.f. history, such as the W6NLZ-K1I6UK 144-Mc. QSO, a complete two-way contact via meteor scatter, the first moon-reflected amateur signals, and the first moon-bounce two-way. All bands from 50 to 1300 Mc. are represented, and some of the recordings date back as much as 20 years.

Instructive, entertaining and inspirational, it is a must for v.h.f. groups. To be sure of having it on schedule, ask for it as far in advance of the desired date as possible, and give an alternate date if you can. Running time: approximately one hour. Write ARRL Training Aids. QST-

### 220- and 420-MC. STANDINGS

220 MC.							
W1JR	11	4	480	W9FQC	11	5	740
W1AZK	9	3	412	W9JCS	5	2	340
W1HDQ	11	5	450	W9JEP	6	4	540
W1OHI	12	4	460	W9OVL	6	3	475
W1RFL	15	5	480	W9UED	4	4	605
W1UHE	11	4	385	W9ZIH	10	5	500
W2AOC	13	5	450	K0DGU	3	3	425
K2AAX	8	3	330	K0TPE	6	3	515
K2CBA	10	4	425	KH6UK	1	1	2540
K2DHC	4	3	140	VE3AIB	7	4	450
W2DWJ	15	6	740				
W2DZA	12	5	410	420 MC.			
K2KIB	12	4	300	WIHDQ	8	3	210
W2LRJ	10	4	250	W1MFT	8	3	170
W2NTY	12	5	300	W1RFU	7	4	410
K2PZ	11	4	190	W1OOP	10	3	390
W2LWT	11	4	400	W1AJR	8	3	230
K2QJQ	13	5	540	W1UHE	6	4	430
W2SEU	4	2	150	W2AOD	6	4	290
W3AHQ	4	3	180	W2BIV	12	5	360
W3FEY	10	4	295	W2DWJ	10	4	195
W3JYL	8	4	180	K2TBA	5	3	225
W3JZJ	4	3	250	W2DZA	5	3	130
W3KKN	10	4	255	W2NTY	3	2	100
W3LCC	8	5	300	W2OTA	9	3	200
W3LZD	15	5	425	K2OUR	7	3	175
W3RUE	9	5	450	K2KIB	4	2	100
W3UJG	13	5	400	K3RDE	6	3	250
W3ZRF	5	4	112	W3FEY	7	2	225
K4TFU	8	4	400	W3RUE	2	2	96
W4UYB	7	5	320	W4HHK	5	4	550
W4UMF	11	5	420	W4VVE	6	4	410
W5AJG	3	2	1050	W5HTZ	3	2	400
W5RUC	4	5	700	W6RTG	1	1	180
W6NLC	3	2	2540	W5RCL	9	3	600
K6GFG	2	1	240	W7LHL	2	1	180
W6MIU	2	2	225	W8HCC	3	2	355
K7ICW	7	1	250	W8HRC	3	2	250
K8AXU	10	5	1050	W8JLC	4	2	275
W8WJB	4	5	475	W8NRM	3	2	390
W8LFD	6	4	480	W8RQL	4	2	270
W8NRM	8	4	390	W8PT	4	3	310
W8PT	10	5	660	W8TTY	4	4	580
W8SVL	6	4	520	W9GAB	9	4	608
W9AAG	9	4	600	W9AAG	5	3	375

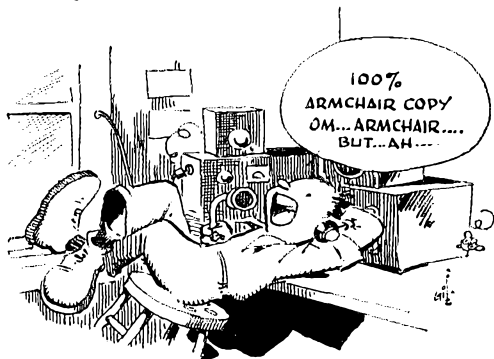
# Roger - - - Roger

BY JOHN G. TROSTER,\* W6ISQ

**W**LAW — W1AW in Connecticut. This is W6ISQ returning. Roger, Roger. All OK, OM. Practically 100% that time. Little QRM now and then, that's all. You've got a terrific signal in here today. Real punch. One of the best east coast signals, too, and that's saying a lot with the way the band is these days.

"There was a little QRM on you like I said though and I missed your handle, OM. Just as you gave your name a real strong K9 came on and blanked you out; so, I didn't quite get the handle. So you might pass that along. Also didn't get your QTH there, OM. A local came on and clobbered you and the 9 just as you said where you were. I did get the Connecticut part though; so, just pass on the name of the town so's I can get it down in the log here, OM.

"No fooling, though, when you are in the clear you really pound through here. Real beautiful armchair copy and a joy to listen to. Especially like your modulation. Very, very nice modulation. Believe you mentioned something about your modulator and about clipping or something. Didn't quite copy that part. Anyway, sounds as though you must have some sort of clipping or something to help you ram that terrific sig through all that QRM.



"Would sure like to get another run-down on that rig of yours. You started to mention what you were using there but you went into a fast fade about that time and all I got was something about your second doubler — I believe it was the second doubler. So I'd really appreciate hearing what you're using back there to put through such a terrific sig. Oh yes, you might let me know how much power you're using too. A real sock all right. Probably running fairly high power, I'd guess, to put in a sig like that.

"Let's see now. Oh yes, one other thing, old man. A five came on just as you mentioned what antenna you were using. Sure wish you'd repeat that dope because any antenna putting out a sig like that, I'd like to know about for sure. So you might let me know about that.

\* 45 Laurel Avenue, Atherton, California.

"Glad to hear you're having such nice weather there. Raining I guess you said. We don't get much rain here.

"No fooling, OM, you really pour a fine sig in here when you're in the clear. Good solid S9 plus and Q5 all the way — except when the QRM comes on. 100% armchair copy. Real nice sig.

"QRX one while I check the frequency.

"OK. It's pretty clear now. Coupla fours heterodyning each other. But maybe you can give me the dope before that 9 or the local come back on. So what did you say your handle was, OM? And you might let me know what you're using there for a rig, also the antenna. Oh yeah — what about the receiver? Guess you forgot to mention that — or I didn't copy it through the QRM.

"And, oh say, OM, if you can kick the power there a little it might help — or maybe rotate your beam a little, if you have a beam. Might get your sig up out of the S7 line noise here and some of the QRM. So what say? W1AW somewhere in Connecticut — this is W6ISQ listening. K."

## Strays



Invited to NBC's Los Angeles studios under the pretext of doing a brief TV interview for local release, Lenore Kingston Conn, W6NAZ, suddenly discovers she is the subject of the nationwide telecast show, "This is Your Life," aired February 26. Here are Roy Neal, K6DUE, NBC news producer who pulled the trick; Ralph Edwards, the show's MC; Lenore, who was a most effective ambassador for ham radio throughout the program; and "Butch" Weyer, W2LLZ, her daily sked of some 15 continuous years. Other surprises for Lenore were the appearances of Takeo Hama, J8AA; Bob Purcell, W6RGM, KFWB president; and several military personnel from such places as Fletcher's Island and Antarctica—all of whom paid deserved tribute to a charming young lady and her amateur public service accomplishments. No surprise, however, was the appearance of husband Joe Conn, W6MSC, NBC technical director for the show.

## Licensing Notes Canadian Mobile Amateur Week

### AMATEUR LICENSE SUSPENSIONS

The Conditional Class license of Dennis J. Alkire, W7EMN, of Spokane, Washington, was suspended for a period of six months for transferring his license to another individual, with the advice that the person could operate as W7EMN while awaiting issuance of his own license. The suspension, not contested, went into effect August 9, 1960. (*Section 310 (b) of the Communications Act*)

A Novice lost his license for operating on phone at 7,224 kc. from the station of a radio club. Bert F. Christman, WV6IVP, of Colma, California, did not contest the FCC action, which suspended his license from August 16, 1960 to its expiration date in October. (*Sections 12.23.(c) and 12.23 of the Rules Governing the Amateur Service*)

A Technician Class license was suspended for two months after the licensee, Robert Adamitis, K9MDO, of Chicago was found to have transmitted in the 15-meter phone band on several occasions. The amateur did not request a hearing and the suspension went into effect on August 13, 1960. (*Sections 12.23(d) and 12.23 of the Rules*)

A similar action resulted in a two-month suspension for Eugene P. Rossier of Brockton, Mass., another Technician, who operated his station K1AZO several times in the ten-meter band. In addition, the amateur had operated at an unauthorized location and failed to answer Commission correspondence on the subject. The suspension became effective on August 13, 1960. (*Sections 12.23 (d), 12.28, 12.64, and 12.155 of the Rules*)

Walter R. Farley, K4CE, of Homestead, Florida, the holder of a General Class license, was cited for operation on 28.495 Mc. using A-3, and for failing to reply to an Official Notice of Violation and to a letter from the Commission. Originally, the license was ordered and suspended for the remainder of the license term, but Mr. Farley filed a written statement in lieu of a hearing. On the basis of the explanations given therein, the FCC modified its order so as to suspend the license for 30 days, effective October 20, 1960. (*Section 12.111-(g), 12.155 and 1.61 of the Rules*)

See page 10 of this issue for a correction on a previous suspension item.

### LICENSING NOTES

The revised FCC Forms 610 (and 610-A for the special cases of club stations, second individual stations, and amateur stations on military bases for recreational purposes) are now getting into distribution. Old forms may be used until June 30th this year, along with renewal form 405-A which is also discontinued after that date. See p. 63, January *QST*. Some things to watch:

New Form 610 will cover all individual operator or operator-and-station license applications, whether new, modified, duplicate or renewal. (The use of renewal form 405-A is optional until June 30). Renewal applications on Form 610 may be submitted only within 60 days prior to expiration (not 120 days, as before). All applications on Form 610 require the submission of your current amateur license. Note in your log the date of submission of application and license. If application is for renewal, and has been mailed so as to reach the Commission prior to expiration, you may continue operating even past the expiration date if FCC is not able to get your renewed license back promptly. If you fail to apply for renewal before expiration, you have a one-year period of grace in which to file for renewal; however, in such event you may not continue operation but must await receipt of renewed license.

Fill out *all* pertinent portions of the application form. FCC's licensing-processing system is badly slowed down by incomplete and inaccurate applications which have to be returned. *Be careful!*

This year, 1961, is another peak in the 5-year cycle of renewals which commenced with our return to the air in late 1945 and early 1946. The workload is heavy. Do not write FCC to inquire about your license application, whether new or renewal. Wait at least two months after submission: if nothing is heard by then, check first with ARRL Hq.

### NATIONAL AMATEUR RADIO WEEK

Rep. William Ryan (D-NY) has introduced into the Congress a bill, H.J. Res. 188, authorizing the President to establish and proclaim a National National Amateur Radio Week each year. Said week would customarily be that culminating in the ARRL Field Day. The bill has been referred to the Committee on the Judiciary.

A similar bill in an earlier Congress died in committee. Thus, we again urge amateurs to write their Congressional representatives seeking release of the bill from committee and early passage. It would especially be desirable for amateurs in states having Representatives on the Judiciary

Committee to write similarly urging action on the bill in recognition of the amateur's public service record. A list of the committee members follows:

Emanuel Celler, Chm., New York; Francis E. Walter, Pa.; Thomas J. Lane, Mass.; Michael A. Feighan, Ohio; Frank Chelf, Ky.; Edwin E. Willis, La.; Peter W. Rodino, jr., New Jersey; E. L. Forrester, Ga.; Byron G. Rogers, Colorado; Harold D. Donohue, Mass.; Jack Brooks, Texas; William M. Tuck, Va.; Robert T. Ashmore, S. C.; John Dowdy, Texas; Lester Holtzman, New York; Basil L. Whitener, N. C.; Roland V. Libonati, Ill.; J. Carlton Loser, Tenn.; Herman Toll, Pa.; Robert W. Kastenmeier, Wisconsin; William M. McCulloch, Ohio; William E. Miller, New York; Richard H. Poff, Va.; William C. Cramer, Florida; Arch A. Moore, jr., W. Va.; H. Allen Smith, California; George Meader, Michigan; William T. Cahill, New Jersey; John V. Lindsay, New York; John H. Ray, New York.

### FEEDBACK

This department in January *QST* erroneously reported that new Southwestern Division Vice Director Howard Shepherd, W6QJW, was also SEC. Howard had indeed held the post several years earlier, but since 1956 the Los Angeles SEC has been Tim Huntley, W6LIP. Our apologies, OMs!

### VE MOBILE CHANGES

Canadian amateur regulations have been revised so as to permit mobile operation in *any* motor vehicle (previously the vehicle had to be registered in the name of the amateur), and also to allow aeronautical mobile.

Aero mobile aboard private aircraft is now permitted with approval of the pilot and after an inspection by a representative of the Department of Transport. The installation must be independent of the regular aircraft radio equipment and must not interfere with such equipment. Within Canada, all bands except 1.8-2.0 Mc. may be used; on the high seas, 14,000-14,250, 21,000-21,450 and 28,000-29,700 kc. may be used; within the territory of another government, express authority of that government must be secured. QST

### Strays

The mobile whip on the family car has often resulted in criticism. Recently the XYL was involved in a minor accident. She told me that the man in the other car used the most vulgar language until suddenly a child's voice rang out, "Daddy, that's a policeman's car." — W6WFR

— . . . —

Here's one way to guarantee that the QSL card destined for yourself is addressed correctly. Work the other station on RTTY, and at the conclusion of the QSO have him insert his QSL in the machine and you type out your own address. K8OGA and W4RHZ did this.

— . . . —

Ever wonder whether the FCC is on the ball? Darn right they are! For example, it appears to have been the FCC's monitoring stations that got the first accurate fixes on the hijacked Portuguese liner *Santa Maria*, in late January.

### SIXTH ANNUAL PACC CONTEST

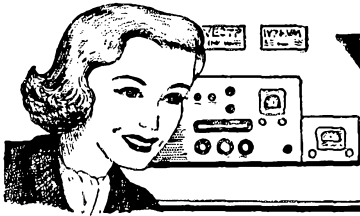
Netherlands' VERON invites amateurs throughout the world to participate in the Sixth Annual PACC Contest to be held (c.w.) 1200 GMT April 29 to 2000 GMT April 30; the phone contest is the following week end May 6-7 same times.

Stations outside Holland will strive to contact PA stations once per band by calling "CQ PA" and exchanging the usual RST001, RST002, etc., serials ("T" omitted on phone, of course). Count three points for each completed contact. For final score multiply QSO points by the number of Netherlands band-multipliers collected, these based on Dutch provinces as indicated by the following suffixes appended to PA call signs: DR, Drente; FT, Friesland; GD, Gelderland; GR, Groningen; LE, Limburg; NB, Noord-Brabant; NH, Noord-Holland; OV, Overijssel; UT, Utrecht; ZH, Zuid-Holland; ZL, Zeeland. To be eligible for merit certificates, logs must be mailed to Contest Manager P.v.d. Berg, PA0VB, VERON, Keizerstraat 54, Gouda, Netherlands, no later than June 15, 1961.

### Silent Keys

It is with deep regret that we record the passing of these amateurs:

K1ABQ, Frank G. Smith, Amesbury, Mass.  
 W1FSY, Ernest G. Johnson, Trumbull, Conn.  
 K1JAD, Rev. Gordon F. Knight, Norwalk, Conn.  
 W1LMG, William S. Sadlier, Boston, Mass.  
 W2AZV, Edward L. Baunaeh, Massapequa, N. Y.  
 ex-2BCF, Samuel Kopelson, New York, N. Y.  
 K2CND, Dr. Thomas Killip, Pittsford, N. Y.  
 W2CQF, James L. Bernard, jr., Eatontown, N. J.  
 W2DFR, Rudolph Faerberach, sr., Millville, N. J.  
 K2HL, Richard C. Jensen, Baldwinsville, N. Y.  
 W2UQU, Walter L. Stewart, Oradell, N. J.  
 ex-W2XR, John V. L. Hogan, New York, N. Y.  
 ex-W3BRG, Harold P. Diehl, Birdsboro, Penn.  
 W3JZB, William R. Wendel, Selingsgrove, Penn.  
 W3LWM, Harold L. Swartz, Williamsport, Penn.  
 W4BCQ, Marion B. Henderson, Atlanta, Ga.  
 W4BIX, LeRoy A. Andrews, Falls Church, Va.  
 W4FU, Bert L. Brown, Covington, Ky.  
 K4GON, Michael Chaputa, Miami, Fla.  
 W4UY, Karl F. Sneider, Jetersville, Va.  
 W4VP, ex-K2CQ, Dr. Milton I. Schwalbe, Arlington, Va.  
 W5BCG, Walter C. Douglas, Beaumont, Tex.  
 K5PED, Wayne T. Huggett, Huntington, N. Y.  
 W6HIX, Charles L. Worthley, Alhambra, Calif.  
 W6OZN, Raymond L. Lithgow, Hollywood, Calif.  
 ex-W6RXC, Ralph O. Dow, Las Vegas, Nev.  
 W6UXV, George L. Stafford, Temple City, Calif.  
 W6WCP, William R. Blake, San Francisco, Calif.  
 W7AXO, Arthur S. Olsen, Portland, Oreg.  
 K7BZT, Anthony Baldasar, Fall City, Wash.  
 W7EAT, Lloyd C. Peffy, Aloha, Wash.  
 W7ED, R. Earl Dawes, Bozeman, Mont.  
 W7RLN, Gene F. Schermerhorn, Eureka, Mont.  
 ex-8EZ, Cndr. Thomas M. Hale, Cutler Ridge, Fla.  
 W8FWL, William R. Corzatt, Warren, Ohio  
 K8IGS, Jules P. Dwyer, Stow, Ohio  
 K9LJW, John C. Fredricksen, Gary, Ind.  
 K9OZI, William L. Wohl, Aurora, Ill.  
 W9USI, John Grimm, Wilmette, Ill.  
 W0ADX, Virgil A. Swanson, Minneapolis, Minn.  
 K0AQP, Richard S. Bennett, Fort Dodge, Iowa  
 K0MAB, Lt. Hugh P. Sams, Hutchinson, Kan.  
 W0SEW, John T. Calhoun, Minneapolis, Minn.  
 W0WLY, Dr. George H. Clough, Clear Lake, Iowa  
 W0YAZ, Dean M. Alderman, Grey Eagle, Minn.  
 W0YTP, Frederick Weyerhaeuser, St. Paul, Minn.  
 G3LFL, George A. Western, Torquay, Devon, England  
 VE1CR, C. R. Rogers, Sydney, N. S., Canada  
 VE3ND, Douglas H. Nelles, Ottawa, Ont., Canada



# YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,\* W1QON

## TRIBUTE FROM THE MILITARY TO K1LQZ AND K6ZKH

THE following information is quoted from a letter received from Captain C. E. Sharp, Commanding Officer of the U. S. Coast Guard Cutter *Cook Inlet*, as an expression of gratitude to "a wonderful lady ham who helped make Christmas 1960 for the cutter's crew, one to remember."

The outlook for a happy Christmas season for the officers and crew was bleak when the Coast Guard Cutter *Cook Inlet* departed her home port of Portland, Maine, on 10 December. The *Cook Inlet* was enroute to a six week patrol of ocean station Charlie which would extend over Christmas and New Year. Ocean station Charlie is a geographical point on the North Atlantic Ocean where the ship must maintain position in the face of storm after storm carrying out her mission of providing weather observations, navigational aids, communication services and Search and Rescue for aircraft flying the routes to Europe.

However, the crew became optimistic when word was passed that the Medical Officer assigned to this patrol, Dr. Bernard Marsh, USPHS, was a radio ham and had permission to have his rig aboard for the patrol. Visions of family traffic danced through their heads. Doc, after a brief session of *mal de mer*, was soon filling the air with CQs for anyone in the Portland area. He had contact with hams everywhere but in the Portland area.

The good hams contacted passed the word around and shortly thereafter, first contact with Portland was made with John, K1ADO, Herb, K1JDA, and Peggy, K1GSF, and the *Cook Inlet* had been adopted by the hams of Portland and no orphan has had better foster parents.

Messages were passed from the men to their

\* YL Editor, QST: Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.



In appreciation of her service to Patrol Squadron 19 K6ZKH was presented with an engraved silver silent butler.

families. Again the hams rallied and decided that there was a Portland ham who could carry the ball, and Angie, K1LQZ, was called. A schedule was soon arranged and Angie then spent four to five hours a day handling traffic for the ship.

Angie's Christmas shopping was delayed and housework rushed for whenever the band was clear, Angie was at her rig. Fortunately, Angie's husband Dave, W1LHD, is also a ham, and when he came home for lunch and found Angie on the air, he made the sandwiches and then helped with traffic during his lunch hour.

On Christmas Day many a man was seen to wipe a tear from his eye when a child's voice was saying: "Daddy, Santa brought me a doll and. . . ." Angie was bringing cheers to the men of the *Cook Inlet* as they performed their duties in the North Atlantic during the Christmas season 1960.

The entire crew of the *Cook Inlet* and their families have fallen in love with Angie. The officers, crew and families of the Coast Guard Cutter *Cook Inlet* think that Angie Richards, K1LQZ, is the "Ham of the Year."

And in a letter to Marge Carter, K6ZKH, of Atherton, California, Commander B. B. Smith, Commanding Officer Patrol Squadron 19, U. S. Navy, wrote the following:

At a special ceremony aboard the ship K1LQZ was made an honorary member of the *Cook Inlet* crew—believed to be a first in Coast Guard history.



QST for



"It is a pleasure for me to be able to express to you the heartfelt thanks and gratitude of our squadron personnel for your cooperation in handling [traffic] with our families this past summer while we were deployed to Kodiak, Alaska."

Hal Moore, W6DEF, EC for Redwood City, Atherton, and Menlo Park, California, gives further information on K6ZKH. Averaging between 85-100 messages a month, Marge's call is well-known to overseas stations from Alaska to Okinawa to the Antarctic seeking stateside connections for servicemen. From 1400 GMT to about 0100 GMT Monday through Friday K6ZKH is at her rig ready to handle traffic, read off the major league ball scores, or help the servicemen in any way she can from the home end. A member of the BAYLARC of San Francisco, Marge is the XYL of K6ZNQ. Though a c.w. operator himself, Dick prefers to stand by and let Marge do the honors.



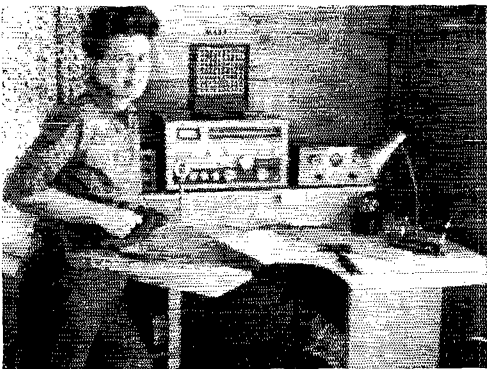
W1ICV's DXCC record is 80 countries worked, 153 confirmed. Jane's OM, W1OOS, is also DXCC with 200 countries plus. The DXing Andersons of Terryville, Conn., use an HT-30 exciter, HT-31 linear and another linear amplifier using a pair of 4-400As. They receive with an HRO-60 and have beams on 20 and 10 and doublets on 80 and 40.



Five years ago she "didn't know a ham in the world" and now Kay Gaynor, K2UKQ, has become the first amateur to win K6BX "Hunt the Hunters" award for working 25 members of the Certificate Hunters' Club. Strictly a c.w. gal, K2UKQ has a total of 40 awards to date, including 200 countries confirmed for DXCC. Kay says she is continuously amazed that she is the first U. S. YL contact for countless DX stations. (There's still some intrigue left for YLs in DXing, wouldn't you say?)



DXCC YL W1YPH of Stoneham, Mass., spends 99% of her operating time on 15 and 20 c.w. Licensed several years ago but a DX chaser for little more than a year, Leona says that when a new country QSL arrives, it's like Christmas at the Peacor QTH. Leona's OM is W1GAG and daughter-in-law Jean is K1IJV.



K1LCI—do-it-yourselfer cum laude! From floor to ceiling Ginny Powell built eighty per cent of her 20' x 24' shack, with its 15 window view of Damariscotta, Maine. A professional artist, the wife of a doctor, W1BWM, and mother of four children, Ginny was high Maine scorer, both phone and c.w., in the last YLRL AP.



In a punning way KN8YGC says she resorts to either for work and play—in her work as chief anesthetist at the Monroe General Hospital in Monroe, Michigan, and for play after hours on 160 meters. Connie thanks ARRL publications and local hams for her start in amateur radio.



**DXCC YL OA4HK** is ex-W5JJK. Now a school teacher in Lima, Peru, Jean has both her phone and phone/c.w. certificates.

### DXCC YLs

In keeping with the format for the general list of DXCC members published in Dec. 1960 *QST*, our YL DXCC records are hereby brought up-to-date with the following list concerning only those YLs who have submitted confirmation to ARRL during the period from Oct. 1, 1959 thru Jan. 31, 1961. (Our last YL DXCC list, which appeared in the May 1959 column, contained the calls of all YLs who held the Postwar DXCC award.) Thanks to W1WPO of headquarters for furnishing this information. The number and date following the call letters is the number of the certificate and the date it was issued.

### PHONE

KR6HL	1705	12- 1-59
K9KKR	1795	4-11-60
YV5AFF	1845	6- 2-60
OA4HK	1856	7- 1-60
K9LUI	1920	9-15-60
K0MIAS	1969	12- 6-60
DJ3YL	1970	12-13-60

### C.W./PHONE

G6YL	4774	1-28-60
SM5AE	4796	2-11-60
ZL2JO	4832	3- 2-60
W1ICV	4848	3-11-60
OA4HK	5096	7- 1-60
VE7ADR	5174	8-22-60
HB9YL	5205	9-16-60
K8ONV	5310	11-14-60
W4YYJ	5323	11-23-60
W1YPH	5372	12-29-60
W5JCY	5411	1-30-61

### 1961 AWTAR

The 1961 All Woman Transcontinental Air Race will start at Montgomery Field, San Diego, California on July 8 and will terminate on July 12 at NAFEC (National Aviation Facilities Experimental Center) at Atlantic City, New Jersey. This year's rare course of 2709 miles will cover a route via Yuma and Tucson, Arizona; El Paso, Midland, Abilene and Dallas, Texas; Shreveport, Louisiana; Jackson,

Mississippi; Montgomery, Alabama; Greenville, So. Carolina; Lynchburg, Virginia; and Hagerstown, Maryland.

Carolyn Currens, W3GTC, of Norristown, Pa., will supervise the AWTAR amateur radio net for the fourth year. Carolyn would appreciate offers of assistance from amateurs who live in cities along the flight route. Contact W3GTC, P.O. Box 523, Norristown, Pa., if you would like to assist in this interesting operation.

### OREGON ELIZABETH CERTIFICATE

W7NJS sends rules for a new YL certificate. Among the YLs in Oregon a number have the given name "Elizabeth" or a derivative of that name (Betty, Bessie, Beth, etc.). The Oregon Elizabeth certificate is offered to radio amateurs who furnish proof of contact with five so-named YLs in the state. QSLs, or other proof of contact, should be mailed first class to custodian Beth Taylor, W7NJS, Manzanita, Oregon. Endorsements will be issued for each five additional "Oregon Elizabeth" contacts.

### COMING EVENTS

**YL-VHF Contest**—sponsored by the YLRL, April 12 and 13. See rules in last month's column.

**Third California YL Get-Together**—May 12, 13, and 14 at the El Cortez Hotel, San Diego. Contact W6VSL for details.

**W7RONE**—Annual luncheon May 6 at the famous Public House, Sturbridge, Mass. Contact K1ICW, Mary McLam, 89 Denison Lane, Southbridge, Mass. N. E. YLs are reminded of a YL meeting in conjunction with the ARRL N. E. convention, April 8 and 9 at Swampscott, Mass.

**1961 AWTAR**—July 8-12. See item concerning the 15th annual All Woman Transcontinental Air Race.

### WAC-RTTY to K6OWQ

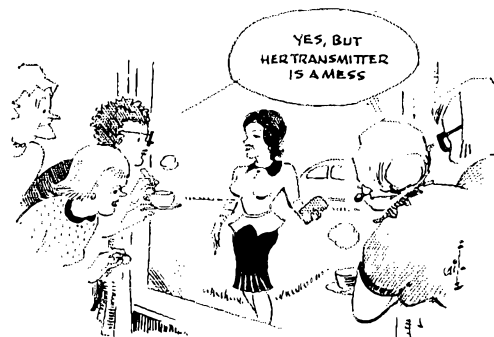
Mary Schultz, K6OWQ, has been awarded the third WAC-RTTY certificate issued by the Southern California Amateur Radio Society. A difficult award to obtain because of the scarcity of RTTY stations throughout the six continents, it took Mary seven long years of frustration to acquire the award.



In Oakland County, Mich., three radio clubs (the Oakland County, Oak Park, and Catalpa Radio Clubs) have established the AREC Amateur Radio Award. It is to be presented annually to a radio amateur in their area who has performed meritorious service to the community and to amateur radio. In this manner the clubs hope to stimulate amateurs to participate to a greater extent in such activities as the AREC and to make the general public more aware of the contributions that amateur radio is making in the community. Recipient of the first award was W8BXO, who, despite the heavy demands of his medical practice, has consistently found time to help youth get started in amateur radio, to participate in disaster communications, and to schedule and give assistance to missionaries in many distant outposts.

W3DQ (403 Delaware Ave., Wilmington 1, Del.) wants the names and calls of all hams who are members of the Reserve Officers Association, and then he's going to publish a ROAHAM directory.

All hams in the San Antonio area are invited to visit him at the ROA convention at the Gunther Hotel June 28-30.





# How's DX?



CONDUCTED BY ROD NEWKIRK,\* W9BRD

## Which?

Even news-feature syndicates are getting into the new-countries act. "The Walser Valley," states a recent Ripley's *Believe-It-or-Not*, "is administered by Germany and is completely surrounded by German territory — yet it is part of Austria."

Okay, we'll believe that, so far as it goes. The Ripley sketch shows some skiers, an alpine-type village, lots of snow, a mountainous background and an auto. How come the DJ/DLs are sleeping on this one? Or is the OE gang holding out? By golly, Walser may already be active, for all we know, although we discern no Zepps or rotaries in the Ripley drawing. *Was ist lös?*

This reminds us that we haven't run a DX quiz for quite a while. Jeeves was poking around in his *Rand-McNally* for Walser Valley and came up with an interesting one-question examination: What three foreign countries are closest to the United States? Unless you're an inveterate globe twirler, No. 3 and its proximity will surprise you.

— \* \* \* —

Time out for some fundamentals on a subject we haven't kicked around since December 1956 *QST*, dear readers. Nothing very complex or abstract, just a few simple considerations concerning the importance, the indispensability, of QSLs.

When you think you've just completed a QSO with, say, ZK2AB and have finished filling out your log, have you worked Niue? Possibly. Very probably. Indeed, depending on QSO circumstances, perhaps almost positively. But your log does not verify the certainty. Your log shows merely that you believe you worked a station in Niue signing ZK2AB. Go ahead, collect all the beam headings, tape recordings and earwitnesses you can find; it still comes out the same. In all honesty and sincerity, you *think* you've worked ZK2AB in Niue. Nothing more.

This is known in the trade as a claimed QSO. It's no more than that until you receive a bona-fide certification (QSL) from the operator of ZK2AB or his accepted agent. Only then should every vestige of doubt, every possibility of aural illusion, be considered eliminated. (The imaginative and wishful thinking of some perfectly honest DX men is astounding. Compound a pile of vicious QRN with poor conditions, and K2ABZ's c.w. easily turns out to be some optimist's "ZK2AB"; on phone it might be VK2AB.)

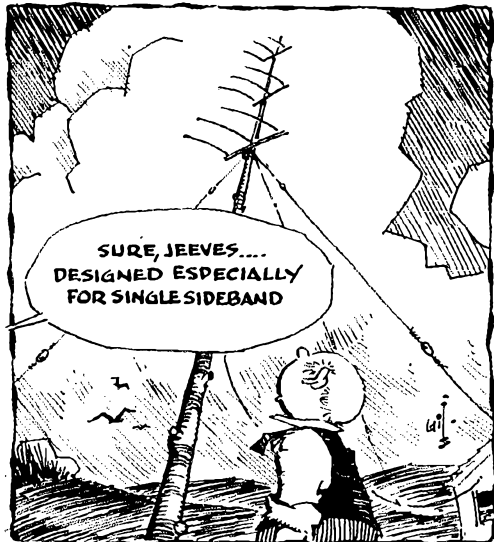
It's obvious that any secondary certification ("award") issued on the basis of such claimed QSOs is issued solely on the basis of possibility or probability, not on the basis of fact. The issuing source certifies your apparent belief that you have worked so-and-so. It can even go so far as

to certify that you claim to possess valid QSLs. (*Big deal.*) However, it cannot, without itself passing on proper evidence, validly certify the communication as fact.

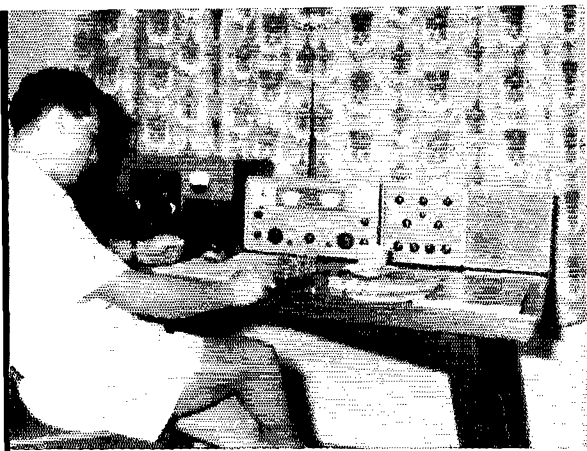
Those "just-send-in-a-QSO-list" certificates are rather harmless fun, but some pretend to do something they really don't. They should not be confused with the real thing. An excellent test of whether or not a secondary QSO-certification really is worth while is your reluctance or eagerness to collect the necessary QSLs and risk them in the mails for it. If you'd rather not bother, well — there are "awards" and there are awards.

## What:

Bushed? Beat? *Bugged!* If not, OM, you just weren't with it. Your 27th ARRL International DX Competition, we mean. Fringy conditions meant no easing of interest in the 1961 long-haul free-for-all. To the contrary; never have so many terrified Q3s been so hungrily devoured by so many fadeout-frazzled W/K/VE/VOS. We'll go easy on you this month and pass up our usual 14- and 21-Mc. activity analyses in favor of the more esoteric DX ranges. Unusually heavy correspondence, plus the fact that 15 and 20 deserve a rest after the past few hectic high-pressure weeks, makes this advisable. But we must appreciatively acknowledge the 14-Mc. c.w. reports of W1s OPB TS TX VG; WDD, K1s HTV IMD JFF (87/75 countries worked/confirmed), MOD (86/37), W2JBL, K2s MMS TDI UYG YFE, WA2s ASM (79/62), EFN EGK (98/70), LOR, K3KHK, W4CKD (173), K4s JAG (71/53), MZU (123/94), W5CFJ, K5s MHG YAA (60/35), VTA, W6s EAY RCV, K6s CJF (125/114), STZ, WA6s IVM JVD, W7DJU, K7GCK, W8s KML (300/297), KX, K8KCO (107/41), W9s CLH JFJ LNQ QQG YMZ, K9s TOK TYC/mm, K8s OSV OSW RNK, DL5DU, H1ER; the 14-Mc. phone offerings of K1s JFF MOD, K2TDI, WA2s FIT LOR, K4MZU, K5YAA, K7GCK, W8KX, W9s YHE/9 JFJ (142/132), K9MLE, VE3DZL; 21-Mc. c.w. contributions by W1OPB, K1s IMD MOD, K2s MMS TDI YFE, WA2s ASM EGK LOR, K3KHK, W4CKD, K4s JAG LRX, K5s MHG VTA YAA, W6RCV, K6CJF, W6IVM, W8KX, K8s KCO TJW, W9s CLH QQG YMZ, K9ORC, K8s OSV OSW RNK, K9s 5ERQ 0BQI, WV6ORS, H1ER, VE3PV; the 21-Mc. phone dispatches of K1IMD, K2s MMS TDI YFE, WA2EGK, W4LJV (110/89), K4LRX, W5CFJ, K5s MHG



\* 7862-B West Lawrence Ave., Chicago, 31, Ill.



5N2PJB accomplishes plenty of DXing despite sparse spare time away from oil exploration duties in the Port Harcourt area. You may have worked Pete previously as VO1G, VO6AE, G3JHZ, 5A1CT, MP4BCR and ZD2PJB. (Photo via W8KX)

VTA YAA. K8s KCO TJW, K9ORC, KØRNNK, VE3PV; plus the s.w.l. observations of Messrs. Edger, Epley, Kemp and KN8VIX on some or all of those bands. Don't fret — with the summer doldrums just around the corner we'll be falling back on old 20 and 15 with a vengeance!

**160 c.w.**, however, deserves a close look as the clouds of battle clear after the dizzy 1900-'61 low-band season. Need Africa or Russia on 1.8 Mc.? Well, it's probably your own fault. W1s BB ME and W2EQ made the grade with UB5WF around 0500 GMT in mid-January. Then, a couple of weeks later, EL4A (1801-1820 kc.) delighted Ws 1BB 2UWD and 9PNF with a juicy set of firsts. Oh — we almost forgot — Asia is available, too; ZC4AK swapped exclamations with W1s BB and PPN on 160 c.w. about the same time. Two more contacts off the beaten path were scored by K6SDR and XE2OK near 1995 kc., and KH6JL-ZL3RB, ZC4AK, by the way, has logged 1.8-Mc. QSOs with some 40 Gs, 15 OKs, DL1s BA VU, GM5RI, GW3NAM, HB9s QA T, OD5LX, ZC4KV and 5A2CV. Famed KH6JL stashed away a stack of W.K. contesters as far east as Eight-land. Other worthy items reported active are DL3CZ G3s CHN ERB ERN MBN NFV PT, G6s BQ HB, GC2FMV, H1EV, KH6VDY, VP3AD, VS9AAC and ZK1BS. Springtime brings with it a shroud of crackling atmospherics on our lower DX bands, but we may have more 1.8 Mc. doings to regale you with before summer chases the gang toward 20.

**80 c.w.** finally got rolling after several false starts. W1TS, K1s JFF MOD MZB, K2BMJ, K5WVZJ, WA6IVM, W7DJU, W8WZJ, K8QJH, W9JJN, KV4CI, VE2ADD, ISWL, NCDXC and VFRON 3.5-Mc. students studied the emanations of CO2CT, EL4A (3502 kc.) 0600 GMT, FA3DU, HA8 1KSA 5KBP, HC1JU (4) 8, H18BE (9) 23, HK7ZT (6) 10-11, JA8 ICE (15) 16, 1HJ (3) 15, 3BMZ (5) 17, 3RNX (4) 5, 8LN (5) 9, said KV4CI (1) 2-3, KM16BJ (19) 18, OK1KFN, PY5 4AZZ (12) 12, 7AN (18) 7, SP9DH, curious 8U5AW, T1EES, UA8 2KAE (8) 22, 9DB (20) 18, 95H, UB5DD, UB8AP, UL7s BM 1, HB, UW3AF, VE8PK, VK3APQ (4) 10, VPs 2LY 6ZX (4) 6, 7NV, VR2DK (6) 9, YO3AC, ZK1BS (5, 12) 7-8, ZS6s AJJ (2) 2-3, AVP (3) 3 and 5A2FA. The usual DJ/DLs, Gs and ZLs are barreling through with solid signals, so old 80 is a slot to reckon with henceforth. . . . Even 75 phone is getting clippier. ISWL and VFRON members report ample audio from EA8BA, HA8VA, HB9TL, HP3FL, KP4AXT, LX1s DE\* SJ, OEs 3NA 7ZH\* OHOND\*, OK1RTV, OY4NL\*, OD5CG 2L, SP6KBF, TG5HC, UR2s AO\* AR BU, YU2CJX, YV5ANS, ZC4AK\*, ZL 1A1X 2AHM and 4X4DK\*, asterisks indicating s.w.b. Remember that the 75-meter phone DX range lies well below 3800 kc. Swing on down and surprise yourself!

**40 c.w.** continues a tremendous rally and should be productive right into the warm season. W1s AQE TS, K1s HTV JFF MOD MZB, K2s MMS OFD, WA2s ASM EFN, K3s CGS KHK, W4CKJ, K5VTA, W6s JOB RCV, K6CJF, WA6s IQM IVM HRS JVD, W7DJU, W8BZX, W9JJN, K9s QM, 7OK, KØUTX, KN8VIX, 11ER, KV4CI, D. Edger, ISWL, NCDXC, VFRON and WØ1XC present such evidence as CE1s AD, BC, CNs 2BK (17) 7, 8CS 8MB, CO5W, CP4DJ, DJ7SV, EA8s BF (6) 21, CG, EL4A (7) 18, ET3AF (11) 15, FASRJ (5) 7-8, FB8s CE (25) 4-5, AX, Ffs 7AJ (12) 6, 8BF (5) 23, EM7WZ, FORHW (3) 6, FR7ZB 17, GC2s 8MV (5) 9, FZC (13) 8, GD3UB (3) 7, HC1JU 15, Hk5 2NF (7) 23, 7YC 7ZT, HA5KFR, HZ1s AB (2) 1, IJZ (35) 21, ISIAM (10) 7-8, ITAAGA (2) 1, KA2MC, KGs 4AO 6NA, KR6MD (35) 16, KV4CI, KW6s DF (14) 6, DG (11) 7, LA8s EG-P VP/P (3) 9, L3E2 (27) 7-8 of Norway, LU2ZR, MP4s BBE BBL TAQ, OAH4M, OD5LX, OEs 6K (5) 6-7, OX3NK (15) 19, OY8RJ (25) 2, PJ3AD (34) 12-13, PZ1AY, RAEM (1) of Moscow, SL5s AB AP of Sweden, SVs 1AH (100) 4, ØWZ, TF5s GE (30) 7, TP, T12s LA WR (7) 7, UA9s DN FS KCT, UA0s EV JB (19) 16, KAE KCA (3) 12, KCI KCO

(9) 7, KFG (6) 7-8, KKD (8) 16, KSB, UB5s FP (15) 3, KCF SM, UD6BC, UF6KAE, UH8s BI KBC (8) 18, UJ8KAA, UL7s BM DE (19) 12-13, VA HA, UM8KAB, UO5s KAN WN, UP2AC, VPs 2DQ (3) 2-3, 2LD (25) 3, 2SC 2VA 4LE (1) 23-0, 4LQ (12) 21, 6AF 7BP (5) 2, 7NS 9EO (5) 12, 9EU (3) 22, VR2DK (22) 7-8, VOs 2CZ 4AQ 4HT, Vss 1FW 1FZ 1KA (26) 16-17, 1KP (22) 15, 1JJ 6EN (16) 16, 9AAC, VU2XG, XZ2TH, YN4AB (10) 2, YO3AAK, YVs 4BE 5EZ (8) 5, 5HML, ZB2AD, ZC4CT, ZD8SH (3) 4, ZS31X (15) 1, 3V8CA (16) 21-22, 4X4s FN (40) 0, MR, 5N2GUP (10) 17, 7G1A, 9M2s DW and PQ (16) 17. Last but far from least are dozens of JAs, the "rarest" of which are 5KP 5MZ 5VX 5YY 9CQ 9NTU 9OP ØRR and ØUH . . . WIAPA, KIJFF\*, W5CFJ, K6-CJF, listener Edger, ISWL and VFRON hold the fort on 40 phone with CN2BK, HB1ZV, KH6s galore, K6CQV/ K5s (205), KP4AXT, KW6DG (260), PY2CEN, SV1AB, UP2s CG KNP, VK2AVs, VPs 2AE 2GAQ 2GV 3VN 4AF 48N, XE2KH, YN1s JN (90) 3, TAT (203) 3-4 and 4X4-DK's s.w.b. You'll find foreign phones as low as 7050 kc. but they habitually ignore the BC-ridden bedlam upband.

**10 phone**, a feller that's going to need some friends, stays with us this month thanks to K1s HTV IMD, K2s MMS YFE, WA2s EGK FIT, W4LJV, K4JAG, W5CFJ, K6s CJF STZ, WA6IVM, W9LNQ, K9s QMJ TOK, K8s PQW RNK UAF UTX, s.w.l.s Edger, Epley, Kemp and "Vince" who find 28 Mc. adequate for folk like CR8s 6CA 6CZ 7ES, CT2AK (570) 15, EA8s CC (400) 13-14, CM, ELs 1D 2V 4B 5A, GB2SM of England, GD3ENK, HC8 1AM 2AS 21B 2JU 5HA, H1E2RS (500) 22-23, H1s 7C1Y 8DGC 8DGH, HK0A1 of San Andre, HP1s AP CN GA, HRs 1HP 2HA 2JD 3HC, IT1SMO, JA8 1BWA 1CEY 1DN 1GV 2YL (300) 0, 3ACQ 3AVD (225) 0, 3RQ (480), 7EP 8BY (470) 22-0, KA8 2BF 2FB 2JL (480) 2, 9JD, KG4s AK (700) 21, AT AX (550) 22, KR6HM (510) 2, KV4BT, PJs and PZIs in number, SV1AL TG9s BK F1 (320) 21, UA1s KAG (600) 13-14, WFCM (600) 14, UP2NCH (600) 14, UR2RGU (600) 13, VE6NA, VPs 21A 2GAQ 4MM 5BB 5VB 5VP (400), 6AM 6FO 61R 6JK 6WR 7BM 7NA, VR2HC YNs 1WH (460), 3LBV 4CB, ZEs 2JF 2KT, 2KR 3UJ 6JL 7JW, ZK1AR, ZS7L, 5As 2FO 4TA, 6W8AP, 9G1DI and 9O5DQ . . . WA2EGK, K3CUT, K4JAG, W5CFJ, K5VTA, K6CJF, K6s RNK UTX, 11ER and Vince Epley persist on 10 c.w. because of CN81J, CR4AX, CX2s AZ BT, HC1LE, H1E2s JV V(16), JA8 1AJA 1BWA (50), 1GV, 2AAT 5HM, OE5AW, PY7LJ of Fernando de Noronha, and YN1RH. Alack and alas, friend 10 is going, going — going. . . .

## Where:

Asia — "I QSL 100 per cent on receipt," declares HS82M, "and would be glad to act as QSL manager for HS stations." Inquiries regarding Thailand QSLs should be accompanied by appropriate International Reply Coupons and self-addressed envelopes . . . . KA2JM becomes proprietor of the KA QSL bureau at FEARL(M), APO 925, San Francisco, Calif. Pappy has a tall stack of unclaimed cards for KA8 ZEE 2LG 2MAI 2RA 2VT 7DL 78L 8AB 8JB 8RA 9CG 9JD 9JW and 9ME. "It's a shame that some amateurs spend entire tours over here without claiming a single QSL at the bureau." . . . . KX-KA8KW, now WA2QCB, shipped out 4000 confirmations for DX work in Japan but still hasn't spotted his QSLs on the walls of stations whose photos appear in QST. Will he make it? Anyway, Jerry welcomes abeyant QSL inquiries at the address to follow . . . . WGDXC observes that K1CIB, stationed in Vietnam, receives many "K1CIB/XW5" QSLs even though he has never been active there . . . . Pens W9QPI of HL9KT: "Just mailed out a batch of QSLs that piled up while I was in the hospital. They may take a little longer to arrive now that I have authorization to use Government 'free' mail but this surely takes a big load off my monthly paycheck. I've made arrangements to have HL9KT QSLing kept up to date after I leave Korea in April. By the way, the real HL9KT never has operated 40 meters." . . . . W8KX made a hit with 9K2AD by providing Des with some clean unstruck envelopes, high-priority rarities in Kuwait.

Africa — Ex-EL8AC writes, "I QRT'd as of July, 1958, despite indications of pirate activity. Unfortunately there are no more FLs on the air, and little chance of such activity for a long time." He's in Lagos now with scant prospect of becoming a 5N2 but follows PL8AC QSL inquiries at the Nigeria address to follow: "I'm back in the States for a while," writes ex-BT2TO-CN81E-KZ5TO-KP1AOL from his WØWET diggings. "I believe I've caught up on my QSLing but in case somebody got left out, try again." Tom requests self-addressed stamped envelopes

from soliciting W/Ks. . . . ZS5UA, planning a two-year DXing junket around rarest Africa, seeks a reliable Statesider to collaborate with QSL chores. More on this venture in "Whence. . . ." "I expect to be at my new northern Nigeria QTH for the next year," writes 5N21JS from the address that follows. "My order for QSLs is overdue and I will confirm QSOs 100 per cent when they arrive." John is ex-VP2LO, you know. . . . The ET2US combine writes, "All QSLs for this station must be addressed to our Call Book address, and we request that all previous QSL managers for ET2US forward QSLs and correspondence. The Stateside QSL manager idea has not proved successful for us." . . . ZD2JKO comments in ISWL's Monitor: "QSLs used to be considered the final courtesy of a QSO, but now they tend to be thought of as the sole reason for a QSO. Neither of these definitions is strictly true; the latter certainly is true of rubber-stamp QSOs, but for rag chews the QSL certainly is an ideal way to cement an otherwise ethereal contact. My own plan is to send out cards immediately after contact to all stations in the U.K. and Commonwealth, and to new countries or any other stations whose cards I especially want; others are QSL'd on receipt. Cards are sent via the ISWL bureau, or direct if postage is defrayed. My QSL manager in the States, W4MCM, very kindly handles cards for W/Ks but after contests I hear from a lot of them direct. Some arrive by air with up to six IRCs. Quite a few of these Coupons, by the way, have dates stamped on the right-hand side instead of the left. This automatically cancels them! W4MCM and I went through 3500 QSLs in 1960. I have a 5000-card order on the way; this should be enough for a couple of years. . . . WGDXC has it that W2CTN may be able to alleviate your ZD1GM and ZD9AM QSL shortage, full QSO details plus s.a.s.e., of course. The Gulf gang also learns that ex-602NG-ZD3G is not averse to QSL inquiries bearing self-addressed envelopes and IRCs. See Lee's current address in the roster to follow. . . . Those Senegal 6W8s in most cases are ex-FP8s retaining their old suffixes. Former FP8CV, for example, now signs 6W8CY. . . . W8KX hears from 5N2PJB that "All my QSLs for U. S. A. contacts are being cleared through W7VEU. I receive cards through such bureaus as RSCB and ISWL.

**Oceania** — "I'm now QSL manager for VR2BC," informs K4LRX, "s.a.s.e. required for replies to W/Ks. Non-Statesiders should include IRCs for direct response." . . . FO8AO saddens W2BHM and others by declaring he has never worked W1Mc, despite spurious evidence to the contrary. "W80L/PK was not operated off ship," confirms USS Hope radioman W6PIH, but a QSL from this station is a dandy souvenir item nonetheless.

**Europe** — "I have been appointed QSL manager for ZB2AD for QSOs starting January 1, 1961," states W3AYD. "I expect to be able to mail QSLs around the tenth of each month for the previous month's activities to those who supply s.a.s.e. or IRCs. Cards for others must go via bureaus." . . . DL5DU and other Yank DL5s hope you'll use the DL4 bureau to reach them rather than the REF route recommended for French DL5s. Ray (K4OMR) is taking no chances, however, and has envelopes on file with the DARC bureau. "All QSLs received by DL5DU will be answered even if I am slow in getting started." . . . RAEM of Moscow assures NCDXC that Russia's Box 88 QSL bureau forwards incoming cards to soviet amateurs with a minimum of interference. Ernst claims that the few QSLs intercepted meet such fate through rare poor decorative taste approaching pornography.

**South America** — "I am now the Canadians-only QSL manager for YV2CJ," apprises s.w.l. D. Druick whose address follows. "VE/VOs desiring his QSLs should include

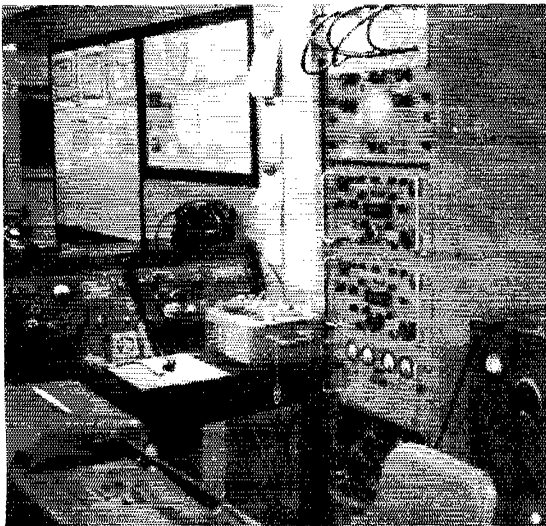
s.a.s.e. with theirs." . . . K4LRX finds that CE9AF will respond with direct QSL reply on receipt of IRC plus s.a.s.e. . . . W8KX observes that the month of February saw feverish transportation liaison between antarctic outposts and home bases, so long-delayed QSLs from that part of the world should now be arriving in quantity.

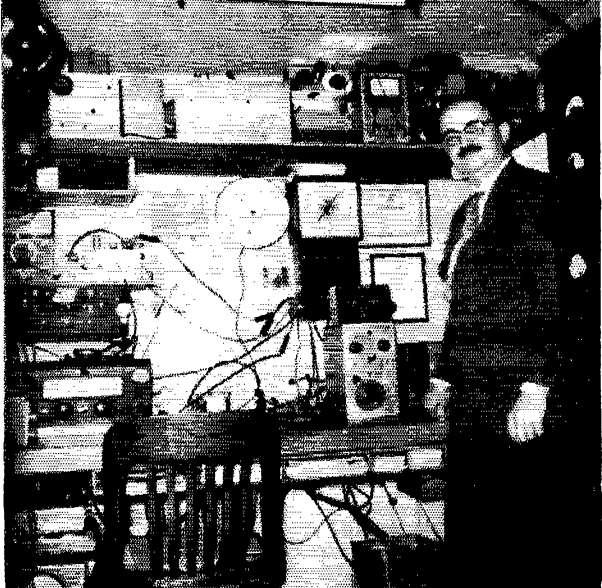
**Hereabouts** — "We get mail service once weekly by airplane," writes KL7AGX of the Pribilofs to W8KX. "St. George Island, however, gets mail only by air-drop and boat, much poorer service." . . . Before casting aspersions at hard-working U. S.-based QSL managers, W8KX feels a few considerations are in order: "Some logs from DX stations are sent to their QSL agents by air mail but must go by boat. Some are posted weekly, others monthly. Six-month service should be considered satisfactory in many cases where rare DX operates under isolated circumstances. Don't unreasonably blame QSL managers for every occasional delay." . . . K6BX of *Directory of Certificates and QSL Newsletter* fame has a fat list of W/Ks who volunteer as QSL aides for overseas DX operators. Those in bona-fide need of such service can apply through Cliff N. Y., as the current address for the KG1 QSL Bureau . . . W6KG has garnered more than 40,000 QSLs for QSOs made under numerous calls around the world. That's about 5000 square feet of wallpaper, isn't it? . . . K5P80 acts as QSL manager for T12. . . . now schooling in D. C. with buddy F13CME. . . . I'm the Stateside QSL agent for VE6ZX," advises W9JFJ. "Cards without the usual s.a.s.e. will be answered via bureaus." Incidentally, Howard, K1OJQ and W7MH offer QSL chores help to other DX ops requiring such assistance. . . . WGDXC notes that W9JUV still has complete K84BB logs on hand and will entertain QSL interrogation on the subject

. . . Help! W2EUI wants a lead on VS9AP; W3BWU hunts info on 1956 ZP5TX operator Chuck Martyn, USAF; W3LC needs a tip on K85AB; and K9ALP seeks ops Bill and Larry of O441GY, plus TP2WBC staffers Wes, John and Lee. . . . W8KX has an idea that may save you and your colleagues a rare pasteboard or two. "Our radio club has an arrangement with the [Grand Rapids] general post office to ensure that improperly- and incompletely-addressed ham-destined mail is forwarded to the club for rerouting." The U.S.P.O. is only too glad to help hold down its deadletter litter. . . . Let's Hoff our heads to W1s, 8PA, OPB, TS, TX, UED, VG, WHL, WPO, YAM, K1IAD, W2s APF GT, JBL, K2s TDI, UYG, W42s ASH, EFN, LOR, K3s CUI, KHZ, W4CRD, K4s JAG, MZU, K5JVF, W6s OGI, RCY, K6s CIP, S4Z, W7UVR, W8s KX, NYG/3, W9s CLH, LNQ, QQG, K9s ECE, ORG, QMJ, TZH, K9PQW, DL5DU, G3NLL, VE3PV, s.w.l.s. D. Edger and R. Kemp, Far East Auxiliary Radio League, International Short Wave League, Japan DX Radio Club, Kansuwa (W. V.) Radio Club, G2SV of Austria, Newark News Radio Club, Northern California DX Club, Universal Radio DX Club, VERON of Holland and West Gulf DX Club for this selection of possible QSL-clinchers:

GN8TZ, D. Waring, 7221st ABRON, P.O. Box 35, APO 118, New York, N.Y.  
 GX2CX, Box 286, Montevideo, Uruguay  
 DL4BU (to K9DMW)  
 FA0AF, F. Matomba, Box 147, Bata, Spanish Guinea  
 ex-EL3A (to FF4A1)  
 ex-ET2TO-GN8JE-KZ5TO-KP4AOL (to W0WET)  
 ET3GB, G. Brumley, P.O. Box 621, Addis Ababa, Ethiopia  
 ET3MA, P.O. Box 16, Harar, Ethiopia  
 ex-F7GP (to W5CSB)  
 FA8AN/sh, R. Vervotte, Tamrasset, Sahara, Algeria  
 FF4AL, B. P. 1712, Abidjan, Ivory Coast

HL9KT helps the HM1 gang keep Korea workable with a BC-610 and associated military-type apparatus at Seoul. That's W9QPI at the bug. Korea may be a DX man's paradise, but poor Don caught guard duty on a recent DX contest week end — hi!





The highly successful 1960-'61 160-meter DX season now drawing to a close finds these avid 1.8-Mc. men burning the midnight oil under forced draft for hard-to-get transoceanic QSOs. Left to right across these facing pages we see

ex-FL8AG, G. Malosse, P.O. Box 160, Lagos, Nigeria  
 FQ8AS (via FQ8AG)  
 GD6UW (to G6UW)  
 HG1JU, Box 2951, Quito, Ecuador  
 HC1WB, c/o U. S. Embassy, Quito, Ecuador  
 HC2AS, Box 3236, Guayaquil, Ecuador  
 HC7KO, R. McClendon, P.O. Box 1007, Quito, Ecuador  
 HB8GH, D. Hall, 78 Ave. Bolivar, or P.O. Box 157, Ciudad Trujillo, D.R.  
 HK2NF, R. Solano, Air Box 19, Ocaña, Colombia  
 HK3CJ (via LCRA)  
 HM2AO (via KARL)  
 HM4AO, Park Sung-Kun, Shinchangdong Ika.225, Iri, Korea  
 HP1AP, Box 639, Panama, R.P.  
 HS2A (via W7USP)  
 HS2M, M. Pioso, c/o A. Pioso, SEATO-MPO, APO 146, San Francisco, Calif.  
 KA2EB (via PEARL)  
 ex-KA8KW-KH6DMP, Col. J. Branch, WA2QCB, Box 336, Griffiss AFB, Rome, N.Y.  
 KH6ECD (via KM6BI)  
 KM6BI, Det. Navy 3080, FPO, San Francisco, Calif.  
 KP4AXU, Box 222, Ramey AFB, P.R.  
 LU5ABL, M. Lejneff, Florida 336, Esqr. 405, Buenos Aires, Argentina  
 ex-LU6DEM, J. Francisco, 8427 Atlantic Ave., Cudahy City, Calif.  
 LU9ZL (via W9DHO)  
 OA6AGI, Tracking Station, Casilla 751, Arequipa, Peru  
 OD5CO, Box 301, Beirut, Lebanon  
 OE6UI, C. Mulisch, Dreierschutzengrass 10/v, Graz, Styria, Austria  
 ON4ZY, R. Houssa, 442 Avenue de la Couronne, Brussels 5, Belgium  
 ex-OO5RH (to ON4ZQ)  
 PX1EP (to EA2CN)  
 PY4ZG, D. Grandi, P.O. Box 314, Belo Horizonte, M. G., Brazil  
 PZ1BN, c/o Postmaster, G. P. O., Paramaribo, Surinam  
 PZ1BX, P.O. Box 1450, Paramaribo, Surinam  
 SV0WV, Box 172, Rhodes, Greece  
 SV9WZ (via W7FTU)  
 TG9LM, L. Mendoza, 32 Av. A, 27-81, Z.5, Guatemala City, Guatemala  
 TI2J (via K5PSQ)  
 TI2WA (via K9TZH)  
 TI5RE, Box 21, Quesada, C.R.  
 UA3FE/0, Box 81, Moscow, U.S.S.R.  
 UA3KND, V. Mirgorodsky, P.O. Box 124, Riazan, U.S.S.R.  
 UP2CG, Box 17, Shaulay, Lithuanian S.S.R., U.S.S.R.  
 UR2AR, Box 17, Tallinn, Estonian S.S.R., U.S.S.R.  
 VE1MW/VOZ, Box 300, Goose Bay, Labrador, Canada  
 VO2WV, Box 94, RCAF, Goose Bay, Labrador, Canada  
 VP2GAO, F. Winslow, L'Assurance Estate, St. Johns, Grenada, B.W.I. (or via K9UTJ)  
 VP2LD, Box 181, Castries, St. Lucia, W.I.  
 VP3RW, Box 239, Georgetown, B.G.  
 VP4TP, Capt. C. Fraser, P.O. Box 40, Port-of-Spain, Trinidad, B.W.I.  
 VP5BB, B. Berthelsen, Grand Turk AAFB, GMRD Box 4187, Patrick AFB, Fla. (or to W4IOI)

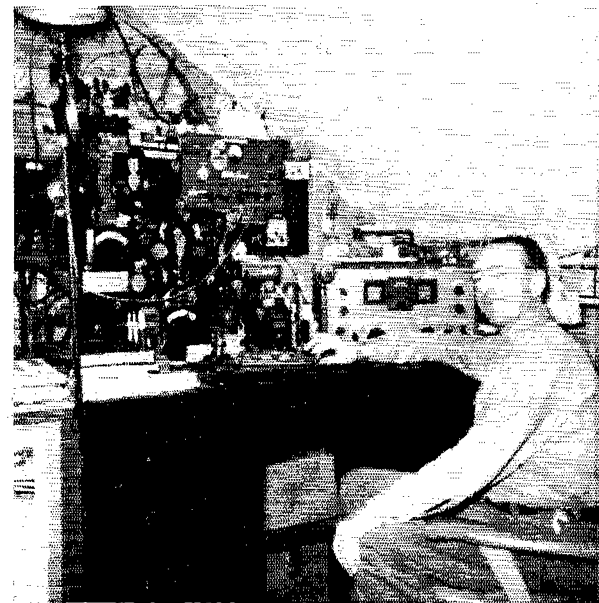
VP6ZX (via W9JFJ)  
 VP7NF (via W1YDO)  
 VP7NO, P.O. Box 1566, Nassau, Bahamas  
 VP8EE (via RSGB)  
 VO2TV, Box 667, Banercoft, N. Rhodesia  
 VO3KL, K. Lori, Box 63, Moshi, Tanganyika  
 VO3SS, F. Lawden, Box 125, Tanga, Tanganyika  
 YR2BC (via K4LRX)  
 W3RVM/KV4 (to W3RVM)  
 W4GEF/VOI, Cmdr. E. Cate, USNR, AEW Staff, NavSta No. 103, FPO, New York, N.Y.  
 XE1YJ (via LMRE)  
 ex-XW8AH (to 3V8CA)  
 YN3KM, P.O. Box 14, Leon, Nicaragua  
 YN4AB (via K4ASU)  
 YV1ED, P.O. Box 157, Maracaibo, Venezuela  
 YV1EL, Box 762, Maracaibo, Venezuela  
 YV2GJ (VE/VOs see preceding text)  
 YV3AS, Box 13, Barquisimeto, Venezuela  
 YV3DL, Box 382, Barquisimeto, Venezuela  
 YV5ASP (via RCV)  
 YV5ATC (via RCV)  
 ZB2AD (via W3AYD; see preceding text)  
 ZC5BK (via MARTS)  
 ZD2KHK (to G3KHK)  
 ZD3E, J. Ward, Electricity Dept., Bathurst, Gambia  
 ZL3AM, R. Kirk, 43 Dover St., St. Albans, Christchurch, N.Z.  
 ZP6BB, USAF Mission, c/o U. S. Embassy, Asuncion, Paraguay  
 ZS3AZ, H. Forrer, Box 1100, Windhoek, Southwest Africa  
 ZS5UA, Mrs. Shirley Greissing, 172 Musgrave Rd., Durban, Natal, S. Afr.  
 4X4NJ, R. Kline (K7ADD), Kibbutz Maagan Michael, Doar Na-Hof, HaCarmel, Israel  
 5A5TZ (via RSGB)  
 5N2ATU, B. Wilbraham, P.O. Box 38, Jos, Nigeria  
 5N2DCP (via W2CTN)  
 5N2IJS, J. Stratfull, Audit Office, P.O. Box 196, Maiduguri, N. Nigeria  
 5N2IND, D. Boyles, P.O. Box 144, Lagos, Nigeria  
 5N2PJB (via W7YEU)  
 ex-6O2NG-ZD3G, Les Grant, College of Aeronautics, Air Traffic Control, Cranfield nr. Bletchley, Beds., England  
 6O2RS, D. Bushe, Box 164, Berbera, Somalia  
 6W8AF, Box 7, Ruis-que, Senegal  
 6W8AP (same as F78AP)  
 6W8BL (formerly F78BL)  
 6W8CY, B. P. 971, Dakar, Senegal  
 7G1A/FF7 (via CAV, attn. OK1PD)  
 9G1DS, P.O. Box 450, Accra, Ghana  
 9O5PL, P.O. Box 427, Elizabethville, Congo  
 9U5GH, Box 76, Kitega, Ruanda-Urundi  
 9U5MG, J. Decoster, P.O. Box 78, Kigali, Ruanda-Urundi

NOTE: Not necessarily accurate and "official" about the preceding QSL hints. Life's funny that way.

**Whence:**

Europe — Now that you've warmed up on ARRL's 27th International DX Competition, more contests await. In fact April is just jammed with 'em. VERON (Holland)





W8GDQ (left) at W8ANO's ham shack, K2BWR, W1EFN and W2EQS. Well over 100 collective 160-meter countries have been worked by this group. (Photos via W1BB)

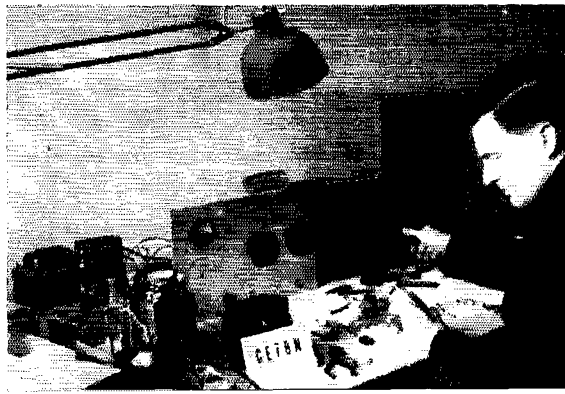
invites your participation in its annual PACC DX Contest to be held (c.w.) 1200 GMT, April 29th, to 2000 the 30th; (phone) same times on May 6th-7th. Stations outside Holland will strive to contact PA colleagues once per band, exchanging the usual RST001, RST002, etc., serials (the "T" omitted on voice, of course), each successful QSO counting three points. For total score multiply all QSO points by the number of band-multipliers collected, these based on Netherlands provinces as indicated by the following suffixes appended to PA call signs: *DR*, Drenthe; *FR*, Friesland; *GD*, Gelderland; *GR*, Groningen; *LB*, Limburg; *NB*, Noord-Brabant; *NH*, Noord-Holland; *OV*, Overijssel; *UT*, Utrecht; *ZH*, Zuid-Holland; and *ZL*, Zeeland. To be eligible for certificates of merit awarded to high scorers in selected areas, log transcripts must be mailed to VERON Contest Manager PA0VB, Keizerstraat 54, Gouda, Netherlands, no later than June 15, 1961. . . . Also on the final week end of this month comes the U.S.S.R.'s annual DX kick, details elsewhere in this QST. And don't forget the French Contest phone session on the 15th-16th. . . . USKA's annual *Helvetia-XXII* DX fling is said to be ready for the 15th-16th, too, rules presumably the same as last year. W1AQE says HB9s BY DE and ZE will be on hand to present rare Tessin canton on 40 and 20. . . . ART's Ancona Fair DX Contest is a marathon deal running from 0000 GMT on the first of this month to 2400, May 3rd. Confirmed QSOs during this period with five 1Is in the Italian provinces of Ancona, Ascoli Piceno, Macerata and Pesaro And can qualify W/K/VE/VOs for ART's DFIA-61 wallpaper. While you're collecting those 1Is, rush a request for full particulars to the ART Ancona branch, P.O. Box 122, Ancona, Italy. . . . Check with SA15CQH for details on an interesting 40- and 80-meter DX certification offered by Sweden's A.M.P. DX Club. It's based on confirmed QSOs with fifty countries on 7 or 3.5 Mc. since the first of this year. Incidentally, ARRL 11q cannot certify QSLs for non-ARRL awards, only KSGB's WBE excepted. . . . Now Faeroes notes via K2UYG: OY1R has a new electronic key. OY1X prepares a QRO 813 final, OY7AL is enjoying 75-meter a.m. and s.s.b., and OY8RJ is glad to be back in DX harness after a year in Denmark. . . . Ex-VS90C will fire up in the U.K. at a fine DX location some 500 feet a.s.l. overlooking the Irish sea. This may help make up for Terry's lost DX-appeal. . . . ON4ZQ describes the DX outlook over his way: 28 and 21 Mc. practically dead, 14 Mc. spotty with European short skip, 7 Mc. okay but cluttered with local rag chewers, and 3.5 Mc. usually fraught with commercial splatter. He's ex-OQ5RH . . . G3s MDR NTL OBT and OSU of G6UW, Cambridge U. Wireless Society, expect to activate G6UW at

Douglas, Isle of Man, over the 5th-12th of this month with 150 watts on several bands. They may use their own suffixes under the Gd prefix. . . . DL1IN joins the growing roster of "DXCC2" qualifiers with No. 38 (see p. 69 of July '59 QST). He's been hamming since 1928. . . . W2APP reports that EAs 2CN 4EP and K1HMG intend to put PX1EP and Andorra on 10-, 15- and 20-meter phone during the week of May 1st-7th. They'll stick to the high ends. . . . K3CUI points out that our February photo of "UA3GM" actually is a study of the popular Russian comedian A. Raikin, ham status in doubt. We'll just have to get him into the game, that's all. . . . DL5DU (K40MR) has half-gallon sideband competition from DL4NQ next door but does okay DX-wise between 1800 and 2000 GMT on 20 c.w. W1AWE was Ray's first Stateside QSO from the Continent. DL5DU avers that the immense blanket of U.S.S.R. ham QRM over there must be heard to be believed. . . . NCDXC and WGDXC s.s.b. notes: LA1NG/p's new HT-37 should aid his DX cause. . . . P9QV/PC anticipates a three-month s.s.b. session near 14,300 kc. . . . Russians are passing a simple sample single-sideband rig around to stir up interest in the mode.

Asia — HM1AJ writes W8NYG/3 (formerly HL9KJ): "We can use the a.c. line in Seoul only between seven and twelve p.m. each day, so I suppose I should buy a gasoline generator for my station. HM1s AJ and AM will be on 7, 14 and 50 Mc. but will not operate solely for DX. We will have ten watts to a 2E26. There are now three 1st-class stations licensed here: HM1s AD AP and HM1AQ. They use c.w. on 20, 15 and 10 meters with 150, 20 and 300 watts, respectively. . . . HL9KT's W9QPI reports, "K2MPB, a 7th Infantry chaplain, dropped in for a few QSOs and really worked up a storm on 20 c.w. Bill got eight new countries for us and a whole logful of contacts. Twenty and 15 meters aren't too good here now. HL9KS, on a hill some two miles from us, still does fine with a quad, though. I will be leaving Korea in April and so far there is no ham to take my place." "Didn't work a W/K for two months," remarks 9K2AD to W8KX. "I'm mostly on c.w., 10, 20 and 15 meters, with a bit of phone as well. The rig is a DX-35 driving a Globe linear; the antennas are wire dipoles and a rotary for 28 Mc. My old SX-28 still does a good job on the pile-ups." HS2M1 states, "I'm usually active around 0900-1000 GMT near 14,015 kc. or 7150 kc. with an Eico

CE7BN of Puerto Varas received wide commendation for his emergency communications work during last year's devastating Chilean earthquakes. Operator Fr. de la Barra, S.V.D., a Divine Word missionary, still is salvaging equipment fragments to get CE7BN back to full-scale DX operation. (Photo via K9PRI and Rev. Dr. R. Willgen, S.V.D.)

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rig and RAL-8 military-type receiver." Mike formerly signed WH6CZZ. . . . Regarding his next trip to Bhutan, VU2CQ-AC5CQ declares, "I'm keeping in very close touch with the Bhutan weather picture this time so that I will have fifteen days for QSOs. I think I am getting too old after 35 years of hamming and must lay off one of these days." Nonsense, Mickey! DX men improve with age, just like fine cheese, sausage and wine. . . . "Band conditions are wonderful here compared to Las Vegas," opines 4X4NJ (K7ADD) in lines acknowledged by new ARRL staffer W6OGL/I. "I'm living on a collective farm and fishing settlement with a 210-foot antenna strung between a water tower and grain elevator." With his U.S. ham ticket and the proper approach to Israel's minister of posts, Dick encountered only a two-month wait for his 4X4 transmitting authorization. . . . "A friend of CR9AH goes to Goa to become postmaster," notes K2UYG. "He hopes to get CR8AC back on the air." . . . K6CJF, now at the 382-JAa-worked mark, mentions K6BX's mention of a certification available for QSOing all Japan call areas in one day. "This is a real challenge — perhaps someone can swing it in the Asian DX tests." Say, check with JA1BWA of the Chino Line Amateur Radio Club for the specs on the Tokyo Century Certificate, a diploma available to non-Japanese stations who confirm contacts with twenty Tokyo JAs. . . . VS9AAC tells W8KX of intentions to radio-activate the Red Sea's Kamaran island as VS9KAC come fall. . . . W6NZZP and OM are visiting in India," writes VU2RG (ex-AP2N). "Evelyn was thrilled when we raised W2INF. Ten meters has been poor here but there is quite a lot of W.K.VU work going on around 1300 GMT on 20." . . . Asian miscellany courtesy FEARL (M), NCDXC, VERON and WGDXC: Ex-ZBIAQ is reported stationed near Ankara hoping for TA ticketing. . . . UA9LA of Vladivostok makes his a.m. available each week end around 11,275-14,300 kc. . . . The rig of MP4QAD expired but MP4BCV reports much 14-Mc. action by MPs MAH on c.w. and phone, TAJ on voice only. . . . CR9AH huddles with CR1BA in an effort to enhance Timor QSO possibilities. . . . KA2AB assumes FEARL (M) News editorship. That outfit now has issued 129 Worked-Five-KAs certifications to stations in all continents and most United States.

**Africa** — FF4AI, (ex-EL3A) assures Ws ITS IVG and 8KX that his Ivory Coast activity will continue at length. FF4AL, in the diplomatic service, expects a two-year tour at Abidjan. . . . K6BX directs your attention to the "6 X 6" certification now offered by Kroonstad DX Club, P.O. Box 378, Kroonstad, S. Afr., a sheepskin based on QSOs with six countries on each of the six continents. Before applying, check with the club for details. . . . ZS1OU tells WIWDD that ZD9AM has decided to shun week end DX activity; too much pile-up pressure. "Wynand is a commercial c.w. operator on Gough island and is not particularly interested in DX, preferring instead to rag-chew with friends in ZS-land." ZD2KHK's British Cameroons action has been similarly curtailed by DX hogzery, according to K2UYG, and FF4AL also is much perturbed by W/K boorishness. . . . "Perhaps you could hint that there are DX phones on 20 meters apart from the 14,190-14,200-ke. slot," suggests 5N2JIS whose CQs slightly lower in frequency are apparently undetected by Americans. Neighbor 5N2PIB reports to W8KX, "Conditions quite poor lately with few decent openings to U. S. Sevens and Sixes. When the bands are anywhere near decent I can work about twenty W/Ks per hour on single-sideband, more on c.w., but the resultant RST-PSEQSL-73 QSOs may get my RCC certificate revoked; hi! But after I clear the main wolf pack perhaps I can settle down to some good chat sessions."

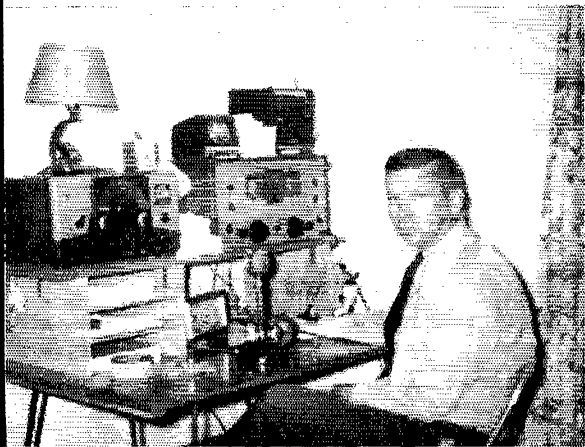
. . . SA15s BUG and KV make all that portable-9Q5 noise with a modest 6AG7-6146 thirty-watter, modified AR-50A receiver, long-wire and W8JK antennas. Their QTH is Kamina, Katanga province. . . . In lines to W8KX, ZS6IF expresses pleasure in receipt of his ARRL A-1 Op certificate. Lambert also commends the c.w. operation of ZS7M who has captured 4000 contacts with 100-odd countries in the past three years. . . . ZS5UA and her unticketed OM embark on an operational trans-Africa tour

shortly, hoping to produce QSOs from FB8 FR7 VQ1 VQ9 ZD6 AS7-8-9 9U5, Pemba and other delectable DX areas. They'll have a mobile rig and stationary outfit along for on-the-spot communication from such scenic wonders as Kilimanjaro, the Zimbabwe ruins, the Atoshapan, Kariba dam, Victoria Falls, and so forth. . . . Ex-FL8AC, now at Lagos, finally collected enough QSLs for his Somali-style DXCC. . . . Africa notes via NCDXC, VERON and WGDXC: June may see the conclusion of 3V8CA's DX career. . . . 5A5TA (W5LAK) guns for Idaho to complete his you-know-what. . . . A fresh sideband entry is 6W8AU. . . . Political ferment threatens to cramp ST2AR's DX style.

**Oceania** — USS *Hope's* W6PHF writes from Indonesia: "Twenty and 15 are the best bands here; ten is very erratic, while 40 and 80 are cluttered by commercial signals. We are optimistic about future shore-based DX operation from rare spots but there are miles of red tape to cut. It's frustrating to be an s.w.l. with my HRO-60 for so many years of eager DX work." *Hope* signed W8OLJ/PK for a few QSOs but there was no land-based activity. . . . VK8TB tells K2UYG he's still hearing down on CR10 possibilities. Chuck is slated to leave Australia at the end of this year. . . . "Conditions mediocre," laments VR2BC amid this year's ARRL DX Test phone sessions. Greg notes that ZL2GX's long-haul relays were instrumental in obtaining assistance when VP2VB's *Yasme III* newly founded off Mexico last December. . . . KW6s 1P and DG each managed to work over 100 countries in 100 days with 100 watts. Delaware made it all states for Bob and Layne. "We now have a 33-foot vertical on 7-Mc. c.w. and phone, squeezing through the broadcast QRM as far as South Africa. Forty is the coming band!" The pair affirms that Europe is by far the rarest item for mid-Pacific DX men. . . . Ws IADW and 8KML were early to report KH6DEL & Co.'s recent Kure island multiband and multimode KH6ECD splurge. A sunset flare-up greeted this effort in early February but KM6BI's alert liaison kept the QSO ball rolling. . . . OT ZL2BX should be enjoying the Stateside hospitality of W6s AL PFD and ZKU about this time, according to W5NZE. Next month ZL2BX and XYL head for Denver and the Midwest, then probably south to New Orleans and Miami. . . . Pacific gleanings thanks to NCDXC (K6CQM): FK8AH keeps a homebuilt 6146 job, an 8X-28 and triband "MD2AC" radiator in readiness at Noumea; Bob's brother is FK8AL. . . . VR2DK is game for more 80-meter ventures but his power is limited to ten watts on 3.5 Mc.

**South America** — "The January 30th-February 10th operation on Fernando de Noronha by PY7s SA and YS on 15 and 20 phone was duly authorized by Brazilian authorities as a private expedition," documents LABRE president PY1CQ. . . . Ex-LU6DEM (D) now lives up our way (see "Where") with XYL ex-LU6DIO and daughter. . . . From VP4TP: "After a 26-year absence from ham radio I've just returned to the game. I operate 14, 21 and 28 Mc. at present." Colin's comeback included a brave performance in the ARRL DX donnybrook just concluded. . . . LU5ARL's 210,153 DX tally was accumulated with 807s at 120 watts, a 13-tube super and various dipoles, all thoroughly homespun. . . . NCDXC reports the availability of CE6s AD and AE on Thursdays and Fridays around 0100 GMT, 20 c.w.

**Hereabouts** — W0AIKF breaks through with "DXCC" No. 57, the first from Zero-land. This gives the project a foothold in every mainland U. S. call area. . . . DXers who drive airplanes are invited by K6BX to sign up for his Flying Hams Club. Cliff feels there must be a thousand or more winged amateurs in the fraternity. . . . The 5th Annual W0-DXCC Round-up, scheduled for the 15th of this month at Des Moines, is expected to feature such DX lights as MP1BBW, XE1H (XE4B), W0AIV (VQ9A, etc.) and 9N18M on the dais. Check now with W6s BSK or NTA on how not to get left out of this powwow. . . . Don't forget to remind your overseas Nevada-needing friends about W6AY-7's availability on the 22nd-24th of this month. Details appeared in this rubric, previous QST. . . . W4BPD wonders if W3ZA's collection of 51 per-



VP9EP deserves our gratitude for heeding swarms of Stateside callers when he could be ignoring us in favor of his own countries total. Alex is especially popular on 20 c.w. (Photo via W3INH)

**QST for**



sonal call-signs is a record. We see that W6KG's QSL lists 21. Any challengers? . . . . . KV4CI is harassed by what he terms the muscle-flexers, W/Ks with brutal signals who insist on calling him everytime he lets out a peep. Pat now concentrates on 40 and 80 c.w. where the resulting barrage of European s.w.l. cards frightens him. W4CKD (ex-W8PQK-K8FAE-1D4LU-DL4NC) and W7DQM lambaste proponents of lid-manship now running loose on DX bands, from electronic-key-fiddlers who set and reset their dot-dash ratios with loaded antennas, to prominent DX artists who sneak out of W/K phone subbands to capture new countries. . . . . K1LWF/VOI mentions the Codfish Certificate to K2YFE, a diploma based on ten confirmed contacts with "/VOI" stations. Details are available from the Argentina Amateur Radio Club, Box 73, Navy 103, FPO, New York, N. Y. . . . . VU2ANI won Niagara Frontier DX Association's "DX Signal of the Year" plaque for 1960 despite heavy competition from PX1PF, EP5X, VP1JH and ZL4JF. . . . . WA2LOR observes that 14-year-young KZ5MQ knows his DX onions down Cristobal way. . . . . W5IRJ finds W5VE enjoying the sport again after a 15-year ham hiatus. . . . . KL7AGX writes W8XX from the seal-hunted and storm-haunted Pribilofs: "Conditions here are generally poor compared to my previous W0HNI and WA6CIL locations. I prefer long-wire antennas because seawater corrosion quickly ruins beam mechanisms in this region. Fluctuating line voltage is rough on my Apache but I'm often catchable on 14,065-kc. c.w." . . . . . Ex-W5ZHI of KG4AO comments, "We reactivated Guantanamo Bay Amateur Radio Club last August with about 16 members. KG4s AE AM and AP like single-sideband, KG4s AB AD and AY prefer c.w., and KG4s AA AF AH AK AO AQ AV and AX use a.m. mostly. KG4AQ, by the way, is the first YL to hold her own license here. Guantanamo stations now may use phone on 7.1-7.2, 14.1-14.2, 21.15-21.25 and 28.4-28.5 Mc." KG4AO has a Ranger driving an 813 at 500 watts into a TA-33 spinner 70 feet high. . . . . Closing localisms from NCDXC and WGDXC: Cincinnati-area Eights and Fours intended to amplify VP5BH's QSO contribution to the ARRL Test's final sessions. . . . . NCDXC's recent intramural 40- and 80-meter DX test turned into a real owl-boiling killdiller.

**Ten Years Ago in "How's DX?"** — The eye-opener for your April 1951 QST DX section has Jeeves delving deeply into the occult with Ouija boards and other offbeat efforts to defeat poor propagation conditions. . . . . No complaints from the 160-meter fans, however, for they find EK1AO, GW3s FSP ZV, KV4AA and a bunch of Gs quite workable along the east coast. . . . . Eighty is kept alive and awake by FAs 8DA 9RZ, F7Y7C, HB1LL, PJ5RE, SV0WH, Z53K and 4X4RE. . . . . Forty's faithful fall upon EK1s AD RW, FF8AC, FP8BX, HZ1KE, OX3BD, PJ5FN, TA3GVU, VK1PG and ZK2AA. . . . . On 20 c.w. you're welcome to AR8AB, CR5s AA AC AF, EA0AB, EK1AQ, FBEX/AR, HN1VR, KB6AF, M13VG, OY3TGO, some VK1s and 9S44X. . . . . Phone follows find 15ZC, VRs 1C 5GA and WT1DF to their liking on 20; KJ6AP, M13s RP XX ZX and PJ5HO dominate a thinning field on weakening 28 Mc. . . . . Guadeloupe DX action appears imminent, but prolific TA3s AA FAS and GVU are said to be nearing their Turkey departure dates. . . . .

**An Open Letter to ZD9—, or FF4—, or . . .**

DR OB:

I've just wasted half an hour calling you on c.w. before you quit because, you said, the QRM from many calling stations was too much for you. I'm burning! No, not for the reason you might suspect; I'm not teed off at the fellows who called and called, trying in vain to figure out what kind of operating system you were using. Not at all. The thing that gripes me is the inexcusably poor handling you gave the situation.

You fellows in the rare countries: Don't you know that you can completely control these pile-ups? If you don't want us to call on your frequency simply tell us "5 down" or "10 up," wherever you want to listen. If you don't want tail-ending, let us know. If it starts to build up, say "no tail-ending." It's as simple as that. We'll comply, you may be sure. But then don't ruin everything by answering someone who does tail-end. And don't fall for the time-consuming and snarl-causing master-of-ceremonies scheme. You can make the QSOs as orderly and as gentlemanly as you please if you are savvy.

Don't tell each station where you are, what your name is and how to QSL. We know all that; some of us have been sitting there listening and biting our nails for an hour or more. Just be brief and give the next fellow a chance. Your signal won't be in very long with conditions as poor as they are, so don't take up precious time sending a lot of stuff that everyone knows or can find out afterwards.

When you answer a fellow, give his call along with yours at the end of your first transmission. There will always be a few lids who will still be calling on your frequency when you first come back. If you just say BK at the end, we won't know which of us you've answered. Certain DXpeditions have made incredible numbers of QSOs in spite of their being in new countries, countries so rare that amateur operation may never take place there again. How? By good operating, of course.

The next time one of you rare-DX boys starts to get mad and quit because of QRM, ask yourself what is really causing the trouble. Analyze your operating practice and adopt a system that keeps us in line. Remember — you are the king. Except for a ubiquitous few who never seem to get the word, we'll do exactly as you say.

Very 73,

— Pete, W1VG



**Indiana** — The Hoosier Hills Ham Club will hold its second annual dinner meeting and ladies night on Saturday, April 8, at 1930 EST at the Greystone Hotel in Bedford. Speaker for the evening will be Walter Burdine, W8ZCV/K9BOU. All the chicken you can eat at \$3.00 per person. Tickets and further information available from Marge Edwards, Secretary, Hoosier Hills Ham Club, P. O. Box 484, Bedford, Ind.

**Illinois** — Society Radio Operators will hold its annual open house on Wednesday evening, April 26, at the club's meeting rooms in the Edgebrook Forest Preserve Field House, 6100 N. McClellan Ave., Chicago. The principal speaker will be Gus Browning, W4BPD, who will give an illustrated talk on some of his DX travels. No charge.

**Iowa** — The W0 DXCC members will meet at the Holiday Inn, Des Moines, on April 15th. Guest of honor will be MP4BHW. Registration is \$5.50 at the door, or \$5.00 in advance. Speakers will include W1WFO from ARRL Hq. Contact Vince Davis, W0NTA, for reservations and further information.

**New Jersey** — The 16th annual Old Timer's Nite Round-up will be held on Saturday evening, April 29, in the Terrace room of the Hotel Stacey-Trent in downtown Trenton. Stag as usual. Sponsored by the Delaware Valley Radio Association, this annual event gives the old timers a chance

to reminisce. A turkey dinner will be served promptly at 1830. A silver cup award to the OM present whose radio operating dates the earliest. Tickets are by reservation only. Send a stamped, self-addressed envelope to Ed G. Raser, W2ZL, 19 Blackwood Drive, Trenton 8, N.J. \$6.00 if purchased prior to April 21, \$7.00 at the door. Bring as many guests as you wish.

**New York** — The Western New York Hamfest is scheduled for the Doud Legion Post, Buffalo Rd., Rochester, N.Y. on Saturday, May 6. Program starts at 10 A.M. with open house at the Barn Museum and luncheon at 12 noon (\$1). Registration begins at 1 P.M. followed by top technical talks on antennas, v.h.f., RTTY, single sideband, and DX, plus the W.N.Y. Code Sending Championship and a mobile contest. Unlimited registration at all times — \$2.50. Registration with roast beef dinner by advance sale only at \$4.75 (closing date for dinner is Apr. 29). Send check or m. o. to: C. C. Unruh, WA2EOQ, 25 Castlebar Rd., Rochester 10.

**Ohio** — The 10th annual Dayton Hamvention, sponsored by the Dayton ARA, will be held April 28 and 29 at the Dayton Biltmore Hotel, downtown Dayton. Activities begin at 1700 Friday and end with the grand banquet on Saturday evening. W1HKK is the main speaker. Saturday's technical program will include mobile operation, antenna arrays, transmitter hunt, applications of triode-connected pentodes, and semi-conductors. There will be an ARRL forum, plus other forums on v.h.f., DX, RTTY, and sideband. Advance registration \$6.50, at the door \$7.00. Send check or money order to Dayton Hamvention, P. O. Box 426, Dayton 1, Ohio.



# Correspondence From Members -

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

## TEN KC. AND DOWN?

☐ I, for one, was fascinated by WINP's article "Radio Below 500 Kc." (Technical Correspondence, January *QST*). Well, why not an amateur band in the v.l.f. region?

Surely here is an answer to our problems of instability and QRM, not to mention a nostalgic return to the romantic days of wireless with those majestic antennas and coils the size of beer kegs. If there isn't too much interest by other services, who knows, maybe they would give us ten kilocycles and down.

Hm-m-m-m, I don't suppose there's any hope of reviving spark. — *Jack C. Taylor, VE3DUJ, Thornhill, Ont., Canada*

## HAM SHORTHAND

☐ Pity the poor c.w. man who lives in such places as Minneapolis, Minn., Charlottesville, Va., or Poughkeepsie, N. Y., as compared with the lucky fellow who lives in York, Pa., Tulsa, Okla., or Flint, Mich. — not to mention Fly, Minn. Of course, Manhattanites get away with "NYC". But unfortunately no such shorthand is current for towns like East San Sebastian, La.!

But wait. We take it back. For aeronautical communications and air-traffic control services, the FAA has a 3-letter nickname for every sizeable city in the U. S., particularly those with an airport. On a population basis, therefore, probably 80% of all hams could sign their home QTH with three letters — if they would — using the FAA code. And the codes — or "location identifiers", as they are called — often readily suggest the city name, so they're not hard to learn. Airline employees, plane pilots and others seem to take them in their stride — PGH for Pittsburgh, ROC for Rochester etc. So why not get the directory from the Government Printing Office, Washington 25, and everybody start using it. (Catalog No. FAA 3.10:960 145 Pages, \$1.50.) How are things in PGH, ob? FB here in ROC! — *Larry Triggs, W2YBK, Rochester, New York*

☐ For the sake of brevity during c.w. transmissions, certain key phrases were assigned code symbols such as "HI", "73", "K," etc. These abbreviations have been appropriated by phone men even though the ARRL *Handbook* states that they should have no part in phone operating procedures.

Two phrases, having little or no meaning, have been steadily creeping into nearly every phone man's vocabulary. As a c.w. man, I demand reciprocity. Why doesn't the ARRL assign such codes as "BG" or "76" for "By Golly" and "TFS" or "77" for "That's for sure"? — *Ralph A. Dage, WSP17, Dearborn, Michigan.*

## APPRECIATION

☐ We would like to express the appreciation of the U. S. Weather Bureau for the excellent cooperation of your members in promptly reporting tornadoes to the nearest Weather Bureau office and in helping to relay our warnings to the

W1LD (See letter, "Abused;" at the right.)

public during 1960. We think you will be interested in knowing that the year was one of the lowest on record for deaths from tornadoes.

We are looking forward to continued cooperation with your members in our efforts to prevent tornado fatalities and avert undue public alarm during the 1961 tornado season. A booklet, *Community Tornado Safety*, has been prepared to further assist communities in establishing an inexpensive type of tornado warning system. This brochure, which encourages local interests to work closely with the nearest office of the U. S. Weather Bureau, contains the best known portions of several thousand volunteer network plans now in existence.

The booklet is available from Weather Bureau offices or from the Government Printing Office, Washington 25, D. C., for 10¢ in coin. — *E. M. Vernon, Chief, Forecast and Synoptic Reports Division, U. S. Dept. of Commerce, Washington, D. C.*

## THE HALF-CLOCK

☐ Seems every time you change the rules you make an awful lot of trouble around this place. Take for example your recent urge to have everybody use GMT. *Requidez*:

The XYL and I share the big 24-hour wall clock we treated ourselves to last Christmas. It hangs in stately splendor over the rig. I use it to record my QSOs in a manner most scientific. To the XYL, however, it remains a disappointment and a delusion, an illogical and unnecessary complication.

"I understand the first 12 hours all right, but why does it have to go to higher numbers?"

"Well you see, at noon . . ."

"You mean that's noon, here at the bottom?"

"Yes, and afternoon follows, 13, 14, etc."

"But I always think of noon at the top. Like 'high noon'. It's very confusing. And must I stop to calculate and deduct every time I want to save a trip to the kitchen or living room to see what time it is? I don't want an exercise in arithmetic. This was to be half my clock, remember? I call that selfish. All these years you've been doing that telegraph tapping that nobody can understand, and now that crazy clock!"

A month or so later, just when she begins to get the hang of it and things are fairly quiet around here, you want me to put it on GMT! It seems to me, *QST*, that you are obligated to support your members. Can you, preferably using short, succinct monosyllabic Anglo-Saxon words, explain how she can use this new arrangement?

And while you are at it, consider that daylight saving time is coming up, too! — *W. F. Chambers, W3EYF, West Willow, Pa.*

(Okay, sir, see page 54 of this issue. — *Ed.*)

## WOUFF HONG WISDOM

☐ Old Man Mose, from his cave on Witches Roost Mountain, smoke signalled as follows:

The Wouff Hong, in normal upright position, directs attention to the High Realms of attainment which challenge the skill and integrity of the Ham Fraternity. Horizontally, it becomes an accusing digit, radiating searing scorn upon whatever unregenerate transgressor of the Amateur Code, at whom it may be pointed. — *Charles V. Swarer, W5JZZ Las Vegas, New Mexico*

## ABUSED

☐ For over twenty years now I have been slandered, maligned and abused in the pages of *QST*.

The latest attack by W9BRD (March 1961 *QST*, p. 65) is particularly vicious. However, I refuse to QRT. You will continue to find me operating on all bands. — *W. A. Melanson, W1LD, Lexington, Mass.*

*QST* for



## "DEVOTED ENTIRELY . . ."

¶ Mr. Park Gregory (February *QST*) seems to feel that if he has a dislike or lack of interest for something, it isn't any good at all. How one person can give himself this much authority is more than I can see. It certainly is a good thing everyone doesn't hold this point of view, for if they did, hams who work s.s.b. only would leave the ARRL because *QST* writes about a.m. and a.m. men would quit because of articles on c.w., and soon no one would be left but the staff.

*QST* is a magazine "devoted entirely to amateur radio." It is not "devoted entirely to those parts of amateur radio in which Park E. Gregory is interested." *QST* could not possibly please everyone with every article in every issue. It would be stupid to try.

I, for one, say "hats off" to the fine job *QST* does in printing some articles for every interest in ham radio. — *L. Marshall Smith, W46HJJ, Escondido, Calif.*

¶ I wish to offer a rebuttal to the letter of W8ROE. I have been a member of the League and have received *QST* since about 1932 which should show what I think of the magazine. Sometimes I will go for months without finding anything of special interest but I don't blow my top because I know that probably in the next issue I will find something right down my alley. I can remember at least six articles in 1960 that had a special interest for me. From two of these I constructed the gear.

How can you be expected to please everyone every month with a membership of about 90K? I feel that if I find just one article a year that increases my knowledge of ham radio or gives me a good idea for some piece of gear, it is well worth the price. You're not perfect but I would grade you 99.44%.

As for RTTY, I suggest Mr. Gregory contact one of the RTTY boys in the Detroit area (there are several) and get a demonstration. I'll bet he will go home determined to get on RTTY.

Keep up the good work! — *N. H. Stinnette, W4AYV, Umatilla, Florida*

¶ Having been a subscriber and avid reader of *QST* for 40 years, it occurs to me that I might add my emphatic "yes" in favor of this and more articles on RTTY. While *QST* did publish an article on the "Pat" converter in 1953, I feel it is guilty of neglecting RTTY art to too great an extent in the ensuing years. It is a shame when those of us interested in RTTY are surprised to find W1AW is participating in a RTTY contest.

And, of course, I am not unaware of the fact that *QST*'s principal competitor has been much more helpful in furthering the art of RTTY. — *C. E. Price, W8HPR, Midland, Michigan*

¶ We do hope that Mr. Gregory's letter is not typical of the average amateur. If this be the case, then amateur radio is lost forever.

If Mr. Gregory will consult his rules and regulations governing amateur radio services, he will find that having large sums of money is not one of the requirements for the Amateur Extra Class of license. Further research on the part of Mr. Gregory will furnish him with the fact that amateurs operating RTTY number well into the thousands. Tune to the frequencies 3620 kc. or 7140 kc. any night in the week and it is a rare night you won't hear a RTTY amateur.

In conclusion, if Mr. Gregory were to count the number of amateur teletype clubs and societies now in existence, he would find this count would require the use of all ten fingers and possibly several of his toes.

Keep those RTTY articles coming; they are welcomed by a large portion of the amateur fraternity. — *Delbert McMullen, Sec. Treas., The Midwest Amateur Radio Teletypers Soc., Inc., Independence, Missouri*

### QS-59 UPDATED

¶ Now that the QS-59 communications receiver (*QST* April 1959, p. 67) has been on the market for two years, a further evaluation of it seems in order. I purchased one last April at Larsen E. Enterprises, Inc. on Route 128 (*QST*, April 1960, p. 51) and was immediately delighted with it. I find its sensitivity adequate not only for around-the-world signals (*QST*, April 1959, p. 69) but also for moon-bounce (*QST*, Sept. 1960, p. 10) and even for reception of non-solar system signals (*QST*, March 1960, p. 71).

Several faults showed up with some use, however. The panoramic screens furnished with the set do not cover the complete band in use, but only that portion of it at and adjacent to the signal being received audibly. True, two complete adjacent bands are shown, but operating convenience demanded complete coverage of the band in use. To take care of this, I simply added a new wafer to the band switch, so that the higher frequency screen now shows either the primary band or the one above it, at the flick of a new switch I installed at the bottom of the front panel.

Another fault was the size of the screens. Although all pile-ups were shown, it was impossible to determine quickly and accurately the exact frequency of each pile-up. Possibly this sacrifice in screen size was due to the manufacturer's desire to produce a compact unit, but what true ham would hesitate to add an ell to his house to improve operating efficiency? I therefore resorted to my junk box from which I extracted two old 21-inch television sets which I inserted in the panoramic screen circuit of the QS-59, removing the wiring to the original screens, but leaving the screens in place on the panel in case I ever have to move to a one-room apartment. I equipped these new screens with calibrated scales, and was thus able to locate pile-ups instantly and exactly.

After I had managed to work some 300-odd countries (some of them very odd), I found that I was of necessity tuning to pile-ups for such comparatively common countries as AC7s, AX2s, KM4s, and 6CL6s. To take care of this situation I went back to the junk box and took out a couple of teletypewriters. By a simple conversion, I converted these from RTTY code to International code. It is now a simple matter, using automatic push-button tuning, to zero the teleprinter onto each pile-up and read off the call of the DX station calling or being called. I have had the diagram of the conversion circuit mimeographed as a service to hams, and should be happy to send it to any amateur who will send me a s.a.s.e. together with \$2,999.99 to cover cost of mimeographing and mailing. The entire conversion cost for the average amateur, assuming the average junk box with a few 21-inch TV sets and teleprinters should not much exceed \$10,000.00.

I am at present working on a circuit for converting a.m. and s.s.b. calls so as to activate the radioteletypewriter, and hope to have the diagram mimeographed when it is successfully completed. — *Jollit E. Spoofer, WA1GAG, Upper West Loner Falls, Mass.*



April, 1936

. . . A dark banner across the cover of *QST* twenty-five years ago and an outstanding piece of writing by K. B. Warner told of the passing of Hiram Percy Maxim and Charles Steward, president and vice-president of the League. They died within days of each other during February.

. . . Jim Lamb, W1AL, *QST*'s technical editor, discussed more developments in the noise-silencing i.f. circuits, and George Grammer, W1DF, assistant technical editor, described a simplified high-performance subhet.

. . . Other technical articles included details of a 28-Mc. rotary beam by W6JN, crystal tuning by W9DRD, cathode-ray monitoring of received signals by W9HYO, a laboratory-type signal generator by W1CBD, a medium-power transmitter by W1JPE, a discussion of e.c.c.o. (v.f.o.) vs. crystal-control by W1TS, a 5- and 10-meter converter by W8ABX, and an automatic tape recorder (for recording c.w.) by W9UZ.

. . . On the operating side we had the results of the 1935 VK-ZL DX contest, half a page of DX notes, and ORS party results.

. . . A National HRO could be bought new for \$167, but an 866A was \$4.00.

. . . And there was "To a Lady With Red Hair," a piece of fiction by W4VT, and of a caliber seldom equaled in *QST*.



# Operating News



F. E. HANDY, WIBDI, Communications Mgr.  
GEORGE HART, WINJM, Natl. Emerg. Coordinator  
JOHN F. LINDHOLM, WIDGL, Ass't. Comm. Mgr., C.W.

ROBERT L. WHITE, WIWPO, DXCC Awards  
LILLIAN M. SALTER, WIZJE, Administrative Aide  
ELLEN WHITE, WIYYM, Ass't. Comm. Mgr., Phone

**Yukon Section Listing Discontinued.** ARRL rules provide for a designation of Sections within the operating territory of the League, such as may be required for field organizational purposes. This is an administrative matter and takes a basis of considerable station activity and generally many hundreds of members to be administered by an SCM to warrant favorable consideration. In the case of the Yukon, a section designation was hopefully indicated but practical activity has proved far below that required for successful leadership in terms of Section Nets, emergency organization and appointments in the usual ARRL pattern. As a necessary action in recognition of this, effective April 3, 1961, with this publication in *QST*, the Yukon is no longer defined as a Section. The typical ARRL Section today has around 1000 Full Members or licensees. A minimum of some 400 members is regarded as desirable and necessary for a workable Section with enough actives to assure section success.

Regarding activity credits and contests: In the Yukon, and in the Northwest Territories of Canada there are, we're delighted to say, quite a few scattered but active stations. Reports of monthly activity from all these are welcome. In line with past practice and the consent of the SCM of the nearest Canadian-Section-to-the-south of their location, monthly reports of traffic or other amateur radio activity are welcomed. Reports may appear with those nearest Sections, identified as to source. Since ARRL Sections are not created or maintained for spot contest purposes another policy there applies. In contests the Yukon-NWT will be recognized for multiplier credit as may be warranted, when set forth in the rules for a particular activity.

#### **W6OJW Certificate for All-SCM Contact.**

Bill Southwell, W6OJW, sends Headquarters a "sample" of his personal new certification that he will give: For 2-way radio contact with *each of the official SCMs of ARRL Sections*. There is no limitation as to band and/or mode. All contacts, however, must have been made after Jan. 1, '60. To make a full 73 contacts, W1AW may be contacted in lieu of a Yukon SCM. Club officials may examine QSL-proofs and after check against page 6 *QST* listings, certify these for local amateurs to W6OJW, 200 South 7th Street, Dixon, Cal. However, Bill reserves the right to ask for specific QSLs whenever application is made by a club's list. Any card submissions to W6OJW should be accompanied by one dollar

for postage-certificate returns, or by 50c, if request is supported by club documentation.

**Emergency Operating, the Field Day and You.** If amateur radio is all things to all people then the ARRL "FD" is even more so. A testing of emergency equipment is decreed; operating know-how is challenged. For League ECs the occasion must not pass without a new appraisal of amateurs and groups locally. A renewal of contacts with officialdom, organizational plans, inventory of equipment, hand-carried, mobile, fixed, how it would best be employed, may be needed. Some amateurs come out in June just for the fun of the Field Day. To many it's an outing with field radio operating thrown in. There's wide club interest, a competitive aspect too. But clubs are made up of individuals. Let us view what's back of the "FD" from the personal side.

Forget club angles and the holiday look. Make like imagining the chips are down. Flood, fire, the big wind or other disaster has struck. No power; no wires. So we are elected to communicate. What can we do? Have we message handling know-how? Emergency power? Are we lined up with an AREC or RACES set up so we will be called on? Can we meet such a call and deliver?! The Field Day is a time for Emergency Coordinators to re-register AREC members, revise (upward we hope) the lists of portables, mobiles, battery and gas generator sources, also to distribute identifying OFFICIAL MOBILE UNIT, EMERGENCY RADIO UNIT and cards AREC decals, but only where they are deserved. The ARRL Field Day from its inception has been dedicated both to individual and club improvement of the status quo with special respect to our *emergency-powered amateur radio equipment*. Let us make this FD one in which each of us adds some new emergency-radio item or ability through participation in these things) to the cause. This can so greatly strengthen the standing and capability in emergencies, for all amateur radio!

**Planning for the "FD".** The week end of June 24-25 is the one when the over-the-air annual test of setting up and operating will take place. More units that you build tailored just to the emergency application would be a welcome variant from what is too often the transplanted fixed equipment. It would be good to feature in the reports any especially light weight or practical battery-worked gear that really performed. We're bound to have fun afield come June. To be ready to give an account of our set up then,

you and I owe it to ourselves now to review and list the gear we own and can lay hands on that can or could be used in emergency. Let us get any dust-covered equipment off the shelf and test that which has been too long idle. We should plan-and-build to expand our horizons and capabilities — not in June, but right now.

**Radio Club FD Planning.** Some clubs no sooner complete their Field Day score one year, than they start out on the planning for a bigger and better FD for the next. It is for them that we start listing FD dates in the Activities Calendar as early as January *QST*. Club committees (for location, equipment, antennas, commissary, operating plans) may start functioning months in advance. One approach is to have club teams under a chairman for each band or to organize under a general FD chairman. The club itself must decide what transmitter class to enter, if any Novice or Technician set up will work certain hours, or for the full FD, and perhaps how many meals will be on the club during the activity. Review of last year's FD report in December *QST* is recommended for any new to this ARRL activity.

In addition to getting those club committees going, now is the time for some meetings in which the Top Operators available give some chalk-talks and procedure demonstrations. Just before the Field Day your operators need to be familiarized with the controls and tune-up techniques on any unfamiliar equipment. Careful, accurate logging practice, message form, the length and timing of calls for best effectiveness . . . these things deserve (beyond talks) a club educational program. Each year's submitted logs in different activities speak eloquently in favor of more briefings, skull sessions, and club question-and-answer periods on operating. The April CD Party often is utilized by SCM appointees for advance trying-out of newly built FD gear; may we also suggest that clubs get many more potential field day stalwart's reporting on the Section c.w. and phone nets, handling traffic and in any and all official activities that give an "experience edge" to the operators you want to bring home your bacon, come Field Day.

**Ideas for Improving Operating Practices** (Continued). Last month we ran out of space while giving some operating-practice suggestions that started off with a W7JDX contribution. We continue, with an item each in two more additional fields of interest. We invite (from all) more commentary or suggestions; progress comes from looking for the good (and bad) operating techniques as we hear on the air.

**In phone operating,** h.f. or v.h.f., avoid careless expressions that are untrue or misleading. If "off and clear," another station will often call you so do not use that expression unless you are through. Never combine this expression with "by for your final" unless you want deliberately to provoke chuckles at your own expense. *Ham Hum* (Ak-Sar-Ben Radio Club) speaks of the misuse of voice control in the s.s.b. group. Mis-setting the voice control circuits so they drop out

between syllables and words is not good operating practice, and may put "clunks," as their bulletin describes, all over the place. From a.m. splatter and long-winded CQs operators turn away. A dummy antenna that can be switched in for tune-up is a must item of improvement for your station this season, if you don't have one . . . and will eliminate the imprecations against you for your needless QRMing on tune-ups

**Novice operations** rightly include slow-speed nets in some sections where familiarity with the good procedure, and correct message form of the real communicator can be gained. The fellows in these groups will not send a tell-tale "back to you" when K shows more advanced skill. A W3 writing as we put this section together suggests Novices be warned *not* to operate below their 21.1 Mc. band-edge or be cited by FCC for using v.f.o. Crystal control on FCC-stipulated frequencies is required, you know.

— F. E. H.

## RESULTS, JANUARY CD PARTIES

*CQ CD*, Calling any Communications Department Appointee, the rallying cry of the myriad League Officials and Appointees, is the official call-up to four c.w. and four phone weekends of fun each year. January was no exception this year! While space this month just won't permit us to delve at length into the Party, the April CD Bulletin will carry complete listings. The top QSO figure was posted by K5ZBS, with 625 two-ways on c.w., while W1EOB and K9ELT at W9YT scouted sections and came up with 67 apiece. Vocally, W9SZR and W9YT came up with 168 contacts and ever faithful W8NOH dug into the QRM and found 46 sections. A lack of carefulness was noted in reporting the affair from the number of logs received without any identifications, without Code Proficiency dates, etc. Have a heart fellows—we're not mind readers! — E. W.

C. W.		PHONE	
K5ZBS	208,560-625-66	W8MSR	104,600-353-58
W1EOB	199,060-549-67	K4TEA	103,840-360-57
W9YT	197,983-587-67	K1YEP	103,700-340-61
W1RAN	175,040-541-64	W3WJ	101,400-386-52
W6BES	170,500-543-62	K6SNG	101,115-320-63
K8HGT	166,633-525-63	VE3CWA	100,595-335-59
W6NYU	164,775-503-65	W1MX	184,155-576-65
K0LUZ	163,175-532-61		
K8KCO	157,170-500-62	W9YT	39,150-168-45
K8MTI	148,230-481-61	WA2EKE	30,060-163-36
W2OIB	146,160-461-63	K9RPH	27,090-120-43
K1RAD	145,465-472-61	W8NOW	25,760-107-46
K5ABV	144,625-440-65	W1AW	13,775-88-29
W4YE	144,150-458-62	W1JYH	13,650-72-30
W8FNI	141,825-460-61	W2OIB	13,650-105-26
K5IID	141,520-464-61	WA2BAH	13,635-101-27
W3GYP	138,260-441-62	K0KYK	13,200-77-33
K9RFV	129,920-406-64	W9PNE	12,800-73-32
K4PUZ	125,700-415-60	W8FNI	12,150-76-30
K8KVV	124,500-408-60	W1NJL	11,400-89-24
K2MFP	121,800-400-60	W1GKK	10,625-80-25
W8AEB	120,780-391-61	W1YK	10,500-77-25
W4FJJ	119,475-399-59	K2PWH	10,385-64-31
K9CQC	115,500-380-60	W2CVD	9360-78-24
K0AZJ	112,530-359-62	W8NYH	8400-60-28
K4RIN	110,550-351-62	K3ANU	7820-63-23
W9ZB	108,045-336-63	K4JQJ	6885-51-27
K11FJ	107,445-371-57	K4RIN	6235-51-23
K5AUZ	106,720-368-58	K1MEM	5950-65-17
W1AQE	106,020-342-62	K4PUZ	5940-50-22
K5LZD	105,950-326-65	W3ADE	5800-51-20
W4WKQ	105,905-359-59	K8KVV	5000-43-22
K4KWQ	105,850-365-58	K8MTI	5280-43-22

<sup>1</sup> K9ELT, opr.; <sup>2</sup> K8HVT, opr.; <sup>3</sup> W1WAJ, K2KIR, opr.; <sup>4</sup> W9SZR, opr.; <sup>5</sup> W1WPR, opr.; <sup>6</sup> K2PHF, opr.



Now and then we are not above using a "gimmick" to get some action out of you fellows. In the matter of getting EC annual reports, this year we used two of them at the same time. First of all, we shortened the form and made it easier to fill out; second, we enclosed a sample AREC decal (see this column last month) and promised to send five additional decals to each EC who sent in his annual report.

The result? EC annual reports have been pouring in steadily. We have already, at this writing (Feb. 15) received over 500 of them, and they are still coming. By the time we are ready to start analyzing, there should be many more, making a grand total of far over the maximum number of annual reports we have ever received before in one year. So, you see, these devious methods work. Our analysis will be more complete than ever, and the over-all estimates of total strength more accurate as a result.

But this isn't all. It will be April by the time you read this, and the preliminary analysis based on reports received by Mar. 1 will have already been made and submitted for inclusion in the Communications Manager's annual report to the Board of Directors. But the reports received subsequent to that time will not be wasted. The final analysis will be in the annual Emergency and Traffic Bulletin, which we usually work on during the summer slump (hah!). Meanwhile, you ECs who have not submitted annual reports are going to have a tough time getting a supply of AREC decals. You might call this a bribe in reverse. It's not too late to "give" with the annual report. If you have misplaced your bulletin and report cards, we'll be glad to send you a duplicate.

Only one thing bothers us: what are we going to use for a "gimmick" next year? — WINJM.

During the years we have been writing and editing this column, along with "Traffic Topix," it has never occurred to us that someone would want to know specifically who is responsible for such outrages and we have never bothered to initial it or use any kind of byline. Indeed, most of it is paraphrasing of material received from the field, so this would have seemed inappropriate. One of your NEC's jobs is that of re-write man, ghost writer and assistant editor on a very low level—so low, in fact, that our superiors on the magazine seldom even bother to correct our many grammatical, mechanical or syntactical goofos in these two columns. We are not so much eager to receive the credit as we are willing to take the blame. So, for the information of anyone interested, this column is and has been written and edited by WINJM ever since the Dec. 1949 issue of QST. Also, "Traffic Topics" has been one of our jobs since the March, 1949, issue of QST. Now you know.

VE3NG (left), SCM of Ontario, checks with VE3RU/mobile during a recent emergency drill in Toronto.



Seems like everything we do these days is done in a hurry. The recent "Donna" article (Feb. QST) was no exception. Let us try to make amends, thus:

The paragraph about the doings of the Tallahassee gang (p. 53, first col.) was about the right people, but the wrong hurricane. The "expedition" mentioned was in preparation for hurricane "Ethel," which was approaching even as Donna was whistling up the east coast. Also, SEC WANLE says the other guys did most of the work.

Six amateurs, very much in the Donna picture but not mentioned in the February QST writeup, received letters from W4PHL, assistant director of the Office of Telecommunications Services, American National Red Cross, expressing "appreciation for your invaluable assistance during the recent Hurricane Donna disaster, and for your continued support in time of need. Red Cross could not fulfill its mission without the support of volunteers such as yourself." Recipients were W4s PCN LLI, K4s IIP R4P TFL, W3RHK. Incidentally, W4PHL himself was in the thick of it, too.

W2YRW reminds us that members of the Philadelphia Electric Company's Radio Club were active from club station K3LLD, handling information on Donna's course and movements as she approached. This information was valuable to the immediate area as well as to points north and east which benefited from it.

Also in the Feb. issue, p. 76, is a squib concerning an explosion in Kingsport, Tenn. W4MCC, who was not mentioned therein, informs us that he operated portable on six meters at the scene, relaying the need for equipment via another mobile to c.d. headquarters.

On Dec. 9 the television receiving tower serving cable customers in Marfa, Texas, crashed to the ground, loaded with ice, and the surrounding area had no television. This dire emergency was only the beginning of worse things to come. By the following day there was no longer either telephone communication or electric power. Marfa, Fort Davis, Valentino and Presidio, high in the Davis Mountains, were virtually cut off from the world. Amateur radio stepped into the picture when a commercial broadcast station in Alpine, 26 miles east of Marfa, put on a call for K5KDE, the only amateur in Marfa, to contact W5BXD in Alpine; this message was heard on a car radio and K5KDE was informed. The contact was made at once from K5KDE's mobile rig, but permanent contact could not take place until after K5KPE, a power company employee, had local emergency generators working and had both the time and wherewithal to get on from his fixed station.

After that, for three days constant contact was maintained with W5REM in Alpine, W5WVV in McCamey, K5CNB in San Angelo and W5BKH in Abilene, along with any number of assisting amateurs, mostly on behalf of the power company, whose communications tower had been put out of action by the ice. They called the amateur network the Big Bend Emergency Net, which logged more than 150 contacts and made innumerable telephone calls to keep power company officials in touch, facilitate the dispatch of crews and equipment for both power and telephone companies, handled traffic for the R.E.A., whose lines were also down, and many urgent messages for individuals. It would have been a long drawn out emergency had it not been for the amateurs' work. — K5ZHM.

For a Christmas present, K9UMQ received a severe knee injury when his car was involved in a head-on collision in northeastern Indiana on Dec. 24. Still able to operate his mobile rig, he called for assistance on 52,525 kc. and was heard by K9VMJ and K9QXC, who called police and ambulance. W9ABP also heard the call and tried to summon additional assistance. K9s VVT ZNJ, W9s JRR and SWK proceeded to the scene, arriving just about the time the ambulance arrived and rendered what assistance they could. — W9TE.

On Jan. 20 W4MMW, president of the Eglin AFB Amateur Radio Society, Fla., was asked to assist in providing communications in a search for a missing jet aircraft and its pilot, as air force vehicles were having trouble maintaining two-way contact. Within an hour, W4MMW and K4UBR were manning club station W4SRX and mobiles W4s RKH MFY and SYP were enroute to the search scene. Operations continued until 1700, when dark-

ness forced a halt. The search was resumed on Jan. 21 at 0800 and continued until 1700, without success. Base station operators during the second day were K4UBR and W4s ZAE NYW and BPI (EC); mobiles were K4s TQM RGE, W4s MMW RKH KPE SYP IQK and JD. The amateurs worked primarily with groups of ground search parties, covering square-mile areas of a grid map, one by one. Considerable traffic was handled concerning the dispatch of teams from one area to another and reporting search progress back to the base. The Air Force relied most heavily on amateur communications and the club was commended for its efforts. All communication was on 29,560 kc., but equipment was available for other frequencies in case the search moved out of ground-wave range. — *W4HKL, SCM Western Fla.*

Here is a paraphrase and build-down of information submitted by SEC W5AIR regarding emergency work in his area: "On Jan. 21 there was an explosion in an oil refinery east of Houston. I was called at 1917 and advised that help was needed, so called W5DSF and K5RDP to get some fixed stations on the mobile frequency while I left for the scene. Also advised C.D. Radio Officer W5QJS. Made contact with W5ZPD while en route, managed to get through roadblocks, arrived near scene of fire. Advised all mobiles to stay out of area pending further information. By 1950 was informed that communication was ample but shift in wind might change the situation; this was passed on to W5ZPD and K5UWE on 3835 kc. K5BED, who works at the plant, checked in to advise how serious the fire was and suggested I stay upwind if possible. Stations began to check in, either to me direct or to W5ZPD and K5UWE. Information received by monitoring me was also passed on to the six meter net by W5BGA and W5AWG. K5BGY activated the South Texas Emergency CW Net on 3780. W5BD operated on STEN CW while monitoring me. The Bay Shore Area Net was also activated on 3980 kc., with W5BRM acting as liaison.

"Shortly after communication was set up the wind shifted and enabled the fire to be better controlled, and by 2120 it was snuffed out. I left the refinery at 2127. The following stations participated, in addition to those already mentioned: K5s JFP WMI TGD LTK BEQ OIJ KYH CNU VBN AKY OIX IUY BZS PVK LZV, W5s IKX DGG CSP CVP CVQ FJL."

Six Boy Scouts with W1UED and W1LAN as leaders were camping in Woodbury, Conn. the week end of February 3-5. The heavy snowfall and heavier drifting blocked the road they were on, involuntarily extending their stay for an additional day. W1UED mobile on two meters kept in regular touch with town authorities and the boys' parents through the cooperation of W1s DXE FDO HCU LLE. K1s BWP EEW HJV on the National Calling and Emergency Frequency of 145.35 Mc. Though the boys had ample food, shelter, clothing and heat and were not in any danger, the amateur operations contributed to their morale and to the peace of mind of their parents, as well as to the orderly handling of the white stuff by the town officials. — *W1UED.*

Amateur radio in December kept a man in Middletown, Conn., in touch with the condition of his daughter, who was on the critical list in a hospital in San Antonio, Texas. It all started when the San Antonio Radio Club received a telegram asking for amateur assistance in making this contact. K5SJB took on the job, contacted K1OCS who telephoned the father long distance. Later a schedule was set up between K5SJB and W1KXM or W1VP and maintained every day for two weeks until the daughter was off the critical list. — *W5SC.*

On Dec. 11 the Turlock (Calif.) Amateur Radio Club assisted with communications at a Sports Car Rally. Five 2-meter mobiles covered 8 check points on the 90-mile run, with W6BXN, 6, the club call, as base station. Time checks from WVV were given each 15 minutes to synchronize the clocks at each check point, and the mobile for the last check point acted as standby at all check points. As each car passed the check point, the time was recorded and transmitted to the base station, where the master log was kept. Within 15 minutes after the last car crossed the finish line, the results were announced over one of the mobiles

equipped with a p.a. system. Thirteen club members took part. — *K6SWW, EC Stanislaus County, Calif.*

The Santa Clara Valley SEC pulled a snap drill on the San Jose C.D. on Jan. 10. The drill was totally unannounced and was pulled 5 minutes before regular net time. All objectives were achieved, with 5 mobiles and 18 fixed stations taking part. Both the c.d. control station and the Red Cross station were manned within 15 minutes. Twenty-seven messages were passed during the drill. — *W6ZRJ, SEC Santa Clara Valley.*

The month of December produced 26 SEC reports, representing 11,074 AREC members, considerably below the 30 reports received in Dec. '59 but slightly above in number of AREC members. December reports were received from: NYC-LI, E. Mass., S. Texas, Kans., Utah, S. Dak., W. Mass., Okla., Colo., E. Bay, San Joaquin Valley, Ga., Ont., Mich., Nevada, E. Fla., N. Texas, Minn., Maine, Md.-Del.-D. C., Wash., Ore., Maritime, E. Pa., Santa Clara Valley, Ind.

During 1960 we received a total of 353 reports from 42 different sections, showing a considerable increase in number of reports but a decrease in number of different sections. What this means, in effect, is that the same old faithful SECs are coming through with reports every month. We'd like to see some of the non-reporters come to life in 1961.

The following sections show a 100% record for 1960 (number of consecutive years, if more than one, in parentheses): Eastern Fla. (9), NYC-LI (7), San Joaquin Valley (5), Santa Clara Valley (5), S. Texas (2), Minn. (2), Mich. (2), Ore., Ga., E. Mass., E. Bay, S. Dak., E. Pa., Maine, Wash., Ind. and Utah. Our sincerest congratulations to these 17 sections and their SECs for a fine reporting record.

## A.R.R.L. ACTIVITIES CALENDAR

- Mar. 17-19: DX Competition (c.w.)
- Apr. 5: CP Qualifying Run — W6OWP
- Apr. 15-16: CD Party (c.w.)
- Apr. 22-23: CD Party (phone)
- Apr. 20: CP Qualifying Run — W1AW
- May 4: CP Qualifying Run — W6OWP
- May 17: CP Qualifying Run — W1AW
- June 7: CP Qualifying Run — W6OWP
- June 10-11: V.H.F. QSO Party
- June 15: CP Qualifying Run — W1AW
- June 21-25: Field Day
- Nov. 11-12, 18-19: Sweepstakes Contest

## OTHER ACTIVITIES

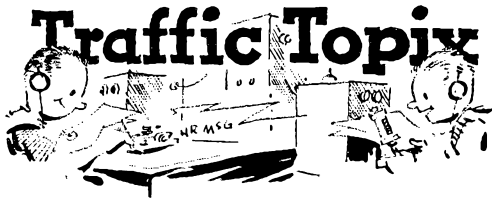
The following lists date, name, sponsor, and page reference of QST issue in which more details appear.

- April 1-2: Ohio QSO Party, Ohio Council of Amateur Radio Clubs (p. 110, this issue).
- April 8-9: Delaware QSO Party, Delaware ARC (p. 90, this issue).
- Apr. 14-21: Goose Bay QSO Party, Goose Bay ARC (p. 144, this issue).
- Apr. 15-16: The French Contest (phone), REF (p. 70, last month).
- Apr. 15-16: Helvetia-22 Contest, USKA (p. 77, this issue).
- Apr. 26-30: Operation Alert, OCDM (p. 86, this issue).
- Apr. 29-30: New Hampshire QSO Party, Concord Brasspounders (p. 122, this issue).
- Apr. 29-30: PACC Contest (c.w.), VERON (p. 69, this month).
- April 29-30: International Telegraphic Contest, USSR Federation of Radio Sport (p. 29, this issue).
- May 6-7: PAAC Contest (phone), VERON (p. 69, this issue).

The following sections also reported in 1960, number of reports (out of a possible 12) shown in parentheses: N. Texas (11), Colo. (11), Okla. (11), Nevada (10), Ala. (9), Wyo. (9), Ont. (9), Kans. (8), N. Mex. (8), Md.-Del.-D. C. (7), Wis. (7), Ohio (7), Ill. (6), Maritime (6), Va. (6), Vt. (5), Iowa (5), La. (3), N. C. (2), N. N. J. (2), W. Mass. (2), Mont. (1), Mo. (1), Los A. (1), San D. (1).

### RACES News

Information just received, too late for inclusion of details: Civil Defense *Operation Alert, April 26-30!* RACES organizations will all be activated, AREC groups should contact local radio officers to see how they can help. Other information much the same as for last year (see April 1960 *QST*, page 83).



Delays and non-delivery in traffic handling seem to be favorite topics among traffic men these days. Just to add fuel to the discussion, if you will look closely at the Simulated Emergency Test writeup (elsewhere in this issue, we hope), you will note that 150 ECs reported they sent messages to headquarters—but we received only 71.5% of them.

Before we press the panic button at this low percentage, we must consider that any number of things could have happened. First is the possibility that some ECs just said they sent a message to get the point, but never actually sent it. Others may have actually written it but forgotten to send it. Chances are good that quite a few placed the message in the hands of non-traffic people who couldn't get rid of it and just chucked it.

But even taking these things into consideration (and none of them is really excusable), a figure of 28.5% non-deliveries is absurd and shocking. Are we really that bad? We think not. We think this must be a misleading statistic for the above and other reasons. But even if we discount the irregularities and arbitrarily reduce the percentage by ten or even fifteen, the remaining percentage is an indictment, if not a conviction, of some of our traffic practices that need correction and need it badly.

### January net reports

Net	Sessions	Check-ins	Traffic
Eastern Area Slow	31	208	77
Inter State Side Band	31	1021	433
Northeast Area Barnyard	25	670	7
Early Bird Transcon	31	...	340
Northeast States Traffic	30	347	761
7290 Traffic	44	1519	551
Eastern Seaboard Traffic	34	...	56
Mike Farad E & T	50	538	909
No Name Phone	23	...	209

**National Traffic System.** We recall some time ago a discussion in one of W4IA's Morning Watch Net Bulletins regarding "who calls first" when two stations are dispatched to a side frequency to clear traffic. This seems to be a good topic, because much time is wasted in NTS nets when two stations are so dispatched and each waits for the other to call first. We don't remember now the exact import of Ev's discussion on this subject, but it seems to us that he indicated the station who is to receive the traffic should call first, in order that this station may establish the exact optimum frequency for reception at that location.

This seems to make sense, so why don't we make it a standard? QNY procedure is used a great deal on NTS nets. The NCS's instructions to QNY up or down, giving

## NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc.

7140 kc.

### BRIEFS

In the December 1960 *QST* Field Day report, the one-transmitter Class B score of 166 points should be accredited to K4CXT/4.

In the February 1961 *QST* "Brief", page 75, the multiple-operator entry for the Stuyvesant Radio Club (Sept. VHF QSO Party) was under the call W2CLE.

the number of kilocycles, are not to be construed as exact figures. They do not mean you shift your dial the exact number of kilocycles he specifies and start calling even before you tune your receiver. This is what gets us in trouble with casual stations and other nets. Find a spot near the one specified that is reasonably clear, or at least not zero beat with another station, and clear your traffic with full consideration for other operators. If both stations call at the same time, or each waits for the other to call first, delays will result. So let the station who is to receive the traffic call first, because after all he is the one who has to do the copying, and QRM conditions are not always the same at different locations.

### January reports:

Net	Sessions	Traffic	Rate	Average	Representation (%)
EAN	31	1261	.771	40.7	98.9
CAN	31	1235	.754	39.8	100.0
PAN	31	1062	.582	34.4	100.0
IRN	57	773	.418	13.6	81.5
2RN	62	647	.507	10.4	95.8
3RN	62	690	.419	11.1	97.8
4RN	59	614	.328	10.4	94.9
RN5	62	609	.324	9.8	81.6
RN6	37	517	.355	13.8	87.6
RN7	56	417	.220	7.5	41.5
8RN	60	286	.196	4.8	88.1
9RN	48	739	.505	15.4	76.5
TEN	93	937	.497	10.1	69.3
ECN	16	31	.132	1.9	75.0 <sup>1</sup>
TWN	31	303	.229	9.8	93.5 <sup>1</sup>
Sections <sup>2</sup>	1238	6699		5.4	
TCC Eastern	102 <sup>3</sup>	524			
TCC Pacific	120 <sup>3</sup>	871			
Summary	1974	18,218	EAN	8.5	CAN/PAN
Record	1911	25,982	1.039	12.5	100.0

<sup>1</sup> Region net representation based on one session per day. Others are based on two or more sessions per day.

<sup>2</sup> Section nets reporting: MDSD (Md.-Del.-D.C.); SCN (Calif.); GBN (Ont.); FN, TPTN, FMTN, Gator, FPTN (Fla.); AENT, AENP, AENP Morn, AENO, AENB (Ala.); W. Fla. Phone (2 nets); WSSN & WIN (Wis.); WSN (Wash.); S. Dak. 75; NJQ & SDN (S. Dak.); MSPN Eve, MSPN Noon, MSN, MJN (Minn.); QMN (2 Mich. Nets); CPN & CN (Conn.); SCN (S.C.); QKS (Kans.); PEN (Sask.); VSNm VFN & VN (Va.); KPN, KYN & MKPN (Ky.); BCEN (B.C.); RISP (R.I.); TN (Tenn.).

<sup>3</sup> TCC functions reported, not counted as net sessions.

About these section net reports: we're pretty hard boiled about receiving them on time and getting four items of information required for listing. First, the name of the net; second, the number of sessions held during the month; third, the total traffic handlings accomplished; and fourth, the net's region or section NTS liaison. Our copy deadline is the fifteenth of the month; reports received subsequent to that time just have to be left out unless our copy is late, which it quite often is but don't count on it. Sorry, fellows, we just can't correspond on this subject. We'll answer specific requests, of course, but we can't let you know if your net report was received too late. It is just marked "too late" and filed with the rest of the reports. If the report omits one or more of the above required items, it is similarly marked and filed without being entered on the summary.

W5SCW summarized the year 1960 in the Feb. 1961 EAN Bulletin showing total traffic of 17,569 and an average per session of 49.7 (pretty good for a one-hour session!).



## NATIONAL CALLING AND EMERGENCY FREQUENCIES (Kc.)

3550	3875	7100	7250
14,050	14,225	21,050	21,400
28,100	29,640	50,550	145,350

During periods of communications emergency these channels will be monitored for emergency traffic. At other times, these frequencies can be used as general calling frequencies to expedite general traffic movement between amateur stations. Emergency traffic has precedence. After contact has been made the frequency should be vacated immediately to accommodate other callers.

The following are the National Calling and Emergency Frequencies for Canada: c.m. — 3535, 7050, 14,060; phone — 3765, 14,160, 28,250 kc.

The following received EAN certificates: W1s EOB EFW KYQ NJM OBR SMU WEF, K1GRP, VE2AZI/W1, W2s EXB OPB ZRC, W4s CIG COO, K2s NBU RYH SSX UFT, W3s KML MFV NF UE VG, W4s DVT PNM FX KNI, K4ZHV, W3JWN/4, W8s BZX FWQ OCC ZYU, W9s ALL BAQ CWA, W9DYG also puts out a good rag, called "CAN KAN," the third issue of which was just received. PAN certificates have recently been issued to WA6NCE, W7HH and W0FEO; not to be outdone, K0EDK issues a monthly PAN Bulletin.

W2FZB is the new 2RN manager, replacing W2PHX, who issued 2RN certificates to K2UAT, W4s CRH CZG and HQO in January. E. Pa. Section was 100% represented on 3RN for the fourth month in a row, getting to be a habit. K4AVU is resigning from 4RN; certificates to K4LRL and W1OGG in January. An RN5 certificate was awarded to K4EHY; W4AKP is assisting RN5 Manager W5GY. K6LVR is replacing W6RSY, who resigned, as manager of RN6. RN7 representation is improving with the advent of an active section NTS net in Saskatchewan; a new manager, W7BDU, replaces W7QLH. Two late 8RN sessions were cancelled because of bad conditions. W9ZYX issued 9RN certificates to K4FDO and K9OZM, W0LXC issued a TEN certificate to W6OKO; TEN now has 21 sections performing CAN liaison and three on TCC. K0EDH has resigned as TWN manager and is being replaced by W0FEO.

That's five regional managership changes, all happening at once. The four replacements made so far all appear to be good ones, and we're looking forward to no decrease in activity in any of the nets. But with five consecutive resignations on our hands, this may explain why we weren't exactly greased lightning in making the replacements.

**Transcontinental Corps.** There are a lot of irregularities and imponderables in TCC work. That's why we give TCC Director and TCC stations a lot of leeway in accomplishing their jobs. We do emphasize, however, that all TCC commitments, whether in or out of nets, be kept on time, whether or not this means leaving some traffic temporarily unclear. We have also, in the past, requested the cooperation of NCS at all NTS levels to clear TCC stations as promptly as possible when they are reporting into a net with traffic, because usually they have other places to go and more traffic to clear. You see, TCC stations are the only NTS stations that are encouraged to "net hop" to get rid of their traffic.

For example, Station C reports into CAN and picks up a batch of traffic for the Eastern Area — which is his job. He then passes this traffic to Station K by special schedule after CAN is over, and then Station K has the job of getting this traffic to its destination as quickly as possible. By the time he gets the traffic, it is too late to clear it into local nets for the simple reason that they are all QNF by that time; so he has to wait until the next day to clear the stuff locally. If he waits and clears it all in EAN, this means that there will probably be another day's delay in getting it to its destination, because few sections conduct late net sessions; so we encourage him to report into early section nets with it as time permits. He might have traffic for five different sections. If he's held up unduly in one section net, he won't have time to hit other section nets before they start to QNF and he therefore has to hit region nets instead, or sometimes, if he has a real load, the area net.

So give these traffic-laden TCC boys priority if possible — not because they are privileged characters, but in the best interest of prompt traffic delivery via NTS.

### January reports:

Area	Func- tions	% Successful	Traffic	Out-of-Net Traffic
Eastern	102	86.3	1270	524
Pacific	120	89.2	1726	871
Summary	222	87.8	2996	1395

The TCC roster: Eastern Area (W1SMU, Dir.) — W1s AW EMB NJM OBR SMU WEF, WA2APY, K2s SSX UYW, W3WG, W4DVT, W8s UPH ELW, VE2AZI/W1, VE3CWA, Pacific Area (W6EOT, Dir.) — W5ZHN, K0s ZYZ GID DYG, W4s EOT ELQ HC WPF QMO, W4s OAQ ATB HZM, K7NWP, W7s GAC DZX ZR HH, K0s EDH EDK CLS/G, W8s WAF KQD FEO.

## BRASS POUNDERS LEAGUE

Winners of BPL Certificate for January Traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3CUL	384	1892	1306	421	4003
W0LXC	359	726	626	100	1487
K4SJK	169	650	630	10	1459
W6YDK	863	203	165	35	1266
W0LGG	273	461	420	35	1189
W0SCA	15	529	524	0	1068
W6VPH	278	391	339	13	1021
W6GGY	293	207	151	104	955
K4AKP	42	142	114	26	924
K2UAT	137	382	337	52	908
VE2AZI/W1	22	431	387	7	847
W0BDR	159	395	270	0	824
K6BFL	52	382	322	72	824
K4BY	12	296	159	51	818
W7BA	5	402	392	10	809
W7DZX	6	388	363	19	776
W4PL	12	380	361	6	759
K6LVR	19	357	348	3	727
W9DYG	65	343	286	20	714
W8DAB	49	343	210	92	694
W3EML	37	331	272	52	692
KUTS	6	339	315	2	662
K0QNK	81	293	272	8	654
W8UPH	7	321	276	42	646
W7HUT	3	319	314	5	641
W6WPF	39	287	270	17	613
K1GNR	18	289	281	31	609
W2LZB	38	279	240	26	583
K2UCY	34	276	257	15	582
W0UJJ	2	286	256	4	574
W1SMU	11	287	247	13	558
K4VDD	140	205	180	25	550
W9OZM	13	264	167	104	548
W3WRE	66	240	231	3	540
W3VRC	61	242	221	6	530
W9DAB	14	237	225	2	528
WA6OQ	97	215	181	34	527
W9JZX	7	253	260	3	523
K1LLX	12	255	254	1	522
W9DO	23	237	219	41	520
W0NLK	59	448	9	2	518
K0EPT	20	247	100	147	514

### Late Reports:

VE2AZI/W1 (Dec.)	20	1238	1219	8	2485
W6GGY (Dec.)	421	254	524	120	1319
K5USE (Dec.)	40	476	472	32	1020
W7HH (Dec.)	81	275	238	38	612
W9USK (Dec.)	7	282	210	52	551
WA6GK (Dec.)	19	263	260	3	545
K4PFM (Dec.)	108	68	282	49	507

### More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
K6MCA	39	507	490	8	1044

### BPL for 100 or more originations plus deliveries

W2EW 191	W5ZHN 124	W9NZZ 101
VE3CWA 183	WA2HNF 121	K4FSS 100
K2UBG 173	W4JSJ/4 119	Late Reports:
K7BKH 167	W3KUN 117	K9UOV (Dec.) 252
K1BCS 134	WA6GOF 116	W7QMU/VE8
WA2CCF 133	W3TN 111	(Dec.) 178
K0EHI 130	K8KAO 104	W9AOI/9 (Dec.) 127
W7QMU/VE8 128	K2VVI 103	K9CIL (Dec.) 122
	K2OFD 101	

### More-Than-One-Operator Stations

Late Report:

K3KFM (Dec.) 101

BPL medallions (see Aug. 1954 QST, p. 64) have been awarded to the following amateurs since last month's listing: K9BTE, K0BXC, K0HGL.

The BPL is open to all amateurs in the United States, Canada, Cuba and U. S. Possessions who report to their SCM a message total of 500 or more or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

## HIGH CLAIMED SCORES 1961 A.R.R.L. V.H.F. SWEEPSTAKES

<i>Single Operator</i>	
W3HYJ	30,218
W3KKN	27,025
K2ITP	23,608
W2MIF	23,232
K2TYW	22,591
W2BLY	19,200
W3CKP	19,032
W3HFX	18,584
W9ROS	17,430
W2BV	16,800
W3CL	16,720
W1QXX	16,350
K3IUV	16,160
W3TYX	14,628
W2KFC	14,155
W3FQD	13,756
W3FSC	13,642
W2PAU	13,376
W2NSF	13,140
K9LTC	12,780
K2MLB	12,719
K9QPA	12,705
W1HDQ	12,512
W3HKZ	12,342
K8MMI	12,320
K3HNP	12,240
W2JAV	12,100
W3TXO	12,060
K3ECF	11,988
W3SAO	11,968
W2GOO	11,800
WA2EMLB	11,704
WA2GSO	11,440
K3AUH	11,196
W2HTL	10,926
W2AXU	10,800
W3BIB	10,800
W9JFP	10,764
K2LXI	10,626
W2HBE	10,624
WA2DWT	10,592
W2YHP	10,507
W2OSD	10,472
K3IUZ	10,319
K2HOD	10,224
W8UMF	10,200
<i>Multiple Operator</i>	
K1AII	18,414
W2ADE	17,900
W2PRZ	17,072
W2REB	15,876
W3QQB/3	15,800
K2JZW/2	15,768
K6TJL/6	13,218
K2MUB	13,068
K2RRM/2	12,532
K8BLS/8	12,172
K2GLQ	11,484
K3HRD	11,445
K8III	10,640

## ELECTION RESULTS

Valid petitions nominating a single candidate as Section Manager were filed by members in the following Sections, completing their election in accordance with regular League policy, each term of office starting on the date given.

British Columbia	H. E. Savage, VE7FB	Apr. 10, 1961
Michigan	Ralph P. Thureau, W8FX	Apr. 10, 1961
Los Angeles	Albert F. Hill, jr., W6JQB	Apr. 18, 1961

In the Colorado Section of the Rocky Mountain Division Mr. Donald S. Middleton, W0NIT, and Mr. Bernard N. Jacobs, W0MYB, were nominated. Mr. Middleton received 195 votes and Mr. Jacobs received 132 votes. Mr. Middleton's term of office began Feb. 14, 1961.

In the Missouri Section of the Midwest Division Mr. C. O. Gosch, W0BUL, and Mr. Davis Helton, W0PME, were nominated. Mr. Gosch received 307 votes and Mr. Helton received 236 votes. Mr. Gosch's term of office began Mar. 1, 1961.

In the Minnesota Section of the Dakota Division Mrs. Lydia S. Johnson, W0KJZ, and Mr. Robert R. Power, W0TUS, were nominated. Mrs. Johnson received 360 votes and Mr. Power received 233 votes. Mrs. Johnson's term of office began Feb. 23, 1961.

## ELECTION NOTICE

(To all ARRL members residing in the Sections listed below.)

You are hereby notified that an election for Section Communications Manager is about to be held in your respective Section. This notice supersedes previous notices.

Nominating petitions are solicited. The signatures of five or more ARRL full members of the Section concerned, in good standing, are required on each petition. No member shall sign more than one petition.

Each candidate for Section Communications Manager must have been a licensed amateur for at least two years and similarly a full member of the League for at least one continuous year immediately prior to his nomination.

Petitions must be in West Hartford, Conn., on or before noon on the closing dates specified. In cases where no valid nominating petitions were received in response to previous notices, the closing dates are set ahead to the dates given herewith. The complete name, address, and station call of the candidate should be included with the petition. It is advisable that eight or ten full-member signatures be obtained, since on checking names against Headquarters files, with no time to return invalid petitions for additions, a petition may be found invalid by reasons of expiring memberships, individual signers uncertain or ignorant of their membership status etc.

The following nomination form is suggested. (Signers will please add city and street addresses to facilitate checking membership.)

Communications Manager, ARRL. \_\_\_\_\_ [place and date]  
38 La Salle Road, West Hartford, Conn.

We, the undersigned full members of the \_\_\_\_\_  
\_\_\_\_\_ ARRL Section of the \_\_\_\_\_  
Division, hereby nominate \_\_\_\_\_  
as candidate for Section Communications Manager for this  
Section for the next two-year term of office.

Elections will take place immediately after the closing dates specified for receipt of nominating petitions. The ballots mailed from Headquarters to full members will list in alphabetical sequence the names of all eligible candidates.

You are urged to take the initiative and file nominating petitions immediately. This is your opportunity to put the man of your choice in office.

— P. E. Handy, Communications Manager

Section	Closing Date	SCM	Present Term Ends
West Indies	Apr. 10, 1961	William Werner	Aug. 10, 1960
Kentucky	Apr. 10, 1961	Robert A. Thomason	Aug. 16, 1960
Idaho	Apr. 10, 1961	Mrs. Helen M. Maillet	Feb. 10, 1961
Oregon	Apr. 10, 1961	Hubert R. McNally	Resigned
Nehraska	Apr. 10, 1961	Charles E. McNeel	June 10, 1961
Eastern	Apr. 10, 1961	Allen R. Breiner	June 15, 1961
Pennsylvania			
Iowa	Apr. 10, 1961	Russell B. Marquis	June 16, 1961
Alberta	Apr. 10, 1961	Kenneth G. Curry	Resigned
South Dakota	May 10, 1961	J. W. Sikorski	July 3, 1961
Hawaii	May 10, 1961	Samuel H. Lewbel	July 14, 1961
New York City	May 10, 1961	Harry J. Dannals	July 31, 1961
& Long Island			
Oklahoma	June 9, 1961	Adrian V. Rea	Aug. 9, 1961
Western	June 9, 1961	Percy C. Noble	Aug. 11, 1961
Massachusetts			
San Francisco	June 9, 1961	Leonard R. Galdi	Aug. 14, 1961
Southern	June 9, 1961	Herbert C. Brooks	Aug. 26, 1961
New Jersey			
Maine	June 18, 1961	Jeffrey I. Weinstein	Resigned
West Virginia	July 10, 1961	Donald B. Morris	Sept. 18, 1961

The boys of the Mankato (Minn.) Amateur Radio Club didn't let K0ICG, Minn. EC/OPS, stay off the air just because he had to be in the hospital for a while. They rigged up a neat little "set with handles" and put it at his bedside, and put up an antenna on the hospital roof.

**QST** for



## CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from WIAW will be made April 18 at 2130 Eastern Standard Time (0230 GMT, April 19). Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,800 kc. The next qualifying run from W6WP only will be transmitted April 5 at 2100 PST (0500 GMT, April 6) on 3590 and 7129 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate, if your initial qualification is for a speed below 35 w.p.m. you may try later for endorsement stickers.

Code-practice transmissions are made from WIAW each evening at 2130 EST (0230 GMT). Approximately 10 min-

utes' practice is given at each speed. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of QST text sometimes is reversed. To improve your list, hook up your own key and audio oscillator and attempt to send in step with WIAW.

- Date Subject of Practice Text from February, QST*  
 April 4: "It Seems to us . . .", p. 9  
 April 7: The BC-458 . . . in a Multiband Receiver, p. 11  
 April 13: A Sturdy Lightweight 87-Footer, p. 24  
 April 17: Practical Operating Hints for 1215 Me., p. 27  
 April 20: The DL1FK . . . Beam Antenna, p. 36  
 April 26: Ice Island Revisited, p. 40  
 April 27: Project OSCAR, p. 56.

## PROJECT OPERATING NOTE

The operating schedule for WIAW appears on page 77 March QST. WIAW will follow this schedule through April 22. The next WIAW schedule will appear in May QST.

## DX CENTURY CLUB AWARDS

### HONOR ROLL

PY2CK . . . 307	LJ6DJX . . . 302	WIGKK . . . 300
W8JIN . . . 306	W8HRA . . . 302	W8HGW . . . 299
W4IQH . . . 305	W7GUV . . . 302	W9YFV . . . 299
W3GHD . . . 305	W9NDA . . . 301	W7GFW . . . 299
W3JNN . . . 305	W5AIZ . . . 301	W4HFD . . . 299
W8MDM . . . 303	W2KXA . . . 301	G3AMM . . . 298
KV4AA . . . 303	W6FBG . . . 301	W6BAY . . . 298
W8AM . . . 303	W2HUQ . . . 301	G4CPC . . . 298
W9RBI . . . 303	W3RKT . . . 301	4X4DK . . . 297
W2AGW . . . 303	W1ME . . . 301	W6ENV . . . 297
W6CQ . . . 303	ZL2GX . . . 300	W6YTY . . . 297
CH3AC . . . 302	W1PF . . . 300	ZL1HY . . . 297
W8BKP . . . 302		W8UAS . . . 297

### Radiotelephone

PY2CK . . . 307	W9RBI . . . 297	Z88BW . . . 293
W8GZ . . . 301	W6YY . . . 296	VQ4ER . . . 293
W8BF . . . 299	W8KML . . . 295	W7PHO . . . 292
W3JNN . . . 299	4X4DK . . . 294	CX2CO . . . 291

From January 1, to February 1, 1961 DXCC Certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

### NEW MEMBERS

W5JCY . . . 191	SM5BAS . . . 107	U18AK . . . 102
W4MZP . . . 182	K4TKM . . . 106	W1AOP . . . 101
U2ADJ . . . 157	G3ZY . . . 106	K1BZY . . . 101
W7UMJ . . . 145	SM5WP . . . 106	V3ERT . . . 101
W5ARJ . . . 140	UA3UJ . . . 106	UA4HC . . . 101
E43IT . . . 131	Z2GMM . . . 106	V33BG . . . 101
W3VQE . . . 125	K8MTI . . . 104	K1DIR . . . 100
ZL1TB . . . 122	VO1AU . . . 104	W2ASE . . . 100
VE2LJ . . . 117	SM5BMU . . . 104	W2COT . . . 100
W3L3 . . . 108	Z86GS . . . 104	W2UGM . . . 100
W4NC8 . . . 113	W4AHY . . . 103	W3EYV . . . 100
W4DNE . . . 111	DL9DY . . . 103	W5GZR . . . 100
G3JZJ . . . 111	PJ3AD . . . 103	K5LIW . . . 100
W1JP . . . 110	K1D8S . . . 102	W5YFN . . . 100
C88BB . . . 109	W1FTF . . . 102	W7ED . . . 100
U41CG . . . 109	K9L1O . . . 102	W8CUT . . . 100
K2RVL . . . 107	G4LPS . . . 102	W4FOX . . . 100
W4DTI . . . 107	JA7AB . . . 102	DL1UE . . . 100
IJ21B . . . 107		D4L8S . . . 100

### Radiotelephone

K5MDX . . . 166	W4CGW . . . 105	C88BB . . . 103
E43IT . . . 125	W61DY . . . 105	W9KFA . . . 102
W3VQE . . . 118	K2RVL . . . 104	K9L1X . . . 101
W7UMJ . . . 117	G30CG . . . 104	W1EPE . . . 100
VK4BQ . . . 114	W4DNE . . . 104	W3ABR . . . 100
W4ONA . . . 112	W1YDO . . . 103	DL6UV . . . 100
K64AO . . . 107		VK5QR . . . 100

### ENDORSEMENTS

W3GAU . . . 295	W8ZVQ . . . 261	G6XL . . . 240
W6AIW . . . 291	KF4CC . . . 260	TG9AD . . . 234
W6DU . . . 291	W9JUV . . . 252	K2QXG . . . 232
W2QHH . . . 290	W3FYS . . . 251	W9WVY . . . 232
W5ABY . . . 287	W2RUM . . . 250	W4DKP . . . 231
K6RVR . . . 282	D22BV . . . 250	W2KXA . . . 230
W9WBLM . . . 282	W1OJR . . . 245	WA2OJD . . . 230
K4LNL . . . 276	VE3BWI . . . 245	W4FCI . . . 230
W9GIL . . . 273	W4UXY . . . 244	W4SRT . . . 230
W6CHW . . . 272	W6ANN . . . 243	W6HBY . . . 230
W7ADS . . . 271	W6GMC . . . 243	W4JST . . . 230
W1HA . . . 265	W1HGT . . . 242	W4FCI . . . 229
CN4DM . . . 264	K5BGB . . . 240	W0AIIH/VE3
I40FX . . . 264	K6K1L . . . 240	W4ZCC . . . 223
W4QPM . . . 263	W9GFF . . . 240	W8ZCC . . . 225
W4QJR . . . 263	W9MQK . . . 240	SM5BCE . . . 220

W4HVQ . . . 216	K6OYE . . . 181	W6ABA . . . 142
W9EFW . . . 215	W7CWE . . . 180	K7GCM . . . 142
W9MXY . . . 213	K6LEJ . . . 179	DJ2IN . . . 142
W90TS . . . 212	W3PN . . . 173	W2MFO . . . 140
W2SHC . . . 211	G2AFQ . . . 173	K4ZCK . . . 140
W4JRO . . . 211	W3JVA . . . 172	W8JDK . . . 140
W4WDI . . . 211	C8EAA . . . 172	WRKMD . . . 140
W50BC . . . 211	W7BTH . . . 171	DJ4OP . . . 140
DL1JN . . . 210	W7TQY . . . 170	SM5DX . . . 140
W10HA . . . 210	K9KDI . . . 170	K4OYR . . . 135
W2VYX . . . 210	W9TKJ . . . 170	K8BHM . . . 134
K4KOY . . . 210	VE7PH . . . 170	SM7BHF . . . 134
W0VBK . . . 210	W6APH . . . 169	W91AR . . . 133
K5BGT . . . 208	K6R7K . . . 167	DJ2IV . . . 133
W81FZ . . . 208	K3IAD . . . 162	K45TH . . . 132
K2UKQ . . . 207	W4JZQ . . . 161	W5UVR . . . 132
W3RBY . . . 205	K81QQ . . . 161	W6GRX . . . 132
K4JVE . . . 205	W2DEO . . . 160	W5CXY . . . 131
VE2YA . . . 205	W4RVW . . . 160	W1DGJ . . . 130
K0BJT . . . 204	W5CEP . . . 160	K2FG . . . 130
W2BWK . . . 203	W9PNI . . . 160	W4BHG . . . 130
W4AW . . . 201	SM6FZ . . . 160	W4ORT . . . 130
W7CMO . . . 201	Z86JW . . . 160	K7ABV . . . 130
K1JDN . . . 200	K2DJD . . . 159	W0NGM . . . 130
W1JTD . . . 200	K1BEB . . . 156	K2MDL . . . 129
K2DGT . . . 200	W1ST . . . 155	K7ABU . . . 129
W4RNP . . . 200	W4HQN . . . 155	O44TK . . . 128
W6MVL . . . 199	K1BER . . . 153	SPRHU . . . 127
DL1DC . . . 198	K6VVA . . . 153	K8ONY . . . 123
ZL3IS . . . 197	W48XE . . . 152	DL1TS . . . 122
W2ZKQ . . . 196	W6CBE . . . 152	YU1AA . . . 122
W3JNM . . . 194	W0WAN . . . 152	W4Y8D . . . 120
W9LQK . . . 193	W4CQJ . . . 151	W14JE . . . 120
W3KHU . . . 191	W4TK . . . 150	W1Y7L . . . 120
W4CKB . . . 191	K6ANP . . . 150	VE3PV . . . 120
K8L8G . . . 191	W7DWM . . . 150	W2DVC . . . 119
W8KBT . . . 189	W0FVE . . . 150	K3ERC . . . 116
K4GSS . . . 188	VE6TP . . . 150	O2HK . . . 114
W83R . . . 188	W4CQJ . . . 151	W14JE . . . 111
W6YCP . . . 183	W9ONB . . . 146	K4HPR . . . 111
VK5QR . . . 183	W5OJL . . . 145	K0EMK . . . 111
W3BVL . . . 182	OZ9N . . . 144	K2YXY . . . 110
W9UXS . . . 182	T2CFM . . . 143	W3KFO . . . 110
W1DOP . . . 181	W0BMJ . . . 143	K6Z1L . . . 110

### Radiotelephone

W9WHM . . . 280	PA0FX . . . 180	W4TWW . . . 141
LU4DMG . . . 273	H89FE . . . 178	W2VZC . . . 140
W8QJR . . . 261	G2AFQ . . . 171	K4JQR . . . 140
G3DO . . . 251	YV5AF . . . 166	W2HXG . . . 132
TG9AD . . . 234	W3BVL . . . 163	K5BJU . . . 132
W2LV . . . 223	W421ZS . . . 160	VE3DMT . . . 132
YV5AB . . . 222	W0AIIH/VE3	K0KKN . . . 131
F3DJ . . . 215	W1HA . . . 159	K1EJO . . . 130
K6EVR . . . 206	W3JNN . . . 155	IJ2BV . . . 126
W4PDL . . . 205	K1DRN . . . 153	K1BEB . . . 126
W1YPK . . . 201	SM88A . . . 153	W9WIO . . . 122
W4AAW . . . 201	SM88A . . . 153	K1BDF . . . 121
W1WDD . . . 200	YV5AIT . . . 153	W2PTM . . . 121
G3AIZ . . . 190	W9RFU . . . 151	O44HK . . . 120
I1BIF . . . 186	W1WKO . . . 150	K2O9L . . . 110
PZ1AX . . . 184	Z86Z . . . 149	K9LUL . . . 110
W1UOP . . . 181	K2QXG . . . 146	VE3PV . . . 110
	W70EV . . . 142	

### U. S.—Canada Call Area and Continental Leaders

KH6CD . . . 261	VOIDX . . . 241	VE6NX . . . 256
KL7PI . . . 249	VE2WW . . . 276	VE77M . . . 290
W0QVZ . . . 295	VE3DIF . . . 260	VE8AW . . . 195
VE1PQ . . . 252	VE4XO . . . 200	Z86BW . . . 293
	VE6RU . . . 209	

### Radiotelephone

W1PF . . . 289	W0AIIW . . . 280	VE4RP . . . 102
W2RKA . . . 283	VE1FQ . . . 154	VE5RU . . . 192
W4DQH . . . 286	VOIDX . . . 129	VE6TF . . . 181
W5BGP . . . 265	VE2WW . . . 220	VE77M . . . 271
KH6OR . . . 259	VE3QA . . . 241	Z2PL . . . 266
KL7AFR . . . 190		ZL1HY . . . 288

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

**ATLANTIC DIVISION**

**EASTERN PENNSYLVANIA**—SCM, Allen R. Breiner, W3ZRQ—SEC: DUL RM: AXA. PAM: IVS. Some people are Florida-bound, EU states he is snow-bound. K3IMP is now ORS and needs Vermont for WAS. K3ETS is a new OES. K3HQA has expanded to a new shack and added a number of new items, including a 40-meter doublet. ELI has given up mobile operation because of the controversial problem, dead battery versus car pushing. K3LKR added an 80-meter v.f.o. to the present rig. The Susquehanna Valley ARC has been re-activated and is in the capable hands of K3AJT, pres.; UOH, vice-pres.; K3JSX, secy.-treas. Reading ARC officers are ENY, pres.; BOL, vice-pres.; UQC, secy.; CDS, treas. K3BFA added a new Millen grid-dipper to the shack. K3IPK added a 20-meter dipole and right off worked 19 countries. SS Contest QRM was too much for UUU so he went back to traffic-handling. K3HTZ has filled in as net control on the EPA C.W. Net because of BUR changing to a different shift. K3JHT is quite active on the Eastern Seaboard Net and has experienced some rig troubles. K3CAH also was quite busy with sick transmitters. 4DVT, who comes to us from "Dixie Land," is quite a trafficker and is added to our list of ORS appointees. The Mt. Airy V.H.F. Club Net meets on 6 meters, its aftermath is known as "The Nitwit Net." Its 2-meter counterpart is the "Idiot Net." HNK has added a five-element beam to the Heath-Twoer. The West Branch Emergency Net, Williamsport, meets Sun. at 2130 EST on 6 meters with NCV as NCS. KVK has gone mobile with a new Halo antenna. K3KNM has enlisted in the Navy and is stationed at Great Lakes, Ill. The West Philadelphia Radio Assn. recently held a very successful "White Elephant Sale" with WNC as chief auctioneer. K3KOD and K3GEN acted as the foxes at the North Penn ARC transmitter hunt and K3HNW was bloodhound No. 1. In 1960 your SCM recorded 94 stations sending in traffic reports. The traffic total for the section was 109,646. The EPA Section Picnic will be held June 18 at Hershey Park. Traffic: W3CTL 4003, EML 692, VR 530, IVS 321, K3GSU 283, HWX 249, W3HNK 177, K3JLW 138, BHU 105, W4DVT 81, W3ZRQ 61, KMD 44, K3CAH 41, HEX 41, HTZ 34, W3JSX 33, K3JHT 22, W3FAF 21, UUU 21, FKE 19, K3IPK 16, IMP 15, W3BFF 13, ITT 13, BUR 11, K3MVO 10, W3EAN 8, K3JSX 8, W3ADE 7, ELI 6, K3GAY 6, ANU 5, LKR 5, W3BNU 3, K3KFD 3, W3OY 3, DUI 2.

**MARYLAND-DELAWARE-DISTRICT OF COLUMBIA**—SCM, Thomas B. Hedges, W3BKE—SEC: CVE. The MDD Traffic Net meets on 3850 kc. Mon.-Sat. at 1915 EST; MEPN (phone) on 3820 kc. Mon.-Wed.-Fri. at 1800 and Sat. and Sun. at 1300 EST; the MDD AREC Net every Tue. at 2000 EST on 3521 and 7042 kc. and 50.7 and 145.66 Mc. Everybody should check in on at least one of these nets. New appointments: ZNW as RM for Eastern Maryland; K3KPZ as EC for Baltimore County; K3NZV as ORS; KYF as OO; AYD and K3MDL as OPS. TN, K3KFM and K3HRN make the BPL this month. K3ADS reports plenty of OPS activity. BUD says his son now has his Novice Class ticket and soon will be on. K3BYD enjoys ragchewing and experimenting on v.h.f. CDQ likes to work the old-timers. CQS likes getting back into traffic nets. K3CRF is glad his exams are over. K3CWG liked the V.H.F. SS. VESDYK/W3 is a new reporter from Baltimore. ECP is busy as ever as Vice-Dir. and at the Washington RC. EGV is waiting for warm WX to work on the mobile rig. K3ARA is now on the air with TBS. KAN is the new president of the Capital Suburban RC. EQK is busy on MEPN. 4EXM-3 checks in from Okinawa, a new section record! K3GJD received a 3RN net certificate and is busy at school. The

Washington TVI Committee meets every 2nd Tue. at Broadcast House. K3GVE checks in from Towson. HC keeps busy as OO in Delaware. HKS reports in from Wilmington. HQE has a new all-band vertical. K3HRN reports that the 1961 officers of the Chesapeake ARC are K3EVK, pres.; LMC, vice-pres.; K3HRN, secy. K3HTE has a new 20-meter beam and rotator. HWK is busy with exams. Washington RC had Robert Marmet, General Counsel for ARRL, as speaker at its January meeting. IWJ is busy on the AREC nets. K3IZM has trouble with ice on his 6-meter beam. K3JQ did good work during the snow emergency. K3JOX moved into MDCC from Pennsylvania. JSL is back in the nets after exams. K3JYZ was thrilled to handle a message to the new President. JZY has been snowed in. Bethesda/Chevy Chase H. S. station K3KFM handles plenty of traffic for students. HKA says snow and antennas don't mix. K3KHK is glad to make WAS. The FSARC held its Annual Banquet on Jan. 9 with 4GGA as guest speaker. 5AX (New Mex.) would like to work a Delaware Novice. K3KHN is rebuilding the 6-meter rig. K3KPZ wore out his rig in the Jan. CD Party. K3LEM received his General Class ticket. K3LFD says MEPN handled an emergency request for blood from Johns Hopkins Hospital. K3LLR now has his Tech. Class license. KN3LRA is a new Novice reporter. K3LUQ is trying s.s.b. on 6 meters. MCG likes his new keyer. K3MDL is the new Asst. EC for Balti-

(Continued on page 98)

**SIXTH DELAWARE QSO PARTY**  
*April 8-9*

The Delaware Amateur Radio Club of Wilmington announces its 6th Delaware QSO Party and invites all amateurs to participate. Delaware hams are urged to work as many out-of-state stations as possible, so that those interested can earn credit toward WAS and the W-DEL certificate. Here are the details:

- (1) Time: 30-hour period from 6 P.M. EST (2300 GMT) Saturday April 8 to midnight EST Sunday, April 9.
- (2) No time limit and no power restrictions.
- (3) Scoring: Delaware stations: 1 point per contact and multiply total by the number of states, U. S. Possessions, Canadian provinces and foreign countries worked during the contest period. Outside stations: 5 points for each Delaware station worked and multiply total by the number of counties in Delaware worked during the contest period.
- (4) Credit for contests with the same station on another band will be given.
- (5) A certificate will be awarded to the highest-scoring station in each state, U. S. Possession, Canadian Province and foreign country (with 3 or more contacts) and to the highest-scoring station in each Delaware county. In addition, a W-DEL certificate will be sent to any station working all 3 Delaware counties. Party logs showing required data will be accepted in lieu of QSLs.
- (6) Watch 3530, 3700, 3905, 7030, 7150, 7275, 14,100, 14,250, 14,300 SSB, 21,100, 21,400, 28,100 and 29,520, and 50 and 144 Mc. for contest stations.
- (7) General Call: "CQ DEL." Delaware c.w. stations should identify themselves by signing *de DEL (call) K*. Phones say, "Delaware calling."
- (8) Contact information required: Delaware stations send number of QSO, RST or RS and county (New Castle, Kent or Sussex). All others send number of QSO, RST or RS report, and state, possession, province, or country.
- (9) Logs and scores must be postmarked not later than May 1, 1961 and should be sent to the Delaware Amateur Radio Club, c/o Jack Wilson, K3AMC, 1005 Greentree Road, Newark, Delaware. Applications for the W-DEL certificate other than through the contest should be sent to the D.A.R.C., c/o Gordon R. Rugg, W3TXY, 611 West 27th Street, Wilmington 2, Delaware.

## "ACCURATE CW, PAST AND PRESENT"

**W**HEN we pull the main switch after a brief or prolonged session of activity in one of our favorite pastimes, Amateur Radio CW operating, what will the person on the other end of the circuit be thinking?

**Q**UITE certainly we must be hoping his or her thoughts will resemble something like this: "Aside from proving to be an interesting conversationalist, John or Jane sends BEAUTIFUL CODE. What a pleasure to have been on the receiving end. I am going to try a little harder to improve the quality of my sending."

**S**URROUNDED by an aura of amazing progress, man should not live in the past. Improved methods must be realized through constant scientific research and logical thinking. If he occasionally reviews history, it may serve as a searching examination of past achievements and heritages to ascertain whether past accomplishments are being sustained or improved upon.

**T**HE radio telegrapher of by-gone years established many enviable records both in speed and accuracy, demonstrating incomparable operating ability. Speed records were NOT attained through sending and receiving imperfectly formed morse code. Enormous volumes of traffic were efficiently handled. In many instances an operator was "lifted" from the circuit if he found it necessary to "break" an operable circuit more than twice per hour to request a "fill."

**W**ITH vastly improved equipment and methods available, should the CW operator of the space age, in honesty and pride, fail to meet accomplishments of the dim past?

**T**RUE, the majority of present day operators are not using CW in the commercial sense, but they do use it in overly crowded bands where noise and fading are all too prevalent.

**U**NDoubtedly, modern methods of exchanging intelligence through the medium of manual or automated CW, under uncontrollably adverse conditions, demand the consistent practise of improved sending habits.

**L**ET's make certain our hope becomes reality; designating ACCURACY FOREMOST.

**S**PEED must, and will, follow ACCURACY. This statement has thoroughly been proven many times during the past 30 or more years.

**S**HALL we of the space age be complacently content with accomplishing less than our Fraternal CW Brothers before us?

—JOHN B. NELSON, W6EAR  
(Guest Editor)

*Beul Bailey Jr.*

*W. J. Healy W9AC*

for **hallicrafters**

# "INVADER"

## EXTENSIVELY FIELD

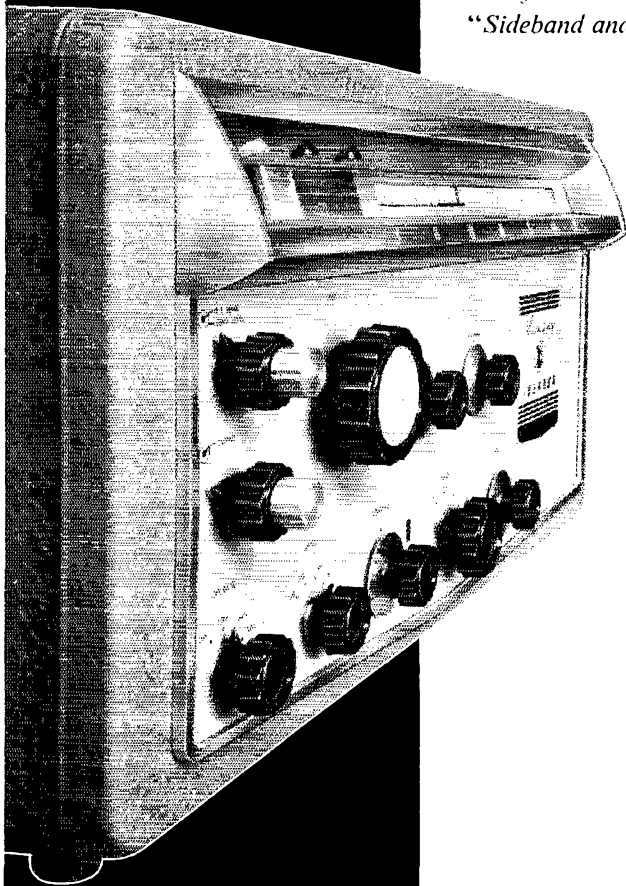
here are typical reports:

*"Sideband never sounded so good!"*

*"Excellent penetration and an outstanding signal!"*

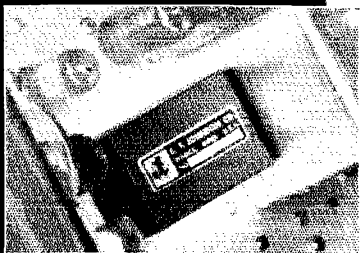
*"Full-fidelity voice reproduction—picks up the lows for that 'natural' sound for the first time!"*

*"Sideband and carrier suppression is tops!"*



Here's the transmitter with the sharp, penetrating signal you've been waiting for—plus *more* exclusive operating and convenience features than any other SSB Transmitter on the market today! A classic of modern communication equipment design, the "Invader" offers instant bandswitching coverage 80 through 10 meters—no extra crystals to buy—no realigning necessary—delivers a solid 200 watts CW input; 200 watts P. E. P. SSB input; 90 watts input on AM! Unwanted sideband suppression is 60 db or better! Built-in VFO is differentially compensated. Exclusive RF controlled audio AGC and ALC (limiter type) provide greater average speech power—high gain push-to-talk audio system has plenty of reserve gain for either crystal or dynamic microphones. VOX and anti-trip circuits are extremely smooth in operation—built-in anti-trip matching transformer—adjustable VOX time delay circuit. Mixer-type shaped keying is crisp, sharp—click and chirp free. Single knob wide range pi-network output circuit—fully TVI suppressed. Blocking and operating bias for noise-free T-R switch operation.

Cat. No. 240-302-2—Wired and tested with tubes, crystals and crystal filter. Amateur Net . . . \$619.50



**superior to phasing-type units  
. . . sets a new standard in filter design!**

**EXCLUSIVE**—Now, for the first time, not only better audio fidelity—but balanced audio response in a filter-type transmitter. The only equipment on the market using a specially developed high frequency, symmetrical, multi-section band-pass crystal filter for more than 60 db sideband suppression—more than 55 db carrier suppression! Select either upper or lower sideband instantly with a front panel "mode" switch.

# the finest SSB signal on the air!

TESTED BY DOZENS OF UNBIASED AMATEURS!

**A BOLD STATEMENT  
FROM E. F. JOHNSON CO.**

The sophisticated engineering and styling of the "Invader" is *unmatched* by other equipment within the amateur field—*bar none!*

Long recognized as the "first choice among the nation's amateurs" . . . Viking transmitters achieved popularity in a solid and healthy way. Known the country over as the line that gives you excellent engineering and performance, outstanding dollar value and more features at a popular price . . . the Viking line now achieves a new pinnacle with the introduction of the "Invader" and the "Invader-2000". We feel that the creative and imaginative engineering in the "Invader" sets aside "old fashioned" ideas that a unit is good simply on merit of the manufacturer's name alone! It has to perform—and nothing outperforms the "Invader!"



**EXCLUSIVE**—When converted to the Invader-2000—the only maximum legal power table-top unit available! (Remote power supply can be placed in any convenient location.)



**EXCLUSIVE**—The only transmitter with both limiter ALC and audio AGC for an extra sharp signal! Reduces over-driving and flat-topping—increases average audio level for greater penetration and the **best** signal anywhere!

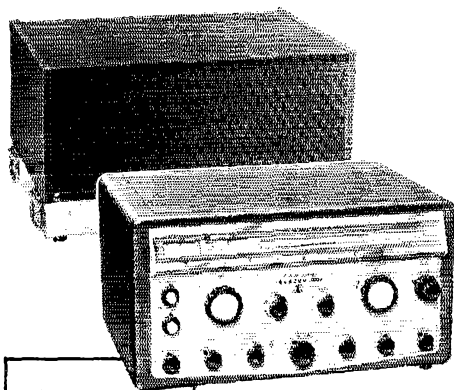


**EXCLUSIVE**—Single-knob wide range output circuit makes it possible to load into just about any conceivable type of antenna!



**EXCLUSIVE**—Full-time VFO heater element keeps VFO at operating temperature, even with the equipment turned off! No warm-up drift—**rock-solid stability!**

**add hi-power conversion overnight for an integrated 2000 watt desk-top transmitter!**



**HI-POWER CONVERSION**—Take the features and performance of your "Invader" . . . add the power and flexibility of this unique Viking "Hi-Power Conversion" system . . . and you're "on the air" with the "Invader-2000". Completely wired and tested—includes everything you need—no soldering necessary—complete the entire conversion in one evening!

Cat. No. 240-303-2 . . . Amateur Net . . . . . **\$619<sup>50</sup>**

**INVADER-2000**—All the fine features of the "Invader", plus the added power and flexibility of an integral linear amplifier and remote controlled power supply completely wired and tested. Rated a solid 2000 watts P. E. P. (twice average DC) input on SSB; 1000 watts CW; and 800 watts input AM! Wide range output circuit (40 to 600 ohms, adjustable.) Final amplifier provides exceptionally uniform "Q". With multi-section power supply, tubes and crystals.

Cat. No. 240-304-2 . . . Amateur Net . . . . . **\$1229<sup>00</sup>**

*free*

**8-PAGE  
BROCHURE . . .**

Yours on request . . . complete specifications and photographs on the "Invader" and the "Invader-2000"!

FIRST CHOICE AMONG  
THE NATION'S  
AMATEURS



*Viking*

**E. F. JOHNSON COMPANY • WASECA, MINNESOTA.**

# Gateway



## *to Amateur Radio!*

- ★ HOW TO BECOME A RADIO AMATEUR
- ★ THE RADIO AMATEUR'S LICENSE MANUAL
- ★ LEARNING THE RADIO TELEGRAPH CODE
- ★ OPERATING AN AMATEUR RADIO STATION

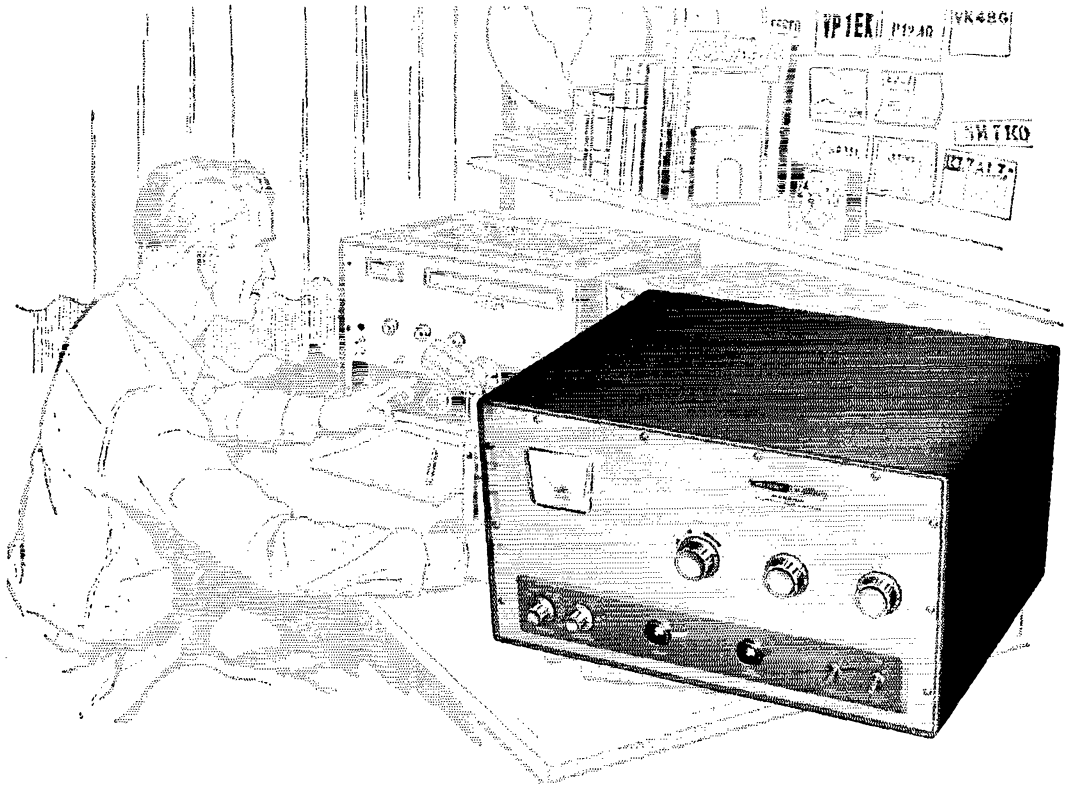
Anyone starting out in amateur radio will find these publications a necessary part of his reading and studying for the coveted amateur radio operator's ticket. Written in clear, concise language, they help point the way for the beginner. Tried and proven by thousands upon thousands of amateurs, these ARRL publications are truly the "Gateway to Amateur Radio."

**\$1.50**

POSTPAID

The American Radio Relay League, Inc.—West Hartford, Connecticut

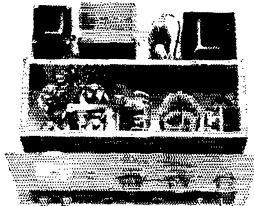




## HERE'S A NEW HEATHKIT® GROUNDED GRID KW LINEAR... JUST \$229<sup>95</sup>

The new Heathkit "Warrior" is a completely self-contained, desk-top kilowatt linear, loaded with special features, at half the cost of comparable units! Compare feature for feature, quality component for quality component, you'll find no shortcuts . . . only the finest watt-per-dollar value in a linear amplifier on the amateur market today!

**Maximum power input:** SSB—1000 watts P.E.P., CW—1000 watts, AM—400 watts (500 watts using carrier controlled modulation), RTTY—650 watts. **Driving power required:** 50 to 75 watts—depending on frequency. **Output circuit:** Variable pi-network (50 to 75 ohms). **Input circuit:** Broad banded—requires no tuning. **Input impedance:** Approx. 70 ohms. **Band coverage:** 80, 40, 20, 15, 10 meters. **Panel metering:** Switch-selected, grid current, plate current, high voltage and relative power output for ease of loading. **Tube complement:** 4-811A, 2-666A. **Size:** 19½" W x 11½" H x 16" D.



This inside view shows the neat circuit layout and husky components that emphasize quality. Note the internal shielding of plate circuit for maximum protection against TVI.

### CHECK THESE FEATURES . . .

- Completely self-contained . . .* HV, Fil. and Bias supplies built in.
  - Versatile . . .* May be driven by any 50 to 125 watt transmitter or exciter—no matching or swamping network required.
  - Efficient . . .* Stable grounded grid circuitry allows most driving power to appear in output for up to 70% efficiency.
  - Oil-filled capacitor . . .* And 5-50 henry swinging-choke provide the excellent dynamic regulation required for high peak power output with low distortion.
  - Inexpensive tubes . . .* 4 paralleled 811A's and 2-866A's, forced-air cooled by silent built-in fan.
  - Stable . . .* careful design provides a high degree of over-all stability in conjunction with the grounded grid circuit configuration.
  - Exclusive . . .* Internal RF shielding of plate circuit for maximum TVI suppression.
  - Interlocked switching . . .* prevents accidental application of HV before switching on filament and bias.
  - Rugged construction . . .* 16 gauge steel chassis—½" aluminum front panel—welded one-piece cabinet.
- Kit Model HA-10 . . .** 100 lbs. \$23 dn., \$20 mo. . . . . **\$229.95**  
**Assembled Model HAW-10 . . .**  
 100 lbs. \$33 dn., \$28 mo. . . . . **\$329.95**



**HEATH COMPANY** Benton Harbor, Michigan

*more features, better performance in this new Heathkit transmitter*

**PHONE AND CW TRANSMITTER KIT (DX-60)**

Smart modern styling . . . clean, rugged construction . . . and conservatively rated components all add up to ease of assembly, trouble-free operation and fine performance in the new DX-60 Transmitter. Offering far more than any other unit in its price and power class the DX-60 features a built-in *low pass filter* for harmonic suppression, *neutralized final* for high stability, *grid block keying* for excellent keying characteristics and easy access to crystal sockets on the rear chassis apron. A front panel switch selects any of four crystal positions or external VFO. Modulator and power supply are *built in*. *Single knob bandswitching* for 80 through 10 meters and the *pi-network output* provide complete operating convenience. A tune-operate switch provides protection during tuneup and a *separate drive control* allows adjustment of drive level without detuning driver. *Panel meter* shows final grid or plate current. A fine kit for the beginner as well as general class amateur, the DX-60 may be run at reduced power for novice operation. Operates CW or AM phone with crystal or VFO control. Power input is *90 watts peak*, carrier controlled phone or CW. Construction of the DX-60 is a breeze, with its clean circuit layout, precut and cabled *wiring harness* and the complete, informative instructions furnished. The handsomely-styled finished unit measures only 13 $\frac{3}{4}$ " W x 11 $\frac{1}{2}$ " D x 6 $\frac{1}{2}$ " H. 29 lbs.

Model DX-60 . . . \$8.30 dn., \$8 mo. . . . . **\$82.95**



Model DX-60 **\$82<sup>95</sup>**

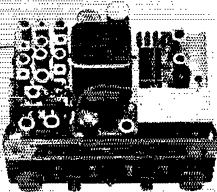
- Built-in low pass filter
- Neutralized 6146 final amplifier
- Grid block keying
- Handsome low profile styling

**you get twice as much for your budget**



Model HW-20 **\$199<sup>95</sup>**

- Tracked VFO & Exciter Stages for single knob tuning
- 10-watt RF output to antenna—6360 final
- Built-in low pass filter
- Built-in 3-way power supply for 117 VAC, 6 VDC, 12 VDC
- Push-to-talk ceramic element microphone



*new transceivers for 6 & 2 meter nomads*

**VHF TRANSCEIVER KITS (HW-10 & HW-20)**

"Mobile" or "Fixed", the new "Shawnee" 6-meter or "Pawnee" 2-meter transceivers bring you unprecedented performance, for each is a complete AM & CW Transmitter/Receiver combination with features unmatched at this price . . . just connect an antenna and you are in business! Transmitters feature a *built-in VFO* with all frequency determining components mounted on a "heat sink" plate for temperature stability and *four* switch-selected crystal positions for novice, CAP, MARS or net operation. VFO and all exciter stages are tracked for convenient *single knob tuning* over any 500 kc band segment (greater excursions require simple re-peaking of final). A VFO "spotting" switch is provided to "zero in" signals with transmitter off-the-air. The 6360 dual-tetrode final RF amplifier provides 10 watts of power *output* to the antenna and a built-in *low pass filter* is incorporated to suppress harmonics and other spurious radiation. The *dual-purpose modulator* provides a full 10 watts of audio for high level plate modulation of the final RF amplifier or 15 watts of audio for paging or public address use, selectable with push-pull switch. Superheterodyne receivers feature double conversion with first oscillator crystal-controlled. All oscillators are voltage regulated for stability. A large slide-rule dial and vernier tuning provide more than ample bandspread for both receiver and VFO. RF gain, BFO, ANL, Squelch, AVC on/off and transmitter controls are front panel mounted. *Tuning meter* is automatically switched to read signal strength or relative power output. Units come complete with built-in speaker, heavy duty AC & DC power cables, primary fused relay, adjustable mounting bracket and push-to-talk ceramic element microphone with coil cord & mounting clip. 6" H x 12" W x 10" D. 34 lbs. each.

Model HW-20 (2 meters) . . . \$20 dn., \$17 mo. . . . **\$199.95**  
 Expected Shipping Date Feb. 25.

Model HW-10 (6 meters) Coming Soon.

Model  
HW-29A  
**\$44.95**



*lowest cost transceivers on the air*

- Operate from low-frequency crystals for greater stability
- Push-to-talk Transmit/Receive switch
- Variable receiver tuning
- Built-In AC power supply—easy conversion to mobile operation, using accessory vibrator power supply

Attn. HW-29 owners: Convert your "Sixer" to the new improved "A" model with this easy-to-install conversion kit. Allows use of 8 mc crystal for maximum stability.

Model HWM-29-1 1 lb **\$4.95**

**2, 6 & 10 METER TRANSCEIVER KITS (HW-30, 29A, 19)**

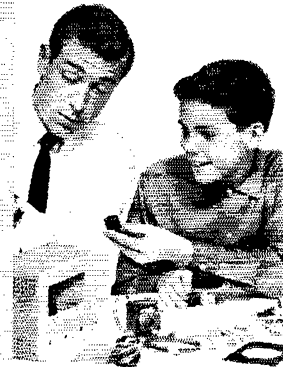
These three outstanding transceiver models bring you top performance at the lowest prices offered in complete amateur facilities. Each model has a crystal controlled transmitter and tunable, superregenerative receiver with RF preamplifier. Receivers pull in signals as low as 1 *uv* and the 5 *watt* transmitters are ideal for emergency work or "local" net operation. Features include push-to-talk transmit/receive switch, metering jack, ceramic element microphone, and two power cables. Less crystal. 10 lbs. each.

Model HW-19 (10 meter) . . . \$4 dn., \$5 mo. . . . . **\$39.95**  
 Model HW-29A (6 meter) . . . \$4.50 dn., \$5 mo. . . . . **\$44.95**  
 Model HW-30 (2 meter) . . . \$4.50 dn., \$5 mo. . . . . **\$44.95**

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( ) SEND MY FREE COPY OF YOUR COMPLETE CATALOG

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Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

Dealer and export prices slightly higher.

## Station Activities

(Continued from page 90)

more County. K3MLY is looking for a 6-meter rig. KN3MXJ is a new Novice reporter. KN3NFJ is now on the air. K3NKX reports from Baltimore. KOPIV/3 has new s.s.b. gear. TN continues solid traffic activity. UE says 3RN is working fine. K3WAG sends in a good traffic count. K3WBJ keeps up activity at Walter Reed Hospital. YTW is snowbound on the Eastern Shore. ZAQ likes OO work. ZNW is reviving the Md. Slow Speed Net. Your reporter is now active on 160 meters. See you there! Traffic: (Jan.) W3TN 158, UE 108, K3JYZ 91, HTE 88, WBJ 88, I.FD 83, GJD 67, KPZ 58, W3HQE 48, BKE 43, K3WAG 40, W3ZNV 23, VE3DYK/W3 19, W3ECP 17, K3-JIQ 14, W3JZY 12, K3LUQ 12, W3BUD 11, CQS 8, EQK 8, K3KHK 8, W3FWJ 5, K3LEM 5, MDL 5, KN3MXJ 3, (Dec.) KOPIV/3 136, W3MCG 131, K3KFM 109, GJD 44, JIQ 39.

**SOUTHERN NEW JERSEY**—SCM, Herbert C. Brooks. K2BG—SEC: W2YRW. RMs: W2BZJ, W2HDW and W2ZL. W2EZM, Maple Shade, recently visited HI-, KPA-, VP5- and KV4-Landis. K2DEI again made the BPL. W2BZJ, Pennington, reports the DVRA is making early plans for Field Day. K2RXB, Margate, has gone side-band. The DVRA plans another Old Timers Nite Round-up Apr. 29, the 16th. Contact W2ZL for details. NJ Emerg. and Phone Net totals: 31 sessions, QNI 683, traffic 178. W2SXV, ORS of Hightstown, has moved to Rochester, N. Y. Burlington County e.d. officials honored 95 amateurs and 65 restricted operators at a dinner held in January. K2ECY, Burlington Co. Ec, reports the following AREC activities: 2 meters, WA2HJI NCS, 5 drills; 6 meters, WA2NDK NCS, 5 drills; 10 meters, K2-ECY NCS, 4 drills. WV2QHM and WV2QHN are new calls in the Millville Area. W2BAY, Haddonfield, is building a 220-Mc. transmitter. K2VNL, NJN mgr., reports a January total of 447 messages. The net boasts an active QNI of 35 members. The SJRA plans its 2nd Annual QSO Party May 6 and 7. Contact K2UWH for details. The SJRA presented Achievement Certificates to K2DFE, K2YIB, K2HOD, K2KCI and W2ZX for their 1960 contributions to the club's activities. W2EIF, Camden OO, was the February speaker at the Levittown (N.J.) Radio Club. WA2VIG was home from Alaska for a short visit. Levittown's theory class continues with good success. WA2KCR has some new gear and a new vertical. The SJRA's top scorers in the 1960 SS Contest were: C.w., W2PAU, W2EXB, K2BZK and W2ERW; phone, W2LBX, WA2IEK, W2BVL and K2SHJ. W2ZUL has a new tower. With regret we report the passing of W2AEJ, Westmont, a former member and SJRA director. Areas and clubs not reporting are urged to do so. Traffic: K2DEI 200, K2RXB 143, W2RG 122, W2BZJ 100, WA2-MEQ 87, W2ZT 73, K2ECY 54, K2JGU 30, K2SOX 30, K2SNK 16, K2MOV 14, W2UI 10, W2BEI 8, WA2IBG 5, K2JIC 5, WA2HJD 2.

**WESTERN NEW YORK**—SCM, Charles T. Hansen, K2HUK—SEC: W2LXE. RMs: W2RUF and W2ZRC. PAM: W2PVI. NYS C.W. meets on 3615 kc. at 1900, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3510.5 and 3993 kc. (s.s.b.) at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, IPN on 3980 kc. at 1600. W2EZB takes BPL honors for January traffic. K2MQA has been appointed as OPS. K2UJZ, W2MTA/9 and K2KTR renewed as ORS. Congratulations to WA2GCH, the new EC for Clinton County, and W2IDM, EC for St. Lawrence County. W2EMW built the PHJ receiver (Sept. '60 QST) and reports it is FB for c.w. DX. K2EQB got married. K2YJN has a new RME 6900. WA2DAC has been building a vest pocket station for 6 and 2 meters. W2RUI worked W2ALR on 1296 Mc. K2ULY has his General Class ticket. K2LMG has constructed an s.s.b. exciter for 2 meters. The Penn York Hamfest will be held June 17 at 1-R Hall in Athens, Pa. The RARA Hamfest will be held May 6 at Doud Post in Rochester. The CCAREC has a mobile halo project with two prototypes built. W2IDM is organizing an AREC net to be affiliated with the Red Cross in St. Lawrence County. The North Country Radio Club elected WA2HEC, pres.; W2GAR, vice-pres.; and W2IDM, secy-treas. W2BB has moved to Boston. W2KKA and K2RNV have gone s.s.b. K2UIW is operating bedside on 75 meters, thanks to K2BYZ. K2KTK has a new Valiant and an SX-101A. The NYSPTEN announces K2BWK as mgr., K2QDT as 1st asst. mgr., K2MIEF as 2nd asst., and W2PGA as secy.-treas. WA2BPE is on d.s.b. at 50 Mc. with a homebrew exciter and linear. The Adirondack Radio Club wants the section name changed and also went on record as favoring its own section, reports WA2CRH. The Syracuse V.H.F. Club reports its highest score yet in the Sweepstakes. W2SB reports the N. Chautauqua ARC has obtained exclusive use of a building at the airport. The Auburn ARA now has a station call of its own.

WA2QBL, WA2GCH has compiled and edited a Champlain Valley Call Book. Anyone in the section desiring information on RACES or AREC activity in his area should contact either the EC, SEC or SCM in that order. This spring finds us trying to step up AREC activity and helping to find leaders and organize nets. Traffic: (Jan.) W2EZB 583, WA2CIG 416, W2RUF 295, K2SSX 210, W2OF 138, W2FEB 108, WA2CRH 100, WA2YB 68, K2JBX 63, WA2EYJ 61, K2QDT 50, K2OFV 42, W2VUY 41, K2LDG 36, K2RTQ 29, W2RQF 27, W2TPV 24, W2PTI 22, W2QQK 19, K2RYH 19, K2EE 15, W2PGA 13, K2GAO 11, WA2OTC 11, K2ULY 10, K2DXV 8, K2BBJ 7, K2YJN 7, K2BWK 6, K2RTE 5, W2BLO 4, W2EMW 3, WA2CEF 2, W2EFO 2, K2KTK 2, WA2DAC 1, K2DNN 1.

**WESTERN PENNSYLVANIA**—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA. RMs: KUN, NUG and GEG. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. Congratulations to WRE and MFB on receiving their Third Regional certificates. GJY announces the following winners in the Fourth Penna. QSO Party held in December: Penna. winners (1) DQG, (2) K3JJG, (3) K3HVL. Out-of-state winners (1) K2GTC, (2) K8GHH, (3) K2VGR. LIV reports that his local c.d. gave them ten mobile supplies for Health Sixers. The Greater Pittsburgh V.H.F. Society is going to hold a V.H.F. Hamfest at South Park this coming June titled, The Greater Pittsburgh VHF Hamorama. The Keystone Slow Speed Net (KSSN) meets at 1830 EST Mon. through Fri. and at 1900 EST Sat. and Sun. on 3585 kc. SMV is back on the air. GJY has a new home-brew pair of 813s on the air. JT is serving as acting net control for sector four Allegheny County. The Clearfield County ARA is starting a theory class under the supervision of GXV. The Radio Assn. of Erie has the call of GV as a memorial to Dawson Bliley. K3COT is vacationing in California. The Etna RC reports via Oscillator: RMS has a Tri-Bander; RFX is an amateur magician; K3JDP has earned his Breeze-shooters certificate. The Honeshore RC reports via Hamateur News: MBB has a monoscope; RBH took part in the Pa. QSO Party; K3HXV received his Worked All Pueblo certificate. K3HHN has a DX-100B, Coke Center RC has code and theory classes on Mon. evenings. The Cumberland Valley ARC reports via Valley QRM: ACH has been handling a lot of traffic from the Antarctic region; ZQU recently completed his 2-meter portable rig; the club mobiles participated in the March of Dimes Campaign. K3DDP is attending school in St. Louis and looking for a Pennsylvania sked on 6 or 40 meters. K3CLX is operating portable from Milton, Traffic: (Jan.) W3WRE 540, KUN 255, MFB 141, K3KMO 41, GHH 40, W3LSS 34, KNQ 16, SMV/3 6, UHN 6, K3COT 4, W3GJY.

## CENTRAL DIVISION

**ILLINOIS**—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME. SEC: PSP, RM: USR, PAM: RYU. EC of Cook County: HPG. Section net: ILN, 3515 kc. Mon. through Sat. at 1900 CST. The Central Division Convention Committee has announced a pre-registration prize and the blanks may be secured and registrations made by addressing SHM, c/o WMAV, Springfield, Ill. New officers of the Mississippi Valley Radio Club are PGE and VPV. This column extends sympathy to the family and friends of OXS, who served as EC of Hancock County until the time of his death. The Starved Rock Radio Club has set June 4 as the date for its very successful hamfest, which will be held at the same place as in previous years. K9OXW is now in WO-Land. K9LRY reports that a new club has been formed in Flora and those interested should contact him. K9MKW's new QTH is Fort Leonard, Mo. K9CNE is returning from D14USN and should be heard soon from his home station. LCI and WFH are two new calls heard in the Rockford Area. HOA is using a pair of Heathkit CB transceivers for communication for skiing. K9UOV is running a new Globe Scout on the traffic nets. K9TVA has erected a new tri-band for 10-15-20 meters and is now working good DX. K9MLI reports that he has joined the ranks of the married gang and hopes his XYL will let him buy new equipment. K9LXG has a new bamboo vertical antenna. K9QMJ is trying for the hard ones with his recently acquired SX-101A. JIN is celebrating his 25 years of hamming. K9OKD's new 800-watt final is doing a mighty job. SXL is chairman of the TVI committee of the Central Illinois Radio Club at Bloomington. HOD is attending the Philco transistor school of Philadelphia. Officers of the Western Illinois Radio Club AREC/RACES program are BIV, KRC, K9JJD, K9RHU.

(Continued on page 102)

## AN APPEAL TO INTELLIGENCE

A product that is consistently advertised in QST month after month, year after year, has to be good. Over 10,000 GOTHAM antennas have been purchased by QST readers. Even the "price-is-no-object" customers choose GOTHAM antennas on the basis of performance and value. Select your needs from this list of 50 antennas:

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**1805 PURDY AVE., MIAMI BEACH, FLA.**

Enclosed find check or money-order for:

### TWO BANDER BEAMS

A full half-wave element is used on each band. No coils, traps, baluns, or stubs are used. No calculations or machining required. Everything comes ready for easy assembly and use. *Proven Gotham Value!*

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### TRIBANDER

Do not confuse these full-size Tribander beams with so-called midgers. The Tribander has individually fed (52 or 72 ohm coax) elements and is broad banded. It does not have baluns, coils, traps, or other devices intended to take the place of aluminum tubing. The way to work multi-band and get gain is to use a Gotham Tribander Beam.

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|----------------------------------|---------|-----------------------------------|---------|
| <input type="checkbox"/> 6-10-15 | \$39.95 | <input type="checkbox"/> 10-15-20 | \$49.95 |
|----------------------------------|---------|-----------------------------------|---------|

### 2 METER BEAMS

Gotham makes only two different two meter beams, a six-element job and a twelve-element job. They are both Yagi beams, with all the elements in line on a twelve foot boom.

- |   |      |                                |       |
|---|------|--------------------------------|-------|
| <input type="checkbox"/> Deluxe 6-Element | 9.95 | <input type="checkbox"/> 12-El | 16.95 |
|---|------|--------------------------------|-------|

### 6 METER BEAMS

New records are being made every day with Gotham six-meter beams. Give your rig a chance to show what it can do, with a Gotham six-meter beam.

- |  |       |                                  |       |
|--|-------|----------------------------------|-------|
| <input type="checkbox"/> Std. 3-El Gamma match   | 12.95 | <input type="checkbox"/> T match | 14.95 |
| <input type="checkbox"/> Deluxe 3-El Gamma match | 21.95 | <input type="checkbox"/> T match | 24.95 |
| <input type="checkbox"/> Std. 4-El Gamma match   | 16.95 | <input type="checkbox"/> T match | 19.95 |
| <input type="checkbox"/> Deluxe 4-El Gamma match | 25.95 | <input type="checkbox"/> T match | 28.95 |

### 10 METER BEAMS

Ten meter addicts claim that ten meters can't be beaten for all-around performance. Plenty of DX and skip contacts when the band is open, and 30-50 miles consistent ground wave when the band is shut down. Thousands of Gotham ten meter beams have been perking for years, working wonders for their owners, and attesting to the superior design and value of a Gotham beam.

- |  |       |                                  |       |
|--|-------|----------------------------------|-------|
| <input type="checkbox"/> Std. 2-El Gamma match   | 11.95 | <input type="checkbox"/> T match | 14.95 |
| <input type="checkbox"/> Deluxe 2-El Gamma match | 18.95 | <input type="checkbox"/> T match | 21.95 |
| <input type="checkbox"/> Std. 3-El Gamma match   | 16.95 | <input type="checkbox"/> T match | 18.95 |
| <input type="checkbox"/> Deluxe 3-El Gamma match | 22.95 | <input type="checkbox"/> T match | 25.95 |
| <input type="checkbox"/> Std. 4-El Gamma match   | 21.95 | <input type="checkbox"/> T match | 24.95 |
| <input type="checkbox"/> Deluxe 4-El Gamma match | 27.95 | <input type="checkbox"/> T match | 30.95 |

**CITIZENS BAND ANTENNAS** • Any of our ten meter beams or the V40 vertical is perfect for the CB operator.

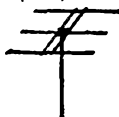
**1961**  
**FREE CATALOG**

Name.....  
 Address.....  
 City.....Zone.....State.....

### New! Ruggedized 6, 10, 15 METER BEAMS

Each has a TWIN boom, extra heavy beam mount castings, extra hardware and everything needed. Guaranteed high gain, simple installation and all-weather resistant. For 52, 72 or 300 ohm transmission line. Specify which transmission line you will use.

- |   |         |
|---|---------|
| <input type="checkbox"/> Beam #R6 (6 Meters, 4-El)...   | \$38.95 |
| <input type="checkbox"/> Beam #R10 (10 Meters, 4-El)... | 40.95   |
| <input type="checkbox"/> Beam #R15 (15 Meters, 3-El)... | 49.95   |



### 15 METER BEAMS

Fifteen meters is the "sleeper" band. Don't be surprised if you put out a quick, quiet CQ and get a contact half-way around the world. Working the world with low power is a common occurrence on fifteen meters when you have a Gotham beam.

- |  |       |                                  |       |
|--|-------|----------------------------------|-------|
| <input type="checkbox"/> Std. 2-El Gamma match   | 19.95 | <input type="checkbox"/> T match | 22.95 |
| <input type="checkbox"/> Deluxe 2-El Gamma match | 29.95 | <input type="checkbox"/> T match | 32.95 |
| <input type="checkbox"/> Std. 3-El Gamma match   | 26.95 | <input type="checkbox"/> T match | 29.95 |
| <input type="checkbox"/> Deluxe 3-El Gamma match | 36.95 | <input type="checkbox"/> T match | 39.95 |

### 20 METER BEAMS

A beam is a necessity on twenty meters, to battle the QRM and to give your signal the added punch it needs to over-ride the high power boys. Hundreds and hundreds of twenty meter beams, working year after year, prove that there is no better value than a Gotham twenty meter beam.

- |  |       |                                  |       |
|--|-------|----------------------------------|-------|
| <input type="checkbox"/> Std. 2-El Gamma match   | 21.95 | <input type="checkbox"/> T match | 24.95 |
| <input type="checkbox"/> Deluxe 2-El Gamma match | 31.95 | <input type="checkbox"/> T match | 34.95 |
| <input type="checkbox"/> Std. 3-El Gamma match   | 34.95 | <input type="checkbox"/> T match | 37.95 |
| <input type="checkbox"/> Deluxe 3-El Gamma match | 46.95 | <input type="checkbox"/> T match | 49.95 |

(Note: Gamma-match beams use 52 or 72 ohm coax. T-match beams use 300 ohm line.)

### SOME QUESTIONS AND ANSWERS

Why are all Gotham beams of the Yagi type, all metal, and grounded at the center? Answer: To get the maximum strength for the minimum weight, to get maximum efficiency, and to avoid the use of wood, tuning stubs, traps, or other substitute devices, all of which are undesirable and unnecessary. In addition, grounded beams are lightning-proof and protect your home.

How do Gotham beams gain compare with higher priced antennas? Answer: No beam, regardless of price, can give more gain, for a given boom size, than a Gotham beam. Obviously, the more elements, the more gain. Our gain figures are published in our literature, and are available, free, on request.

Why is the Gotham price so very low? Doesn't the low price mean a lack of quality? Answer: The Gotham price is low because we sell in quantities and make only a fair profit on each antenna. We do not add on a tremendous overhead and engineering charge. As for quality, we have always used the best materials, and every antenna is doubly inspected before shipment. Thousands of Gotham antennas are in use the world over.

What is the difference between the Standard and the Deluxe beams? Answer: The Standard beams in the 6, 10, and 15 meter bands use 3/8" and 1/2" tubing elements; the Deluxe models for these bands use 1/2" and 1" tubing. In the 20 meter beams, the Standard beams have a single boom, while the Deluxe beams use twin booms. All 20 meter beams use full 12 foot booms. In the 20 meter beams and in the Twobanders and Tribanders, only 3/8" and 1" tubing are used.

Is it advantageous to use a Gotham Twobander or Tribander beam? Answer: Hundreds of these beams are in daily use. They are compromise beams, but by having each element a full half-wave, their gain figures are more than reasonably good. Of course a single three element beam on a single band will outperform a Tribander on that band, but the Tribander permits beam operation on three bands.

## IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked— with only 65 watts and a \$16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California  
January 31, 1959

GOTHAM  
1805 Purdy Avenue  
Miami Beach 39, Florida

Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,  
Thomas G. Gabbert, K6INI (Ex-T12TG)

## OR IS K4ZRA THE NEW CHAMP?

Read his letter, and see his diagram of a typical installation and what it achieved:

2539 Christie Place  
Owensboro, Kentucky

GOTHAM  
Miami Beach, Florida  
Gentlemen:

While I was at home last summer, I had occasion to use your GOTHAM vertical antenna on the air for about two months. I was quite amazed with the excellent performance of that inexpensive and simply installed antenna. It did everything you, K6INI, and others said it would, in spite of the generally poor band conditions during the summer months.

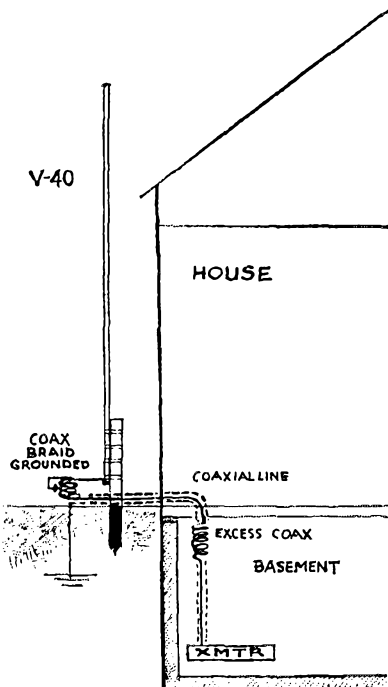
During the time I used this antenna, I worked well over 100 DX stations in 44 different countries, earned a WAS certificate, and worked the necessary stations for WAVE, receiving very fine signal reports from all. My rig ran from 75 to 100 watts plate input and the receiver was an old military ARR-7 (Hallicrafters rebixed SX-28).

The above mentioned contacts were made with the vertical mounted several inches off the ground, without radials, with only a simple ground connection to the coaxial shield. Later I raised the antenna up about 20 feet and installed the radials and this improved the already good signal pattern and enabled me to pick off another 12 DX countries and other DX contacts in a couple of weeks of good band conditions. In the latter part of August I used several single-band vertical and ground plane antennas and found that the single GOTHAM vertical equalled all these individual antennas.

Another attractive feature is the versatility of installation. It works high or low on ground, with or without radials,

## K4ZRA's INSTALLATION

THAT WORKED WONDERS WITH A GOTHAM V-40 VERTICAL



mounted in any space. Of course I did find that the best installations were the two mentioned above, but they were fairly simple to arrange, especially the first one!

The GOTHAM vertical is also a superior receiving antenna and I would strongly urge you to recommend that it be used for receiving as well as transmitting.

I just wanted to tell you how pleased I was with the overall performance of your antenna. For an inexpensive, easy-to-install, dependable antenna that really works for both DX and "local" W/K contacts, I don't see how one could ask for more and I would certainly recommend a GOTHAM V-40 to anyone desiring these features. Good luck in 1961 with those FB antennas!

Sincerely,

Daniel F. Onley, K4ZRA

Some Stations worked by K4ZRA using a Gotham V-40. Call, RST, freq. mc. given

CE1AD -569-14	W1AW -599-14	PX1PF -569-14
CO7NR -579-14	KG1FR -579-14	PY7AIO -579-7
CN8MB -579-14	K44AB -579-14	SPKDT -579-14
CT2BO -579-14	KH6JG -589-14	T12DN -599-14
DL1EE -589-14	KL7AWR -579-7	UA3GM -579-14
EA2FO -589-14	KM6BT -579-14	UB5FK -579-14
EA8CP -589-14	KP4TIN -589-7	VP2LD -569-7
EL4A -589-14	KV4AA -589-14	VP3YG -559-21
F9ER -579-21	KZ5BC -589-14	VP4TK -? -21
FA2VC -589-14	LZ1G -559-21	VP5VB -589-21
FP8BM -599-14	LU2NZ -589-14	VP7VB -589-14
G3JLB -589-14	OA4HK -589-14	VP9C -599-14
GW3IEM -579-14	OESHE -559-21	VQ2IE -559-14
HB1ZA -589-14	OH3ND -569-14	VO3HE -569-14
HCIJU -589-14	OK2PO -579-14	XE3BL -589-14
HK1ZOT -? -14	OX3MT -599-14	YN4AE -579-14
HK3RQ -579-14	PA0MDG -569-14	YU1KA -569-14
I1BVP -599-14	PJ2AE -579-14	YV5APR -589-14

### CANADA:

VO1DC -599-14	VE3BU -589-7	VE7AIT -589-14
VO2AW -579-14	VE4MW -589-14	VE8RW -599-14
VE1DO -589-14	VE8KY -589-14	VE9NM -589-14
VE2EA -599-14	VE6VV -589-14	

All states were worked with very fine reports.

# FACTS

## ON THE GOTHAM

### V-80 VERTICAL ANTENNA

- If K6INI can do it, so can you.
- Absolutely no guying needed.
- Radials not required.
- Only a few square inches of space needed.
- Four metal mounting straps furnished.
- Special B & W loading coil furnished.
- Every vertical is complete, ready for use.
- Mount it at any convenient height.
- No relays, traps, or gadgets used.
- Accepted design—in use for many years.
- Many thousands in use the world over.
- Simple assembly, quick installation.
- Withstands 75 mph wind-storms.
- Non-corrosive aluminum used exclusively.
- Omnidirectional radiation.
- Multi-band, V80 works 80, 40, 20, 15, 10, 6.
- Ideal for novices, but will handle a Kw.
- Will work with any receiver and xmitter.
- Overall height 23 feet.
- Uses one 52 ohm coax line.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price. **ONLY \$16.95.**

73.  
GOTHAM



YOU COULD  
WORK  
WONDERS WITH  
A  
GOTHAM  
VERTICAL  
ANTENNA!

### FILL IN AND SEND TODAY!

*Airmail Order Today — We Ship Tomorrow*

**GOTHAM** Dept. QST  
1805 PURDY AVE., MIAMI BEACH, FLA.

Enclosed find check or money-order for:

V40 VERTICAL ANTENNA FOR 40, 20, 15, 10 AND 6 METER BANDS. ESPECIALLY SUITED FOR THE NOVICE WHO OPERATES 40 AND 15..... \$14.95

V80 VERTICAL ANTENNA FOR 80, 40, 20, 15, 10 AND 6 METER BANDS. MOST POPULAR OF THE VERTICALS. USED BY THOUSANDS OF NOVICES, TECHNICIANS, AND GENERAL LICENSE HAMS... \$16.95

V160 VERTICAL ANTENNA FOR 160, 80, 40, 20, 15, 10 AND 6 METER BANDS. SAME AS THE OTHER VERTICAL ANTENNAS, EXCEPT THAT A LARGER LOADING COIL PERMITS OPERATION ON THE 160 METER BAND ALSO..... \$18.95

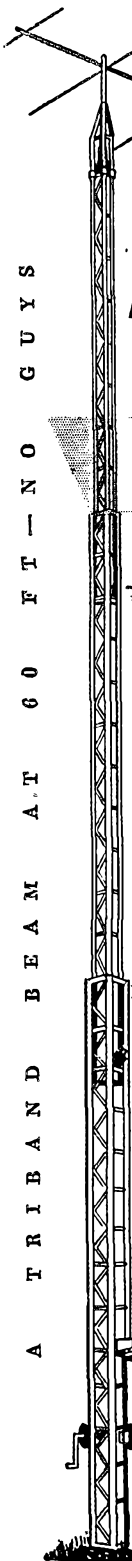
**HOW TO ORDER.** Send check or money order directly to Gotham. Immediate shipment by Railway Express, charges collect. Foreign orders accepted.

Name.....

Address.....

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

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**DESIGN**  
**STRENGTH**  
**DEPENDABILITY**

THREE REASONS WHY  
YOUR BEST BUY IS...

**E-Z WAY**  
*Satellite "60"*

E-Z WAY AERO-DYNAMIC design decreases wind load and provides telescoping action that permits raising and lowering of tower sections. **CRANK UP TO 60 FEET, DOWN TO 25 FEET and TILTS OVER FOR ACCESS TO ROTOR OR BEAM.**

**STRENGTH** is built-in to every E-Z Way Tower...Heavy wall steel tubing legs, continuous diagonal bracing of solid steel rod and electrically welded throughout....no loose bolts or nuts here. E-Z Way design and strength are your assurance of **DEPENDABILITY** that you can count on year after year. See your nearest distributor today or write for free literature.

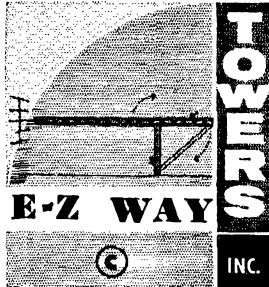
**The SATELLITE**

- Model RBX-60-3P (Painted) \$335.00
- Model RBX-60-3G (Galvanized) \$410.00

**MOUNTING KITS:**

- GPK X60-3 (Ground Post) \$125.00
- BAK X (Wall Bracket) \$17.00

Freight Prepaid anywhere in (48) U.S.A.



**E-Z WAY**



**FORMERS INC.**

K9MFS, K9KOJ and K9MRM. CRV is recuperating from his hospital trip. K9ROL's new shack contains an HT-32A and a 101A. PNE, G3PU, up on 160-meter c.w. Christmas. LZE is the proud owner of a new Collins 75A-4. PBY is now active on RTTY. PVT is looking forward to pleasant c.w. contacts with his TO Kover. New officers of the SRRC are K9KHZ, NIU, QLZ, and PNY. YYG was married Feb. 18. GBT is experimenting with a police Alotrola transmitter on 2 meters. K9IYN, K9IDN, K9SEA, K9PXU, DGV, K9YCF and K9MIVJ are the new officers of the Quad City Amateur Radio Club. New appointees include K9HQW, KN9ZYK and KN9BGV as OESs; K9OZM, K9UGY and K9QAE as ORSs and K9UOV as ORN. The Sangamon Valley Radio Club graduated 15 new Conditionals and Novices from its latest class. The No Name Phone Net traffic count for December was 707 and for January was 209. The ILN handled 798 messages in 28 sessions for the month of December. The North Central Phone Net message count for January was 200. The RPL awards for January went to K9OZM, IDA and DO. Late RPLs go to USR, K9UOV, and K9CIL for December. Traffic: (Jan.) K9OZM 548, W9IDA 528, DO 520, K9UGY 262, QAE 242, BTE 168, W9JXV 133, K9IVG 115, W9FAW 58, K9GSR 58, UOV 55, W9DZR 54, K9QYW 51, SCP 46, W9MAK 35, K9WEG 34, W9SXL 33, K9JTD 22, WFG 32, OCUT 25, OAD 21, RHU 23, W9PRN 32, K9IVA 19, LXG 19, W9FET 16, K9RAS 16, BIV 13, VEW 10, PFL 9, W9YMZ 8, K9LLA 7, W9AXV 6, KN9BGV 6, W9GFF 6, K9QVA 5, RHU 5, W9WPC 4, VBV 2, KCR 1, KHZ 1, PNY 1, K9QPA 1. (Dec.) W9GSR 551, K9UOV 400, CTL 100, RHU 23, TVA 13, RAS 8.

**INDIANA**—SCM, Clifford M. Singer, W9SWD—Asst. SCM; Arthur G. Evans, 9TQC, SEC; SNQ, PAMs; K9AOM, BKJ, K9PFQ and RVM, RMC; DGA, TT and VAY. Net skeds: IFN 0900 daily and 1830 Mon.-Fri. on 3910 kc. ISN (s.s.b.) 1930 daily on 3920 kc.; QIN (training) 1800 Mon.-Wed.-Fri. on 3745 kc.; CAEN (160 meters) daily at 1900 on 1850 kc.; QIN daily at 1900 and RFN 0700 Sun. on 3656 kc. New appointments: K9PFQ as PAM of CAEN; K9OET as OBS and EC of Allen County; YDP as EC for Jennings County. New officers of the Michiana ARC are WCE, RZO, K9MVX, K9AJC, BYY, K9UOJ, BDG and ZIB. K9VEC has added a 6-meter transceiver to his station. Seymour ARC elected DES, K9DZS, RTH, K9BGU, BXP and SIO. JFJ has the Collins S/Line receiver and transmitter. K9PFQ is enjoying his new Viking II. The Allison ARC held a successful swap and auction with 100 present. NZZ is back in business with regular Arctic skeds and made BPL No. 109. Tri-State ARS's new officers are K9JSE, OVB, AIN and K9GBB. K9OET has a new G-76 for base and mobile. Tri-State College ARC officers are K9UDW, K9SGS and W8MNP/9. The club station is PMZ. New officers of the Delaware ARA are K9USE, K9BPA, K9JJC, K9TNG, K9IZP and BZI. The club meets the 1st and 3rd Tue. of each month. Kokomo ARC elected K9IHS, K9PEF, K9CFG, YIT and PNZ. DKR is trustee. The Indiana Radio Club Council will be at Indiana U. on Apr. 9. All interested amateurs are welcome. The Council's Annual Hamfest and Family Picnic will be held in Indianapolis July 16. K9MSB is general chairman. The RCARC is host. *Amateur radio exists as a hobby because of the service it renders.* January net reports: RVAI reports IFN total at 294; ISN traffic was 117, reports K9AOM; CAEN totaled 22, reports K9PFQ; VAY reports QIN traffic at 227 and QIN (training) at 37 and TT reports 66 messages for RPN. Making BPL: JOZ and NZZ. Traffic: (Jan.) W9JOZ 523, TT 269, ZYK 238, MM 202, NZZ 177, VAY 148, K9RMQ 97, W9SWD 64, GJS 56, RTH 56, K9AOM 51, WET 49, ILK 37, W9CC 33, UQU 33, EJW 30, K9OET 30, W9DGA 27, FVH 26, K9PFQ 19, W9SNQ 18, YX 14, K9IXD 12, NBK 9, W9RUQ 8, BDP 6, K9HMC 5, W9OCC 5, K9VEC 5, W9DOK 4, K9VIV/9 4, MAN 3. (Dec.) K9KCQ 163, W9AOJ/9 131, K9RSI 33, W9RVR 22, AB 20, K9BSU 15, UEF 11, WST 11, RKX 6, GSV 4, VHE 2.

**WISCONSIN**—SCM, George Woida, W9KQR—SEC; BCC, PAM; NGT and NRP, RMs; VHP and VIK. New appointees: K9GDF as OPS, FXA as ORS, VSO as OO Class III and IV. Because he has moved out of the Wisconsin section, YQH has been forced to resign as SEC. He wishes the Wisconsin amateurs the very best and thanks all for their cooperation. KHH is now in SVQ-Land on the Coast Guard cutter *Courier*, a Voice of America transmitter ship serving the Middle East. New officers of the Four Lakes Amateur Radio Club of Madison include K9QDG, pres.; K9YXW, vice-pres.; CBE, secy.; K9EBL, treas. K6DDO is active from Madison as AIW while attending the U. of Wis. and holds OO Class I. K9RRS has a new 600-watt s.s.b. rig on 6 meters plus a new Drake receiver. FZC's voice can be heard on TV channel 6. Milwaukee, giving traffic and road conditions from the State Traffic Patrol Bu-

(Continued on page 104)

P.O. BOX 5767 TAMPA 5, FLORIDA



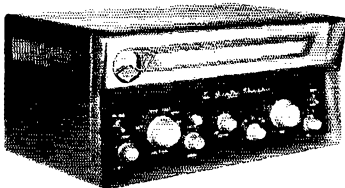
# SIX SENSE...

Six sense . . . good sense six times over. Six bands . . . a jumping-lively communications receiver on every band and six meters, not as a compromise or afterthought, but with the same excellent sensitivity and stability as the five other low frequency bands!

Here's opportunity to have yourself a fine-performing, all-band receiver and at the same time, six meters to increase the scope of your operating enjoyment. This band supports some exciting DX when Mr. Sun's spots permit . . . it is a place to meet interesting people anytime.

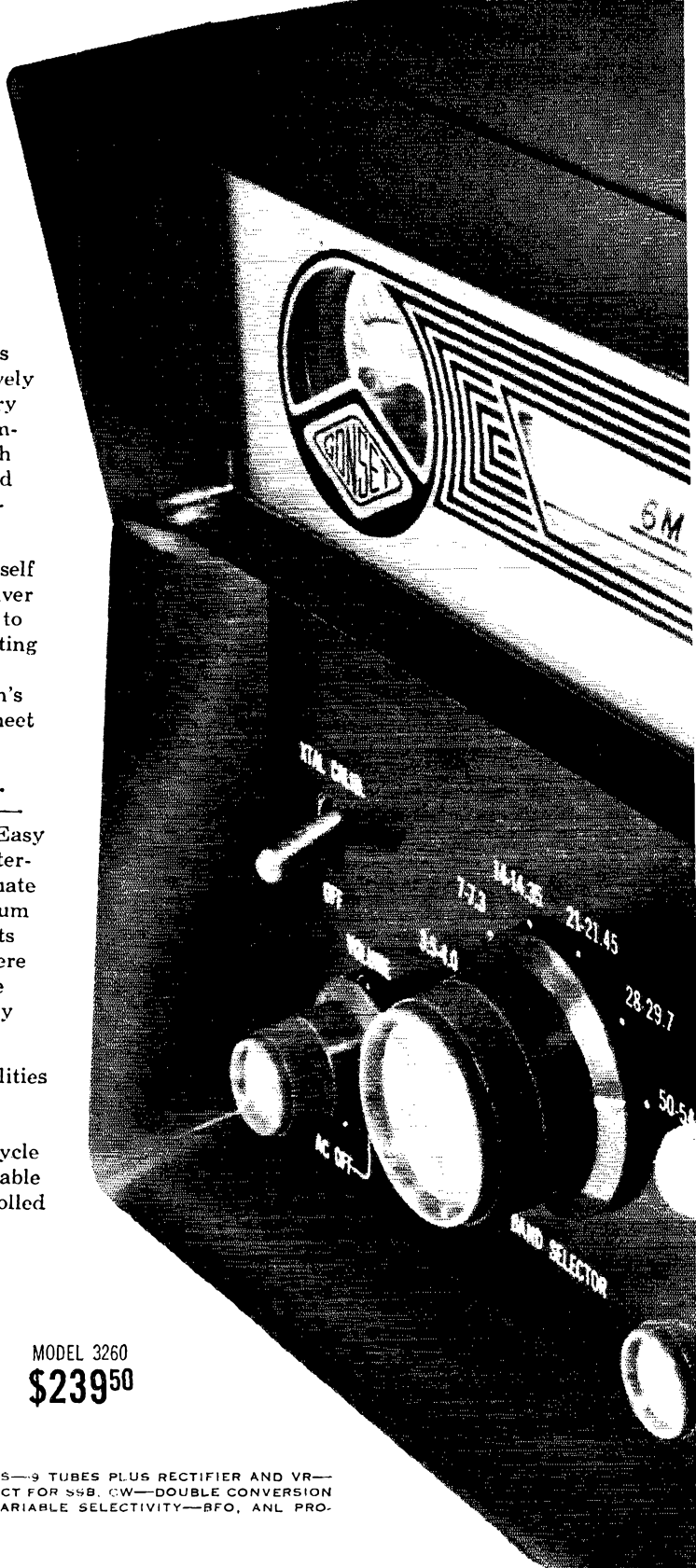
G-63 gives you AM reception . . . and SSB . . . and CW. It's stable—well compensated for low drift. Easy to tune also with smoothly counter-weighted tuning knob and adequate step-down ratio. A full vision drum dial exposes only band in use, lets you keep better track of just where DX and other stations are in the band. Each amateur band is fully spread across dial.

G-63 also opens up great possibilities for those who operate 2 and 1 1/4 meters because the 50-54 band covers a smooth-tuning 4 megacycle range, provides an excellent tunable I-F for home-built crystal controlled 2 meter front ends.



MODEL 3260  
**\$239<sup>50</sup>**

**FEATURES** 6 BANDS, 80 THRU 6 METERS—9 TUBES PLUS RECTIFIER AND VR—TWO DETECTORS, DIODE FOR AM, PRODUCT FOR SSB, CW—DOUBLE CONVERSION—PEAKING TYPE Q MULTIPLIER FOR VARIABLE SELECTIVITY—BFO, ANL PROVISIONS FOR XTAL CALIBRATOR.



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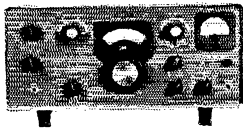
EXPORT SALES: WESTREX CORP., 540 WEST 58TH STREET, NEW YORK 19, N.Y.



WARD J. HINKLE

a word from  
**Ward, W2FEU**

**"IT'S TRADE-IN TIME AT  
ADIRONDACK."**



The crusty, thrifty Scotch folk have a wonderful old saying that goes: "Keep a thing for-r siven yir-r-r-s — and ye'll find a use for-r — it!"

Back in the days when new things were hard to come by, and money was scarce, it may well have been a good idea to hang on to the old possessions.

But if a modern day ham tried to live by that old adage, he's soon find himself loaded down with so much obsolete equipment that he's be plumb short of space for any new gear!

Just think of this. Today — right now — you probably have some old equipment in your shack which you haven't even used for the past six months! And the odd part is that somebody, somewhere, is hunting high and low for just that equipment! What to do about it? Simply this:

Sit down. Drop me a post card telling me what you have. In no time at all we'll make you a good, fair deal where I'll take that gear off your hands and credit it toward a down payment on a piece of spanking new equipment — such as the "Cadillac of Transceivers" — the Collins KWM-2 Mobile or Fixed Station SSB Transceiver!

With this particular unit the Collins people undoubtedly jumped to the head of the class. That KWM-2 is a sharp looking, lightweight beauty that operates on all bands from 3.4 to 29.7 mc., works on voice or CW, has a power output of 100 watts, and, best of all, is designed to work like a charm in your car, boat, plane, fixed station, camp, home or what-have-you!

Send along that post card today. I'll be looking for it.

Before you buy or trade, wire, write,  
call or drop in to see **WARD, W2FEU**

*Ward J. Hinkle W2FEU*

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Write for our latest "used" list

reau each morning. Our sympathy to NLJ, who is moving to Madison to start anew at 1XCC. Twenty-six members of MARS at Eau Claire attended a banquet and meeting to start the new year. K9HGQ is running amateur TV transmission on 420 Mc. Mon. and Fri. nights from 7 to 9. 4VRD/9 is active on the BEN as NCS from Madison. K9PQT has worked his 100th country and is looking for states for a 15-meter WAS. The Jefferson County Club's new officers include K9AJM, pres.; K9DJR, vice-pres.; K9LCA, secy.-treas. GIL received his A-1 Operator certificate. EC ONI has a new mobile installation. OO notices mailed in Jan.: RKP-102, GFL-38, K9GDF-22. Official Bulletins are transmitted by VZK on s.s.b. Mon. through Fri. on 7215 kc. at 2400 GMT. July 9 is set as the date for the Wisconsin Net Association Picnic to be held at Fond du Lac. New in Wisconsin Rapids is KN9HZH. Traffic: (Jan.) W9DYG 714, CXY 396, K9GDF 154, W2MTA 9 77, W9VHP 64, ONI 55, KQB 49, SAA 38, K9EQQ 30, W9CBE 29, W4VRD/9 25, W9DKH 24, NRP 24, VIK 24, LFK 18, MWQ 18, APB 14, K9HDL 14, W9FZC 12, K9HJS 9, W9WJH 9, ZB 8, K9ULJ 7, W9CCO 5, KN9YTJ 5, W9GIL 3. (Dec.) K9CJL 27, W9FZC 5.

**DAKOTA DIVISION**

**NORTH DAKOTA**—SCM, Harold A. Wengel, W0HVA—The North Dakota 75-Meter Phone Net reports for January: 25 sessions with 708 check-ins; Maximum number of check-ins 38, minimum 20; 67 pieces of formal traffic handled, 92 informal and 12 relays. The C.W. Net is in need for more activity. KOCLY, with his wife and baby daughter, have moved from Bismarck to Ames, Iowa. KORLF is sporting a DX-40. CBN was appointed EC of Williams County and KOIVQ was appointed ORS. Traffic: K0IVQ 163, ITP 96, HSA 55, WYV 39, W0BHT 30, KORLF 15, MPH 14, KJR 12, W0IRN 11, W0AQR 8, GGD 6, KORRZ 9, GGI 8, GRAI 8, TPK 8, GGL 6, W0PBC 5, HFF 5, AYJ 4, K0DWX 4, PVG 4, W0TQA 4, K0PVB 3, TVM 3, W0TAN 2, K0PKO 2, EMA 1. (Dec.) K0ATK 4.

**SOUTH DAKOTA**—SCM, J. W. Sikorski, W0RRN, SEC, SCT. Section Net certificates for participation in the South Dakota C.W. Net have been presented to K0BMO, K0VYV, CWJ, QMC, WCN and K0DYR. The ARC of Hot Springs has a new station at the IA Center, with the call BSC. The rig is an HT-37, a Thunderbolt and an SX-311. YQR qualified as Class II OO in the November FMT. ZWL made BPL for the third month in a row. The Hi-Li ARC elected K0WJT, pres.; HWX, vice-pres.; K0VNC, secy.-treas.; and ACJ, act mgr. VNO received his Conditional Class ticket at Sargis. K0BSW has been appointed EC for Lake County. New calls: KN0S EGL and FID, Sioux Falls, and KN0FKJ, Dell Rapids. RKN has a Stoureners' class of 14. QR is mobile with a new AF-68. Traffic: W0SCF 316, DVB 170, K0BMO 96, AIE 81, YNR 29, W0WFF 26, CTZ 29, K0VYV 23, W0VTX 19, VQC 13, PMA 9, K0DHA 6, W0VVF 5, K0BYV 4, W0RQY 3, TLU 3, K0YBZ 2, W0DIY 1, K0TPF/O 1, VIZ 1.

**MINNESOTA**—SCM, Mrs. Lydia S. Johnson, W0KJZ—Asst. SCM: Rollin Hall, 01ST, SEC: TUS. PAMs: OPX and K0EPT, RMs: PRT and KOIZD. New NCSs for the MSPN (none) are ALW, OPX, HEN, WVT, DZZ and UMX; (voicing) OPX, TUS, K0S SNC, SNG, MGT and QBI. UYR says that the 6-meter net meets 3-W-F at 0300 GMT on 51 Mc. EC OGP installed his mobile Gonset G-68B and G-77 with a Webster Band Spanner Whip. New editor of the section news bulletin *Cipher Log* is NYM, who is a science and math professor in Little Falls. K0DLE applied for AREC membership. His station has a DX-100, a T-50 Knight and an HQ-110 receiver. K0OQT, who keeps regular skeds with KG1FR and CESEF, joined the ranks of the married OMs. NKB is home on a 30-day leave after two years in Japan. K0LBC is employed at KWAD. EC K0MEQ and his XYL attended the "capping services" of their YL, a student nurse in Milwaukee. OOs KLG and WAS reported a total of eight violations. K0S OSY and ZNE are engineers at KCMT TV station. K0NIN and his XYL were hosts to the following hams: K0ULX, UMA, LWK, VPI, IUC, VPO, ZSK, W0S BHA, EYW and NYM. OO KLG warns all phone stations to keep their modulation level below 100 per cent to avoid splatter. YL KNOZED's brother is KNOZON. The Reading Radio Club station has a Heath AR-3 receiver and Globe Chief transmitter. AMB has a new Apache on the air. OTU showed slides and narrated his trip to the Holy Land at K0MEQ's QTH and the schools in Monomery. New Ulm Club officers are K0UMY, pres.; K0IYK, vice-pres.; KNOAYU, secy.-treas.; the club trustee of K0TSW is YAC. Deepest sympathy goes to the families of YAZ and YPQ, who became Silent Keys. KNOZRW has a DX-40 and

(Continued on page 106)

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- |        |         |        |        |
|--------|---------|--------|--------|
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| W1JHR  | K5MRQ   | W6DLS  | W0AHU  |
| W1MAE  | K50AJ   | W6JFW  | W0PQW  |
| W1VP   | K5QHZ   | W6KVH  | W0SYN  |
| K2IEG  | K5TCM   | W6PLG  | KN0AJM |
| W2JEU  | K5ZHB   | W7HCJ  | KN0AOX |
| K3DML  | K5ZPS   | K7GCO  | K0DOM  |
| K3EMA  | W6AEE   | K7MSL  | W0LTE  |
| W3FFZ  | W6DRZ   | W8DUS  | K0OBX  |
| W4CV   | W6GWY   | W8LUI  | W0QAN  |
| W4LHS  | WV6HBD  | W8PDZ  | K0SCG  |
| W4RP   | K6AQP   | W9GLM  | W0USE  |
| K4VKA  | K6TMY   | K9QPX  | K0VQH  |
| KN4WVK | K6HIJ/0 | KN9SZY | K0VVS  |
| W5JND  | K6HJN   | K9UBW  | KL7CZM |

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**IMPEDANCE MATCHING** by Alexander Schure, Ph.D., Covers impedance matching in electrical and electronic circuitry. Provides detailed information on how to obtain maximum power transfer between any type of generator and load. Dealing initially with maximum power transfer in d-c circuits, the text covers inductance-capacitance relationships, vector notation and the j operator. Impedance matching devices, their application at audio and radio frequencies and in transistor circuits are covered. #186-23, \$2.90.

**SHORTWAVE PROPAGATION** by Stanley Leinwolt (Radio Frequency & Propagation Mgr.—Radio Free Europe). Of special interest to those concerned with radio communications. This review in QST (May 1960) sums up the book's vital interest to all amateurs:

"... written at just the right level for the amateur interested in ionospheric propagation..... There is... background material—necessary for an understanding of the subject—on the ionosphere, on radio waves, on sunspots and the sunspot cycle, all treated in language that is easy to follow.

Of special interest to QST readers are chapters on amateur contributions to knowledge of wave propagation and a forecast—advanced with admitted caution!—of probable amateur-band conditions during the coming sunspot cycle. Throughout the book the reader is introduced to various interesting aspects of propagation: one-way skip, for example, scatter, meteor, auroral effects—all the things that ham operators continually encounter in everyday operation. It would be hard to find a question about propagation in the 3-30 Mc. region—at least the type of question that an amateur would ask—that isn't covered somewhere in this book, even if only (of necessity) by the statement that the answer hasn't yet been discovered." #231, \$3.90.

**RIDER GLOBAL TIME CONVERSION SIMPLIFIER** by Lt. Col. John G. Daiger (Ret'd). No matter where you are located you can tell at a glance what time it is anywhere in the world with ease. It lists small towns and large cities around the world; large cities and small towns in the United States. It is color-keyed to tell you immediately the correct day. Corrects for areas that have Daylight Saving Time. Has conversion tables for those who use 24-hour calculated system. Colorful chart and map makes it usable to anyone. #238, \$1.

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an S-107 receiver and has worked 43 states, as has KNØZRX. KØUKU earned the sticker for 20 CP. These appointees were endorsed: ALW, OJG and EPT as OPSs; QLM, ORK and KJZ; as ORSS; KLG as OO; ORK as OBS and SNC, OJG, GKI and KYG as ECs, Traffic: (Jan.) WØPET 182, I8J 139, KJZ 138, TUS 135, KØORK 86, SNC 86, WØQDL 76, RIQ 64, GPX 62, KØSNG 59, QBI 58, WØOJH 54, LST 46, KØUKU 46, IZD 35, EPT 33, WØTHY 33, KLG 31, KØPML 30, WØKYG 27, KØØQT 24, SBB 24, WØNYM 22, WMA 18, DØL 17, OO 15, VPO 15, KØJYJ 14, WØWVT 14, ALW 13, KØMPG 13, WØUMX 13, KØVPP 12, WØKFN 10, IDV 9, LWK 9, WØBUO 8, KØZKK 8, KØAKM 7, KØMGT 7, WØPGF 6, KØMNY 6, WØMXC 6, KØVJP 6, WYV 6, WØHMV 5, KØICG 5, WØOGP 5, KØOCIB 4, KØRHN 3, IKU 2, KYK 2, WØOET 2, KØVXW 2.

## DELTA DIVISION

**ARKANSAS**—SCM, Daniel B. Patterson, W5SMN—SEC; K5CTR, PAM; DYL, RM; K5TYW. The cooperation between the Graveyard Net and the Arkansas Emergency Net continues to be very good. To break off a net at a certain time is very hard to do but it is being done by the Graveyard Net. Our thanks to the NCs and members who are cooperating. RTTY is beginning to be the up-and-coming thing here in Arkansas. This station hopes to be on RTTY by the time this goes to press. This is the newest type of amateur communications and is very interesting. To find out more about RTTY contact your nearest RTTY society. RYM has received some very good equipment which will be in operation soon. However to install the equipment he must cut a hole in the ceiling! K5CTV was invited to appear before a science class consisting of 60 high school students. The class was studying communications and Arl gave a talk and demonstration on amateur radio. The students were very interested and kept him busy answering questions for over an hour. This is a fine piece of work and Arl should be complimented. Traffic: (Jan.) K5USE 484, IFS 38, W5SMN 15, SZJ 15, DTR 6, K5TYW 4. (Dec.) K5USE 1020.

**LOUISIANA**—SCM, Thomas J. Morgavi, W5FMO—Should anyone have a book on a RC-640, the Loyola University ARC would like to use it. The N. O. Medical Net met at Pittari's for the bi-monthly dinner and eyeball QSO with NZ, GHP, VQP, ZPA, K5YMS, STJ, PNR, SGK, SGJ, SMC and FXK attending. WGC has had a bit of heart trouble so is taking it easy with his new HT-32. Baton Rouge ARC's new officers include K5ZOZ, pres.; IQM, vice-pres.; K5OKR, secy.; DPM, treas. The new Iberia ARC is looking around for a RC-610 for its club station. The Jefferson ARC elected K5TZD, pres.; K5SGK, vice-pres.; K5ODD, secy.; K5HEK, treas.; K5YMY, WZE and EBK, board of directors. A fine net is now in operation each Sun. at 2000 CST on 30.4 Mc. IQR is net control. 4LDM/5 has been reendorsed as ORS. 5USX is off the air while his transmitter is being repaired. EA is getting a DX-100B for his home station. MXQ, our SEC, has been very active with AREC activities along with his traffic-handling on the bands. CFZ has his teletype receiving but is having trouble with f.s.k. K5USO got an LM for some frequency checking. K5BIB is in the hospital with a heart attack. TL is there too but is improved. K5QXV had big trouble. W5NUH made top score in the CD Party for Louisiana. K5CTR is working hard on his single sideband exciter. CIT fought a losing battle with his transmitter. A ten-year-old bias battery was the culprit. When did you last look at the appointment date on your ORS or OPS certificate? Traffic: W5CEZ 273, K5USO 131, W5MXQ 76, NUH 75, K5PGV 61, W4LDM/5 20, K5UPA 8.

**MISSISSIPPI**—SCM, Floyd C. Teetson, W5MUG—CBW has received an FB commendation from the Air Force for his work in the MARS Program. Mississippi hams will remember Bob and his 2-meter activity on the Gulf Coast. Congratulations, Bob. A sideband supper was held on the coast recently. The boys on the coast put on a fine program for the large gang that was assembled. Let's do it again soon, fellows. New appointments for Mississippi are JHS, as ORS; ACS, DLA, JHS and JR as OPSs. Let me remind you many more are available. DLA is now on with the complete S/Line. LWS is building to get on with RTTY. ITL is the new proxy of the Jackson Club. YCT is vice-pres.; OFA, secy. Traffic: K5RUO 73, W5JHS 49, RIM 20.

**TENNESSEE**—SCM, R. W. Ingraham, W4UIO—SEC; K4OUK, RM; FX, PAMS; PAH and UOT. We are happy to hear that CXY is recovering after a siege in the hospital. SGI reports a new local 1215 Mc. record of 220 feet by VSN and K4GVZ. K4EQK is experimenting with high-frequency transistors in r.f. amplifiers. PL reports a visit from 2OE. TZG reports an emergency  
(Continued on page 108)

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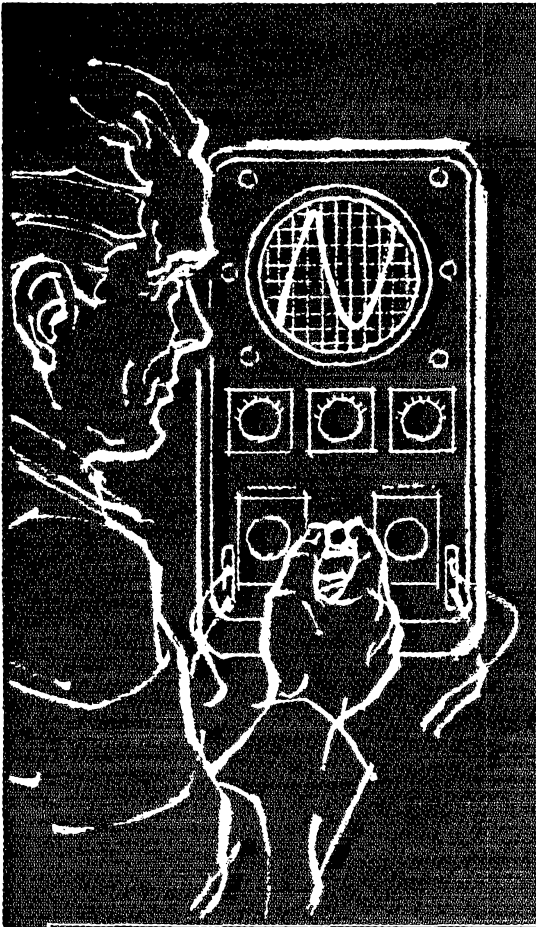
drill with active stations K4s FSH, FKO and HIG. UVU is back on 6 meters with 120 watts a.m.c.w. to a four-element beam, K4RIN received the first WER-BSA Award for working every Boy Scout region. WBR parts Memphis amateurs participated in the March of Dimes and Heart Fund Drives. New OO appointments: TDW and K4PUZ. Traffic: Jan. 1 K4AKP 924, W4PL 759, OGG 482, FX 145, VJ 130, WXH 110, POP 89, ZJY 83, K4OLK 48, W4LTO 46, K4AMC 30, W4UVP 22, K4YFC 20, W4PEP 14, TZG 14, K4RKG 13, W4SGT 9, K4CNU 6, PJR 6, W4VNU 6, UVU 4, K4RIN 2, W4UVL 2, K4VOP 2. (Dec.) W4VNU 3.

### GREAT LAKES DIVISION

**KENTUCKY**—SCM: Robert A. Thomason, W4SUD—Asst. SCM: W. C. Alcock; C'DA, SEC: BAZ, RM: K4KWQ, PAMs: SZB and K4OZL, V.H.F. PAM: K4LOA. It is with deep regret we report the passing of K4SBL and FC, both active amateurs in Kentucky. SEC BAZ attended a meeting of the Blue Grass ARC (Lexington). JB hopes he sparked more interest in the section nets. Perfect attendance for K4OLT on MKPN during January is reported. Six Tennessee stations are active on MKPN. K4ZQR reports the 6-Meter Air Force MARS Net is now in operation. JU1 is keeping a schedule on 20 meters with his son attending M.I.T. K4VDN has a new home-brew kever. K4NIX is new on KYN. The Danville Club continues to show good interest. PIN is on 40-meter c.w. mobile. K4VDL has a Viking Adventurer at Berea College. K4M7S now is in Tompkinsville. K4ZRA mailed 101 OO notices during January and received many letters of thanks. OO reports also arrived from K4ZQR and SZL. ZRA is working 40-meter DX. K4DFO made DXCC. DFO also reports NCS on 9RN is quite a job. K4TVC is a new OHS and is looking forward to the OO Party. SZL is working over his Super-Pro. K4DFO is trying his best for entrance into Harvard. Good luck. Bill. Traffic: K4KWQ 204, W4BAZ 73, RNF 52, K4CSH 54, W4SUD 47, CDA 44, K4DFO 42, LOA 27, VDL 37, VDN 34, CY 32, VDO 22, W4KJP 14, SZB 13, VYI 12, K4HSB 11, MZV 11, QHZ 10, W4JVJ 9, K4QCO 8, ZBA 8, NJX 7, ZRA 5, OLT 3, ZQR 3, W4SZL 2, W4VU 2, K4KIS 1.

**MICHIGAN**—SCM, Ralph P. Thetman, W8FX—SEC: YAN, RM: SCW, GCC, QOO and FWQ, PAMs: K8CKD, K8JUG and ATB, V.H.F. PAMs: NOH and PT. Appointments: EC to ELR, K8ERR, DTZ and OCU; ORS to FDO, K8IUZ, IXJ, K8LPV, K8NHC and ZJE; GPS to K8PSV; ORS to K8KPU; OES to K8IPL. New club officers: Detroit ARA—K8MSP, pres.; K8DYI, vice-pres.; K8AMH, treas.; K8IBI, rec. secy. K8DJQ, corr. secy. Straits Area RC—PIC, pres.; FFD, vice-pres.; FDO, secy.; K8RDF, act. mgr. Niles ARC—DHS, pres.; JFF, vice-pres.; CPL, treas.; KN8TEO, secy. Motor City RC—K8BMC, pres.; STV, vice-pres.; NBF, treas.; ARH, secy.; JXK, asst.; SS, trust. Muskegon Area ARC—K8ROH, pres.; APN, vice-pres.; KN8TZN, secy.; K8KPU, treas.; LCU, act. mgr. The club has a new bulletin called *Washovers*. Nice personal write-ups were in: *STARA News* (QF), KARC (WS) and *Cent. Mich. ARC* (EGJ). In *County State* there was an article about Michigan (QMN) nets. It is impossible to print all the good items I get each month from club bulletins in this space. K8QCJ works s.s.b., QAIN, UTL, QBA got DRD and WAVE awards. UOQ has a new Apache. K8KVM has a new QTH but no power. K8KMQ made BPL again. NOH tried the transistor "Q Mult." with a BC-312. MAI moved to a new QTH. K8NHC got the WERC certificate. JYJ now has 1508 Antarctica contacts. CQU relayed 400 Polio Te'ch-ton pledges on 144 Mc. K8LPV is going v.h.f. MPD conducts code practice Sun., Mon., Tue, Thurs. and Sat. on 29 Mc. from 0200 to 0230 GMT. EMD should be going in a new QTH in April. K8GIV uses an ARC-5 for 75 meters. K8KCO is chasing DX. THZ says "More C B 5 Watt Club activity than ham club." ZIIB is back after a successful eye operation. Kazoo ARC elected NWW, pres.; K8DBY, vice-pres.; K8DYL, secy., treas. OO reports were received from EMD, K8LOS, K8KCO and VPC; OES reports from K8AEM, K8BGZ, EMD, NOH, K8PBA and K8GIV. YAN, our Michigan SEC, reports 1058 AREC members and 44 emergency nets. CAM has been putting on code practice sessions Mon. through Fri. on 1804 kc. from 1900 to 1930 EST. Let's have more information on code sessions. Traffic: (Jan.) K8KMQ 166, W8OCQ 128, K8IUZ 126, W8FWQ 111, K8HLR 70, W8VQN 62, FX 59, K8GWZ 58, W8NOH 32, RTN 50, FDO 46, QOO 44, K8LZF 43, W8DSE 37, K8DJQ 28, W8EU 28, K8NHC 25, W8JYJ 24, IXJ 22, YAN 22, SCW 21, HKT 20, K8PKU 17, W8AUD 15, K8GJD 15, W8OQN 15, COU 14, K8LPV 14, NAW 14, W8BEZ 13, LBB 10, UJ 10, K8JED 10, CUP 9, W8TEP 9, MPD 9, EGI 8, K8KVV 8, W8ETA 7, K8MTEG 7, W8ZJE 7, K8TJH 6, W8QJX 5, K8JJC 4, LGS 4, W8XNO 4, ALG 2. (Dec.) W8WQH 149, JYJ 115, K8COP 38, QJC 29, PKU 22, W8QBA 14, K8LPV 7, W8TIN 7, UOQ 5.

(Continued on page 110)



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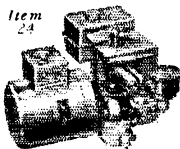
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**OHIO**—SCM, Wilson E. Weckel, W8AL—Asst. SCM; J. C. Erickson, 8DAE, SEC; HNP, RMs; DAE, BZX, VTP and K8ONQ, PAM; HJZJ, The Ninth Annual Ohio Intrastate QSO Party will be held the 1st week end of April and again we will have a chance to work all the counties of Ohio. Let us all get into the contest and make it the best one to date. Stations in counties where there are only a few stations are asked to please get into it and have fun, for you will be like a station in a new country. Remember Apr. 1 and 2 from 1800 to 1800. See you in the Ohio QSO Party. I have lost my sheet with this years hamfest dates on it, so, will all clubs that are to hold a hamfest in 1961 please let me know the date *at once* for I must know three months in advance to get it in QST. Massillon ARC's MAJC News states that its 1961 officers are K8EKG, pres.; K8HTM, vice-pres.; K8EJN, secy.-treas.; and OYL, act. mgr. The club's call was changed from K8APP to NP in honor of its 1960 president. ZWE gave a demonstration of Tesla Coil. The Champaign County RC's 1961 officers are APY, pres.; HFK, vice-pres.; K8RCH, secy.-treas. The club meets the 1st Wed. of the month. The Seneca RC shows movies, The Nike-Herules Story, and Exploring by Satellite. MVE spoke on Who, Where, What, Why and When about DX and JLL displayed his converted prop-pitch rotor. Findlay RC's W8FT News named IYC as its Ham of the Month and

## NINTH OHIO QSO PARTY

April 1 and 2, 1961

All Ohio amateurs are invited to take part in a QSO party, sponsored by the Ohio Council of Amateur Radio Clubs.

**Rules:** 1) The party will begin at 6:00 PM EST (2300 GMT) Saturday April 1 and end at 2300 GMT April 2. 2) All types of emission and all bands may be used, but a station may be worked only once regardless of mode. 3) The general call will be "CO Ohio." 4) **Scoring:** Multiply the number of Ohio stations worked by the number of Ohio counties contacted. Logs should include calls of stations worked, time, date and the county in which the station is located. 5) Suggested frequencies are: 3550, 3740, 3860, 7100, and 7250 Kc. On the other bands, take your choice. 6) A cup and four appropriate certificates will be awarded to the highest scoring stations. 7) All contest logs must be postmarked not later than May 1, 1961 and should be sent to the contest manager, Hamlin King, W8EQN, 353 South Arlington Avenue, Springfield, Ohio.

KN8s WRJ and WUG are new hams. Columbus ARA's *Carascope* tells us that JSU, one of the country's top DX men spoke on DX and the club holds code and theory classes for Novice and General Class licenses. New appointments in January were HFK, K8MNR and K8OBG as OEs; BIF, K8EJI and K8HTM as OOs; K8SMA as EC. Toledo's *Ham Shack Gossip* names HSW, HWK, RZM, TCH and K8AVY as its Hams of the Month for their untiring efforts in establishing communication at Christmas between parents and a child in a home for asthmatic children in Tucson, Ariz., with RZM taking contact. The stork brought a baby girl to OFG and VJO, giving them their 4th harmonic. KN8WOL is a new Novice and JKR is on 2 meters with a Heath transceiver. Springfield ARC's *Q-5* informs us that K8AOH spoke on and demonstrated commercial gear. The Tusco RC *News Bulletin* tells us the club holds code and theory classes Mon., Wed. and Fri. nights. K8JOR was home on leave. SYZ has a new ground-plane antenna for 10 meters. GIZ/8 is back on 80-meter c.w. after being off the air for several years. KN8WLY is a new Novice. LWK has a new 40-meter inverted v-t. K8AAU has a new 41Q-170. IBX has received WANE, the Keystone Award and toured parts of Ohio and Michigan with the Capital U. Chapel Choir. Parma RC's 1961 officers are CZM, pres.; K8IIU, vice-pres.; K8QY, treas.; K8DHX, secy.; DEF and K8BFT, trustees. K8TRU moved to Ohio. K8ONQ is now mobile on 6 meters. Clermont County ARC's 1961 officers are K8OQC, pres.; K8BAJ, vice-pres.; K8QCY, rec. secy.; KN8YKF, corr. secy.; K8SSM, treas.; and ZRL, net director. The father-and-son team of K8PTK and K8JXF have a new SX-101, DAE and UPH made BPL January. BIM, RNL and WJB are ill the hospital. PDO is going to school in California. Hold June 17 and 18 open for the Lancaster Hamfest at the County Fairgrounds in Lancaster. Traffic: (Jan.) W8DAE 694, UPH 646, ZU 224, BZX 164, K8ONQ 123, QHH 108, K8CXM 74, BEW

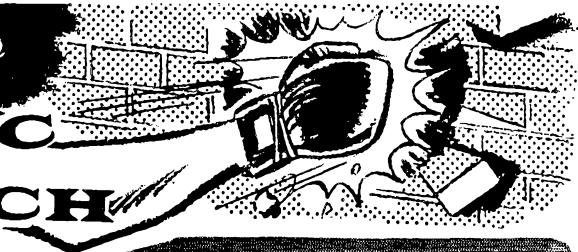
(Continued on page 112)



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33, K8KSN 27, W8CTZ 26, K8LUP 24, W8AL 23, K8MYG 17, OEX 13, W8OOU 13, PZS 11, K8SQK 9, QOJ 8, W8OKN 8, K8STJ 8, BNL 6, W8WYS 6, K8HTM 5, W8IBX 5, HQK 4, LT 3, DG 1, K8PXV 1, (Dec.) K8QHH 75, W8AAU 36, CTZ 36, K8KSN 20, QOJ 20, W8HQK 9, K8HSU 9, SQK 7, W8BLS 6, K8OEX 5, W8PSE 5, K8NPC 4, PXV 2.

### HUDSON DIVISION

**EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W3KGC. RM: W2PHX. PAMS: W21JG and W2NOC. Section nets: NYS on 3615 kc. at 1900; NYSPTEN on 3925 kc. at 1800; ESS on 3590 kc. at 1800; ENY (emerg.) on 29,400 (Thurs.) and 145.8 Mc (Fri.) at 2100; MHT (Novice) on 3716 kc. Sat. at 1300. New ENY regulars on NYS include W2THE, WA2HGB and WA2KUS. 1901 officers of the Albany Club are K2ACB, pres.; W2HUB, vice-pres.; K2HUG, secy.; W2ZOY, dir.; and K2KZN, treas. Again spearheading the drive for call-letter plates is W2AAO, Putnam Club Secy. W2KHT reports plans for a 2-meter net. The trustee of W2PXC in Athens is K2YJL. New officers of the Dutchess County V.H.F. Society include W2LWI, pres.; K2UKF, vice-pres.; and W2HZZ, secy.-treas. The A. B. Davis HS Club in Mt. Vernon is active in RACES and plans an expanded Field Day operation. WA2AUC reports his new NC-300 is bothered by line noise. According to WA2BAH new Albany 2-meter stations are W2PIW and W2VPX. On 75 meters with a new Eico rig is W2ZOY. New OES K2DNR reports a 6CW4 Nu-visor preamplifier has been installed in his 2-meter receiver. K2KF, of RCA, was speaker on s.s.b. at the Schenectady Club. The club has just published a new member directory. The Red Cross Mutual Aid Net (the first Sun. of each month on 3875 kc. at 1200) is looking for stations in Fulton, Montgomery, Saratoga and Schoharie Counties to serve local chapters in an emergency. W2LWI is running 800 watts on 2-meter c.w. with a low-noise 47A neutralized converter. He keeps nightly skeds with W.N.Y. and Canadian stations. Traffic: (Jan.) W2PHX 120, W2THE 98, K2MIBU 81, K2YVZ 67, K2RKY 48, K2TMC 39, WA2HGB 36, K2OZT 26, K2QJL 13, K2HNW 12, WA2KUS 11, W2EFU 10, K2YZI 6, K2DEM 3. (Dec.) K2YZI 158, K2OZT 43, W2TFS 12.**

**NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannels, W2TUK—SEC: W2ADO. RM: W2GXC. PAM: W2UGF. V.H.F. PAM: W2EW. In the Operating News section of this issue you will find the notice of the expiration of my term as your SCM. It has been my pleasure to serve three terms in this office and, during that time, to meet with many of you. My family, job and desire to spend more hours "on the air" are now uppermost in my mind and I plan to retire as SCM. Nominations are open. Select your candidate carefully and then remember to vote! BPL cards were earned in January by K2UAT, W2EW, K2UBG and K2OFD the latter a newcomer to these ranks. John plans to operate v.h.f. s.s.b. New officers of the Mas-sapequa HSRG are WA2HCP, pres.; WA2CZG, vice-pres.; W2VOUO, secy.; and C. Labonte, treas. After many years on c.w. W2GKZ has now tried s.s.b. and is very favorably impressed. W2LDC now has a Communicator III on 2 meters and installed his model II in his car. W2UGF is planning mobile activity from his 26-ft. cabin cruiser, the *Sea Otter*. Incidentally, check Bill's last name for something more than a coincidence. Quecus EC, W2LGLK, is looking for an Assistant EC to organize and conduct a 6-meter AREC net. W2EC has joined the s.s.b. ranks with a new HT-37. KOMKG, ex-K2UJT, has returned to W2-Land. It is my very sad task to report the membership of W2AZV in Silent Keys. Ed, a former SCM, was well-known and liked by all. W2BQM has now worked 218 counties exclusively on phone. K2TPU is mobile on 144 Mc. with one-half watts. New officers of the Suffolk County RC are W2MZB, pres.; K2JQO, vice-pres.; K2FHD, secy.; and W2OKK, treas. The Five Towns RC offers a certificate to anyone working 5 members. Contact K2LGS with your QSLs. Bonnie, W2PQV, is the daughter of WA2BEI and K2VBJ. New officers of the Tu-boro RC are WA2FYX, pres.; K2VBH, vice-pres.; W2KXN, secy.; and K2LST, treas. W2EW is endeavoring to extend the coverage of the V.H.F. Net to take care of traffic throughout the section. Stations are required for Suffolk relay. Any volunteers? New officers of the Amateur V.H.F. Institute are W2EW, pres.; K2DDK, vice-pres.; W2HYL, secy.; W2KQL, corr. secy.; and W2AUF, treas. Very interesting club newspapers were received from the Tu-boro RC, Mid-Island Net, Suffolk County RC, Levittown ARC, Larkfield ARC, East Meadow RC and Amateur U.H.F. Club. The station at K2SDM/K2SDN sports a new HQ-170. K2JMH is currently stationed in**

(Continued on page 114)

# wheelin' time

for GONSET G-76, 6 band,  
100 watt AM transceiver

And now, time for mobile fun . . . time for G-76 to take on wheels. Time also to alert your friends that the good signals your G-76 has been putting out all winter from the home location will now be coming to them from just about everywhere. Maybe a brief chat while zooming over a parkway or when angling in and out of busy city traffic. Or a leisurely conversation as you drive slowly along some blossom lined country lane. *It's wheelin' time!*

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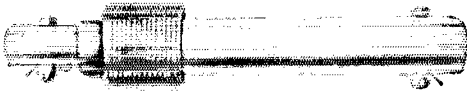
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Twin lead 80'  
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SSB 40M-A 4-Band KW antenna.....**\$24.50**

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DL4-Land. The Walt Whitman HSARC is operating under the call K3JAE/2 until the club's constitution is approved and a club call is obtained. The club is using a Cheyenne/Comanche combination. WA2CCC is on the air from Cold Spring Harbor with a KWS-1 and a 75A-4. K2MJO is on the air with a Heath Two-er and an eight-element Telrex beam. K2TAC thanks the 29ers who helped him get assistance during one of our frequent snowstorms. Now that we are on the doorstep of spring, let's do some spring-cleaning. Switch to safety! When you unlimber the mobile gear, drive carefully! Traffic: (Jan.) K2UAT 908, W2EW 406, K2UBG 386, WA2IDC 275, K2UYW 249, K2UFT 173, K2OFD 156, WA2GPT 112, K2BH 106, WA2EFN 94, WA2CZG 87, W2GKZ 83, K2THY 45, W2LDC 32, K2DVT 27, W2OKU 27, W2UGF 23, W2GP 20, WA2KWZ W2AF6 15, W2LGG 14, W2PF 12, K2YK 10, W2EC 9, K2AZT 8, WA2FBC 8, W2OBU 8, W2MDM 6, W21TK 6.

**NORTHERN NEW JERSEY**—SCM, J. Sparks Remezky, K2MFF—SEC: WA2APY, RM: K2VNL, PAM: K2SLG, V.H.F. PAM: K2KVR. Section met: NJN, daily at 0100 GMT on 3695 kc.; NJFN, at 2300 GMT Mon. through Sat. and 1400 GMT Sun. on 3900 kc.; NJ 6 & 2, Mon., Wed. and Sat. at 0400 GMT on 51.15 Mc. and Tue. and Sat. at 0300 GMT on 147.75 Mc. The only new appointee is WA2EJZ as OPS. NJN reports 31 sessions were held, with 712 attending and 447 messages being handled. NJFN reports 31 sessions, 683 in attendance and 178 messages handled. NJ 6 & 2 reports 21 sessions, attendance 154 and 33 messages handled. WA2BDP received the Keestone Award. K2TWZ is now mobile with a Heath "Sixer." He is also net control of the Union County 6-Meter AREC Net. W2COT received the 100 sticker for his KZ-25 award. The Livingston ARC members are building product detectors with Nuvisitors as a club project. K2DPI is building a radio-controlled model submarine. WA2ASM won the N.N.J. section award in the Maine QSO Party. The 15th Annual Old Timer's Nite Roundup and Banquet will be held in Trenton at the Steaev-Trent Hotel, same time, same place, on Apr. 29. Everyone is welcome. Contact W2ZI for more information. K2JTU received the WAMC Award. WA2CCF received the WA3ONN Award. WA2EJZ received the WVCNY and Empire Awards. WA2CJD is operating 1/2 from Upsala College. W2CCK has a new WRL 6 and 2 transmitter and a new Heath Two-er. An icy promontory on the coast of Antarctica has been named Waite in honor of W2ZK. W2BYE got a new v.f.o. to replace the canaries he was using. WA2NPI is a new General in our section. K2DWL, W2GKE, K2OQA and K2VZJ went to the Staten Island ARA dinner and made a complete sweep. Each one won a prize! W2JH is vacationing in Europe and the Near East. WA2BNF, WA2CCF, K2UCY and K2VVL earned RPL cards. K2URFM, Tri-bander, has been appointed Asst. EC for the Shore Emergency Net. K2SFQ added a modulator to his DX-40. Your SCM has become a member of the CHC Traffic. (Jan.) K2UCY 582, WA2GQZ 283, WA2APY 278, K2VNL 271, WA2CCF 209, K2VYL 188, WA2EQO 152, WA2BNF 129, WA2KKH 114, W2RXL 79, WA2EJZ 65, W2EBG 61, K2MFF 58, W2EWZ 32, W2QNL 30, WA2IHQ 49, WA2GQI 44, K2PVH 30, W2BVE 24, K2MFX 19, K2EQP 16, WA2CNV 14, W2DRV 14, K2ZFI 9, W2OXL 8, K2JTU 7, K2VNK 5, W2ZVW 2, K2PQR 1. (Dec.) WA2EBR 81, K2JTU 30, K2SLG 23, K2ZFI 5.

### MIDWEST DIVISION

**IOWA**—SCM, Russell B. Marquis, W0BDR—Asst. SCM: Walter G. Porter 0UJC, SEC: KOEXN, PAM: KOMFX, RM: PZO. The Iowa 75-Meter Phone Net reports: 26 sessions, 1145 QNS and 154 QTC. For the TLCN: 26 sessions, 282 QNS and 341 QTC. New officers for the Story County Radio Club are K0DYZ, pres.; LSF, vice-pres.; K0QWA, secy.; W0UGR, treas.; and III, communications officer. Officers of the Fairfield High School Club: K0BRE, pres.; DKQ, vice-pres.; K0IQY, secy.-treas.; EAK, act. mgr.; GKZ and KEC, assistants. LXL reports that a new club has been started in Galva which meets every Tue. to give theory and code instruction. WLY is now a Silent Key. The Boone County AREC furnished communications for a police drive. K0TTN, assisted by UYH, operated mobile to keep in contact with two people walking from Ames to Boone. K0QVG operated a base station at the local BC station. The Sioux City Club assisted with the local March of Dimes Drive with two 6-meter fixed stations and several mobile stations over the city to receive messages. K0MMS and T0O received EC appointments. AFN, AAH, AZJ and EEJ renewed theirs. SEF renewed his OBS appointment. PZO is now manager of the 75-Meter Phone Net. Traffic: (Jan.) W0LTX 1487, LGG 1189, SCA 1083, BDR 824, DUA 271, K0RBD

(Continued on page 116)

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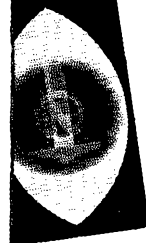
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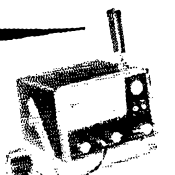

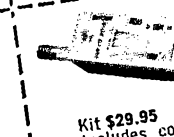


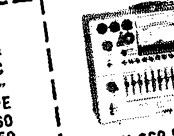
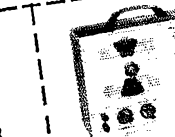
Dear Sir:

When I saw your Model 720 Transmitter on display, it looked so good that I decided to purchase a 720 kit. I put it together in five evenings. The instruction book is so well written that any beginner can build this kit with no trouble at all. When I put the 720 on the air for the first time, I called CQ and a station in Munising, Mich. answered me and gave me a 599 report. In two months I had worked 37 states with a single wire antenna about fifteen feet off the ground.

All stations worked gave me a good report. I was so pleased that I purchased an EICO Model 730 Modulator. Results were equally good. I have worked 44 states and Canada on phone with the 720 and 730. All reports I get are very good. The clipping level control and the over modulation indicator helps make the EICO 730 Modulator the best buy for the money and I personally believe the EICO 720 Transmitter is the best 90-watt rig on the market. The EICO 720 and 730 together make an all around rig that is hard to beat. I am so well pleased with the quality of EICO kits that I am looking forward to building more of your products. I highly recommend EICO kits to beginners as well as the old timers.

Sincerely,  
  
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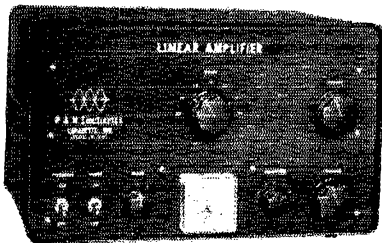
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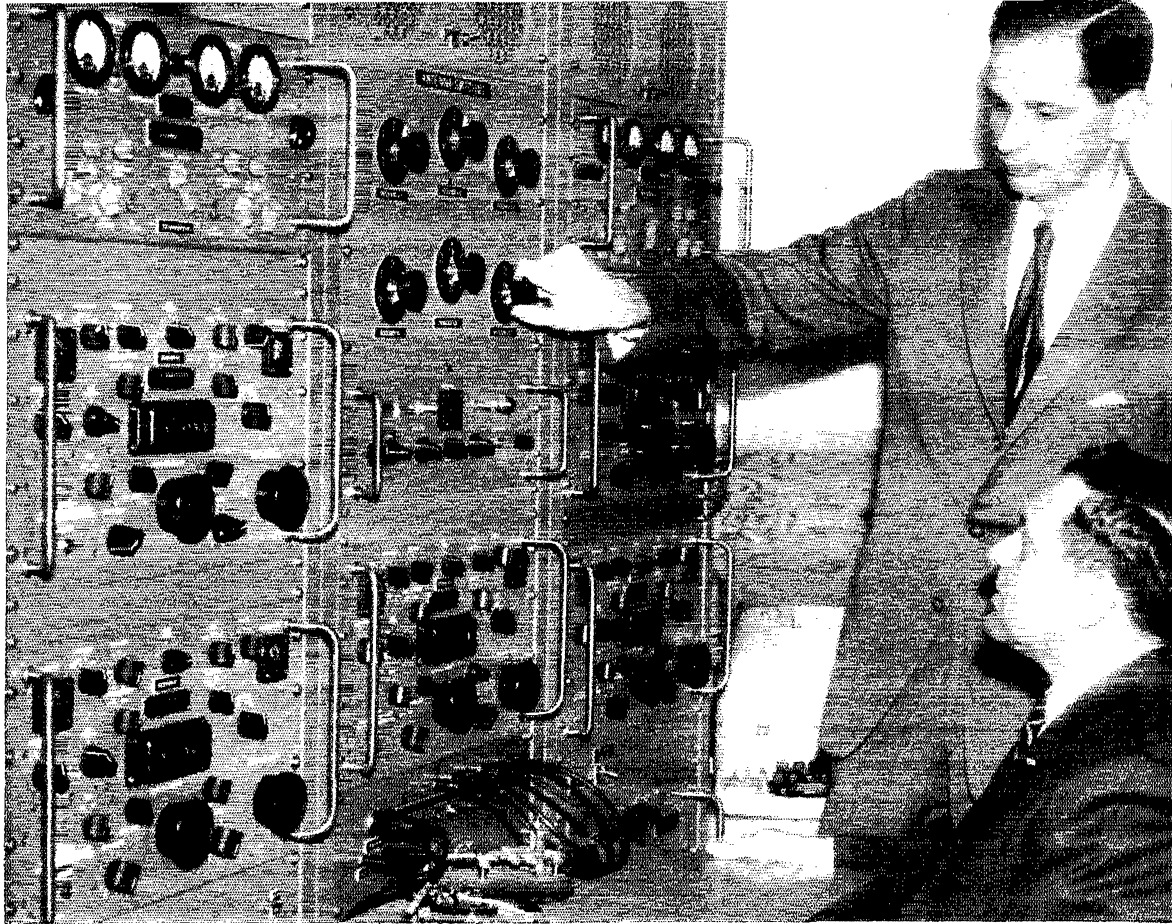
138, WOPZO 119, BTL 108, NTB 84, VWF 26, IO 24, BLH 18, KOYLN 18, KAQ 17, WOPTL 16, LJW 14, YDV 14, KOKBX 10, KORTL 10, WOYOZ 10, KOWUR 9, GOT 8, WONWX 8, KOQWG 8, WVRB 8, KOQWM 7, VSV 7, WOQVA 6, KOXGP 5, POI 5, WOEEG 4, GQ 4, KOHC 4, OFK 4, WOUHO 4, FMZ 2, KORTF 2, WOHTP 1. (Dec.) WOPKH 70, FDM 7, KOKBX 1.

**KANSAS**—SCM, Raymond E. Baker WOFNS—SEC: YZM, Asst. SEC: LOW, RM; OGG, PAM; ONF, V.H.F. PAM; HAJ, Section nets; KPN, 3920 kc. Mon., Wed., Fri. at 0645, Sun. at 0800, NCSs, KOKKS, EFL and PHU; QKS, 3610 kc. daily at 1830, NCSs SAF TOL, QGG and BXF; Area Net HBN, 7230 kc. Mon. through Fri. at 1200, KOWNZ as mgr. The Hambutcher Net has elected KOWNZ as manager. KOIIGI will be asst. mgr. The Lawrence Amateur Club elected KOLTQ pres.; KOBUL vice-pres.; KOKSK, secy.; KOWUY, treas.; KOMFI, activities; KOJWT now has a 4E27, 180 watts 80 through 10 meters and also is experimenting with 2-meter RTTY. The Aethalon Amateur Radio Club will set up an emergency station at the Aethalon Science Fair Apr. 8. KOZQC will be in charge. Kansas Centennial continues to roll. Any inquiries should be addressed to Kansas Centennial QSO Party, 414 Avenue "C," Wichita, Kans. BSS has a new Ranger. KOL has been appointed net control for the Topeka 10-Meter Emergency Net. The Kaw Valley Radio Club elected WIZ pres.; KOAER, vice-pres.; KKF, secy. Traffic: WOHJ 574, SAF 20, KOHGI 185, W0ABJ 128, QUG 106, TOL 81, PMS 68, BYV 65, BLI 37, IFR 23, KOHVG 24, QKS 15, EFL 7, WOEDJ 6, KOYRQ 6, KOTNW 4, ZQ: 4, WOASY 3, VBQ 2, LOW 1.

**MISSOURI**—SCM, C. O. Gosch, WOBUL—Net Reports: MEN (3885 kc. 2100 GMT MWV) sessions 13, QNI 402, QTC 133; NCSs OVV 7, KOONK 4, KOWNZ 2, MON (3580 kc. 0100 GMT M-S) sessions 27, QNI 209, QTC 142; NCSs OUD 16, KIK 6, KOQCQ 2, ARO, UXQ 1, SMN (3580 kc. 2200 GMT, Sun.) sessions 5, QNI 13, QTC 5; NCSs, OUD 4, WAP 1, HBN (7280 kc. 1805 GMT M-F) sessions 21, QNI 540, QTC 262; NCSs KOWNZ 5, K5XD 4, KOMMR 4, QJU, KOWBD 2, KOHGI, KOLTJ, KOONK, KOYWT 1. Congrats are offered to KOWNZ, elected as mgr. of HBN. We are pleased to publish information on the officers of the following cooperating clubs for the ensuing year: Tri-State R. Soc. (Joplin)—DRC, pres.; PKI, vice-pres.; KOEFD, secy.; WEB, treas.; KOHHY, sgt. at arms. SWMARC, Inc. (Springfield)—KOJPI, pres.; KOLT, vice-pres.; KOUWT, secy.; KOVCD, treas.; KOVCD and KOLTJ bulletin. Mid-Mo. ARC, Inc. (Jefferson City) KOMLJ, pres.; KOWSK, vice-pres.; KOETY, secy.-treas.; RGS, KOQMY, KOJDL and PME, board of directors. HARC (Kansas City) MWU, pres.; KOAWT, vice-pres.; KOZFS, secy.; MCL, treas.; Committees: Membership KOEWF, Technical MNL, Publicity TFQ, Activities MAE, Jefferson Barracks ARC (St. Louis)—KOKWJ, pres.; KODOK, vice-pres.; DOI, secy.; YPS, treas.; KOBUM, KOKWL and KOKWJ, bulletin. St. Louis ARC (St. Louis)—KOAEM, pres.; KOKJX, vice-pres.; KOYOV, secy.; KOHUL, treas. Notice the number of "K" call signs in the above list? KOJPL reports that most of the equipment stolen from club station KOAXU has been recovered. KOCBW, KOCPV, KNOBYG and KNOBYF are active at Missouri School for the Blind, KOVNB, BUL and KOLGZ were active in the 'D Party. WAP is trying to stir up activity on 160 meters. K5KXP and K5PDN, from Mississippi, are members of the faculty at Ozark College (Carthage). Traffic: (Jan.) KOONK 654, WOUUD 167, KOMMR 108, WOKKJ 99, BVL 96, KOVPH 92, WOVAP 81, ANT 80, KOVAY 73, PCK 55, WOKIK 48, ARO 41, BUL 35, OVV 32, RTW 31, KOWNZ 30, WOLII 19, KOWBD 19, VNB 18, MAU 17, RPH 16, WOPXE 15, KOQHF 5, VXU 4, WOVYJ 2. (Dec.) KOLGZ 7.

**NEBRASKA**—SCM, Charles E. McNeel, W0EXP—SEC: KOTSU, The Morning Phone Net, KODGW as NC, reports QNI 559, QTC 105; 100 per cent reporting VZJ and SCT; missed only two sessions EGQ, YFR and ZJF. The Western Nebraska Net reported by NTK NC; QNI 605, QTC 500; 100 per cent reporting KOBMQ, KOQYN, KOAIE, KOQFK, DVB, NTK, OCU, OFP, PZH and RII. The Western Nebraska Emergency Net, KORRL as NC, reports QNI 640, QTC 452; 100 per cent reporting MZV and PZII. The 75-Meter Emergency Phone Net, EGQ as NC, reports QNI 675, QTC 49; 100 per cent check-in LXH. The Nebraska Section Net C.W., NYU reports, had QNI 225, QTC 115. ZJF reports the Falls City Club has started a new code and theory class that meets once a month with a lot of interest. New officers of the North Platte Amateur Radio Club are VEA, pres.; ERM, vice-pres.; YVY, secy.-treas. ERM also was elected Radio Officer in

(Continued on page 118)



Army Signal Corps Photo

**NED RAUB** (standing), W1RAN, Raytheon field engineer, and **Anthony Colaguori**, W2GUM, of the Signal Corps R&D Lab, work together on data transmission problems.

## FIELD ENGINEERING WITH A FUTURE

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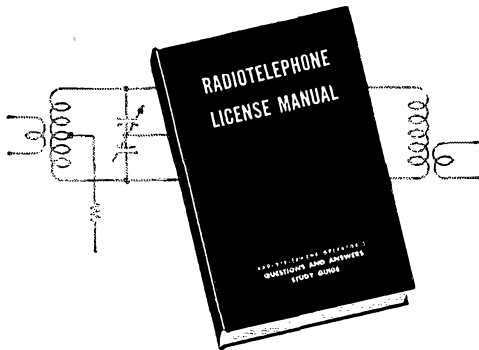
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charge of all c.d. activity. Traffic: (Jan.) WØNIK 518, KØRRL 152, QFK 110, IJW 92, KJP 79, WØNYU 79, KØRTZ 62, WØPZH 58, OCUC 56, KØCYN 52, WØAHD 51, RIH 45, OKO 43, KØUWK 23, WØEGQ 23, AFG 22, BØQ 22, KØMSS 22, RBS 22, WØVEA 15, VZJ 14, KØYDS 14, WØPDI 11, KØUWO 11, WØHTA 10, HOP 8, KØELU 4, WØKDW 4, KØSLB 4, WØYFR 4, KØKOA 3, SCN 2, SIC 2. (Dec.) KØDGW 87.

## NEW ENGLAND DIVISION

**CONNECTICUT**—SCM, Henry B. Sprague, jr., WICHR—SEC, EOR, RM: KYQ, H.F. PAM: YBH, V.H.F. PAM: FHP. Traffic nets: CPN, Mon.-Sat. 2300, Sun. 1500 on 3880 kc.; CN, daily 2345 and 0300 on 3640 kc.; CVN, Tue. Thurs. and Sat. 0130 on 145.98 Mc.; CTN, Sun. 1400 on 3640 kc. All times are GMT. You have elected me as your SCM and it's an opportunity and honor for which I thank you. I'll do my best to merit your continued support and confidence. Monthly activity reports will be gratefully received. FHP advises that CVN held 12 sessions and handled 19 messages with 60 stations reporting. High QNI were FHP 12 and JZA 8. New stations were KIS LDO, JXB and KNIPKQ. RAN worked his 23th, PYZLJ, on 40 meters made 541 contacts in 64 sections in the Jan. CD Party, including W6BES on five bands, did some OOing and worked on two construction projects. KYQ advises that CN handled 616 messages on both sessions; 482 on the first for an average of 14.9 and 154 on the second with a 4.9 average. Attendance averaged 10.3 on the first session and 4.4 on the second. High QNI were RFJ, KZG and KIMZM. KIKQU is becoming interested in traffic work. KIOIK loaded a music stand with his DX-40 on 15 meters and worked Tennessee and Wisconsin. No jokes, please! YBH reports that CPN had 31 sessions and handled 185 messages for an average of 6 per session. Daily attendance averaged 20 and net time averaged 52 minutes. Attendance Honor Roll (80 per cent or higher): KIAQE 31, DAV 31, YBH 31, KIBSB 30, FHP 30, VQH 27, KIDGK 26, and a net certificate, K1GOX 25. Don't forget the Connecticut Section Traffic Meeting at Johnny's in Forestville, Apr. 15. Oak Hill School (Hartford) is for blind youngsters up to 17. The radio club has had some ham support and ZJJ is mobilizing more. Contact him if you have leads to such things as ham-coverage receiver, 30-40-15s Novice crystals, crystal calibrator, relay, etc. OBR reports that the Shore Line V.H.F. Society meets daily on 145.8 Mc. at 0000. It's a rabid group geared to technical problems on v.h.f. Reports received: OO from RAN and KIS GUD, IYR and KSH; OES from FVV; EC from PR. Appointments renewed: EFW as ORS; LIG as OPS. New appointments: KZG as ORS; KIJLJ as OO. Traffic: (Jan.) WIKYQ 485, OBR 300, K1H2T 265, W1AW 188, K5OEA/1 179, W1EFW 166, YBH 149, NJM 119, K1GGG 118, W1BDI 80, KIAQE 52, W1FHP 50, K1HAN 46, W1RFJ 45, QV 40, KIDGK 33, MZM 31, W1NTH 29, CHR 28, K1IVR 16, W1WV 13, K1BSB 12, W1ADW 10, K1KQU 9, W1BWB 8, CUH 7, CTT 6, K1OIK 6, W1APA 4, H1J 4, JZA 4. (Dec.) W1QV 12.

**MAINE**—SCM, Acting Herbert S. Merrill, K1JDA—New appointees acting until the June election: Asst. SCM, Marv C. Hadley, K1ADY. SEC: GRG. PAM: K1BXL. RM: GPY. The PTN meets daily at 1900 on 3596 kc. The SGN meets daily at 1700 on 3940 kc. The MSSN meets daily at 1730 on 3726 kc. K1DVN is off to a new QTH in 6-Land. B1F is working 15 meters but is heard on 75 some. FMT, LHA, K1GUC and WRZ are doing a mammoth job on the license plate bill. The PAWA is making plans for its annual spring banquet. AWY, EBJ and K1ADY all have new towers. Mary, K1ADY, is busy chasing maritime mobiles, K1LQZ expresses thanks for help with the Coast Guard Cutter Cook Inlet schedule. YYW is sporting a new kw. rig. K1HAX was a finalist for the Edison Award for his help in the rescue of the crew of the fishing boat that went down off Peaks Island. Bangor and Brewer c.d. units were operated mobile on 10 and 2 meters for the "Mothers March of Dimes." Still heard in Zero WX mobile are FCS, K1LMJ, K1HHC, LCV, BCB, CBV, PCD, K1BDQ, K1AXO, K1MI, EXD and K1LPB. K1EFZ was reelected president of the Westbrook Club, as was QIH of the Augusta Club. AEM is the new proxy of the PAWA. K1DYG is doing an PB job as NC on the Horsetraders. K1JNN has a fine signal running 813s. VBY is building slow-scan TV for 420 Mc. PNM and IZS (W4SCY) have new SB-10s. K1BXU and K1GUC have new Rangers. K1MDM is manager of the new Region I VA Service Net. K1BDQ is taking flying lessons. Traffic: WIGPY 115, QJA 72, K1KSG 66, GSF 59, MBM 58, W1GRG 54, K1OAZ 37, GQ 32, NPM 25, JNN 24, W1OTR 22, K1BZD 20, EFZ 13, K4PIK/1 7, SGB/16.

(Continued on page 120)



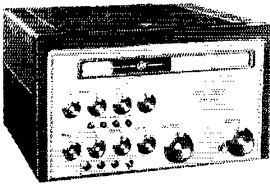
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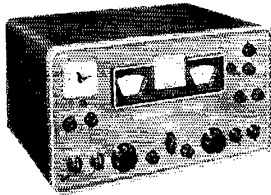
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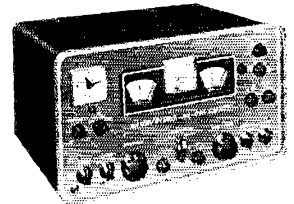
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**EASTERN MASSACHUSETTS—SCM.** Frank L. Baker, Jr., W1ALP—AOG is our SEC; all ECs should send their reports to him. AWA is PAM for the 6-meter band. KNIQET has a Knight T50 transmitter and an R100 receiver. K1AQI put a set of Gonset Twins in his new Corvair and built a 6-meter converter for home. H1L has a new TH-3 beam. K1PFN has a Sixer. TZ is recovering slowly. K1KIHQ has a DX-40 and an SX-100. KN1NYM is building a receiver. K1BNA has a new 829-B final. IS writes from St. Petersburg, Fla., and is visiting KBS at Cape Canaveral. YHY, our Fall River EC, says that the RACES project application has been conditionally approved. HPV is manager of the New England Phone Net, which meets Sun. on 3870 kc. at 9 A.M. The Northeastern States Traffic Net had 347 stations on and handled 761 messages in December. Sorry we have another Silent Key, I.M.G., who was active in the South Shore Club and also on the Boston Hamfest committee. K1PFN, JCC, P.M.M., QJS, KN1S QNQ, QMQ and W1HGT joined forces in the V.H.F. SS Contest at Watertown C.D. UE got married. Ex-INBS is now 4LUV. K1NFZ has a Ranger. K1QKXX is at Lehigh U. FQA is in the hospital. PBM is back to work after several months. K1QNK is ADL's and K1Q's son. Heard on 2 meters: L1H, NDI, NCG, D1N, TCH, KN1OLJ, K1s GOE, GOC, GSI and M1P. Heard on 75 meters: SQQ, RLT, JOI, P1NN, GRC, BVA, GVI, JST, TCH, NJO, BJX, RGH, OJD, KBN, IWA, SKF, WAY, SON, SZB, SAI, OZ, VRK, K1s BXR, J1BJ, MOO, JCC HSC, J1L, L1JZ, AYQ, K1IT, MVT, C1K, AAP, J3JC/1 Peabody, AR, AKN and ALP. If you want to work Florida, get on 80-meter c.w. and look around the band, says 4LUV. TY is a T.V. Hound now. The Wellesley Amateur Radio Society meets the 1st Mon. of each month at the Wellesley Hills Branch Library. UIR has worked 7 states on 2 meters so far this year. SNN showed a movie, Radio Astronomy, at the Framingham Club. BB is busy with 160-meter DX and sends out quite a bulletin; was at his farm in Maine and worked ZC1AK and UB5WF on 160 meter. Certificates have been issued to K1s PFS, BVB and OGD, members of the 6-Meter Cross Band Net. The V.H.F. 6-Meter Net meets Tue. and Thurs. on 50.85 Mc. at 2100. The 6-Meter Net had 332 stations check in and handled 184 pieces of traffic, reports AWA. K1JML worked 4TQC on 6 meters. K1NWQ is in the Army for 6 months. K1s KZV and KUY are working on something to do with radio for the science fair at school. K1BUF is NCS on FMN and IRN. Some of the gang want a net on 10 meters. K1JAW was in the Mass. QSO Party. He and K1s BUE, 1XT, J1U and K1PJJ are on the 40-meter net. K1NQP is on 2 meters. N.U., KBN, held a radio day and has a 220 final underway. K1LJK is on 160 meters. K1s M1MC and L1H have a DX-100. K1MVN has a KP-81 receiver. AKN is very active on MARS nets. MRQ has a Viking 500. AUQ is very active in OO work. EPE is active again on 80-meter c.w. K1ILK has a home-brew 400-watt rig. DYY has a 90-ft. tower and a home-brew 1-kw. for 20 meters. Appointments endorsed: K1AQI Burlington. PST Brookline. MRQ Groveland, INC Melrose, KWD Weymouth. YHQ Eastham. MCR Boston. EIQ Bedford as ECs; LMZ, BHD, UIR, VMD, TZ, K1IWE, OFK and ARR as OBSS; BHD, IWP, AOG and K1KUY as OESS; K1BYV, MRQ, AQE, BB, TY and AOG as ORSS; UIR, MRQ, OFK, AAR and BB as OPSS; UIR, TZ, OFK and RFN as OOS; AQE as RM for 15-meters cw. K1PBJ is EC for Orleans. The Colonial Radio Club has been formed at the Acton-Boxboro High School with KN1ODC, pres.; K1MTU, vice-pres. The rig is a BC-1306 and W1AE is trustee. K1GRG is on 75 meters. K1GNR reports that the Northeastern States Traffic Net had 27 sessions with 212 stations, 262 traffic. ZSS reports the Eastern Mass. 2-meter Net had 31 sessions with 340 stations, 223 traffic. K1MVN says he would like to see some stations on 2 meters on m.c.w. The QRA had F. Roberts, of National Co., give a talk on the NC-270 receiver. K1BYV is busy at school. IAU is active on 2 and 6 meters and working with 2N502 transistors on 2 meters and 220 Mc. U1XN, Dedham, has been endorsed as EC. PTR had 139 QSOs in the Mass. QSO Party. KN1OWK has an AT-1 transmitter and an SX-100 receiver. OFK has a new HQ-150 and an Apache. TWG has been sick. NF says he worked ZESJL. The Yankee Radio Club meets at CBS Electronics, Danvers; K1BZJ is secy. K1GNR has a 20A on s.s.b. into a Valiant. K1NTU is on 2 and 6 meters. K1DSA has a new vertical antenna. Traffic: (Jan.) K1GNR 609, L1X 522, W1AWA 429, EMG 380, ZSS 185, EAE 143, K1BUF 125, MEM 81, W1PEX 79, OFK 70, DOM 56, K1AFF 55, JAW 47, W1FJJ 44, KBN 40, VYS 27, AOG 24, K1BGK 20, W1PTR 20, K1DTJ 18, W1RQL 17, K1LJK 15, W1SIV 13, H1X 10, K1LCQ 10, MEM 10, OJQ 7, MVN 6, W1AKN 5, BB 5, K1GTX 5, W1HWE 3, MRQ 3, ALP 2, AUQ 2, K1DSA 2, IWP 1, (Dec.) K1AFF 231, W1EPE 59, K1LJK 4, (Nov.) W1EPE 47.

(Continued on page 122)

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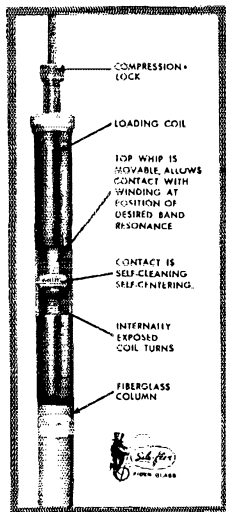
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**WESTERN MASSACHUSETTS**—SCM, Percy C. Noble, WBVR—SEC; WBYH/KIAPR, RM; KIJV, PAM; DXS. With three West. Mass. c.w. traffic nets in operation, we have an ideal set-up for anyone interested in getting into traffic work. Our Novice Net (WMNN) operates Mon., Wed., and Fri. at 6:30 p.m. on or near 374 kc. Our Slow Net (WMSN) operates on Tue., Thurs. and Sat. at 6:30 p.m. on 3560 kc. Our regular WAIN operates daily except Sun. on 3560 kc. at 7:00 p.m. Take your choice, but we'd sure like to see you on one of them! KIGCV has constructed a complete slow-scan facsimile station. The Mt. Hermon Radio Club is now the proud owner of an SX-101 receiver. WMSN handled 38 messages during the month (with much activity from Greenfield. We could use Worcester). Many of the Greenfield High boys are getting Heath "Sixers." IC, NY and BVR were the speakers at the January meeting of the Hampden County Radio Association. QNI has a new SX-111. There are now four bands at the Cranwell School in Lenox. B.G.'s sister-in-law, K6KFP, paid the Berkshire County Club a visit. New equipment around Fitchburg: KN1PCK Vibroplex; KN1QVY S-40 receiver; 6BU NC-270 receiver; K1KBS Hornet beam; K1KJV Birdcage antenna; KIAPR HQ-110 receiver. Our former SCM, DGL is presently with Uncle Sam in the Air Force. K1DOP and RCC used 2-meter walkie-talkies during the recent hunting season. ALLE has worked 46 states, including KF6, on 6 meters. BVR has a new Heath DX-60 transmitter. KN1NAB now has his General Class ticket. WAIN handled 121 messages during the month with a total of 18 stations reporting in. Traffic: (Jan.) KIJV 157, LBB 143, WBVR 131, ZPR 77, LDE 59, YK 50, KIGCV 38, W1FAB 31, K1QZ 29, MFS 5, W1DWV 4, KN1PZR 1. (Dec.) W1YK 171, WEF 79.

**NEW HAMPSHIRE**—SCM, Ellis F. Miller, W1IQ—SEC; K1IQK, RM; K1C1F, PAM; KVG. The GSPN meets Mon. through Fri. at 2400 and Sun. at 1430 on 3842 kc. N1H (c.w.) meets Mon. through Sat. at 2330 (Continued on page 124)

### TWELFTH NEW HAMPSHIRE QSO PARTY

April 29 and 30

The Concord (N. H.) Brasspounders, W1OC, announce their sponsorship of the Eleventh New Hampshire QSO Party, and cordially invite all interested radio amateurs to participate. Here are the details:

(1) Contest period: Saturday, April 29, 6 P.M. EST (2300 GMT) to Sunday, April 30, 6 P.M. EST (2300 GMT).

(2) No time limit and no power restrictions.  
(3) Scoring: N. H. stations count 1 point for each N. H. contact, plus 2 points per outside contact; stations outside the state count 2 points per N. H. contact; both multiply by the number of counties worked (10 maximum).

(4) Engraved certificates will be issued to all participants reporting, with special endorsements for the highest-scoring stations, both in N. H. and outside, in the phone and c.w. categories. Single operator stations only are eligible for the special endorsements.

(5) The same station may be worked for additional credit on more than one band, phone or c. w. Suggested frequencies are 1810 3550 3842 7050 7200 14,100 14,250 21,075 21,350 28,100 and 28,800 Kc., 50.4 and 145 Mc.

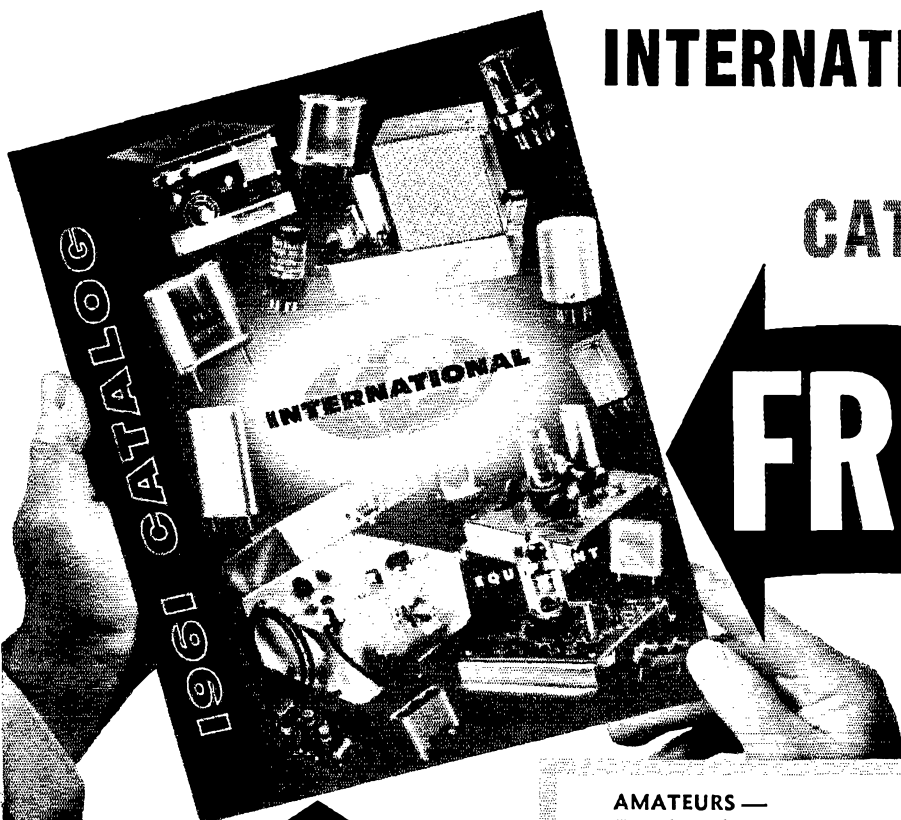
(6) General call: "CQ NH" on c.w.; "CQ N11 QSO Party" on phone. N. H. stations are requested to sign *de NH W1OC* K or give other indication of the fact they are from N. H.

(7) Contact information required: Report and QTH (including county of N. H. stations) and number of QSO. Those operators participating in both the c.w. and phone categories must submit separate logs for each mode of operation. Each log shall be scored separately based on the number of contacts and counties worked in each mode. Logs and scores must be postmarked not later than May 15, 1961, and should be mailed to the Concord Brasspounders, P.O. Box 339, Concord, N. H.

(8) The WNH (Worked New Hampshire) certificate will be awarded to stations working all ten counties during this QSO Party, participating logs confirming. Detailed requirements for the WNH certificate, a standing award, may be obtained by writing the club.

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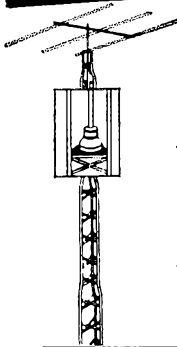
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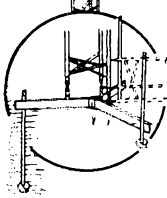
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on 3685 kc. CNEN meets Mon. through Sat. at 1145 on 3842 kc. New appointment: K1KOB as OBS. Endorsements: K1CIG as OBS; K1NBN as OO Class IV. The annual dinner, installation of officers and celebration of its silver anniversary was held by the Nashua Mike and Key Club on Jan. 28. A roast beef dinner was enjoyed by a goodly gathering, followed by an address by your SCM in behalf of ARRL. The principal speaker was TA, who gave the history of the club from its inception to date. Newly-appointed officers: OLY, pres.; QKA, vice-pres.; DUB, treas.; K1NBN, secy. Special thanks to BXAI and his XYL, TA, and others for making the writer's visit a most enjoyable one. Newly-elected officers of the Manchester Radio Club are K1HJF, pres.; K1API, vice-pres.; K1AEJ, treas.; WYZ, secy. BPL cards went to KIITS and K1BCS. Let's set a goal of more originations in the future. Traffic: KIITS 662. BC'S 182, MOZ 106. W1CUE 43, KVG 38, K1GQH 31, W1IQU 20, K1MNT 17, IEH 13, W1ZUS 7, K1MID 6, I1K 3, W1YH 3.

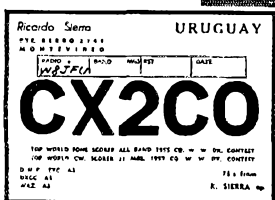
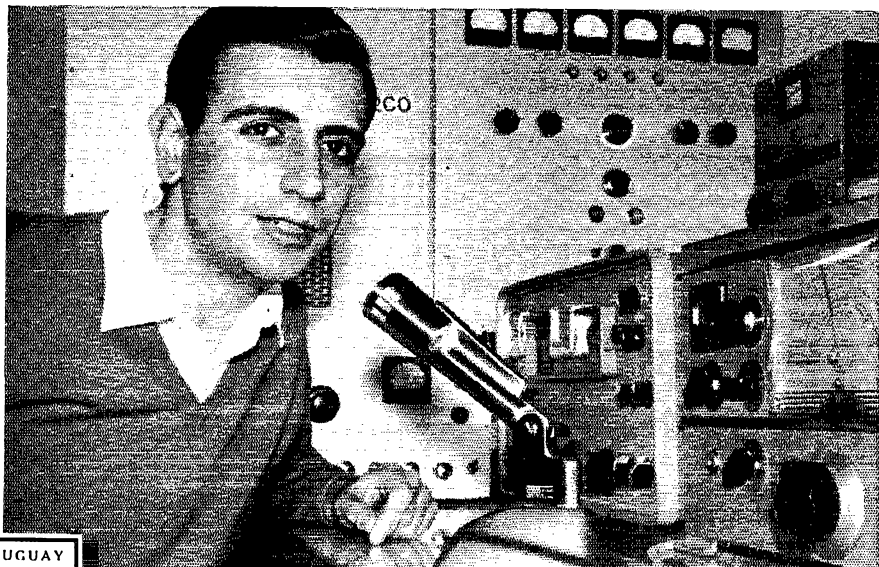
**RHODE ISLAND**—SCM, John E. Johnson, K1AAV—SEC: PAZ, RM; SMU, PAM; TXL, QES reports were received from K1DZX, PNI and HZN. OBS reports came from SMU and TXL. The R1SPN had 31 sessions 388 QNI, 55 traffic, 1085 min. K1HZN requests that operators interested in working 1215 Mc. contact him. K1IQYY is a new Novice and works 40 meters. R. I. hams under the direction of K1GRC are working to obtain a ham station for 12-year-old Roy Sassi, a student at the Perkins School for the Blind. Contributions are coming in from as far as Japan and enough has been collected so far to purchase a receiver. The NCRC of Newport elected K1OUI, pres.; JFF, vice-pres.; K1LRR, treas. Those appointed by the president were AZL, shack comm.; MNX membership; JAF, code; JFF and K1MCW, theory; TXL, certificates; and K1OUI, program. A new club, K1QLY, was formed at Barrington H. S. and the following were elected: K1BWD, pres.; LNP, vice-pres.; Pat Sadler, secy.; VEM, advisor. The townspeople donated a DX-100, an HQ-140X and a 14AV vertical to the club. The PRA Club elected KKE, pres.; VAY, vice-pres.; HIK, treas.; K1NVS, secy. KKR, SGA and TOW, board of directors. The W1AQ Club elected KUG, board of directors. Traffic: (Jan.) W1SMU 558, TXL 70, K1GOY 53, GRC 41, DZX 38, BRK 29, AAV 9, HZN 8, LSA 7, PNI 4, (Dec.) W1WED 2.

**VERMONT**—SCM, Miss Harriet Proctor, W1E1B—SEC: K1DQB, PAM; HRG, RM; KRV. A warm welcome to new amateurs K1PGY of Williston; K1QBF and son K1QBE in the Swanton Area; K1QIP in Rutland; K1NNOY, K1NWW, K1QOD and K1QXH, all of Springfield. Correction on November report: UXK/I is Art Rogerson of Bennington. K1HKL of Barre, was ordained a priest early in February. K1BQB and AD monitor 3855 kc. and 50.6 Mc. VSA has been appointed NCS of the East Coast RTTY Net. International Field Day is a BARC activity and has been scheduled for June 17 and 18. From Rutland Area: FFY is at Dartmouth, K1CSD/I is at U.V.M. and BKZ is at Union College in Schenectady. SP has given 30 years of QST to the Twin State Club for its club-house reference shelf. RVJ has a new Valiant. WOL has moved to Detroit. K1OSS, of Cavendish, is looking for 2-meter contacts. CGV is on 2 meters in Burlington. Traffic: (Jan.) VE2AZI/W1 847, W1KRV 239, K1LRH 44, BQB 41, W1E1B 37, K1BGC 33, OAJ 29, W1GQJ 18, HRG 14, K1JG 13, K1KCT 12, W1RNA 10, K1OXD 9, (Dec.) VE2AZI/W1 2483, W1OAK 134.

**NORTHWESTERN DIVISION**

**IDAHO**—SCM, Mrs. Helen A. Maillet, W7GGV—K7BWV received many "thank yous" and reports of eliminating undesirable harmonics from hams he notified through his work as Idaho's OO. The Pocatello Club's new officers, ALL, pres.; K7JL, vice-pres.; K7GCE, secy., were installed at the annual banquet. Bonner County is forming a ham club with K7JEP as acting chairman. The Twin Falls Club has new meeting rooms. The Treasure Valley Club toured the Dial System at the Telephone Co. in Payette. A new club call is K7OJI. A new Novice is K7YOD. Those dropping the "N" are K7LGS and K7LSZ. UAA bought GRU's service shop and now lives in Rigby. K7CXG transferred to Boise. K7BCE's hobby is watching weather instruments then making wrong predictions. K7GTK used "Q" signals to announce the birth of his new daughter. TYG and OZJ got a rig and generator from MARS. DUP has a picture of himself and his rig in a local paper. Farm Net Traffic: (Jan.) 58; (Dec.) 87. Traffic: W7GMC 66, VQC 31, EEQ 27, GGV 18, JFA 14.

(Continued on page 126)



"better, more consistent QSO's"  
 ... writes Ricardo Sierra, CX2CO, of his  
 Electro-Voice Model 664 Dynamic Microphone

CX2CO, one of the world's top rated phone DXer's, writes us that his new E-V Model 664 microphone has resulted in "better and more consistent QSO's." Considering his DX record—over 270 countries—this is indeed quite a statement. He adds that, even under "severe conditions of propagation and interference", most contacts report "normal reception and 100% understanding" of his transmission. This, CX2CO claims, is due in large measure to the improved modulation provided by his new 664 mike.

Letters such as CX2CO's justify the advanced engineering of the Electro-Voice Model 664. Utilizing the *exclusive* Variable-D® design, this fine microphone provides highly directional sound selectivity and reduces pickup due to ambient noise and reverberation by 50%! VOX operation with the 664 is smooth and reliable. Its greater pickup range actually doubles the conventional working distance. And, best of all, uniform response of the 664 guarantees maximum peak effective radiated power.

See this fine microphone at your Electro-Voice distributor—today.

**TECHNICALLY SPEAKING:** Variable-D Dynamic design of the Model 664 incorporates multiple sound openings to the back of the diaphragm—one each for high, low and mid-frequencies. Response is completely free of dips and peaks with uniform cancellation of sounds, echoes, or reverberations from rear of microphone.

Pop-proof wire mesh grille minimizes wind and breath blasts. Output level -55 db. Rugged, exclusive E-V Acoustalloy® diaphragm unaffected by moisture, humidity, temperature, and mechanical shock. Convenient ON-OFF switch easily converts for relay control, if desired.

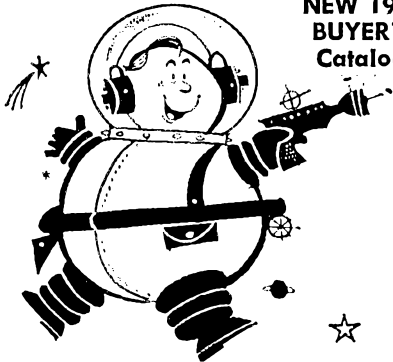
Model 664 (without stand)  
 Amateur Net Price: \$51.00

Model 664 (with Model 419 Desk Stand)  
 Amateur Net Price: \$57.00

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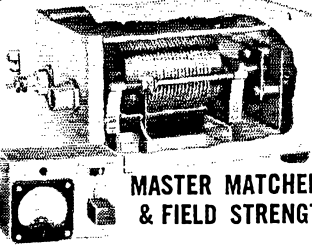
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**MONTANA**—SCM, Ray Woods, W7SFK—SEC: BOZ, PAM: YHS, RM: K7AEZ. The MPN meets M-W-F at 1800 on 3910 kc. TSN meets Mon. through Fri. at 1200 on 7230 kc. MSN meets T-T-S at 1830 on 3530 kc. New Novice calls in Anaconda are KN7MYG, NVV, OEF, OEG, OEH, OFC, OEJ and OEK. TUC is a Conditional Class after being off for 8 years. CPS has a new XYI. Code and theory classes are held weekly by the Anaconda Club. K7DFT and DFS have sold out and are moving west. CJB is working Whitefish on 6 meters. BNK works at KGEZ, Kalispell. A new call in Billings is K7OGF. Montana has a new RTTY net with RZY as NCS. SCG had a bad fall from a radio tower. There is a lot of 2-meter activity in Billings. Montana is saddened by the loss to Silent Keys of ED and RLN. GCC is at the Vets Hospital in Helena. EWR, in Havre, is getting some DX. AIN is moving to Idaho. K7BQN is on with a new Globe Chief. K7MXW is a new YL ham at Saco. K7MOW is a new ham at Laurel. QYA is in the hospital. Solicitations to JRB on the loss of her mother. KN7LUC dropped the "N" from his call. K7CTI made CP-20. New appointments: K7OGF as OO and OBS. Traffic: (Jan.) K7BKM 238, DCI 147, EWZ 84, W7TVX 49, K7DCH 20, W7OIO 12, K7NBV 10, W7IDK 8, K7OGF 8, K7H 5, NFL 5, CTI 2, W7ZCG 1. (Dec.) K7EWZ 79, W7TVX 37.

**OREGON**—SCM, Herbert R. McNally, W7JDX—HDU has been elected mgr. of RN7. OSN will have to keep him busy. HI. A nice report was received from MTW, OSN Net Mgr., with BRAT awards to AJN, ZFH and MTW. K7KZP is now EC for Union County and K7HJM for Klamath County. K7CNZ is a new OPS and K7IMH is a new OBS. Welcome to the gang, boys. The Crab Feed report from 310SY/7, looks like the Coos County gang really eats well. K7EPA is working on an ultra-modulator. K7KBK is minus a driver transformer in the rig, so perhaps will not be so busy. A nice report was received from our RM on OSN activities. DIC says she will be back in the groove again soon. K7CBA is back after a trip to Kansas City. A fine write-up appeared in the Weyerhaeuser Timber Co. magazine re W7s and others who are active as employees of that firm. The January report from WKP, our new SEC, shows fine AREC growth and activity. The net on 3875 kc. still is very active. The SCM is hoping to beat the socks off of DEB on the Rogue River this spring but if this darned old burrito doesn't quit there will be no contest. This is being written with one arm. HI. Traffic: (Jan.) K7AXP 254, W7BDU 97, K7CBA 35, W7MTW 34, DEB 25, GUH 25, BWH 19, DIT 17, K7JWY 15, W7DIO 12, AJN 11, K7EPA 9, KBK 8, IMH 4, CLL 3. (Dec.) K7CBA 74, BDU 12.

**WASHINGTON**—SCM, Robert B. Thurston, W7PGY—SEC: HMQ, RM: AIB, PAMs: LFA and PGY. Washington nets are WSN, 3535 kc. at 1900 PST; Columbia Basin Net, 3960 kc. at 2100 PST Mon. through Sat.; ESN, 3920 kc. 1800 PST Mon., Wed. and Fri.; NSN, 3700 kc. 2100 PST Mon. through Fri.; WARTS, 1800 PST Mon. through Sat. We are sorry to report the passing of two old-timers in the Washington section. EAT and KCO, who passed away on Jan. 27, 1961. New officers of the Radio Club of Tacoma are K7ATD, pres.; RKS, vice-pres.; K7NKZ, secy.; K7ATF and K7AYD, board members. The Tacoma Club made a trip to McChord Air Force Base to see the C124 Simulator. AZI is celebrating thirty years of "hamming." Free QSL cards for Washington amateurs may be obtained by describing the Worlds Fair Century 21 Exposition to be held in Seattle between Apr. 21 and Oct. 21, 1962, by writing and sending postage to EXPO-CARDS, 4010 West Alaska St., Seattle 16. A charge will be made if you wish them to print your call letters on the cards. K7NLD has an Apache, an SB-10 transmitter and an NC-109 receiver. The following renewed appointments: K7ASY, ITP and UWT as ECs; K7CHH and BA as OBSs; K7AJT, BA, DZX and HUT as OPSs; BA, TH, DZX and OMO as ORSs. New appointees are HUT as OBS and K7s GOV, KNZ, LZA, W7s ANL, CTS, PSD, SRU and OZY as ECs. ISC, Lewis County EC, gave members a good work-out on the March of Dimes Drill. PSD is off to a good start in the Clallam County EC program. RDL, King County EC, is nearing the 100 mark in membership for the AREC. K7BIV has an active net on 145.62 Mc. for Grant County. GUJ appointed ZAO as Asst. EC for Pend Oreille County. YFO, Benton County EC, is busy reorganizing the AREC program for his county. K7GUK is home from the Pacific Area so his XYI, K7XNH, is all smiles again. CMQ had open heart surgery at the U. of W. on Feb. 22. Of the 41 areas in the Washington section, 39 now have ECs. We still need San Juan and Garfield Counties. Anyone in these counties interested in the EC appointment, please get in touch with the SCM, KN7IEQ, passed the Tech. Class exam. KN7OFW  
(Continued on page 128)



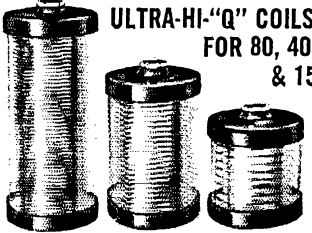


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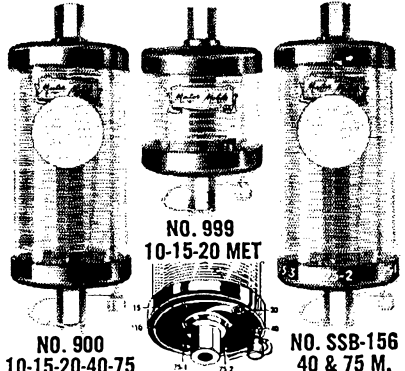
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Positive action,  
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in or out to  
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damage to equip-  
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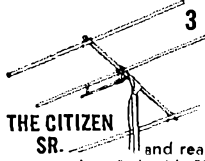
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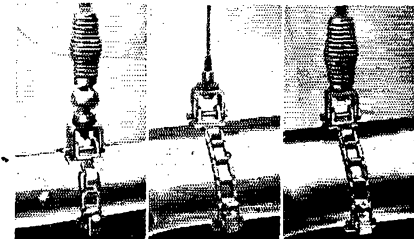
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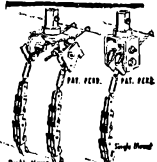
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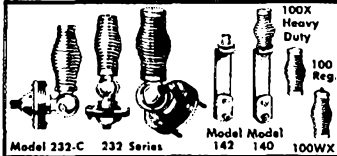
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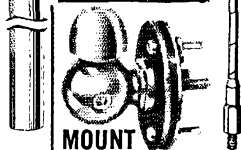
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and KN7OEX are a new husband-and-wife team in the Richland Area. NNF received his Old-Timers Club certificate. JC is having ITV troubles from the new TV set. AXT celebrated the 30th anniversary of his first ticket on Jan. 6. IEU has the new antennas up and is waiting for the next big windstorm. ACA has been appointed Asst. EC for Benton County. KGV is back from a school hitch in Japan and again is active on the bands. OEB says the bands are terrible on the east side also. Traffic: W7BA 209, DZX 776, HUT 641, GYF 132, QLH 124, K7MFF 76, W7APS 64, AMC 61, OEB 41, ACA 32, K7NLD 30, W7AIB 28, EHH 15, USO 15, OMO 14, GAT 13, BTB 11, JEY 11, GSN 8, IEU 7, AXT 6, NWP 6.

## PACIFIC DIVISION

**NEVADA**—SCM, Charles A. Rhines, W7VTU—MAH is building a pair of 4-400As in the final for 14-Mc. s.s.b. YRY moved from Boulder City to Henderson. PRM is on 144 Mc. PWE won the title of "Nevada State Champion Cook" in a national contest. ZJH got married in February. SHY is a new EC/ORS in Churchill County. IWT is QRL ham radio for astronomy. VIU is a member of the OHC. UPS is working in Winnemucca. K7GGE and her QM1, ETN, have ordered an Invader 2000. ETN and CJZ are representing Nevada in traffic work. JUV and JUW are active on 6 meters. K7OIR is a new ham in Elko. Traffic: K7ETN 25, CJZ 2, W7VIU 2.

**SANTA CLARA VALLEY**—SCM, W. Conley Smith, K6DYX—The San Jose c.d. group had a surprise simulated emergency drill which went off almost perfectly. The February meeting of the PAARA was a field trip to the Hewlett Packard Co. WA6CCD is the new secretary of the PAARA, relieving W6STY, and W6VX is now trustee of the club station, W6OTR, San Mateo RC is compiling a history of the club since its formation in 1947. If anyone has something to contribute it will be greatly appreciated. WA6OAO won the construction contest at the MBRC January meeting with his version of the TO keyer. Several clubs in the section plan tracking stations for Project OSCAR. W6YHM has been converting a Panadaptor. K6VQK is building a ham scope. W6CBX revitalized the DX-100 with new bottles. K6ZCR has been trying out a Thunderbolt. WA6AFX build an Ultramatic Keyer while home between semesters at Cal. W6WX has his confirmations for DXCC. WA6IRS is eager for the snow to clear and permit an expedition to Alpine County for his WACC. Hunters for this award should be interested in knowing that K6DYX recently supervised a Conditional Class exam for W6PCI, who is moving to Trinity County. W6EC has been fighting band conditions on his long-haul FCC sked. The combination of long skip and resultant QRM makes traffic handling rough. However, W6ASH reports he worked 20 states and Canada on RTTY during his first two weeks of operation. Traffic: (Jan.) WA6OAO 527, K6ZCR 254, K6DYX 202, W6BYV 162, K6KCB/6 133, WA6HZM 112, W6AIT 111, W6DEF 107, WA6OLQ 39, W6ASH 32, W6YHM 22, W6ZRJ 22, K6VQK 19, W6CBE 15, W6HC 15, K6EQE 10, W6VX 8, K6YKG 3, K6SMH 1. (Dec.) WA6HZM 323, W6ASH 28, W6WX 9.

**EAST BAY**—SCM, B. W. Southwell, W6OJW—SEC: K6DQM, ECs: K6TYX, K6VXX, K6ESZ, W6FAR, W6WAH and K6HTJ. New officers of the Oakland Radio Club are K6KQD, pres.; K6DOQ, vice-pres.; K6LWA, secy.; WA6CVI, treas.; K6ONK, sgt. at arms; W6JUB, EC.; W6JOH, chief op.; W6FTJ and W6ELW, public relations directors-at-large. WA6EWI has a three-element 14-Mc. beam 60 feet up and is working DX. W6NFI has the Tech. Class call of WA6NFI. WA6EWI has a new v.i.o. WA6NFI is building a 144-Mc. converter using transistors. The ORC held its 36th Anniversary Party Jan. 21. W6MAV has a new DX-60. W6NBX, our RML, is the mainstay on NCN. K6GK says traffic is picking up. WA6JCD is a new OBS. WA6JCD also has a new Heathkit Two-er and is building a new 60-watt rig. WA6MIE has a Valiant, an HQ-170 and a Tapetone 345A 6 and 2 meters with an eleven-element antenna. W6OJW received the Ruben Dario certificate from Nicaragua and is sweating out cards for Colonial America and Alaskan DX Award certificates. The EBRC saw a film about the ARRL convention at its January meeting. WA6IQM is the new secretary of the EBRC. WA6JYB and W6NGH are eyeing 2 meters. WA6CSK is on 144 Mc. with a homebrew rig and a single tube converter with an RME-45. W6NFI worked W6MXXJ, WA6MXX and W6MXL the same day right after one another. W6LW has been under the weather since the first of the year. The MDARC already is planning its Field Day activities. K6JNW resigned as EC because of the press of personal business. The CORC held its January meeting at the QTH of W6LW. W6LW is the new president of the MDARC. The HRC held its An-

(Continued on page 130)

# A 30-SECOND QSO



(ALMOST)

**: QRZ?**

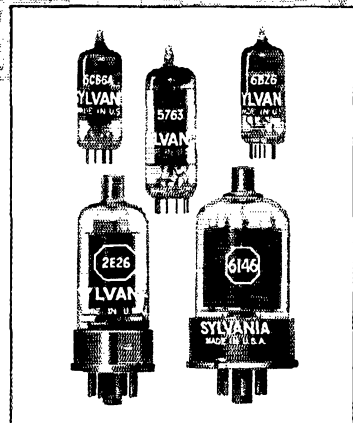
**Q VY I**

**: Vy QRN hr! Sri,  
no copy! Pse QRZ?**

**Q BC C**

**: QRT hr! Must  
b bd condx!**

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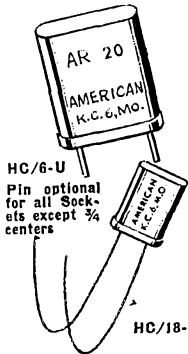
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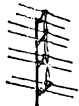
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nual Dinner Jan. 14. W6YKP is all eyes for the Heath-Pawnee 6-meter rig. W6ALY has been working on hi-fi gear. W6ATK has a new antenna. K6TLG is QRL work. K6UID has been hitting the schoolwork instead of DX. W6LGE is on the sick list. K6JZN has a 40-meter inverted "V" dipole. WA6EJA has mobile on 6 meters using a converted DX-35 and a Gonset converter. WA6KCZ and WA6IMC are planning a beer-can vertical. WA6IMC has built a c.w. transistor rig in a walnut shell. WA6KCZ worked JA on a dipole sitting on the roof. WA6AHF's NYL has recovered from recent surgery. WA2HAF/6 was a visitor at the HARC. WA6NOC is a new member of the HARC. The HARC NYL Club met at the home of K6TKL. K6QOH is a new member of the Richmond ARC and had a lot of equipment stolen from his home. W6EJA has a DX score of 159/140. K6YKT built a new modulator and has a new 813 GG in the works. K2PTW is now WA6OAD. K6PQP is mobile with Gonset twins. WA6AFF got his 1st-class radiotelephone license. Traffic: (Jan.) WA6ECF 270. W6NBX 152. K6GK 140. WY6NFI 111. W6JOH 15. W6OJW 8. W6OT 7. WA6EWI 5. WA6MIE 4. (Dec.) WY6NFI/WA6 47. WA6EWI 6. WY6NFI 2.

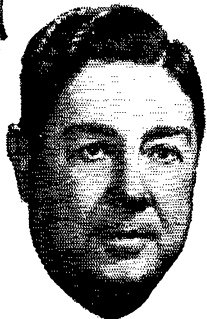
**SAN FRANCISCO**—SCM, Leonard R. Gerardi, K6ANP—NCN (Northern California Net) meets at 0300Z Tue. through Sun. on 3635 kc. The San Francisco Radio Club had W6SAI as its guest speaker at the January meeting. Bill gave a most informative and entertaining talk on the 1296-Mc. Moon Bounce. New officers of the Baylarc are WA6JGR, pres.; W6QYL, vice-pres.; K6ZCR, secy.; and K6CUV, treas. W6GGC is now trustee of Red Cross station W6MLK. OO W6OKR reports that many new 6-meter operators are failing to identify properly. K6SAA is a new station checking into NCN from Mill Valley. Also heard on NCN is WA6LVX/6, from Angwin. W6BIP visited W1AW and worked his son K6DJC on 20-meter c.w. W6GQA got some nice publicity in the CD Bulletin for his efforts in encouraging W6 participation in the CD Parties. W6WYP, a Pacific Telephone employee, will spend the next 8 to 18 months working at one of the isolated Alaskan radar sites. We regret to report the passing of W6WCP. Traffic: (Jan.) W6GQY 955. W6QMO 101. K6JFY 96. K6SAA 26. W6BIP 4. (Dec.) W6GQY 1319. W6QMO 329. K6JFY 98. W6GGC 72. WA6LVX/6 35. K6EKC 13. W6BIP 4.

**SACRAMENTO VALLEY**—SCM, George R. Hudson, W6BTY—SEC: K6IKV. ECs: K6NBN and K6GOT. ORS: W6AF. OES: W6PIV. OPSs: K6EIL and W6PIV. OOs: W6GDO and W6WLI. ORS: W6CEI. Other appointments are open for active hams and inquiries are invited. Your new SCM thanks all Valley hams for the "best wishes" and for the opportunity to serve such a worthy cause. A hearty "thanks" to W6GDO for a job well done and his kind assistance in a smooth transfer of administrations. As a public service local KHQ-FM is making spot announcements of downtown Sacramento Radio Club meetings. New 1961 Club officers are K6YII, pres.; W6BFN, vice-pres.; W6MCR, treas.; WA6DQI, sgt. at arms.; W6GHE, editor. The club meets the 3rd Wed. of each month in the Red Cross Bldg., State Fair Grounds. W6GDO reports designing a new 300-watt s.s.b. mobile rig. K6EIL is active on 75 meters. W6QYX applied for ARCC membership and is rebuilding the rig. Two new clubs are being born, one each in the Yolo and Woodland Areas. The Dunsmuir Club has scheduled code and theory classes. K6JKV reports 2-meter activity in the Sacramento Area is increasing with several old-timers joining in almost every night. Fellows, we need news of your activities. My address is 2209 Meer Way, Sacramento, phone GL 6-2155. Business phone is GA 8-9474. Traffic: K6EIL 19.

**SAN JOAQUIN VALLEY**—SCM, Ralph Saroyan, W6JPU—K6BGO is EC for Fresno County. WA6DAU got married. K6JGH has a new 4-400 final on all bands. W6BJI and W6TJZ are on 1215 Mc. with a converted APX-15. K6BP fell down while surveying some surplus commodities and is now resting trying to mend some ribs. WY6PKI is the son of W6JPS and is operating on 40-meter c.w. W6NOK, W6PSQ, K6LJK and W6JPU attended the DX Convention held in Fresno, Jan. 21, 1961. W6BYH won a TA36 beam. W6HYG and W6BYM, from the South, also attended the DX Convention. WA6JZP has a new Drake IIA receiver. K6JDY, ex-W6NRO, is heard on 75-meter phone with 750 watts. W6OUX is putting his Harvey-Wells back into his pickup. The SJVN Net had 25 sessions, 307 check-ins, traffic of 44. The net has returned to 3915 kc. K6OLN has been busy with school. K6OZL has a new Cheyenne and is on 75-meter phone. The Fresno Amateur Radio Club will hold its Annual Hamfest May 6, 1961, at the Town and Country Lodge. K6CBB is handling the reservations for the hamfest. W6QON is building a filter type s.s.b. exciter. W6ARC is heard on 75-meter mobile every morning going to work. The Fresno Radio Club still meets the 2nd Fri. of each month at 8 p.m. in the Power Building in Fresno. See you there. Traffic: K6ROU 65. K6OZL 31. W6EFB 20. K6OLN 1.

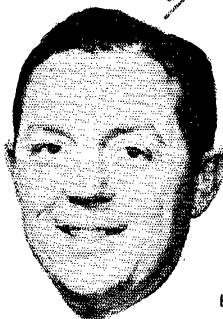
(Continued on page 134)

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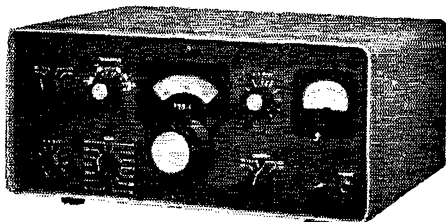
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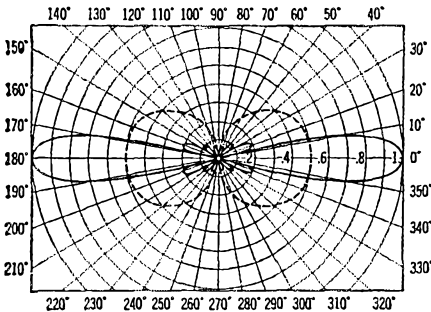
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Bandwidth .....	±0.3%
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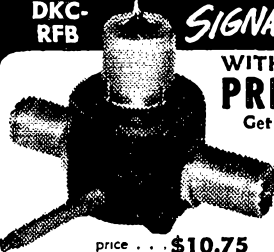
Radiating element material .....	Copper
Element housing material .....	Fiberglass
Element housing tip diameter .....	5/8"
Element housing butt diameter .....	1-7/8"
Element housing length .....	19"
Ground plane element length .....	18"
Support pipe .....	2-3/8" dia. hot-galvanized steel, 22" available for mounting
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Lateral thrust at rated wind .....	45 lbs.
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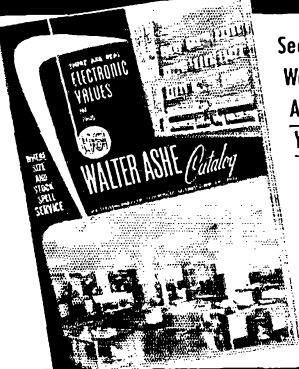
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**ROANOKE DIVISION**

**NORTH CAROLINA**—SCM, B. Riley Fowler, W4RRH—PAM; DRC, V.H.F. PAM; ACY, RM; PNL. A report from KACPX, manager of the NCN C.W. Net, indicates the net now has 41 members with some 16 reporting into the net each evening. C.w. operators should avail themselves of the opportunity to work in his net. The Mecklenburg Amateur Radio Society named the following officers at its January meeting: K4TSM, pres.; K4GHJ, vice-pres.; FKT, secy.; K4PDY, treas.; GTO, RVH, K4SEI and CXS, directors. K4YNS, of the Thomasville Amateur Radio Club, reports that the members were called upon to aid in the search of an airplane downed in their area. Their communications bus was used and served as a communications center, with seven mobile units in operation on RACES frequency 50.380 Mc. Others taking part besides K4YNS were mobiles K4IGP, O'FI, K4AISA, K4JUR, K4CVJ and K4QXN. This was their first experience in emergency work, but the report indicates they did an excellent job. I hope these amateurs have reported this activity to the local newspaper. It makes for good public relations and public information. The Morganton ARC has established a spare parts bank where members can get small parts free to do any construction job. The members will replace the parts used as they become available. Traffic: (Dec.) W3JWN/4 128, (Jan.) K4VUR 6, (Oct.) K4YCL 57, VUR 6, (Sept.) K4VUR 9.

**SOUTH CAROLINA**—SCM, Dr. J. O. Dunlap, W4GQV—SEC; K4EJE, PAM; K4IIE, RM; PED. The following participated in the "lost boy" search: HBA, LEE, K4YAK, FAI, JPX, ZUK, JPT, YOE, GGP, SAT, JPV and FYI. Many thanks to CE for printing the new phone net procedure formulated by the PAM and K4KCO, net manager. The Rock Hill RC has started code classes under the able direction of NDH and plans for construction projects. K4VOH has been busy working DX on the lower end of 40 meters. K4GAT and many others suffered with ice on antennas in January. K4AVU has a jr. operator. NTO will be looking for contacts on 40 and 20 meters while attending electronic school in Oklahoma. K4VJR is a welcome addition on the c.w. net in area 3. New ORS appointees are K4BRP and KNI. New officers of the Mike and Key Club of Greenville are K4FYS, pres.; SUV, vice-pres.; VIW, secy.; BHR, treas. TWW is active as an OBS and TLC as OES. A new EC is SME and K4AVJ is a new OES. GKD is a Silent Key. The XYL of DX passed her Novice Class exam and the NYL of HMG is certified for the c.d. program. Officers of the Palmetto RC are K4MVO, pres.; K4YQD, vice-pres.; JBS, secy.-treas.; K4AVU, custodian. Traffic: W4FFH 140, K4AVU 125, W4KNI 100, AKC 46, K4BRP 46, HDX 31, W4ANK 19, VIW 19, PED 17, CHD 13, K4KIT 12, W4TWW 11.

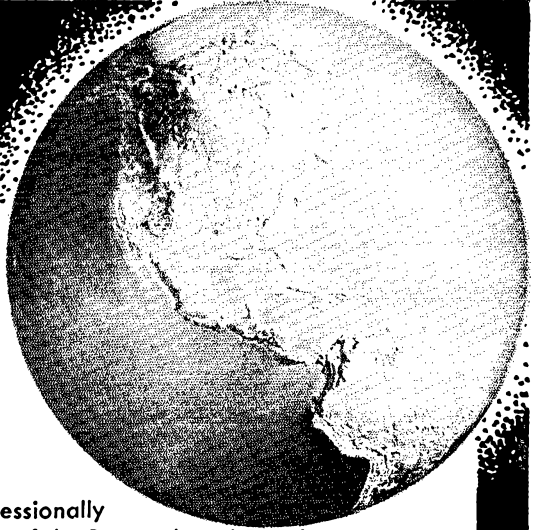
**VIRGINIA**—SCM, Robert L. Follmar, W4QDY—PAM; BGP, RMs; K4QER, K4MXF, K4KNP and QDY. NTS nets: VSN, 1830 EST 3680 kc.; VN 1900 EST 3680 kc.; VFN, 3835 kc. 1900 EST. The VSN is the Virginia training net and code speed is held below 13 w.p.m. This net is a wonderful place for those interested in learning how to handle traffic to "get their feet wet." The VN is for the more experienced c.w. people and proceeds at a much faster clip. The VFN is our phone net which is one of the better phone nets in the U.S. We would like to see better liaison between VN and VFN, however. Nice work is being done by our OBSs, OOs and OESs and the reporting by all of our official appointees is most gratifying to the SCM. Requests for appointment keep arriving at a regular rate. OOL reports he is renewing old contacts on 160 meters. KX has one word for the recent WX—"Brrrr." K4TLK has a new relay in the rig and will be more active. K4JQO is working much DX on 75-meter phone. OWV is doing a nice job as OBS. CVO mailed his recent report from Iceland! He reports ham activity is at a low ebb on the "rock." K4LPR says that the 100th mobile transmitter hunt will be held Mar. 12. This is a weekly affair in the Norfolk Area. BGP, our PAM, is back after a one-month absence. UCH has a new 50-watt 432-Mc. transmitter, two sixteen-element 432-Mc. beams and a new 432 Parametric amplifier and is now looking for skeds with New England. JJJ says the 700th VA-JF Award has been issued. K4CHA is teaching c.w. to a class of 30 civilian patrol cadets! Jan. Traffic: K4VDU 550, W4PFC 201, K9CVJ/4 196, W4QDY 192, K4MXF 177, W4JSJ/4 173, K4FSS 132, W4LK 132, IA 83, K4PQV 72, W4MYA 66, K4AL 48, W4TE 45, OOL 40, YVG 31, K4PQL 27, W4KX 23, K4QER 22, TFL 17, TLK 13, JQO 12, W4ZMH 12, BZE 8, OWV 8, K4PRQ 7, W4AAD 6, CVO 6, K4LPR 4, W4BGP 1.

**WEST VIRGINIA**—SCM, Donald B. Morris, W8JM—HZA has resigned as SEC for West Virginia and SSA has been appointed to the SEC post. All amateurs should be registered in the AREC program, so why not contact  
 (Continued on page 138)



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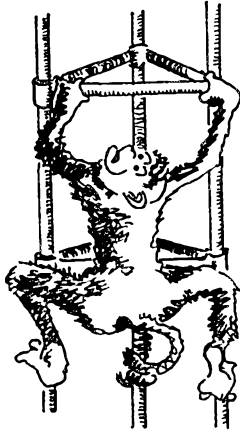
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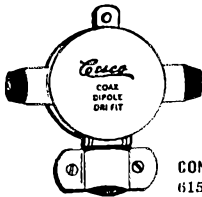
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your EC or write to Keith at Box 62, Bluefield, W. Va. K8PJC has a new HQ-180 and a TO keyer and has just completed WAS. K8RPH worked 45 miles with 1 watt on 144 Mc.; also received a nice write-up in *Feirton Steel Magazine*. K8LOT is a new ORS and K8MJZ and K8KFK renewed their ORS appointments. NYH has a new HT-37 on the air. The Morgantown Radio Club has been reactivated with K8PRC, pres.; RXO, vice-pres.; KXP, secy.; and PMU, treas. K8KZF, attending W.V.U., received publicity in the *B and O Railroad* magazine. HRQ, MZZ, K8HKW and K8HYX, along with K8BOT, K8DXU and other members of the Blennerhassett ARC, are to be commended for their excellent work during the gasoline fire at St. Mary's. Pictures and articles in area newspapers praised amateur radio's role in the disaster. The West Va. Weather Net operates at 1630 p.m. daily on 75-meter phone. The West Va. S.S.B. Net is going great on 3903 kc. nightly at 1800. Traffic: K8CNE 146, HD 106, W8CCR 93, PBO 64, K8LOU 76, W8NYH 32, K8KFK 25, JLF 14, W8SNP 10, K8PJC 8, W8DFC 7, K8JX 6.

## ROCKY MOUNTAIN DIVISION

**COLORADO**—SCM, Carl L. Smith, W0BWJ—Asst. SCM: Howard S. Eldridge, K0DCW. SEC: NIT, RMs; MYB and WME, PAM; JLR and CWX, OBSS, K0DCC and K0EPD. K0WVJ received appointment as OPS. January experienced the normal decline in traffic after the holiday season rush. Brief traffic summaries by nets show January totals as follows: CCW 115 KNI 157, QTC; HNN 536 QNI 230 QTC; CWXN 876 QNI 820 QTC. Did you ever wonder why EDW and EDK didn't work for multi-op. BPL family? It seems that Walt objects to getting 888 from OMs! The Mile-Hi Hibanders reports a project of a trailer-mounted complete 6-meter station with a target date of completion for Field Day. New stations heard on 6 meters were RCX, RGW, FBO, LYL, LLN and BYY. DRC winners of Achievement Awards for the November SS were K0PGM (phone) and MYB (c.w.). *Splatter Chatter* reports that CGH is a new operator in the Ft. Collins Area. *The Roundtable* warns that spoiled hams soon become lids! A reminder to all clubs—send copies of the club paper to the SCM for news items. Congratulations to K0WWD for his continued BPL performances. Traffic: K0EDH 248, EDK 242, W0FEU 200, EKQ 149, K0DCW 145, W0MYB 71, ENA 57, BES 44, K0QAN 42, W0CBI 22, IA 15.

**UTAH**—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 70CX. SEC: BLR, NHQ is the new EC in the Ogden City, Weber County Area. The Ogden ARC held its Annual Installation Banquet Jan. 19. Your SCM and SEC were in attendance along with 0BWJ, the newly-elected Rocky Mountain Division Director. If you have any ideas or complaints let the SCM, Vice-Director or Director know about it. Carl represents us at the Annual ARRL Board Meeting in May. BRAT Awards on BUN went to OCX, QWI, BDX, JQU, NVP, IMB and OCX; also picked one up on TWN. A BUN certificate went to K7COM for work from Oct. 1960 through Jan. 1961. Congratulations, Jim FEO is the new net manager for TWN. HCR was forced to give up his position as president of the UARC because of a heavy schedule at the University of Utah. Traffic: K7NWP 352, W7OCX 102, QWH 24.

**NEW MEXICO**—SCM, Newell F. Greene, K5IQL—Asst. SCM: Carl W. Franz, 5ZHN. SEC: BQC, PAM; ZU, V.H.F. PAM; FPB, RM; ZHN. The Breakfast Club meets Mon. through Sat. at 0700 MST on 3838 kc. NMEPN meets Tue. and Thurs. at 1800 and Sun. at 0730 on the same frequency. NMBP meets Mon., Wed. and Fri. at 1900 MST on 3570 kc. Los Alamos is conducting a big campaign to recruit new amateurs. HWF is organizing a code and theory class. DWB set up a local net for traffic practice and gives code practice on 3505 kc. K5VQU is a new member of the Brass Pounders. K5GOJ will be missed for a few months while getting more schooling with his company. Summer months will improve inter-city v.h.f. links. FPB wishes more v.h.f. nets would report activities to him. Traffic: (Jan.) W5ZHN 417, UBW 85, K5VQU 32, W5HJ 23, GB 8, GD 8, VC 5, K5ONE 4, VLG 2, (Dec.) K5VQU 32.

**WYOMING**—SCM, Lial D. Branson, W7AMU—SEC: IAY. The Pony Express Net meets Sun. at 0830 MST on 3920 kc., the Wyoming Jackalope Net Mon. through Fri. at 1200 MST on 7255 kc. for traffic. The YO Net is a c.w. net on Mon., Wed. and Fri. at 1830 MST on 3610 kc. K7KLE has gone mobile. AEC still is on crutches but is greatly improved. K7VHP has been transferred to Oregon FAA. TZK has been transferred to Glendo. K7AHO, of Worland, is in charge of arrangements for the Wyoming Hamfest, with ABO, of Thermopolis, assisting. PVN has his new sideband rig working fine. Other sideband activity in this section is noted with DTD, BKI, BXS and LKQ active Traffic: (Jan.) W7HH 199, DXV 83, AXG 58, BHH 41, YWE 21, NMW 17, K7IAY 14, W7AMU 12, LKQ 7, BKI 1, BTE 1, K7CQK 1, GDH 1, (Dec.) W7HH 612.

(Continued on page 138)

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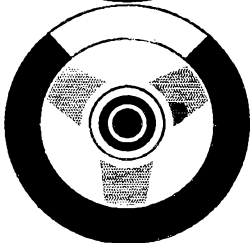
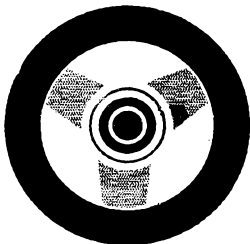
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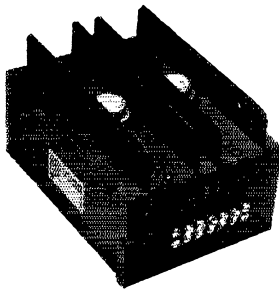
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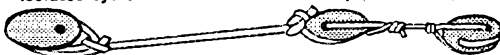
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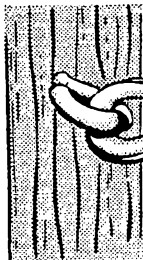
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## SOUTHEASTERN DIVISION

**ALABAMA**—SCM, William D. Dotherow. K4AOZ—SEC: JDA, RM: RLG, PAMs: K4PIH, BTO and JJK. New appointments: K4PFM as OPS; K4ZXX as EC for Marion and Winston Counties; K4TJG as EC for Jefferson County. RLG welcomes to AENB, K4UDK, W4SQV, OQG and K4CMZ. RYY is active again after several months' absence. AENB, our State C.W. Net, meets each night at 7 p.m. CST on 3575 kc. New members are invited. K4AAU is hard at work planning the best Birmingham Hamfest ever! Congrats to K4PFM on making BPL in December. K4GXS congratulates officials for a fine job. PVG and K4HJM have RTTY working. WHW reports that Mobile amateurs meet the 1st and 3rd Fri. of each month. Visitors are welcome. K4APF is up to her neck in record-keeping for the section. K4HFX hopes to be more active upon the improvement of illness in the family. K4KJD reports a new Conditional. K4ZGB in Athens. KJD has a new Drake 2A receiver. K4RIX is at the University in Tusculoosa doing graduate work. RYG-5 has a new coil. W4SQV, K4KDE reports a new Novice. KN4NA, KDE also is sporting a new 15-meter beam. K4AUP reports K4LGF and K4ODU have new rigs for DX contests. K4RCA has gone s.s.b. K4AUU has dropped the "N." CUU is building a new shack. K4IWI, OO, reports harmonic and out-of-band operation running 32 per cent non-Novices. DGH has eliminated his rig troubles. K4DSM made CP-20. K4FJZ is majoring in chemistry at Auburn. K4MEQ worked KQSAE in the Congo Republic on 10 meters. K4ZXX, AENT mgr., is mailing AENT members the new Teen-Age Net Bulletin quarterly and invites articles of interest to Teenage Net members. Congrats to new AENG mgr. NIT, Mobile. K4AWN welcomes to AENI, K4YQG, MGT, NEK, IOA and invites all Valley amateurs to join AENI, which meets each Sun. at 1230 CST on 3885 kc. K4DSD reports Birmingham ARC held open house at the new club quarters Mar. 2. Six Meter News: K4UMD worked Washington, D. C. and New Jersey Jan. 2. K4MEQ worked XE10F Dec. 21. K4UMD, AENO mgr. welcomes K4ZYG, MNG, HKG and CCD. Traffic: (Jan.) K4ZXX 187, PFM 115, W4RLG 98, KIX 74, K4AOZ 66, W4PVG 48, K4PIH 32, YUD 29, W4MI 26, K4ZNI 25, GXS 29, W4YER 19, K4SAV 17, W4EJZ 14, K4KDE 13, W4WHV 12, K4BTO 10, JDA 10, HVN 8, DJR 6, AEG 5, RCA 4, HFX 5, UMD 5, AAU 4, RTO 4, RIL 2, RIX 2, W4TOI 2, ZSH 2, DGH 1. (Dec.) K4PFM 507, KDE 17, CFD 6, AUP 4, KN4ATU 2.

**EASTERN FLORIDA**—SCM, John F. Porter. W4KGJ—SEC: IYT, RM: K4KDN, PAMs: SDR and K4LCF. V.H.F. PAM: RMU. K4BY supervised the installation of a booth at the Manatee Fair; 501 messages were accepted at the booth. DPD is the new RO for Polk County. New officers of the South Miami RC are K4JQ, pres.; K4SPN, vice-pres.; NE, treas.; K4VSC, secy.; K4UOU, station engineer. New officers of the Ft. Pierce RC are K4OII, pres.; K4ZNC, vice-pres.; KN4YXX, secy.; K4OEP, treas. New officers of the Hialeah ARC are K4YXC, pres.; K4ZSY, vice-pres.; K4GPJ, secy.-treas. Congratulations to K4UOU on receiving the special citation from General Electric (Edison Award) for his work during Hurricane Donna. This will be my last report as your SCM. All the files will be turned over to Ham, K4SJH, and you should send all of your future station activity reports to him. I wish to take this opportunity to thank each and everyone of you for the fine support and cooperation you have given me during my two terms in office. It has been a pleasure representing you, an honor for which I am deeply grateful. You may rest assured that in the future I stand ready and willing to assist our fine organization and its members in any way that my limited time permits. Final report for 1960 is as follows: Total traffic handled was 65,792, an increase of 22,882 over '59. We now have 34 ECs, 27 ORS, 37 OPS, 24 OOs, 11 OBS and 13 OESS. Our total AREC membership is 1101, 784 full and 317 supporting, 248 official mobile units, 126 emergency radio units. If you are not a member of AREC now what about a check with your EC. Traffic: K4SJH 1459, BY 818, KDN 345, LCF 239, BZ 139, ENW 132, W4AKB 114, K4COO 105, AX 104, W4RHV 102, FE 92, K4LVE 72, DBT 71, RNS 59, W4EAT 55, TRS 53, K4DAX 45, W4YVT 43, HTH 40, LMT 40, K4VSA 40, W4CNZ 35, K4ILB 35, W4LDF 34, BKC 33, K4BZS 23, ANR 14, W4LSA 12, K4MTP 12, OZS 11, ZIF 11, W4DPD 10, DQS 6, K4YPN 4. (Dec.) W4LDF 23, K4OSB 21, W4SVB 14.

**WESTERN FLORIDA**—SCM, Frank M. Butler, jr., W4RKH—SEC: MLE, PAM: WEB, RM: K4URR. Quincy: K4QDN is looking for DX on 20 and 15 meters. Madison: RDQ is recovering from an operation. St. Joe: WEB has a new RME-6900 receiver. K4RZF is planning an AREC expedition to St. Joe Point, Tallahassee; GAA renewed OBS appointment and is using 100V and 600L. K4VLE is busy lining up equipment and operators for the emergency base stations. The TARC has a new

(Continued on page 140)

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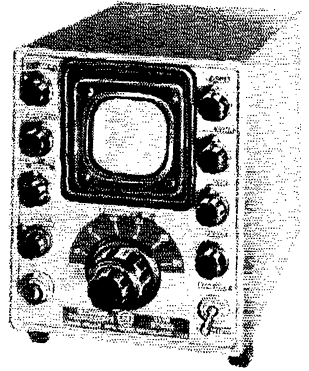
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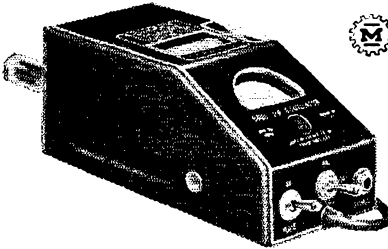
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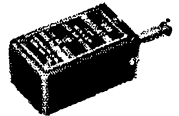
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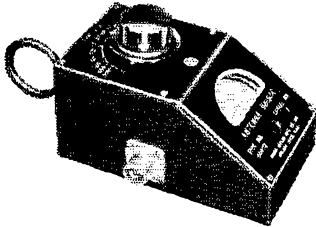
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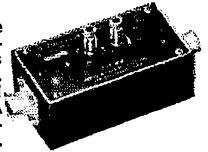
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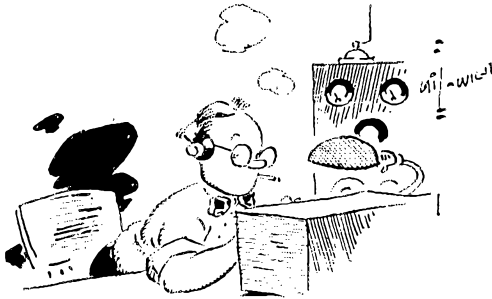
  
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constitution and by-laws. KN4BSQ is head of a group to furnish the Scouts with information on amateur radio. Panama City: The PCARC held a 10-meter bunny hunt; later RKH gave a talk on construction and the use of loops. Defuniak: JOZ has taken over as EC for Walton County. OSD and HQN put up new antennas for the DX Contest. Fort Walton: ROM is building an all-band kw. rig. NVW has done an FB job of editing the EARS newsletter, *Bandspread*. The Hurlburt Field Club has been reactivated, with KN4CNH as pres. New Eglin ARS officers are MMW, pres.; RKH, vice-pres.; IQK, secy.-treas.; NVW, editor, and UXW, act. mgr. Amateurs provided the Air Force with valuable communications during a recent missing aircraft search. Milton: POY is active on the traffic nets again. The Whiting Club now has about 20 members, reports K8DHJ/4. Pensacola: K4PIQ is trying RTTY. Several 6-meter transmitter hunts have been held. K4QOJ and K2AFQ/4 are new OOs. K4BDF is a new OPS. NBF, the NAS Club, is adding equipment for s.s.b. and Novices. K4RMO now has emergency power set-up. Traffic: K4VND 55, W4WEB 33, POY 12, ROM 6.

**GEORGIA**—SCM, William F. Kennedy, W4CFJ—SEC: PMJ. PAMs: LXE and ACH. RAJ: DDY. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., at 0800 EST on Sun. GSN meets Mon. through Sun. on 3595 kc. at 1900 and 2200 EST with DDY as NC. The 75-Meter Mobile Net meets each Sun. on 3995 kc. at 1330 EST with K4YID as NC. The GPYL Net meets each Thurs. on 7260 kc. at 0900 EST with K4ZZB as NC. The Atl. Ten-Meter Phone Net meets each Sun. on 29.6 Mc. at 2200 EST with BGE as net mgr. The Ga. S.S.B. Net meets Mon. through Fri. on 3970 kc. at 2000 EST with K4RHB as net mgr. The Atl. Radio Club meets at 2100 EST on 21.36 Mc. each Sun. night with DOC as NC. The Atlanta Radio Club will hold its hamfest June 2 and 3. The GSN has two sessions nightly at 1900 and 2200 EST. K4TEA has the Ga. Peach and Florida Awards now. K4RHU passed the Conditional Class exam. K4PKK reports that January was very good on openings in the 6-meter band. LNG has returned from two weeks skiing at Sun Valley, Idaho. He also improved his 144-Mc. final. The amateurs who participated in the March of Dimes Walkathon on Jan. 14 and 15 for the Columbus, Ga., Amateur Radio Assn. were MHA, K4AVK, K4BAI, K4BVD, K3ERT, FIZ, WOLOR, NCF, NHY, NTG, NXB, K4PYB, QDK, KN4RTN, K4SZL, K4TAG, K4UYC, K4VDI, WXXW and CVY. It is most gratifying to be associated with these fine fellows, who devoted their time to raise money for such a worthy cause. During January we were sorry to lose to Silent Keys BCQ, Marion Henderson. Traffic: K4BVD 101, W4DDY 77, K4OGG 29, FJD 20, TEA 13, BAI 5.

**CANAL ZONE**—SCM, Thomas B. DeMeis, KZ5TD—The new AREC Net on Sun. at 0930 EST on 7225 kc. has worked out very well, regularly active on the net are CB, MAI, PA, JC, JT, GA, SW, KR, OA, HP3RL and YN4CV. Traffic is handled after net activities. The Canal Zone Emergency Traffic Net set up by the Atlantic Side group has been changed. The new schedule is: Pacific Side on Mon. 1000 EST/1500 GMT on 28.9 and 1030 EST/1530 GMT on 21.375 Mc. The Atlantic Side group will try to cover Thurs. 1630 EST/2130 GMT on 28.9 and 1700 EST/2200 GMT on 21.375 Mc. Routine traffic will be handled after the net times and by stations selected during the watch time. The AREC Atlantic Side Net meets Tue. at 2000 EST/0100 GMT (Wed.) on 28.9 Mc. alternating with one week on phone and the next week on c.w. KZ5WA is back from vacation using a new 100V. BC was in the hospital for a short time. UR is on s.s.b. with S/Line equipment. TF and HFN moved from Gatun to Coco Solo. LM set up with an Apache and an HQ-170. KT now is using a 100V and a four-element Thunderbird. BB and MM are using new quads. W3OMA has open house and will be active from here as KZ5OM. The FAA group shortly will shift to a new housing area called Cardenas. Traffic: KZ5OB 93, JW 82, SB 78, TD 71, OA 45, AD 26, VF 24, UR 18, FG 3, AT 2, LE 2.

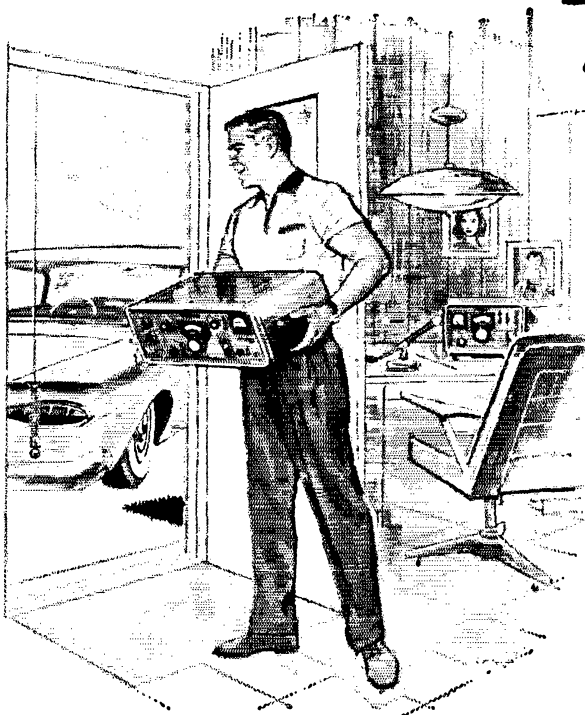
## SOUTHWESTERN DIVISION

**LOS ANGELES**—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP. RM: W6BHG. PAMs: W6BUK, W6GRS and K6PZM. The following stations earned BPL for the month: K6MCA, W6GYH, K6LVR, W6WPF and K8EPT. Congrats, fellows! W6KCH is a new General. K6EA expects to be at sea again soon. W6NAA is getting the amateur booth lined up at the L.A. County Fair. W6FB is attending the 25th anniversary of the Palomar Radio Club which he founded! K6EVR has a new k.w. rig on. W6HUO is doing fine on 40-meter c.w. W6GRS is Asst. Scoutmaster of Troop 76. Congrats, Curky! W6KQN is using a Communicator III. W6DJJ made a good score in the CHF Sweepstakes. The ALN has changed its name to the Golden Bear Traffic Net. W6SRE has a new 10-meter wide-spaced beam up 40 feet. W6AWEV is working San Diego on 1240 Mc! K6PZM reports the SoCal 6 Net is

(Continued on page 142)

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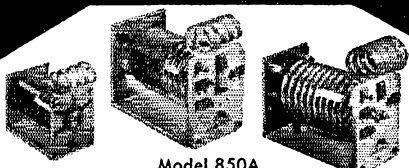
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open for traffic each day at 0230 GMT. W6MIEP reports he has 1/2 million feet of tape log on the repeater K6MYK. Congratulations to W6NLZ on winning the Edison Award and W6GYH for a Special Citation! WA6MFE is a new member of the SoCal 6 Net. K6KUU moved to a new QTH and has a Gotham vertical up. The So. Calif. V.H.F. Club had a wonderful score in the V.H.F. SS and should take the West Coast. Congrats, gang! W6VQZ has a new vertical on 40 meters and is doing FB! WA6CHW is converting an APS-2 for 10 Kmc. WA6FRF built a new 2-meter rig with a 2E28 in the final. K6TVG is building a new transistorized converter for 50 meters. Support your section nets: On c.w., the Southern California Net meeting at 0300 GMT on 3600 kc. daily; on phone, the SoCal 6 Net meeting at 0300 GMT on 50.4 Mc. daily. Traffic: (Jan.) K6MCA 1044, W6GYH 1021, K6LVR 727, W6WPF 613, K6EPT 514, K6OZI 395, WA6DJB 858, K6CLS:6 305, W6BHG 156, K6QPH 134, K6BAY 130, K6SHZ 107, WA6KR 96, WA6DWP 95, W6MAP 68, WA6KQN 36, K6JSD 29, WA6JOC 27, K6SIX 26, W6FB 20, W6LTP 16, WA6MFB 13, K6EA 9, W6SRF 7, K6LS 6, W6NAA 4, K6CDW 2, K6MSL 2. (Dec.) WA6GKK 345, W6MAP 168, K6VFN 144, K6PZM 108. (Nov.) K6VYN 89.

**ARIZONA**—SCM, Kenneth P. Cole, W7QZH—PAM: OIF RM: LND. The Copper State Net meets at 1930 MST Mon. through Fri.; the Grand Canyon Net Sat. at 0800 on 7210 kc.; the Tucson AREC Net Wed. at 1900 on 3880 kc. Tucson: Newly-elected officers of the Old Pueblo Amateur Radio Club are K7EVZ, pres.; LZL, vice-pres.; K7HPV, secy.-treas.; LXX, program director. By combined efforts of the Catalina Radio Club and the Old Pueblo Amateur Radio Club, working under the direction of K7LJY, it was made possible for 52 children, patients of the Asthmatic Foundation Hospital in Tucson, to talk to their parents and relatives located in various parts of the United States. Congratulations to Tucson for once again proving that amateur radio is indeed a benefit to the general public. We regret to announce that BV3 has resigned as editor of *Zephyr Beat*, Catalina Radio Club newsletter. At the recent meeting of the committee for the Southwestern Division ARRL Convention, to be held in Phoenix, Ariz., May 28 through 29, 1961, at the Westward Ho Hotel, it was decided to include the following prizes: A complete Johnson Viking KW; Ranger Exciter and desk; a KWN2 transmitter complete with PM2 transceiver power supply, carrying case, mike and antenna; a v.h.f. transceiver; Spaulding Tower; and others.

**SAN DIEGO**—SCM, Don Stansifer, W6LRU—The Third Annual California YL Convention will be held in San Diego May 12, 13 and 14 at the El Cortez Hotel. The San Diego YL Club will be host. W6MLZ, our Division Director, attended the installation of officers for 1961 at the San Diego Council of Amateur Radio Organizations meeting in late January, and reported on recent happenings in the division during the last year and on what was planned for the future. K6LKD, ORS in Escondido, is now using a Viking II for his net activities. K9UNC/6 is now operating from W6IAB as duties permit. K6GPG, of the Newport Club, is now mobile in a Model T Ford. K6MAQ is now married. K7HFF/6 has been transferred to KH6-Land. At a recent meeting W6WSV and W6WSW showed the Newport Club slides they took on their trip to Europe. The call of the Newport Club station is K6VTS. Members of the San Diego DX Club are helping VP2VB work on his boat to get it back in good shape after his troubles at Clipperton. W6BAM, an old-timer in Santa Ana, has been selected as amateur of the month by the Orange County Club. W6FAF was hospitalized with a bad leg, but is now back in full swing chasing DX. W6FWF and W6WNN have gone s.s.b. The February meeting of the San Diego DX Club was held at the home of the president, K6EC. A new c.d. group in Orange County meets the first Mon. of each month at the Orange County Health Center. If interested, contact K6RCK. Traffic: W6YDK 1266, K6BPI 320, W6EOT 451, WA6CDD 261, K6LKD 209, WA6ATB 163, W6ELQ 8.

**SANTA BARBARA**—SCM, Robert A. Hemke, K6CVR—The Paso Robles ARC conducts a code and theory class each Tue. and Thurs. at 7 p.m. for Novice aspirants. Instructors are rotated among available club members, with W6AGO in charge of the program. W6MNE changed his QTH to San Francisco. The Ventura County ARC has started work on its club station. Those who helped make the station possible were K6UOT, W6KCD, K6ARK, W6QBF and many others. The club call is K6MEP, frequency is 3930 kc. daily at 1830 local time. W6YCF is cleaning up all those loose wires around the shack. The Santa Barbara ARC had the best turnout in the past years at a recent meeting. The speaker was K6BPY, who gave some up-to-date information on the quad antenna. A new OO is W6UWL; a new OBS is WA6FGV. K5TQW/6 is doing FB with a 100V transmitter. Traffic: W6YCF 18, W6JLY 6, W6FYW 5.

(Continued on page 144)

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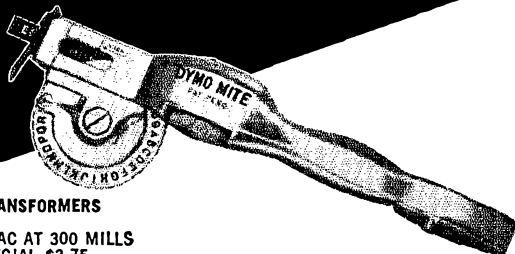
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**WEST GULF DIVISION**

**NORTHERN TEXAS**—SCM, L. L. Harbin, W5BNG—K5ILL has acquired a new 2-kw. portable power plant and is ready for any emergency requiring portable power for communications. K5KFC now has a plate-modulated Globe Scout 90A and is putting a bodacious signal on the air. K5PGW left his job as a disc jockey and is going back to school with a law degree as his goal. East Texas hauns spent most of Sat. and Sun, Jan. 28 and 29 working the KLTV Channel 7, Tyler, Tex., Annual TV Telethon March of Dimes program. Several thousand dollars was pledged as a reward for their efforts to render a public service. The KC Club of Ft. Worth has four pieces of test equipment available for the use of members. All that is necessary to use this equipment is to be a club member and to be responsible for its condition when returned. IEL, an old-timer, after a long absence from the air is back with a CE100V. ACK has made his choice of a lifetime partner. Congratulations and our best wishes for a happy future. K5BK11, net manager for NTX, advises he still is in need of Asst.-NCSs and RN5 representatives. K5BSS/5 has a new jr. operator. QWR has a new Valiant and an HQ-170. K5BWM is back in Wichita Falls and is active on the 7290 Net. The Terry County ARC has 30 students taking code and theory. Classes are held each Tue. and Thurs. at 7:30 p.m. The suggestion has been made that all amateurs review the FCC regulations; 12,159 would be a good place to start. To holders of appointments, please check the expiration date on your certificate and return it for endorsement if you wish to continue with the appointment. Traffic: W5BKH 290, GY 53, K5JLL 40, YPO 36, PXV 32, VWJ 18, ZOM 17, QWR 14, W5ANK 10, CF 10.

**OKLAHOMA**—SCM, Adrian V. Rea, W5DRZ—The Enid Amateur Radio has elected K5QEE, pres.; K5LYK, vice-pres.; QMJ, secy.-treas. The Bartlesville Club's officers are K5PGC, pres.; K5UZL, vice-pres.; K5PMP, secy.-treas. The Clinton Sherman AFB Club elected K5LFC, pres.; K5HFW, vice-pres.; K5OQD, secy.-treas. K5ZUS has a new Technician Class license and OOF a new Extra Class. Both are in Tulsa. The Ardmore Club is the most unique we have known, they have no officers yet have been active over a period of fifteen years. The Tulsa Mobile Club is busy preparing for the hamfest to be held May 7. K5KUX is president. KN5EHC and EHC got together on the Novice Class band. KN5EHC has a new 1X-60 and K5UZZL has a new Eico transmitter. K5MPT and CEG, mother and son, make regular contacts. CEG is in Guam. After twenty-five years in one place YJ, club station at O.S.U. was moved to the basement of the Engineering Building. The Electron Benders of Tulsa graduated fourteen Novices and one Technician from its class recently. K5ICC is known as the "Hard Luck Kid" down Duncan way. Traffic: K5IBZ 178, W5OOF 115, DRZ 85, K5JGZ 77, AUX 63, W5JXM/5 51, K5DLP 49, CAY 35, KLCWVX/5 34, K5QEF 31, W5MFX 22, K5YTH 20, W5CCK 19, GIQ 18, K5USA 17, W5WAF 15, K5JOA 14, ELG 13, W5EHC 12, K5OOV 12, SWW 11, INC 10, WZJ 10, ZEP 10, DUJ 9, W5PNG 9, UYQ 8, K5VNJ 8, CBA 7, W5WDD 7, K5EZM 6, LZP 6, W5VLW 3, K5TAJ 2.

**CANADIAN DIVISION**

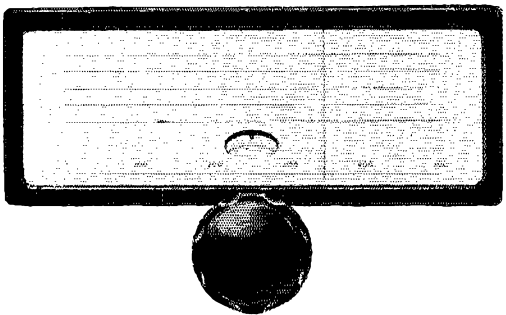
**GOOSE BAY QSO PARTY**

April 14-24

All amateurs are invited by the Goose Bay Amateur Radio Club to participate in the annual Goose Bay QSO Party which commences at 2400 GMT April 14 and ends at 2400 GMT April 24. All bands and either phone, c.w., or both may be used. The exchange will consist of RS or RST, name, and QTH. A WAG (Worked All Goose) Certificate will be awarded to all U.S.A. and Canadian stations reporting QSOs with four GBARC members during the contest period, and to all other stations reporting QSOs with three GBARC members. QSL cards are requested from all stations worked during the 10-day period, to help club members qualify for trophies. Logs showing dates, times, signal reports exchanged, and stations worked should be submitted to Jack Willis, VO2NA, Aeradio, Dept. of Transport, Goose Bay, Labrador, Canada. No QSL cards need be submitted for WAG as logs can be checked locally. The following VO2 stations are members of the GBARC: VO2s AA, AT, AV, AW, DP, ER, GR, HB, JH, NA, RC, RN, UA, WW, VE1MW/VO2, K1PAZ/VO2, WA2AWN/VO2, WA2DSW/VO2, K3MJV/VO2, K0WRW/VO2 and W0WWH/VO2.

(Continued on page 148)

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**\*TUBES AND FUNCTIONS:** 6DQ5 power output; 6CX8 crystal oscillator and driver; 12AX7 speech amplifier; 6DE7 modulator silicon high voltage rectifiers.

**\*FRONT PANEL:** Function Switch (AC off, tune, standby, AM, CW); Band Selector; Drive Control; Plate tuning, plate loading; Crystal V.F.O.; Grid Current Meter; AC Indicator Light; RF Output.

**\*REAR CHASSIS:** Mic. gain; antenna co-ax connector; remote control terminals, AC power cord.

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**\*FEATURES:** RF stage, S-Meter antenna trimmer and XTAL calibrator. Complete band coverage: 80-6 meters. Tuning ratio: 25 to 1.

**\*CONTROLS:** Tuning; Antenna Trimmer; Cal. Reset; Function (AC off, Standby, AM, CW-SSB); Band Selector; Cal.; RF Gain; Auto Noise Limiter; Selectivity/BFO; Audio Gain; Phone Jack; S-Meter Adjust.

**\*TUBES AND FUNCTIONS:** 6AZ8 tuned RF amplifier and crystal calibrator; 6U8 oscillator and mixer; 6BA6 1650 kc. IF amplifier and BFO; 6T8A 2nd detector, A.V.C., ANL and 1st audio; 6AW8A audio power amplifier and S-meter amplifier; (2) silicon high voltage rectifiers.

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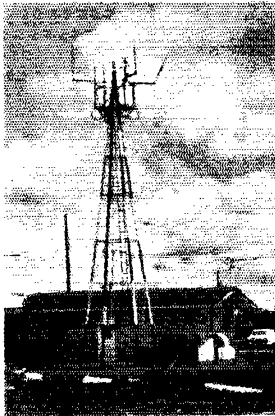
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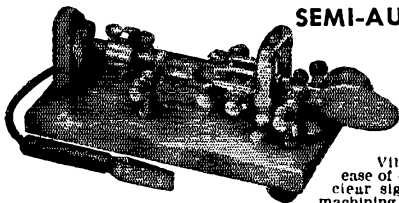
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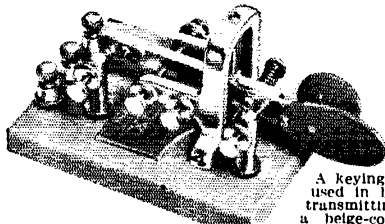
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**MARITIME**—SCM, D. E. Weeks, VE1WB—Asst. SCMs: A. D. Solomon, VE1OC, and H. C. Hillyard, VO1CZ. SEC: BL. Deepest sympathy is extended to the families of CR and XZ, who are now Silent Keys. The Sydney Club has changed its call to CD in memory of Reg. Our ARRL Canadian Director, 3CJ, recently visited a number of clubs in the section on a "get-acquainted" trip to the Atlantic Provinces. VO2AG, ex-VE1MZ, is operating from the ocean-going tug *Foundation Vigilant*. PQ has a new 328-1 transmitter and is getting good results with it. FQ, IZ and ADH have joined the 6-meter group in the Halifax Area. VO2AD has been transferred from Hopedale to Knob Lake. VE1HL, ex-VE3AMQ, is now living in Dartmouth. VO1EM has completed a 500-watt all-band transmitter. VO1DT is on s.s.b. with a 20A and VO1s AO and EC will be on shortly. VE0s NA and NI have been operating from the Southern climes. The phone section of the VE1 Contest was well attended. New appointments include VE1KV as EC for the Saint John Area. Traffic: VE1ADH 21, OM 17.

**ONTARIO**—SCM, Richard W. Roberts, VE3NG—ASR is out of the hospital, as is TX. EIF is on 80 meters. ETM is going mobile. DPO still is tops in putting out an FB bulletin. Westside Toronto held an FB auction with your SCM as auctioneer. Peterboro officers are DCJ, pres.; BAF, vice-pres.; CSY, treas.; BUW, secy. The Sarnia ARC is going to try v.h.f. Ottawa reports that the mobile group elected BCJ, pres.; BST, vice-pres.; BYT, secy-treas. CEZ is on 2 meters. CGP was in VE1-Land for Christmas. BCL is on 6 and 2 meters. DUP is on 10 meters. CMY has been ill. GGO complains of unmodulated carriers on 75 meters. The entire 75-Meter Phone Net is up in arms about this and complaint has been made to the D.O.T. The Westside ARC will hold its Dinner in the fall. *North Bay Bulletin* has some good pointers regarding phone patch operation. Copies can be had from EAW. The Windsor ARC elected CPB, pres.; CXX, vice-pres.; ETM, secy-treas. Scarborough elected CLT, pres.; Bill Down, vice-pres.; DFA, treas.; CIL, secy. The NSRC holds the net Sun. on 3740-kc. phone at 1000 and 3680-kc. c.w. after 1030. AAF worked an EI on 75 meters. The Algoma ARC advises there are at least 20 hams in the immediate area. Should be more activity than there is. Niagara reports success with its certificate. Work ten members and send in your QSLs and get one. AYS is president and worked a VO by mobile recently. The OQN Official Bulletin was well received by your SCM. Nice job, Claude, 2WT. Keep it coming. The Quinte ARC is having a picture taken. RW will be remembered by the William Thompson Memorial Trophy put up by the Quinte Club. Traffic: VE3CWA 416, DPO 172, NG 133, AIL 67, BJR 50, BAQ 48, CFR 48, NO 48, EHL 37, CYR 34, LK 30, DTO 28, PR 18, DWN 14, DZA 13, DLC 11.

**QUEBEC**—SCM, C. W. Skarstedt, VE2DR—YA, our efficient QSL Mgr., wishes to thank all his friends who sent friendly greetings at Christmas. Tendency towards v.h.f. and s.s.b. work is increasing in our section. ABJ works Montreal from Shawinigan regularly on 144 Mc. ANK, Trois-Rivieres, snares 20-meter DX using an indoor folded dip. WT, net mgr. of OQN, reports 25 sessions, 200 stations QNT and 107 messages handled. JZ and DR enjoyed a flight to Halifax where they met VE1s OM, HL, EK and DB. By the way, JZ has modified for s.s.b. Even VE2s complain that P.E.I. QSOs are tough. AZN, at St. Agathe, managed his first one after 40 months trying; he also works DX and is striving for DXCC. CJO elections: BEZ, pres.; ABE, 1st vice-pres.; AWR, 2nd vice-pres.; AGR, secy.; AO1, treas. ASU, at Rimouski, likes 40 meters and reports code and theory classes are given at Ecole de Marine de Rimouski for budding hams. KG, at St. Rose has a 37-ft. tower for a 10-meter beam. AMB is back after a four-year layoff and hunts DX on 40 meters with great success. AWY, ardent s.s.b.er at Bedford, had a pleasant visit from VE1RW. ER reports VO2QB on 75-meter phone used to sign VE2QB. CA sticks to 20 meters with s.s.b. The South Shore Club's Annual Dinner and Dance was highly successful. K5PQG/VE2 is active on 75-meter phone. AGM is interested in c.w. net work. AEW is a new EC. CP is back in action from a new QTH. APR is doing well on 80 and 40 meters with 20 watts. HV and W2SCU have kept a daily sked on 75-meter phone for more than eleven years with very few misses. Traffic: (Jan.) W7QMU/VE194, VE2WT 57, DR 55, EC 16, AMG 15, APR 11. (Dec.) W7QMU/VE8 255.

**MANITоба**—SCM, M. S. Watson, VE4JY—TVI continues to occupy the attention of the ARLA. A representative of D.O.T. attended the January meeting and outlined the problems encountered and the methods adopted in dealing with them. VE4AB, chairman of the TVI committee, has an able staff and their approach to the difficulties has been welcomed by D.O.T. The Winnipeg ARC, a newly-formed club, is functioning well. GC formerly 4FD, now in Calgary, is heard FB on 20

(Continued on page 148)



**\$5 TRADE-IN FOR ANY  
OLD KEY—Telegraph  
or Otherwise!**

**TRY US!**

# hallicrafters HA-1 The "TO" Perfected ELECTRONIC KEYS



Give your fist the clean crispness of tape. Be kind to the fellow copying you. Clear your hook quicker. Avoid developing a "glass arm." Plug in this "TO" Keyer, and get compliments on your perfect sending!

— How It Works —

The "TO" Keyer uses the latest digital computer circuitry to form dots, dashes, and spaces, all of perfect length and ratio, regardless of the speed selected. A slightest touch of the key paddle to the right triggers the flip-flop circuit to cause the output relay to close for the time of a dot, then locks it open for the same time period to give an exact space. Touching the paddle to the left causes the relay to close for triple the dot time to form a perfect dash, then lock open to preserve the correct space before the next dot or dash can be started. Once energized, the "TO" Keyer locks out the key contacts until the dot or the dash and its following space are completed. Nothing the operator does can spoil the full, perfect formation.

Holding the paddle closed will result in a continuous row of properly spaced dots or dashes.

— Keying Quality Indicator —

A dual neon indicator on the panel shows the operator when his keying of the whole character is perfect, or how his spacing deviates from the precise rhythm established by the multi-vibrator pulse generator.

— 10 to 65 WPM Constant Speed —

A calibrated panel control puts the Keyer at any desired speed between approximately 10 and 65 Words Per Minute, where it remains stable regardless of line voltage or temperature changes. Mark-space ratio is factory set, and stays constant throughout the entire speed range ("Weight" control is adjustable to other than 1:1 ratio, if desired.) All timing circuits are entirely electronic. A vacuum sealed mercury wetted contact relay is used only to give positive, clean keying of the transmitter at even the top speed.

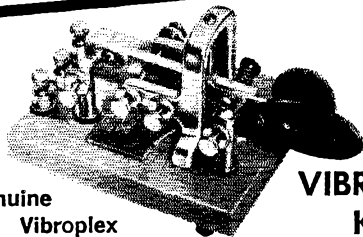
This "TO" Keyer is simple to install and use! Just connect to your transmitter's key terminals or jack—connect Vibro-Keyer key—plug into AC line. In compact 7"x7"x5" high sturdy metal cabinet, finished in attractive two tone gray. Complete, ready to operate with any two circuit key. Hallicrafters Model HA-1 **\$79<sup>95</sup>**

**For your earliest enjoyment**

of this perfected electronic keyer, don't waste time—send your order right to "Ham Headquarters, U.S.A.," today! We have plenty, but we know that almost every CW man will want one in a hurry. Place your orders today!

**CHARGE IT**  
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A DeLuxe companion to the "TO" Keyer. Solidly constructed, with the superior features of the finest Vibroplex keys, famous the world over for smooth and effortless sending.

Special bearing movement for minimal friction, gives a velvet feel. Compound lever permits separate adjustment to your individual touch of either side action for excursion and tension. Large silver contacts. Colorful red paddle and knob. Base 3 1/2"x4 1/2", 2 3/4 lbs., with non-skid feet.

HARRISON brings it to you with a special gray finished base to match the "TO" Keyer, and beautifully chromed machined parts, **\$17<sup>95</sup>** for only

\*Applies to HA-1 Keyer

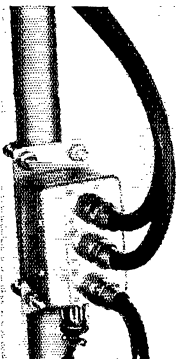
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*73* **Bil Harrison**  
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## NEW "All-Weather" COAXIAL RELAY

- Eliminates Expensive Coaxial Cable
- Faster Switching of Antennas

At Last! Now you can save on expensive coaxial cable by mounting the NEW "All-Weather" relay switch on your antenna tower or mast. Switch antennas fast. Also

may be used as a high quality transmit-receive switch. Standard units supplied with UHF coaxial cable connectors and power plug. Full 1000 watts AM, CW, or SSB. Compact and lightweight. Gold anodized aluminum construction. Mounts anywhere, inside or outdoors. Immediate delivery on either A.C. or D.C. models. Money back guarantee.

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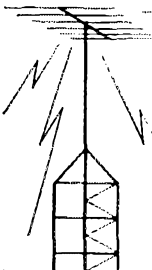
NO.	POWER	COST
CU 420	115v A.C.	\$18.95
CU 421*	115v A.C.	19.95
CU 521*	6v D.C.	19.95
CU 621*	12v D.C.	19.95

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meters. IW had modulator trouble and was assisted back to normal by AY, ye old faithful on the banks of Dead Horse Creek. EG is back on the air from his new dwelling. Congratulations to TX, who prominently assisted the Ice Island Expedition. (See Feb. issue QST). IW, at Manitou, has started a class in his area. FB, Bill, Your SCM would welcome more material for these reports. Send us your news. Traffic: VE4KN 29, PE 23, JY 21, AN 6, QD 6, TW 5, AY 4, RB 4, RM 4, TE 2, XY 1.

**SASKATCHEWAN**—SCM, Harold R. Horn, VE5IR—The C.W. Net is doing very well on 3685 kc. The net now is known as PEN (Prairie Emergency Net). Officers are NQ, net mgr.; AH, associate mgr.; and EO, net recorder. Liaison with RN7 is maintained by MS, KZ, GW and NQ. NCSs are AG, AH, MS, EO, GW and NQ. Net time is 0200Z. EA and LM were both hospitalized at the same time. EA had a portable set to keep him occupied while convalescing. KJ is on a two-month holiday visiting in VE2- and VE3-Land. HR has a new Johnson Matchbox and now keeps the antenna well matched with low s.w.r. RQ made his DX-20 plate modulated and is heard on 10, 15 and 20 meters. MF has been working ZLs on 75 meters. VL is doing FB on 50 Mc., with 9 states and Yukon confirmed. Others on 50 Mc. are XP, JF, KP, EE, CU and MN. How about some QES appointments, fellows? We are sorry to learn that AD has to dispose of his gear because of inability to use his equipment after a stroke. Our sincere sympathy to SVB and TAP and their families following the loss of their father. Traffic: VE5NQ 49, MS 29, EO 19, AH 12, VE6AEN 11, H 6, AG 5, VE4RF 1, VE5BW 2, NX 2.

## 150-Watt Amplifier

(Continued from page 28)

brilliance as the amplifier is loaded. Maximum plate current is 200 ma., or two-thirds of full-scale reading.

Be careful in loading up the bulb if you have 750 volts on the plates of the amplifier, because if you go too far you might burn out the lamp. The same procedure should be followed for checking on the other bands.

With the power transformer used in the unit shown here, the plate voltage under load was 720. Screen voltage was 300 volts. When excitation is removed, the screen voltage drops to less than 100 volts. In order to get maximum output from the 1625s, the screen voltage should be about 300 volts when drive is applied to the amplifier. If you should have a power transformer that gives you only somewhere near 600 volts under load, then the screen-dropping resistor  $R_3$  should be less than 20,000 ohms. A 15,000-ohm 25-watt unit will give a screen voltage of about 300 with a plate voltage of about 600. We say "about" because a variation of plus or minus 20 volts would not materially affect the performance of the amplifier.

One other thing the Novice usually wants when getting his General-Class ticket is a v.f.o. As pointed out earlier, this amplifier requires a few watts of drive but it should be stated here that the average commercial v.f.o. does *not* have enough power to drive the amplifier. In order to drive the amplifier and use a v.f.o., an intermediate stage would be required.

QST

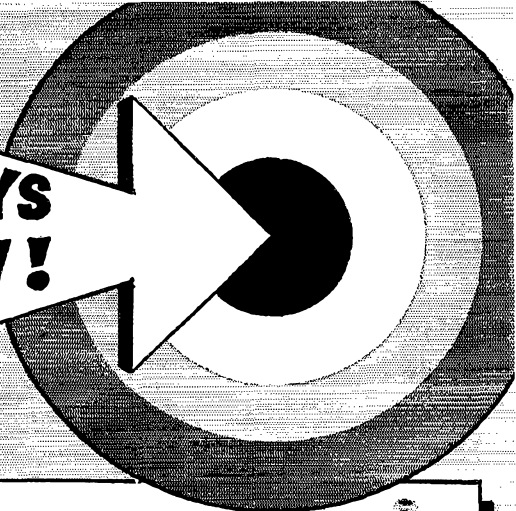
## Multiband Antennas

(Continued from page 43)

several years and the reports have always been just about the same as those obtained with regular doublets. Obviously the loading coils

(Continued on page 150)

# BULLSEYE BUYS at ARROW!



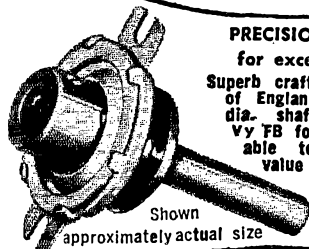
## ZIMCO THEFT ALARM

Protect your radio gear in cars, boats and trucks with Zimco's burglar proof siren alarm. Unit consists of tamper proof siren and latching relay, key-operated on/off switch and 6 push button alarm switches. See QST Jan. '61, page 27.



Complete kit, 12 VDC **59<sup>95</sup>**

6, 24, 32 VDC & 115 VAC models available on special order.



## PRECISION PLANETARY-VERNIER for exceptionally fine tuning

Superb craftsmanship by Jackson Bros. of England. Ball bearing drive, 1/4" dia. shaft, 1 1/4" long, 6:1 ratio, v.v. FB for fine tuning. Easily adaptable to any shaft. Comparable value — \$5.95.

Amateur Net \$1.50 ea.  
10 for \$13.50

Shown approximately actual size



## "Wonder Bar" 10 Meter Antenna

As featured in Nov. 1956 QST. Complete with B & W 3013 Miniinductor. Only 8 ft. long for 10 meters. Wt. 5 lbs.

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**Versatile Miniature Transformer**  
Same as used in W2EWL SSB Rig — March 1956 QST. Three sets of CT windings for a combination of impedances: 600 ohms, 5200 ohms, 22000 ohms. (By using center-taps the impedances are quartered.) The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, high impedance choke, line to grid or plate, etc. Size only 2" h. x 3/4" w. x 3/4" d. New and fully shielded.

3 for \$3.49      Amateur Net \$1.39      10 for \$10.75  
ARROW Authorized distributor of HEATHKIT equipment

## AMECO 2 & 6 METER CONVERTERS

Crystal Controlled  
Gain: over 30 db  
Noise Figure: better than 4 db

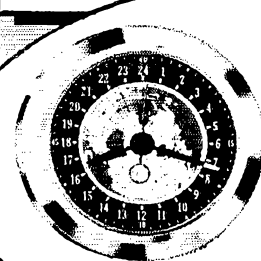


Tube Lineup: 2 meter Converter has new, imported 6BS8 high gain, low noise, cascode 1st RF Amp., 6UBA 2nd RF Amp. & Mixer. 6J6 Osc.—Multiplier.

6 meter Converter has 6BS8 Cascode RF Amp and 6L8A Mixer and Osc.

Converter complete with tubes and xtal for 7-11 or 14-18 mc. IP output in Kit form with instructions  
Wired and tested

6 meter	2 meter
CB-6	CB-2
\$19.95	\$23.95
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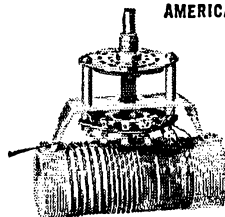
## 24 HOUR CLOCK

24 hr. chrome plated 8" metal wall clock. Inner dial with south polar projection map of world indicates time around world. Polar projection dial adjustable for various time zones. Shpg. wt. 2 lbs.

Amateur net \$8.47  
tax inc.

220V. 50 cycle model.....9.95

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Units have 6 posit. tap switch mounted on ceramic coil form. Mod. 4/111 designed for use with two 807's or 6146's (in parallel). Freq. Range 3.5 to 29.7 mc. Mod. 4/112 is designed for use with single 807 or 6146. Handles up to 60 w. Range: 3.5 to 29.7 mc. Mod. 4/111 or 4/112, each \$4.95

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## NEW CB-10 NEW

A TRULY LOW COST BEAM,  
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METER ENTHUSIAST AND THE  
CITIZENS BAND OPERATOR—

RANGE 26,965 KC TO 29,700 KC

Maximum results by use of dual driving and a unique phasing network, providing high gain, high front to back ratio and low SWR. Again the no-coil no-trap construction. Matches 73 ohm lines.

Powerful operation on each band through scientific broad-banding. Made entirely of high tensile aluminum alloy.

Write for descriptive bulletin.

Longest element—17' Boom—4' 6"  
Weight—5½ lbs.

**G4ZU 10, 15 & 20 Minibeam**—Light in weight but not in performance. 16 lbs. 13' 6" turning radius. . . . . \$89.50

**G4ZU 20, 40 Birdcage**—A 20-meter beam and 40-meter antenna with a turning radius of 9' 6". (Just a tiny bit larger than a 10-meter beam) 14.5 lbs. . . . . \$87.25

24' zoom up mast with hardware to match. . . . . \$7.25

Tribanders, verticals, single band beams, dual band beams, multiband dipoles, corner reflectors, unipoles, cardioids. If they are made by Telrex, HyGain or Andrews we can supply them.

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should be made as low-loss as possible by using good insulation and as large wire as is practical. There are no capacitors to break down as in traps, and the 120- $\mu$ h. coils have been used with a kilowatt transmitter input with no difficulty.

We have not found any exact formulas to determine the relationship between the lengths of wire, loading coils, and the two frequencies. The antennas are very simple to adjust with a grid-dip meter coupled to a single-turn loop connected to the feed terminals, as quite small changes in the wire lengths result in appreciable changes in resonant frequencies.

This principle can be extended; that is, by using two sets of coils, operation on three frequencies is possible, on four frequencies with three sets of coils, and so on. However, these get very complicated to adjust, since the second set of loading coils changes operation of the first set somewhat, and the adjustment process gets rather tedious. **QST**

## Three-Band Quad

(Continued from page 32)

### Materials

The total cost of materials for the quad is about \$55.00. A 30-foot length of 2-inch irrigation pipe can be obtained from Sears for approximately \$8.50. Material for the spider is generally available from dealers in metal stock—look in your phone book. "Heliarc" and other welding facilities are becoming more numerous every day and are now located in most cities. Again—consult your telephone directory. The author obtained the bamboo spreaders from the Mohawk Venetian Blind Co., 36 Cameron Ave., Cambridge, Mass. There are other sources in both east- and west-coast areas. Be sure to ask for poles that are free from cracks. Aluminum clothesline is available in hardware stores. You will need about 350 feet. The brand I happened to find is called Aluminum Dog Run and is manufactured by Nichols Aluminum and Wire Co., Davenport, Iowa. It is guaranteed not to oxidize—an advantage in this application as well as in the originally intended one.

Both electrically and mechanically, this quad has performed in excellent fashion. The first night on its Field Day christening at K1DRX/1 set up at Mt. Aseutney, Vermont, it withstood 40- to 50-m.p.h. gales, remnants of a tornado, with no damage. **QST**

## More Sock for Cents Antenna

(Continued from page 50)

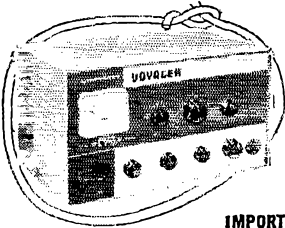
had been depleted of solder. So we made the only cash expenditure necessary in assembling this antenna: we bought 25¢ worth of solder at the local solder shop.

So that's it! MORE SOCK FOR CENTS!

Ridiculously simple, isn't it? Proof once again of the fabulous innovations that can result from a little perseverance and that ubiquitous Aladdin's lamp of ham radio: the junk box! **QST**



# THE LAFAYETTE ROUNDUP OF HAMSHACK VALUES

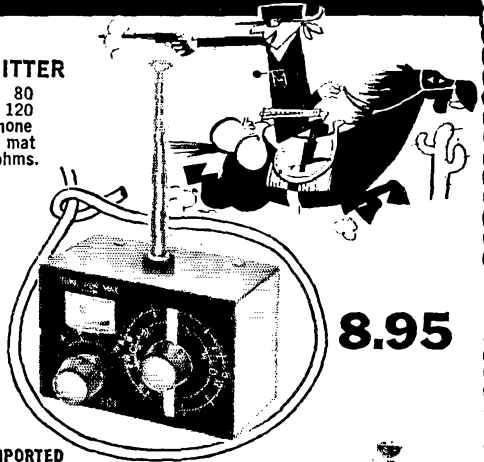


## MODEL HE-25 "VOYAGER" TRANSMITTER

Single knob bandswitching 80 through 6 meters with a full 120 watts CW or 70 watts phone operation. High Q, pi-network matches antennas from 40-600 ohms.

**109.50**

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## MODEL TM-15 WAVE METER

Checks transmitter output for harmonics, parasitics, and out-of-band operation. Provided with magnetic feet. Perfect for the novice.

**8.95**

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**37.50**

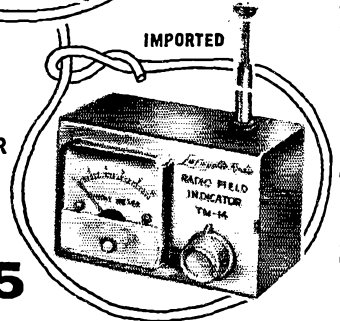
## HE-28 RF WATTMETER AND SWR BRIDGE

150 watts full scale—Built-in dummy load—Wattmeter  $\pm 5\%$  to 54 mcs. SWR  $\pm 5\%$  for in line use.

## MODEL TM-14 FIELD STRENGTH METER

Complete, no wires to connect. Monitor transmitter output, check antennas, etc. Perfect for mobile, provided with magnetic feet.

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- TUNES 550 KCS TO 30 MCS IN FOUR BANDS
- BUILT-IN Q-MULTIPLIER FOR CROWDED PHONE OPERATION
- CALIBRATED ELECTRICAL BANDSPREAD ON AMATEUR BANDS 80 THRU 10 METERS • STABLE OSCILLATOR AND BFO FOR CLEAR CW AND SSB RECEPTION • BUILT-IN EDGEWISE S-METER

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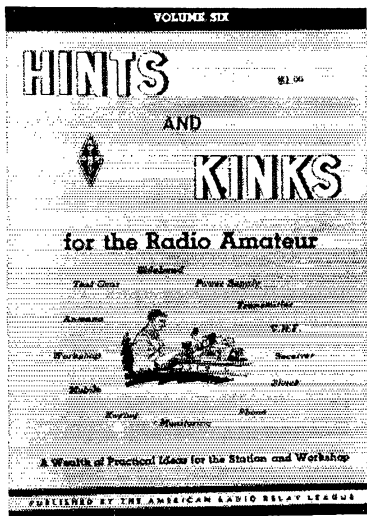
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## World Time Keeping

(Continued from page 57)

### Daylight Saving Time

No discussion of time zones would be complete without mention of daylight saving time. In the summer months it is convenient to "save" or extend the hours of daylight. This is done simply by having the sun set one hour later than with standard zone time. Naturally we can't adjust the schedule of the sun, but we can change the time in a particular zone so that when the sun sets the clocks read one hour later. In this and other countries the clocks are set ahead one hour sometime in the spring. This means that when the sun sets, the clocks indicate it is one hour later than usual, and in effect, we have "created" an additional hour of daylight. (Of course, the sun rose one hour later also, but who besides that DX hound down the street and the milkman are up then?) In effect, our clocks are now set to the standard zone time adjacent to us to the east. In the fall we simply set our clocks back one hour and resume the standard zone time.

### Conclusion

The reader should now be able to convert to GMT or any other zone time and back again with ease. All that is needed is the zone number with appropriate sign and the local time. A large map marked into time zones and a clock set to GMT make the process a snap. We have really only touched on the subject of time keeping and if this article has whetted your appetite we recommend you visit the local library or obtain elsewhere a copy of Bowditch's *American Practical Navigator*, published by the U. S. Navy Hydrographic Office and/or a copy of Dutton's *Navigation and Nautical Astronomy* published by the U. S. Naval Institute. Both volumes cover the subject most extensively.

However, if you are confused by the whole subject of time keeping don't be dismayed. Put this article away to ferment and fire up the rig for a few hours. Maybe you can find a G near Big Ben who is willing to give his local time. **QST**

*Editor's Note* — Two of the many authorized Hydrographic Office agents where H. O. Chart No. 5192 may be purchased are:

New York: American Map Company, 11 West 46th Street, New York 17, New York.

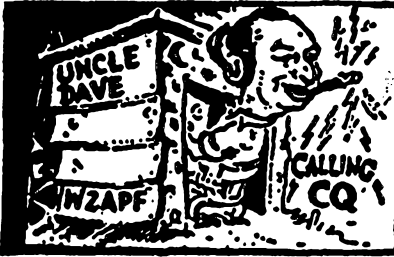
San Francisco: San Francisco Instrument Company, 510 Battery Street, San Francisco 11, California.

### Edison Award

(Continued from page 49)

Bible student, an eighteen-year-old boy and, yes, even a housewife. Tonight we add a communications engineer and an electronics expert. This varied group of amateurs proves that amateur radio reaches all strata of the American way of life, a fact which, to my mind, is one of the most edifying characteristics of the amateur service.

Adding a touch of novelty, and most deservedly so, tonight we honor a joint accomplishment with a joint award. For it was the efforts of two ama-



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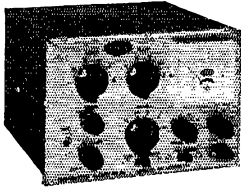
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<p><b>TECHNICAL MATERIEL CORP. RECEIVERS</b></p> <p>GSB-1 SSB Slicer.....\$125.00</p>	<p><b>JOHNSON XMTRS. AND ACC.</b></p> <p>Adventurer Xmtr.....\$ 37.50 Viking II Xmtr..... 195.00 6N2 Exciter..... 95.00 500 500W. Xmtr..... 695.00 Matchbox Ant. Cpler..... 44.95 K.W. Matchbox Ant. Cpler..... 75.00 Messenger (Cit. Band)..... 105.00</p>	<p><b>NEW—demonstrators—display models—one of a kind—subject to prior sale—list second and third choice.</b></p>												
<p><b>HALLICRAPTER XMTRS. AND RECEIVERS</b></p> <p>S53A Rec.....\$ 69.95 SX96 Rec..... 175.00 SX100 Rec..... 219.00 SX25 Rec..... 69.50 SX28 Rec..... 95.00 S85 Rec..... 75.00 S94 or S95 Police Receiver..... 49.50 S108 Receiver..... 104.50 SX110 Receiver..... 129.50 SX111 Receiver..... 229.50 HT20 AM Xmtr..... 219.50 HT30 SSB Xmtr..... 325.00 HT37 SSB Xmtr..... 395.00 SR34AC 2 and 6 mtr. Xceiver..... 325.00</p>	<p><b>"WRL"—GLOBE XMTRS. AND ACC.</b></p> <p>VOX10 Voice Relay.....\$ 22.50 VHF62 10 and 2 mtr. Xmtr..... 115.00 755-755A VFO..... 39.95 6-PMC 6 mtr. Converter..... 19.95 UM-1 Modulator..... 35.00 AT-4 Ant. Tuner..... 62.50</p>	<p><b>BEAMS—NEW AND USED (AS INDICATED)</b></p> <p>Mosley TA33.....\$ 84.95 Mosley TA31 Jr..... 16.95 Mosley V3..... 19.95 Mosley V3 Jr..... 15.95 Mosley TA32..... 59.95 Mosley TA32 Jr..... 42.95 Mosley A320..... 66.95 Mosley S153..... 42.50 Mosley S103..... 37.50 Cushcraft AGP15..... 11.95 Cushcraft AGP10..... 10.95 Cushcraft ATGP3..... 24.95 Cushcraft A28A..... 21.95 HiPar 2H..... 8.95 Hi-Lite 3E10F..... 49.50 Gonset 3220..... 94.50 Hy-Gain 153G..... 29.50 Hy-Gain 152MT2..... 49.50 Hy-Gain 203G..... 49.95 Hy-Gain 113G..... 39.95</p>												
<p><b>GONSET XMTRS.—REC.—CONV.</b></p> <p>Communicators: Series I 2 or 6M.....\$ 95.00 Series II 2 or 6M..... 150.00 Series III 2 or 6M..... 225.00</p> <p>Linear Amplifiers: Series I and II..... 95.00 Series III..... 125.00 G33 receiver..... 69.50 G43 receiver..... 119.50 G63 receiver..... 209.50 GSB100 SSB Xmtr..... 425.00 GSB101 Linear..... 425.00 G28-10 Mtr. Receiver..... 225.00</p>	<p><b>HEATH XMTRS. AND ACC.</b></p> <p>TX-1 AM Xmtr.....\$275.00 RX-1 AM Rev..... 250.00 AR-3 Receiver..... 25.00 GC-1 Pble. Receiver..... 175.00 DX-20 CW Xmtr..... 24.95 DX-40 AM/CW Xmtr..... 49.50 AT-1 CW Xmtr..... 14.95 VHF-1..... 175.00 DX-35..... 39.95</p>	<p><b>EXTRA SPECIALS</b></p> <p><b>NEW ITEMS</b></p> <p><b>Overstock and Discontinued</b></p> <p><b>Lynmar Baluns:</b></p> <table border="1"> <thead> <tr> <th></th> <th>Reg.</th> <th>Special</th> </tr> </thead> <tbody> <tr> <td>2J.....</td> <td>\$11.95</td> <td>\$ 8.95</td> </tr> <tr> <td>T-1-J.....</td> <td>11.95</td> <td>8.95</td> </tr> <tr> <td>RB-1.....</td> <td>2.95</td> <td>1.95</td> </tr> </tbody> </table>		Reg.	Special	2J.....	\$11.95	\$ 8.95	T-1-J.....	11.95	8.95	RB-1.....	2.95	1.95
	Reg.	Special												
2J.....	\$11.95	\$ 8.95												
T-1-J.....	11.95	8.95												
RB-1.....	2.95	1.95												
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<p><b>ELMAC XMTRS. AND RECEIVERS</b></p> <p>A54H Mobile Xmtr.....\$ 75.00 PMR7 Mobile Rec..... 109.50</p>	<p><b>HEATH-KITS</b></p> <p>(Overstock) (KIT FORM ONLY)</p> <p>DX-100 AM Xmtr.....\$175.00 CO-1 Code Oscillator..... 7.95 XR2L Portable BC Radio..... 29.95 XR2P Portable BC Radio..... 27.95</p>													

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teurs which made the most important amateur radio accomplishment of 1960 possible. Like our original amateur pioneers, Ralph Thomas and John Chambers entered the wilderness of radio wave propagation.

Much like the early days when the amateur proved that long distance transmission below 200 meters was possible, so have John Chambers and Ralph Thomas established the possibility of communication over a distance of more than 2500 miles entirely within the earth's troposphere on 144, 222 and 432 megacycles. We know that this accomplishment far exceeds any records previously established by other amateurs for this mode of radio wave propagation, and, to our knowledge, it also greatly exceeds any known records established by private laboratories or government-sponsored projects.

In behalf of the Federal Communications Commission, I commend Messrs. Chambers and Thomas for the vision, ingenuity and perseverance which they have applied toward the accomplishment for which we honor them here tonight. It is performance such as this which confirms our belief in the value of the radio amateur of his country and makes our task at the Commission well worth the effort. Thank you. QST

**Strays**

K8RHR makes his *Callbook* last longer by strengthening the edges and corners of the covers and other frequently used pages by means of Scotch No. 33 electrical tape. He takes pieces of the tape that are as long as the sections he wishes to strengthen and, folding them lengthwise, fastens them over the edges of the pages.

The People-to-People program is accumulating names of overseas youths who want to be pen pals with American hobbyists. If you'd like to take part in this program, contact Mr. A. G. Davis, c/o National Model Distributors, Inc., 2516 North Greenview Ave., Chicago 14, Ill.

W8NGH needed to relay some police information to Los Angeles on a Sunday, and knowing that regular police channels might be a bit slow over the week end, he put out a "CQ LA" on 10 phone. He was answered by W6NMP, who turned out to be a sergeant in the LA PD. Needless to say, thanks to ham radio and an unusual coincidence, W8NGH got some mighty fast service.

A number of correspondents have commented on the "ham" who went up in the satellite in January, and K9ZCW wonders if his call was W1APE. (Why does K9ZCW think he was a W1? — Ed.)

**FEEDBACK**

"Communication on 52,000 Megacycles" by K2UND in the January 1961 issue—wherever 1N34 diodes are mentioned correct to read 1N53.

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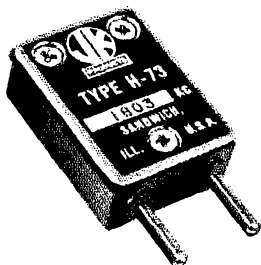
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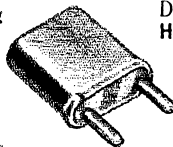
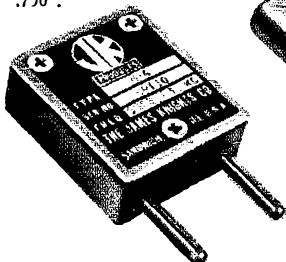
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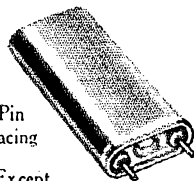


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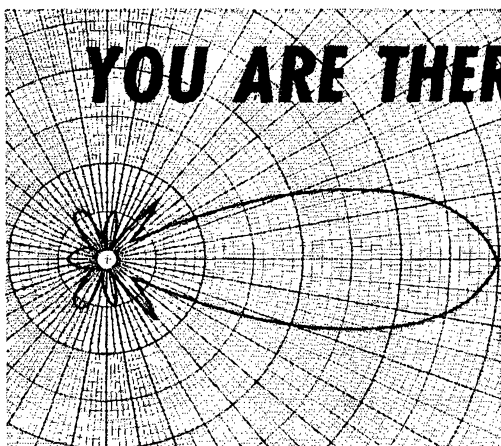
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.750".



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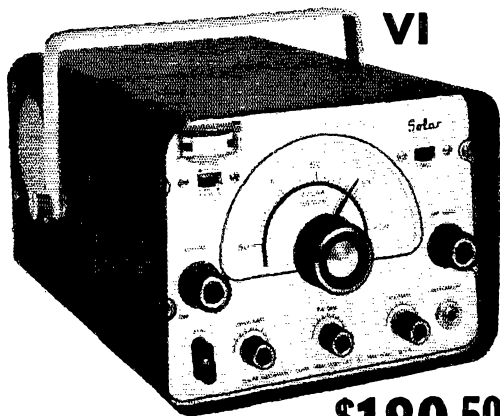
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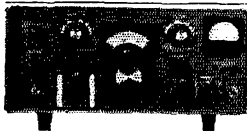
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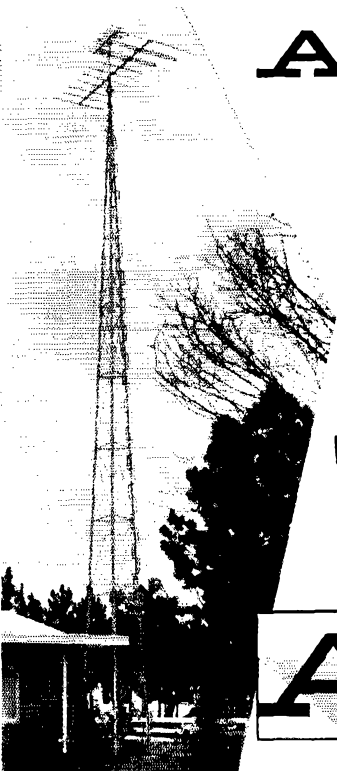
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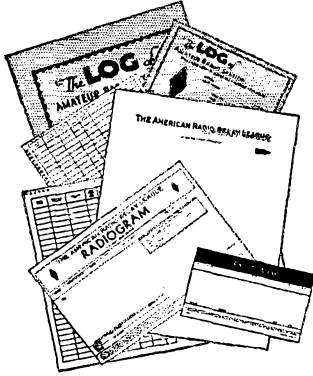
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# FOR THE ACTIVE AMATEUR



Record keeping can often be tedious. But not with the *ARRL Log Book*. Fully ruled with legible headings it helps make compliance with FCC rules a pleasure. Per book . . . . . **50¢**

Mobile and portable operational needs are met by the pocket-size log book, the *Minilog*. Designed for utmost convenience and ease. . . . . **30¢**

First impressions are important. Whether you handle ten or a hundred messages you want to present the addressee with a neat looking radiogram . . . and you can do this by using the *official radiogram form*. 70 blanks per pad. **35¢**

If you like to correspond with fellow hams you will find the *ARRL membership stationery* ideal. Adds that final touch to your letter. Per 100 sheets. . . . . **\$1.00**

and they are available  
postpaid from . . .

**The American Radio Relay League**  
WEST HARTFORD 7, CONNECTICUT

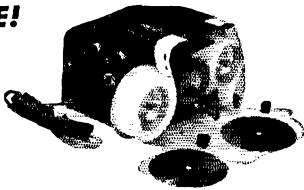
## LEARN CODE!

SPEED UP Your  
RECEIVING  
with G-C

**Automatic Sender**

Type S

\$32.00 Postpaid in  
U. S. A.



Housed in Aluminum Case. Black Instrument Finished. Small—Compact—Quiet induction type motor. 110 Volts—60 Cycles A.C.

Adjustable speed control, maintains constant speed at any Setting. Complete with ten rolls of double perforated tape. A wide variety of other practice tapes available at 50c per roll.

**GARDINER & COMPANY**

STRATFORD

NEW JERSEY

## COMMERCIAL LICENSE

### 1st CLASS EXAM PREPARATION

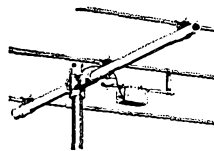
Train Now in New York City

Formerly given for years at leading N.Y.C. Broadcasting Schools. All classes of phone licenses. Proven methods—proven results. Day and Evening Sessions.

**ANNOUNCER TRAINING STUDIOS, INC.**

25 W. 43rd St., N.Y.C.

Phone: OX 5-9245



## BEAM EXPENSE

can be lowered with a  
beam designed to last.

- THREE BAND
- TWO BAND
- SINGLE BAND

**TENNALAB** 417 S. Tenth St.  
Quincy, Ill.

## LET C & G SHOW YOU THE COLLINS KWM-2 MOBILE TRANSCEIVER

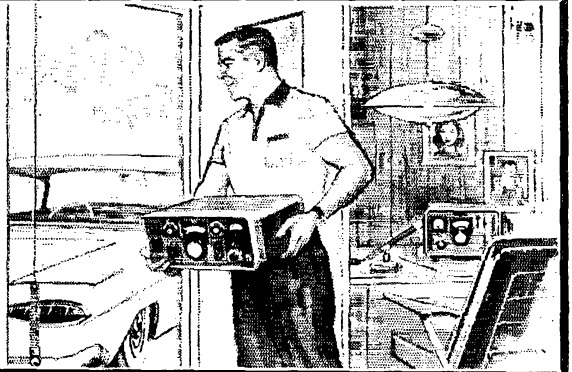
The versatile COLLINS KWM-2 SSB TRANSCEIVER gives you unexcelled SSB performance whether at home or on the road. Its light weight encourages you to take it with you wherever you go. The KWM-2 covers the amateur bands between 3.4 and 29.7 mc. (Collins KWM-2 weighs only 18 lbs., you can carry it home from C & G.) Be sure to see the Collins S-Line, too.



**ELECTRONICS CO.**

Northwestern headquarters for Collins  
2502 Jefferson Avenue  
Tacoma 2, Washington

2221 3rd Avenue  
Seattle 1, Washington

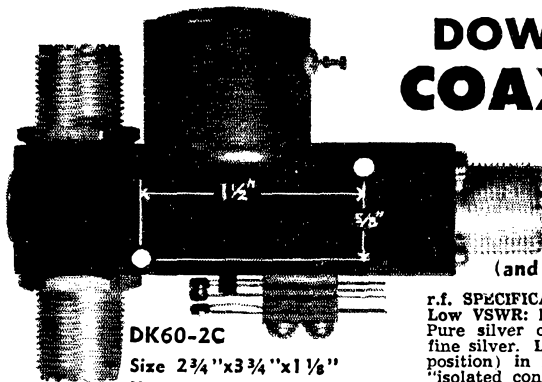




# DOW-KEY DK60 SERIES COAXIAL RELAYS

**A FAVORITE OF AMATEURS!  
VERSATILE FOR INDUSTRIALS!**

Available in 4 models, A.C. or D.C.  
(and Types C, TNC, BNC, N, UHF Connectors)



**DK60-2C**  
Size 2 3/4 "x3 3/4 "x1 1/8 "  
Wt. Less than 9 ozs.

**STANDARD RELAYS INCLUDE:**

- DK60 — SPDT r.f. switch.
- DK60-G — SPDT r.f. switch with special "isolated" connector in de-energized position.
- DK60-2C — SPDT r.f. switch with DPDT auxiliary contacts.
- DK60-G2C — SPDT r.f. switch with DPDT auxiliary contacts and special "isolated" connector in de-energized position.

**UNCONDITIONAL GUARANTEE** (We will repair if faulty within 1 year.)

700 Dealers and Distributors in U.S. and Canada or write:

**Manufactured by DOW-KEY COMPANY, Thief River Falls, Minnesota**

**r.f. SPECIFICATIONS:**

Low VSWR: less than 1.15:1 from 0 to 500 mc. Low Losses: Pure silver contacts. Parts in crucial positions plated with fine silver. Low Cross-Talk: (greater than 80 db in energized position) in DK60-G and DK60-G2C through use of patented "isolated connector". High Power Rating: (a) 1 kw through straight connectors (b) to 10w through "isolated connector" — excellent for video switching. SPDT r.f. Contacts: r.f. leakage extremely low, below typical r.f. connectors.

**MECHANICAL SPECIFICATIONS:**

High Contact Pressures: Long life expectancy greater than 1 million operations. Continuous Duty: Teflon feed-through terminals used on coil to provide connection ease.

**ELECTRICAL SPECIFICATIONS:**

Wide Variety of Coil Voltages: 6,12,24,32,48,110,220 D.C. volts at 2.0 watts; 6,12,24,110,220 A.C. volts at 6 volt-amps, 50-60 cps. (Special voltage or resistance available on request.) Less Than 50°C Temperature Rise Above Ambient: Maximum operating temperature i- 100°C except on special order. Auxiliary contacts available for power control — DPDT at 5a, 110 v A.C. on DK60-2C and DK60-G2C.



7 can give you personal service on helping you select better gear per dollar for your operating pleasure. Over 30 years' experience. Big trades, easy terms. Used bargains.

**VAN SICKLE RADIO SUPPLY CO.**  
Gene Van Sickle, W9KJF, *Owner*  
4131 N. Keystone Ave.  
On the northeast side of  
Indianapolis 5, Indiana

## VHF AMATEUR

Printed Exclusively for the VHF ham

6, 2, 220 and 432 plus extra features on 1296 mc! Page after page of construction items, propagation reports, DX, news, and loads of pictures. Only \$2.00 a year for the ONLY VHF Magazine! Send your \$2.00 to . . .

### THE VHF AMATEUR

67 Russell Avenue, Rahway, N. J.

## LAMPKIN METERS + 2nd Commercial License = YOUR OWN PROFITABLE BUSINESS!

You already have earned one FCC license—your ham ticket. With a little extra study, you can get a 2nd class radiotelephone license. This one can lead to lots of money . . . in a business that's a natural for a ham.

THERE IS AN URGENT NEED FOR TECHNICIANS WITH 2ND-CLASS COMMERCIAL LICENSE—TO MAINTAIN TWO-WAY COMMERCIAL RADIO. FREQUENCY ADJUSTMENTS ON THESE OUTFITS CAN BE MADE ONLY BY PROPERLY LICENSED AND EQUIPPED TECHNICIANS. TO LEARN MORE . . .



**LAMPKIN 105-B  
FREQUENCY METER**  
RANGE 0.1 TO 175 MC AND UP.  
PRICE \$260.00 NET.



**LAMPKIN 205-A FM  
MODULATION METER**  
RANGE 25 TO 500 MC.  
PRICE \$270 00 NET.

Send for **FREE BOOKLET—**

"How to Make Money in Mobile-Radio Maintenance!"



**LAMPKIN LABORATORIES, INC.**

MFG Division, Bradenton, Fla.

At no obligation to me, please send me free booklet "HOW TO MAKE MONEY IN MOBILE-RADIO MAINTENANCE"—and data on Lampkin meters.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

**LAMPKIN LABORATORIES, INC. BRADENTON FLORIDA**

"I never realized how many hams do supply hams" wrote K8HJN when he sent in his list of calls. (See January *QST*, page 168.)

As we said before, the amateurs in the amateur radio business are proud of being hams. Not only do they support ARRL by advertising in *QST* but most of them belong to the League and are personally interested in its success, just as you are.

W2TJD hopes that his list helps us prove to our advertisers that the hams really read the ads in *QST*. There can hardly be any doubt about that. As W6QLO/4 put it: "Also enjoyed re-reading a lot of the ads again". And we hope that making out your lists emphasizes the value of *QST* advertising to us all. W3JXA told us that he "didn't realize how well informed we amateurs are kept by *QST* advertisers until I did this".

The lists of calls are still coming in. "Here's my list — some fun!" — W1VEM. "Thanks for a lot of fun and enjoyment as my father and I read through the *QST*s again." — W7GUH. Others made similar comments. We've heard from forty five of the fifty states and it's gratifying to see the interest all over the country in *QST* advertising.

73,

ADVERTISING DEPARTMENT OF ARRL  
L. A. "Pete" Morrow, W1VG

**SSB** Improve your Mileage and Readability under bad Conditions

**200V TRANSMITTER**

INPUT: 200W SSB, P.E.P.; 175W CW, FSK; 100W AM  
OUTPUT: 110W SSB P.E.P.; 100W CW, FSK; 33W AM

Also the Complete CENTRAL ELECTRONICS SSB line

- MM2 'SCOPE. Monitors your own and the other fellow's signals. Kits or W&T.
- 10B, 20A Exciters, VFO's, Slicers, Kits or W&T.
- RECEIVERS, CDR Ham-M ROTATORS, Tri-Ex, Spaulding, Aeromotor Towers.
- TELREX BEAMS — the best in Beams! Write for Bulletin "Getting Started" and "Stepping Up" in SSB. Give call letters.

SAVE MONEY BY MAIL. Order from W9ADN at

**ORGANS & ELECTRONICS** Box 117  
Lockport, Ill.

**TRI-BAND-QUAD**  
**\$1.00**

**COMPLETE PLANS**

- No Stubs
- High F to B
- Very Broad
- High Gain
- Low S. W. R.
- 30 Lbs. Max.

**BARRINGTON SPECIALTIES, Box 154, Barrington, R.I.**



**FREE**  
**204 PAGE 1961**  
**B-A CATALOG!**

**BURSTEIN-APPLEBEE CO., 1012 McGEE ST., KANSAS CITY, MO.**

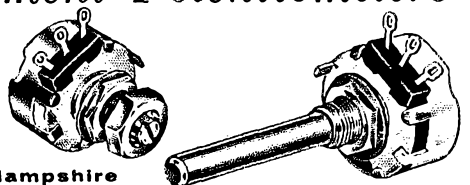
**CLAROSTAT**

*Molded Composition-Element Potentiometers*



Brand new—and better! 2-watt—series 53. Exceptionally low "noise" level. Stainless steel shaft. Only 1 1/8" dia. Meet growing need for top-quality, high-stability, high-resistance potentiometer.

- Ask for catalog.



**CLAROSTAT MFG. CO., INC., Dover, New Hampshire**

# HAM-ADS

(1) Advertising shall pertain to products and services which are related to amateur radio.

(2) No display of any character will be accepted, nor can any special typographical arrangement, such as all or part capital letters be used which would tend to make one advertisement stand out from the others. No Box Reply Service can be maintained in these columns nor may commercial type copy be signed solely with amateur call letters.

(3) The Ham-Ad rate is 35¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy, since Ham-Ads are not carried on our books. No cash or contract discount or agency commission will be allowed.

(5) Closing date for Ham Ads is the 20th of the second month preceding publication date.

(6) A special rate of 10¢ per word will apply to advertising which, in our judgment, is obviously non-commercial in nature. Thus, advertising of bona fide surplus equipment owned, used and for sale by an individual or apparatus offered for exchange or advertising inquiring for special equipment, takes the 10¢ rate. Address and signatures are charged for. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 35¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply.

(7) Because error is more easily avoided, it is requested copy, signature and address be printed plainly on one side of paper only. Typewritten copy preferred but handwritten signature must accompany all authorized insertions.

(8) No advertiser may use more than 100 words in any one issue nor more than one ad in one issue.

*Having made no investigation of the advertisers in the classified columns except those obviously commercial in character, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.*

**WANTED:** Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

**WANTED:** All types of aircraft or ground revrs, xmtrrs or test equipment. Also large xmtrr or special tubes needed. Ham gear bought and sold. For immediate action for cash write or phone Ted Dames, W2KUW, 308 Hickory St., Arlington, N. J.

**MOTOROLA** used FM communications equipment bought and sold W5BCO, Ralph Hicks, Box 6097, Tulsa, Okla.

**WANTED:** Military or Industrial laboratory test equipment. Electronicraft, Box 399, Mt. Kisco, N. Y.

**MICHIGAN HAMS!** Amateur supplies, standard brands. Store hours 0830 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 327 E. Hoover St., Ann Arbor, Michigan, Tel. NOrmany 8-8262.

**CASH** for your gear. We buy, trade or sell. We stock Hammarlund, Hallicrafters, National, Johnson, Gonset, Globe, Hy-Gain, Mosley and many other lines of ham gear. Ask for used equipment list. H. & H. Electronic Supply, Inc., 506-510 Kishwaukee St., Rockford, Ill.

**KWM1** and a few high plate dissipation tubes wanted, 304T/TH 4-100A, 6WR60A, etc. Ted Dames, W2KUW, 64 Grand Place, Arlington, N. J.

**CHICAGO LAND Amateurs!** Factory authorized service for Hallicrafters, Hammarlund, Globe, Gonset, Service all amateur equipment to factory standards. Heights Electronics, Inc., 1145 Halsted St., Chicago Heights, Ill. Tel. Skyline 5-4056.

**WANTED:** Old time commercially built and unaltered amateur spark transmitting and audiotron receiving equipment. Al T. O'Neil, Camp Lakeview, Lake City, Minn.

**RECEIVERS:** Repaired and aligned by competent engineers using factory standard instruments. Authorized factory service station for Collins, Hallicrafters, Hammarlund, National, Harvey-Wells. Our twenty-fourth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

**SSBERS!** Keep up with SSB news and views! Join the Single Sideband Amateur Radio Association, dedicated to furthering good SSB operating; promoting advancement of SSB equipment; and disseminating SSB technical information. Read "The Sidebander," official publication of the SSBARA. Dues \$3.00 yearly. Write for membership application, sample "Sidebander," to SSBARA, 12 Elm St., Lynbrook, N. Y.

**WANTED:** 6 to 12 304TL tubes. Callanan, W9AU, P.O. Box 155, Barrington, Ill.

**BEGINNERS:** Code memorized in one hour. New method. Used in armed services, ham radio, scouting. "Ketchum's Hour Code Course", \$1.00 postpaid. Money-back guarantee. O. H. Ketchum, 10125 Flora Vista, Bellflower, Calif.

**HAM License prep, resident courses, Novice and General classes:** 3 evenings weekly. Delehanty Institute, 117 East 11th St., New York 3, N. Y. Tel. GR 3-6900.

**COAXIAL Cable,** new 580—30 ft. length, \$1.00; 180 ft. six lengths, \$5.00. Send postage one pound per length. Radio magazines, buy, sell, trade. R. Farmer, Plainville, Texas.

**WANT, Need, must have:** ML-203-B wind measuring equipment, as used during WW-2. Top price. Will take complete units or parts. Made by Lionel Corp. N. K. Thompson, WILW9, 99 Water St., Millinocket, Maine.

**WANT 1925** and earlier ham and broadcast gear for personal collection. W4AA, Wayne Nelson, Concord, N. C.

**DISTINCTIVE OSLs!!** Largest variety samples, 25¢ (refunded). Sakkers, W8DED, Holland, Michigan.

**OSLS.** Twenty exclusive designs in 3 colors. Rush \$3 for 100 or \$5 for 200 and get surprise of your life. 48-hour service. Satisfaction guaranteed. Constantine Press, Bladensburg, Md.

**OSLS.** Quality and economy complete samples dime. OSL Printing, 4319 Wuthering Heights, Houston 43, Texas

**OSL-SWLS.** Reasonable. Samples 10¢. Glenn Print. Att: M. L. Edmonds, 1103 Pine Heights Ave., Baltimore 29, Md.

**OSLS "Brownie."** W3CJH, \$110 Lehigh, Allentown, Penna. Samples, 10¢ with catalogue, 25¢.

**C. FRITZ** for better OSLs! Samples 10¢. P. O. Box 1684, Scottsdale, Ariz.

**OSL-SWLS.** Samples 10¢. Malvo Press, 1937 Glensdale Ave., Toledo 14, Ohio.

**OSLS.** Faster for less. Catalog 25¢ (refundable), samples for stamped envelope. Crawford, K6GJM, Box 607, Whittier, Calif.

**OSLS.** Economy prices, prompt delivery. Send for samples. W7IIZ Press, Box 183, Springfield, Oregon.

**CREATIVE OSL and SWL Cards.** Are you proud of your card? If not let us print your next order. Write for free samples and booklet. Personal attention given to all requests. Bob W. Kins, Jr., K6ZMT, Creative Printing, P. O. Box 1064-C, Atascadero, Calif.

**OSLS-SWLS.** Samples free. W4BKT Press, 123 Main, McKenzie, Tenn.

**OSLS** Samples dime, Sims, 3227 Missouri Ave., St. Louis 18, Mo.

**OSLS.** Taprint, Union, Miss.

**SUPERIOR OSLs.** samples 10¢, Ham Specialties, Box 3023, Belleaire, Texas.

**OSLS.** 3-color glossy, 100—\$4.50. Rutgers VariTyping Service, 7 Fairfield Rd., New Brunswick, N. J.

**PICTURE OSL.** Cards of your shack, home, etc., Made from your photograph, 1000, \$13.00. Raum's, 4154 Fifth St., Philadelphia 40, Penna.

**OSLS.** SWLS, reasonable prices. Samples 10¢. Robert Bull, W1BXT, Arlington, Vt.

**OSL's-SWLS:** That are different, colored, embossed card stock and "Kromekote." Samples 10¢. Turner, K8AIA Box 603, Hamilton, Ont.

**OSLS.** SWLS. XYL-OMs (sample assortment approximately 45¢) covering designing, planning, printing, arranging, mailing, eye-catching, comic, sedate, fabulous, DX-attracting, propyl, spazzy, unparagoned cards (Wow!). Rogers, K0AAB, 1200 Marshall Ave., St. Paul 4, Minn.

**GLOSSY OSLs.** 100, 4 colors, \$3.50. Others less. Samples 10¢. Dick, W8VXR, 7373 No. M-18, Gladwin, Mich.

**DELUXE OSLs.** Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

**OSLS.** Samples free. Phillips, W7HRG, 1708 Bridge St., The Dalles, Oregon.

**OSLS-SWLS.** 100 2-color glossy, \$3.00; OSO file cards, \$1.00 per 100. Samples, 10¢. Rusprint, Box 7507, Kansas City 16, Mo.

**OSLS-SWLS.** Free Samples. Spicer, 4615 Rosedale, Austin 5, Texas.

**OSLS.** Kromekote 2 & 3 colors, attractive, distinctive, different. Free ball point pen with order. Samples 10¢. K2VOB Press, 62 Midland Blvd., Maplewood, N. J.

**OSLS.** 300 for \$3.95. Free Samples. W9SKR, "George" Vesely, R.R. #1, Box 208-A, Ingleside, Ill.

**OUTSTANDING (10¢ Call) OSLs.** One style; 100, \$2.75; sample free. Gariepy, 2624 Kroemer, Fort Wayne, Ind.

**RUBBER Stamps** for hams, sample impressions. W9UNY, Hamm, 542 North 93, Milwaukee, Wis.

**OSLS, SWLS.** Rubber stamps. Samples 5¢. Nicholas & Son Printery, P.O. Box 11184, Phoenix, Ariz.

**OSLS:** Cartoons, colors, samples 25¢. Chris, W9PPA, 365 Terra Cotta Ave., Crystal Lake, Ill.

**DON'T Buy OSLs** until you see my free samples. Bolles, 7701 Tisdale, Austin 5, Texas.

**OSLS.** 100 3-color, \$3.00. Sample sheet, 10¢. RBL Print M.R. 12, Phillipsburg, N. J.

**LATEST Designs,** quality OSLs. Samples 10¢. Savory Press, 172 Roosevelt Rd., Weymouth, Mass.

**MAKE** Your own photographic OSL cards. Complete kit of materials. Albertson, W4HUD, Box 322, High Point, N. C.

**OSL:** Samples 25¢ (refundable), W6CMN, Wildcat Press, 6707 Beck Ave., North Hollywood, Calif.

**3-D OSL cards.** Really different! Over 100 color combinations. Samples free, immediate reply. 3-day service. 3-D OSL, 5 Wood End Rd., Springfield, Mass.

**OSLS** you'll like. Samples 10¢. Dupli-Press, 1367 Gary St., Merritt Island, Fla.

**FAST Service,** send stamp for OSL samples. K2 Press, Box 372, Mineola, L.I., N.Y.

**RUBBER Stamps.** \$1.50. Call and Address Hoar, W2UD0, 32 Cumberland Ave., Verona, N.J.

**OSLS.** Exciting, new 1961 designs. Dime. Filmcrafters, Box 304, Martins Ferry, Ohio.

**OSLS.** Samples, dime. Printer, Corwith, Iowa.

**OSLS.** Large selection styles including photos. Lowest prices. Fast service. Samples dime. Ray, K7HLR, 679 Borah, Twin Falls, Idaho.

**OSLS.** Stamp brings samples. Eddie Scott, W3CSX, Fairplay, Md.

BICOLOR QSLs. 100 (and free shack card), \$2.75 ppd. Samples for stamp. Martin Peterman, 7627 Stuckney, Wauwatosa 13, Wis. INEXPENSIVE Quality QSLs, 100 Kromkotec, \$2.50. K3ISW, Mayberry, 385 Maiden Lane, King of Prussia, Penna.

WANTED: SSB transmitter 32S, 100F, 100V, etc. H. Barber, VE3AWP, 26 Ellesboro Dr., Streetsville, Ont., Canada.

QSTs, complete run 1925-1960. Best offer. Shipment extra. M. K. Nelles, 61 Kilbarry, Ottawa, Ont., Canada.

CANADIANS! QSLs in Fluorescent Colors. By Silk Screen Process. Free Samples. Martin, 8 Kensington St., Woodstock, Ont., Canada.

CANADIANS: Complete station for sale, Heathkit Cheyenne MT-1 and Comanche MR-1 with fixed pwr. supply UT-1. All purchased 9 months ago, professionally wired and in perf. condx. 589 reports from Europe with dipole. Shipped in original cartons with manuals. Plus complete cubical quad 10-15-20 meters, poles, spiders, mast, etc. ready to install. Genuine sacrifice \$330 or nearest offer. Ben Arnold, Osgoode, Ont., Canada.

CANADIANS: cleaning house. Tubes 829B, \$15; 813, \$10; RCAF freq. meter C2, \$35; Heath balun, \$8; Johnson Adventurer xmttr, \$55; Knight VFO, \$38. C. Gutman, 7526 Mountbatten Rd., Cote St. Luc, Que. P., Canada.

CANADIANS! Johnson Valiant transmitter, in immaculate condx, six months old. Factory-wired, \$450.00. Maurice Hardman, 889 Warsaw, Winnipeg.

KWS-1, SC-101 integrated control unit and 75A-4. A complete and superb station in top condition. Package \$2000. W2ADD.

DO NOT Fail FCC tests! Check yourself with a time-tested "Sure-check Test" device. \$1.95. \$1.95. Extra \$2.00. We pay the postage. Amateur Radio Specialties, 1013 Seventh Ave., Worthington, Minn.

LOWEST Prices: Latest amateur equipment. Factory fresh sealed cartons. Self-addressed stamped envelope for lowest quotation on your needs. HDH Sales Co., 919 High Ridge Rd., Stamford, Conn.

COMPLETE File of OST for sale: 1915-1951. Landa, R2. Clavton, Ga.

LONG Island tube headquarters. We stock more than 1000 types of tubes. Surplus and recent production at maximum discounts. Maritime International, 199 Front St., Hempstead, L. I., N. Y. Tel. IV 5-2040.

WANTED: Cash for surplus tech manuals, one or one hundred. State condition and equipment type. W4FXQ, Box 2513, Norfolk, Va.

BUY, Sell or Trade, short-wave ham receivers, transmitters. Trigger, W9IVJ, 7361-1/2 W. North Ave., River Forest, Ill. Chicago, Phone TXU60 9-6429, Monday-Friday, 12 N-9 PM; Sat., 9 AM-5 PM.

SOUTHERN California: Transmitters and receivers repaired, aligned, bandwidth, frequency, harmonics measured. Used ham gear bought, sold, traded. Robinson Electronics, 922 W. Channing, Orange, Calif. Tel. KELL 8-0500.

SELL OST 1936-1959 run, four or more, 25¢ each. W9MCX, Art A. Jablonsky, 1022 N. Rockhill Rd., Rock Hill 19, Mo.

TRANSFORMERS (3) W2EWL Special, \$3.00 PP. Coils L1 thru L7, 3 xfmrrs, template for "W2EWL Special", \$10.95 PP. Vitale, W2EWL, Denville, N. J.

SELL: 2 mfd. G. E. Capacitors 4000V DC \$9.00. F. G. Dawson, Detroit 10, Mich.

RECONDITIONED! Terms! Full Guarantee! Dynamos 200 M.A. 400 12V new \$5.95! Carlon Mobile Mic. PT 10, \$6.95! 24 ft. clock 15" \$6.95! Heath Comanche \$119.00, slicer \$7.50, HRO-1 \$169.50, HO129X \$139.50 140X \$179.59 Super Pro 400X \$199.50, NC-173 \$129.50 109 \$129.00 240D \$139.95 300 \$229.00 57 \$49.95 20-A \$179.50 MM-1 \$79.50 Model B slicer \$39.95; Viking II \$209.00; Navigator \$129.95 Valiant \$125.00, Adventurer \$39.95; RFE 4300 \$149.00; CSB100 \$89.00; Globe King 500A \$395.00 Chief 90 \$49.95 90 \$49.95 90A Kit \$39.95 Scout 680A \$79.00; KWM-1 WPS new \$695.00 75A4 \$595.00 540 \$79.00 SX71 \$139.00 99 \$99.00; 32V II \$350.00; Gonset 6 meter linear \$89.95 Comm. III 2 meter \$239.95; Lakeshore Band hopper \$79.95; Lyco 600 \$59.00; Harvey Wells FBS 50D \$49.95; James C 1450 \$39.95; PMR 6 \$79.95 7 \$99.95; Knight World Wide receiver w/s meter \$69.50 Ken W0ZCN Harold W0ZVC Ken-Els Radio, 428 Central Ave., Fort Dodge, Iowa.

6 COILS for Transistor 6 meter converter December QST \$5.95. Postpaid U.S.A. Specify I.F. VSZKT, 1441 Pleasant Dr., Dallas, Texas.

SELL: Hammarlund HO-110C with matching speaker, in exc. condx. \$170.00 K6SIP, 15530 Loukelton St., La Puente, Calif. Tel. ED 3-5641.

MICROWAVE Equipment wanted, including Klystrons and test sets, also other test equipment including industrial type tube checkers and special-purpose tubes. Diamond, 749 West End Ave., New York 25, N.Y.

WANTED: Old-time wireless receivers, xmttrs, etc. Magazines, books, give prices and description, W5WB, 702B N. Fillmore, Amarillo, Texas.

SELL: 75A4, perfect condition, S.N. 2533, \$550. W6WZD, 98 Fairview Ave., Atherton, Calif.

AR-3 rcvr expertly wired and aligned with cabinet and all data sheets, \$26.00. New handsets, 5-wire push-button, \$6.00. Brand new hermetically-sealed 500 ma. multi-voltage bias xm xfmrrs (13 lbs.) \$4.00. All postage extra. S. A. Tucker, W2HLT, 51-10 Little Neck Pkwy., Little Neck 62, N.Y.

BRAND New Hammarlund HX-500 transmitter in factory sealed carton with warranty. W9DOO, Madison, Wisconsin.

COLLINS: KWM-1, AC supply, \$595; 51J2, \$495; 51J3, \$675; 75A2, \$275; 7552, \$525; R-390A, HT32A, \$475; Valiant, \$299; Ranger, \$210; R-37, \$64; Mc. \$395; RFE 1031C Panadaptor, \$125; B-5, \$245; HRO-60, \$325; HRO-50T1, \$225; Northern Radio VFO, \$125. Want teletype equipment for cash, or trade for new amateur equipment. Tom. WIAFN, Alltronics-Howard Co., Box 19, Boston 1, Mass. Tel. Richmond 2-0048.

W0DXCC Members meeting at Des Moines, Iowa April 15th at Holiday Inn. Write W0NTA, Bob White, W1WPO: MP4BBW, W0CVU and W0KFA will be there.

DX40, VFI, S2OR, \$97, plus shipping. KOTGT, Jesup, Iowa.

SELL: Collins 75A3, \$300; Viking II and VFO, \$200; Globe King 400B, \$200; test equipment, surplus equipment, parts, etc. Cheap. Ask for list! W4PRK, 5106 Sylvan Rd., Richmond, Va.

COLLINS S-Line 75S-1, 32S-1, AC supply for 32S-1 and 312B-4, station control. Equipment about six months old, \$1,100. Phil Iteel, K6HHV, 400 Newburgh, Glendora, California. Tel. Edgewood 5-6987.

TRADE Electronic parts for firearms. Want war Mausers, souvenir rifles or pistols. W5UZI, 1351 Sage Loop, Los Alamos, New Mexico.

FOR Sale: Collins 32S-1, 75S-1, 312B-4, 516F-2, \$1000. Mack Lee, W4OJD, 3607 Vansuta, Tampa, Fla.

OOPS! Error in my last Ham-Ad. SX-101 Mark III, \$240.00, not Mark II. K5JZV.

PACEMAKER, \$295; Thunderbolt, \$435. Both arc factory-wired and tested. Linear, W2DTD, 29 Charles, Merrick, L.I., N.Y. Gonset 500W, \$125.

SELL: Johnson Viking II with sequence keying, VFO, low-pass filter, SWR bridge, Matchbox, \$250. C. J. Scott, 1564 Maple, Cleveland 21, Ohio.

NEW TV tubes, 6198 or 5527, \$50.00. W1BYX, Box 122, Rockville, Conn.

WANTED: Hallicrafters SP-44 Panadaptor. Must be in exc. condx. G. E. Hann, Novelty, Ohio.

SELL: Viking 500 factory-wired, with mike, coax relay, spare 4-400A, Hallicrafters SX88 with R46B spkr, also Matchbox 20-23. Will sacrifice! D. McDonald, W6OVF, 103 La Puerta Dr., San Pablo, Calif.

FOR Sale: Ranger, Ser. #69763, \$125; NC-300 with spkr, ser. #434-1125, \$250. Excellent condx. K2RYP, 728 Winsor Ave., Elmira, N.Y.

WANTED: B&W \$50A inductance, UTC S-47 pwr xfmrr. UTC S-33, S-34 chokes. Larry Kleber, K9LKA, Belvidere, Ill.

FOR Sale: Drake 1-A, \$185; Johnson Viking Pacemaker, \$250; Globe LA-1, \$65; Heath SWR, \$15. Darryle W. Kranstuber, 8669 Brecksville Rd., Cleveland 31, Ohio.

VIKING II, Factory wired, with VFO, A-1 condition, \$175. R. V. Allaire, K1IQB, South Main, Bellinham, Mass. Tel. TUCKER 3-8619.

CODE Instruction machine: TG-34A, with inked tapes, \$25.00. W8WSP, 2010 E. Broad St., Columbus 9, Ohio.

WANTED: Commercially-built transceivers and OST for any months of 1922, 1923, 1939 and 1940. Al T. O'Neil, Camp Lakeview, Lake City, Minn.

MOBILE, Complete Heath station with HP-10 supply, spkr mount, power meter, mike. Latest improved model. One month old. Never installed. Checked and calibrated at Heath Company. Still in its factory-sealed cartons. Tri-Band whip, \$325.00. K0LRU.

WANTED: 75S-2 and 32S-2 with 516F-2. Will swap, practically new, Linof Super Technika HIE 4 x 5, #58218 with Apo-Lanhar 4.5/150 mm; Angulon 6.9/90 mm; Telomar S-3/360mm; optical multiolesc viewfinder; 120 film pack adapter; 4 filters: 1 polaroid lens; sunshade, heavy duty tripod; carrying case, etc. KH6DJ, 216 Halemaumau Street, Honolulu 16, Hawaii, phone 33045.

WANTED: Early OSTs. Have seven hundred duplicates to trade, including CQ. Erv Rasmussen, Box 612, Redwood City, Calif.

BC-639 Manuals, not reprints: \$5.50 postpaid. R. J. Sukey, 24-H Prospect Hill Lane, Waltham 54, Mass.

NC101X late w/limiter, meter excellent HROtype handspread, \$75; NC240D, extensive updating for SSB, provision for but less mechanical filter, \$150; 75A3 two filters, calibrator, \$350. TRITV RF \$100. W2HAE, Art Ford, 85 Franklin, Northport, L.I., N.Y. Tel. Andrew 1-8474

COMPLETE Service: Transmitters and receivers. QSLs. Reasonable. K0DGX, Keith, 601 East 4th St. South, Newton, Iowa

SELL: IRE Proceedings, years 1957 through 1960. Sell complete years only. Price \$15.00 per year. You pay postage. W2TB, Charles Gardiner, 39-20 220 Street, Bayside 61, L.I., N.Y.

TRADE: BC-312, in gud condx. AC pwr supply, for new or like-new unmodified BC-312. Reason: Want receiver for battery-powered emergency station. W4NZY, 119 No. Birchwood Ave., Louisville 6, Ky.

FOR Sale: Globe VHF 6 & 2 meter trans., 65 watts output with Hallicrafters S-102, 2-meter rcvr., both 110V AC, both like new condx. Name your price. Must sell. Need cash. Felix Rivera, 101-26 45th Ave., Corona, L.I., N.Y.

ROCHESTER, New York, is Hamfest Headquarters. Saturday, May 6. Outstanding speakers, contests and exhibits. See you there.

SELL for best reasonable offer: DX-100, SB-10, SX-100, Reason; Colgate, Marty, K2MDL, 42 Hemlock Lane, Roslyn Heights, N.Y.

WANTED: OSTs for personal collection; Jan. 1917, February 1917, May 1917, and September 1917. W1CUT, Box 1, West Hartford 7, Conn.

HEATHKIT Mohican all-band rcvr. Works perfectly: \$110. PF. W9DSV, Webster, Wis.

FOR Sale: Johnson Valiant xmttr, perf. condx, little used, First \$250. W2LZW.

SELL: Collins 75A1 and spkr, \$225; Viking I, TVI suppressed, \$115; Johnson Matchbox, \$35.00; Viking VFO, \$35.00; Johnson low-pass filter, \$2.00; T-R switches, Mod. 3000, \$3.00; model 2000, \$2.50; all equipment in gud condx. SCR-522 xmttr, rcvr, pwr. supply. No cabinet. Rcvr needs work on ft. Breadboard stage. Panels on xmttr, rcvr, \$35.00. Pick up after 7 P.M. S. Bressler, 102-32 65th Ave., Forest Hills 75, L.I., N.Y.

FOR Sale: Apache xmt, SB-10, RME-6900 extras. Complete station. Graduating and need the money. K4EKS, 400 Rosewood, Somerset, Ky.

FOR Collins in Detroit Area, it's Michigan Ham Headquarters, also a large selection of trade-ins on display. M. N. Duffy Ham & Electronics, 2040 Grand River, Detroit 20, Mich. Tel. WO 3-2770.

FOR Sale: Johnson Viking II with Johnson VFO, D-104 mike, low-pass filter, Hallicrafters 540B w/Selecto-O-Ject, 75-80 mtr. ARC-5 rcvr, converted with pwr. supply. \$275. Elliot Taynor, K2HYK, 64-55 Bell Blvd., Bayside 64, L.I., N.Y.

CASH: Viking II transmitter, \$140.00; Collins 75A2 rcvr product-detector excellent, \$260. K1CNK, 76 Kaye Rd., W. Haven, Conn. Tel. WEST 3-5045.

WANTED: 75A-3 with 3.1, 800 cy and xtal calib. Give serial and complete info and price. E. Shafer, 3479 Kersdale Rd., Cleveland 24, Ohio.

BC-348-O, perfect with pwr. supply: \$70.00. Also German String Bass, \$150. Consider trade one or both for an electric piano. K2YUS, 1754 Yale Station, New Haven, Conn. Spruce 7-8250.

KWM-1 For sale: AC power supply, spkr, \$600. Joe Michaels, W2MNR, 80 Birch Lane, Woodmere, L.I., N.Y. Tel. CE 9-2342.

SELL: Collins KWM-1 with 12V DC supply, mobile mount, uncut cables, mobile mike, 3-band Heliwhip, recently factory checked. No modifications, extra cable connector from Collins AC supply. First certified check for \$675. Hill, K4QJZ, Box 6527, Ralich N.C.

SELL: HRO, rack-mounted with coil compartment, spkr, pwr. supply, O-multiplier, coils from 50 Kc. to 30 mc., \$95; G-66 with 3-way supply, \$150; NC-303, like new condx, \$325; 3V2 modified to 3V2 specifications LP, \$325; K2-221AK with AC supply, book, wood case, \$70; 480-B T-R switch, \$10; Vibrox (Original Deluxe in case, \$10; Heath O-10 scope, \$35; S-3 58A-4 Perfect with 2 filters \$59.00; Collins 3V-1 Mint Cond. \$50.00; V-6 VTVM, \$15; Telrex 20M-316, \$85; 15M-312, \$55; 10M-310, \$40; 175-R1Z, \$130. Vestro VHP-44 with mast and hardware, \$250 or take complete Xmas Tree \$500. W2WSN, 1900 Loan Rd., Asbury Park, N.J.

"HORSE Trader" Ed Moory, Will trade New HT-37 for 20-A and \$225.00 cash. New 100-V's \$569.00 Drake 2-A Demonstrator \$229.00. 1-KWM-2's late Modifications Guaranteed \$879.00. 75A-4 Perfect with 2 filters \$59.00. Collins SX-111 Demonstrator Original Carton \$339.00. Complete Collins S-Line & AC Supply \$995.00 Collins 312B-5 PTO-Console \$279.00 312-B-4's \$159.00. Collins 30S-1 Demonstrator Used 2 Hours Serial #10,200 Special \$1150.00. New 200-V's \$695.00. Three Brand New RCA Table Model Color Televisions Factory Warranty Reg price \$625.00 Special \$395.00. SX-71 Receiver \$95.00 SX-111 Demonstrator \$195.00 Used 4 hours Perfect B & W 5100 transmitter \$239.00. Terms: Cash. No trades. Ed Moory Wholesale Radio, Box 506, DeWitt, Arkansas. Phone-Whitney 6-2820.

WANTED: Power transformer primary 115V, secondary 2000-1500-0-1500-2000 V, at 450 Ma. or 500 Ma. C. A. Gherardi, 21 Upper Mountain, Montclair, N.J.

WANTED: Old National SW-4 or Pilot AC Superwasp rcvr. Also old battery rcvr. W8QZF, 16412 Marquis Ave., Cleveland 11, Ohio.

WANTED: Mechanical filter, #4551-60 for 75A-4. W2MOW.

CENTRAL Electronics 10B with VOX. In mint condx. Take \$72 or will trade for sharp DX-40 and VFO. Jack, W0VSN, Denver.

LOCAL Sale only: Home-built 6 ft. rack and panel transmitter with schematics, 812As Class C 350 watts, plate modulator Class B T240's, VFO, separate speech amplifier, can be used as a PEP system, completely shielded. Pick up deal only, sry. \$285. W1KHL, 62 Ter St., Attleboro, Mass.

HEATH SB10, perf. condx, used only 3 mos. \$85. Will ship. W3LZA, 205 Boden Ave., Carnegie, Penna.

H & W 5100-B, 51-SB, in perf. operating condx and appearance; the ideal AM and SSB rig; \$425.00. W3AMC, Naratit, 423 Lafayette, Palmetton, Penna.

FOR Sale: \$40A and OFI darn good rcvr: \$60 with spare tubes, call NE 9-5382. N.Y.C. area. W2WAS.

1X-100 complete Heath modif., including stable VFO, \$160; SB-10, \$75. Both arc in exc. condx. FB sigs. all modes. W1ZST, 23 Bowler Rd., Braintree, Mass.

SELL: Hi pwr: 6 ft. rack cabinet, casters, a beauty! \$45; 500w audio mod, xfrmtr, 20; 3200V, 700 Ma. P. S. Variac, screen and bias supply, control relays, ideal for Eimac tetrodes, \$130; par wired 4-250s fine, \$35. All for \$195. Sry, no shipping. W6JKI, 1149 Heatherstone, Sunnyvale, Calif.

HAMGEAR, Havsum wilsap, Wau Watugot? K1JVN, Monson, Mass.

75A4, like new condx, 3.1 filter, \$475. G. E. Brayton, Fremont, Nebr.

SAVE Over \$300 on KWM-2 with \$16-F2 power supply, wattmeter, spkr, console in A-1 condx. First \$110.00 to us all. G. J. Fortescue, 140 S. Court, Orlando, Fla. Tel. GA 3-8559.

GOING Overseas, selling Harvey-Wells TBS-50C mtr.: APS-50 pwr. supply, Calrad carbon mike. WA6PLD, 4804 Donaldson, San Diego 9, Calif.

75A3 with 3 and 6 Kc filters, \$300; Hallicrafters Panadaptor \$35.00. Slicer \$20. All for \$345.00. K6PAZ, 15330 Oxnard, Van Nuys, California, Tel. ST 6-9010.

WESTERN Hams Notice! 165 copies OST run 1939-1960, some issues missing, no covers missing. Sell or trade for gem rock rough, any kind. Richard Williams, 48 McArthur Ct., Anderson, Ind.

WANTED: KWM-2 with AC powr supp, L. S. Byrd, 2716 W. 6th St., Ft. Worth, Texas.

ANTENNA, Complete, vertical, 75, 40, 15 meters: \$3.00. W6-WFR, 199 Random, Walnut Creek, Calif.

SELL: Eimac AF67, PMR7, hash filtered M-1070 supply, ready to go 6, 12, and 115 volts, perf. and complete, all cables and manuals, \$239.00. K5UNI, Goebel Davis, Tijeras, New Mexico.

SELLOUT Bargains: Console KW final amplifier, all bands, complete, \$99.00; KW pwr. supply, 2000VDC at 500 Ma., \$45; complete Class B modulator, driver, speech amp, components, \$39.00; DX-35, \$19; Heath VFO, \$12, complete R.P. \$13. Final amp. All coils 80-10 mtrs. \$99. Will ship F.o.b. Benton Harbor, Mich. First check for over \$200 gets everything. David Manning, KR1MB, Box 242, No. Shore Dr.

75A4/w spkr, \$535, used only 20 hours; Viking II w/push-to-talk, \$180; used only 10 hrs; Matchbox, \$35.00; VFO, \$30. W3DZZ Triband beam, \$100. Matt Surofka, W9KYK, 1225 W. 151 St., East Chicago, Ind.

WANTED: Kilowatt transmitter, complete. Send description, price in your first letter. J. S. Townsend, 1522 Branch, Wilson, N.C.

MEISSNER 150B, 300 watts; Model EX signal shifter with 6146; TVI suppressed, 10-20-40-80 meters; T-19 ARC-5, 86 meters; BC459, 70 meters. Bud frea, calibrator, FCC-90; Sell for best offer. Henry Hannah, W9VUG, 9347 52nd Ave., Oak Lawn, Ill.

ALUMINUM for every ham need! Write to Dick's, 62 Cherry Ave., Tiffin, Ohio, for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits.

FOR Sale: Johnson Viking II and 122 VFO. Best offer over \$200. TBS50D w/VFO and pwr. supp., rack mounted, \$85. No shipping. Will deliver 50 miles. W3BFC, 334 Lambeth Rd., Baltimore 28, Md.

SELL: HO-170C like new, \$290 F.o.b. Hartford. W1KE, c/o ARRL.

SELL: NC-183-D rcvr. DX-40, HT-18 VFO. Phone or write W2QQ Jones, Bowmansville, N.Y.

FOR Sale: KWS-1, Serial 1587, less than 2 years old, very clean. New tubes just installed in output, plus some good spares. Best offer; will consider lower power commercial Sideband rig in part trade. W2ESO, Eugene Black, 16 Marden Ave., Sea Cliff, L.I., N.Y. Tel. OAiole 6-9346.

SELL: Complete station: all in exc. condx: Late serial No. Collins 75A4 with spkr, Phasemaster 2B, D-104 mike and will sell as package deal only for your best offer over \$750. Also first check for \$100 can pick up Johnson Matchbox, RME speech clipper, DR23A, 380B T-R switch, Bud FCC90 xtal calibrator, B&W 550 switch, B&W 650 Match-Master, Sry, cannot ship. Equipment must be picked up. Al Spiewak, K2CZK, 1150 Broadway, N.Y., N.Y.

RECEIVER Console: Tune 15 kilocycles thru 6000 meacycles continuously; comprises 32 receivers with excellent sensitivity throughout the spectrum; all superb. All calibrated. Sacrifice at \$490.00, one tenth of cost. W4UCH, Broad Run Dr., Sterling, Va.

HAM'S Dream location for antenna farm mountain top 1400 ft., 18 acres, 270° panoramic view northeast south 100 miles each way. Elec. 230 volts at 100 amps. House is poured concrete 6-Bm ranch 32 x 44' brand new unfinished inside. Worked Japan, mobile from here. Reason for selling: health and finances. Also have KW PP 810s, 20 & 75 phone trans complete \$450 for sale or trade for Hammarlund SP600 JX recr. Clifford A. Kunz, W1AAH, 22 Kingman St., Weymouth, Mass.

TOROIDs: Unused RR Mhty, like new. Dollar each. Five/\$4.00 P.P. DaPaul, 309 So. Ashton, Millbrae, Calif.

REGENCY AT-1 converter, exc. condx. \$50; Mon-Key Electronic Keyer, \$25; Heath VOX-1 wired, new with schematic, \$22; PE-103 pwr. supp. wired, ready to go (with cont. cable 12V Eimac), \$15. Will ship c.o.d. Tejo, K6LJA, 1009 Riverlane, Santa Ana, Calif.

FOR Sale: B&W T-R switch, \$7.00; Heath AT-1, \$15; PE-103, \$9.00; Eimac F-67, \$85; Hallicrafters S-27, \$65; Palco VTVM, \$25; I-177 tube tester, \$15. J. Doak, 3601 Country Club Rd., Endwell, N.Y.

VIKING "500" for sale, Ser. #41479, wired and aligned professionally, 4-400A final, in perf. condx: \$700. K9ZEQ, 506 Maryhill Dr., Green Bay, Wisconsin.

COLLINS 75A3 with product detector, AM detector, vernier dial. In exc. condx: \$350.00. W6FLT, P.O. Box 392, Lakeport, Calif.

100-V, in perf. condx. Buying 8 sound movie detector, Need \$500. Phone or write K2FC, 191 Parkway Dr., Roslyn Heights, L.I., N.Y. Tel. MA 1-6458.

FOR Sale: HO-150, Globe Chief, Mon-Key electronic keyer. Contact Ed Burke, WA2FCC, RFD #3, Millville, N.J.

HAM Masazine subscriptions. W6LKJ (Tatum), 1451 Raymond Ave., Glendale, Calif.

COLLEGE: Sell, Apache, S-76, TA-33, etc. Contact George Lacy, 305 Cedar, Gillespie, Ill.

WANTED: Steel crank-up type tower. Height 50 ft. or more. Send description, details, lowest cash price and accessibility. K5VLO, 1351 Serenade Lane, Dallas 16, Texas.

WANTED: 80m C.W. rcvr. K8VEN.

WANTED: Need dials for NC-183 rcvr. Any leads, anyone? Have tubes and parts for trade. W5PWW, 1833 Elaine St., Jackson 4, Miss.

SELL: Factory-wired Central Electronics 10A, w/458VFO, QT-HB-130 watt rcvr. RME-45 w/spkr. Make an offer. All in exc. condx. K8HJJ.

FOR Sale: 4 new 304TL tubes. Highest bid gets them. D. E. Hillan, W5SYX, R5, Box 208, Springdale, Ark.

KWM-2, AC pwr. supply and spkr. in perf. condx: \$850. J. Christiano, W1EVX, 237 Water St., Quincy, Mass. Tel. PR 3-1397.

WANTED: Collins KW-1. A. Jensen, 208 N. Foothill Rd., Beverly Hills, Calif.

WANTED: Collins 51J3 or 75A4 rcvr in mint condx. Capt. R. W. Carter, SC, USN, Supply Officer, MCAS, Cherry Point, N.C. (W4HEE).

LAMINATE Your ticket, cards, photos at home. No heat! Guaranteed! 14 sheets of plastic, \$1.00, Namecraft, Box 56-J, Ft. Lee, N.J.

A-1 RECONDITIONED equipment. On approval. Trades. Terms. Hallicrafters SX-99 exc. cond., HI-37, S85, SX-110, SX-111, SX-101A, HT32, Collins 75A-1, 75A-2, 75A-3, 75A-4, KMM-1, SS-1, 75S-1, KVS-1, Central 20A \$159.00; Eimac PMR-6 \$69.00, AF-7 \$109.00, Gonset G-66B, G-77A, G-50, GSB-100, GSB-101; Hammarlund HQ-100 \$129.00, HQ-110 \$179.00, HQ-129X, HQ-140X, HQ-140XA, HQ-150, HQ-160, HQ-170, HQ-180; Johnson Adventurer \$29.00, 6N2 \$99.00, Navigator \$99.00, Viking II \$179.00, Valiant; National NC-98 \$89.00, HRO-50T \$199.00, NC-300, HRO-60, NC-183D, NC-303; Heath, Globe, RME other items. List free. Henry Radio, Butler, Mo.

FOR Sale: Heath SB-10, purchased new in August, 1960. Used approximately 10 hours during December. \$75.00, plus shipping costs. W3CAJ, Lewisberry, Penna.

APACHE: In perf. condx. Make your offer. Rev. Streemeyer, 100R East 6th, Sioux Falls, S.Dak.

SELL: RME DB23 Preselector, like new condx. \$35.00. K8JJ, 1244 Bates, Grand Rapids 6, Mich.

VIKING II and Johnson VFO. In perf. mechanical and electrical condx. Incorporates all factory modifications including time sequence keying. Package price, \$200.00. In operation at W1HUM, 1 J. Hemingway, 112 Sunset Terrace, West Hartford, Conn. Tel. A Dams 2-6520.

FOR Sale: Gonset Comm. III, 2 meters, new condx. \$200; Hallicrafters SX28A rcvr. perf. condx. \$95. Walter Bickmeyer, W2NL, 31 Azalia Ct., Hempstead, N.Y.

SELL: HQ-110, \$150; National NC-57 rcvr. \$30; Viking 6N2, \$80; Valiant xmtr. \$259; DX-40, \$35. All equipment like new. Will ship. Howard Fruchter, WA2DCM, 589 Barnard Ave., Woodmere, N.Y.

SPRING-CLEANING! Transistor mobile supply, \$25; Central Electronics Analyzer, SSB mixer, stereo amplifier, Garrard player, miscellaneous items. List. W4API, 1420 South Randolph, Arlington 4, Va.

SALE: Immaculate BC-610 F. 1949 model, BC614E speech amp., 2 complete sets coils and tuning units. 2 extra 250TH, 4-100TH, VF-1 VFO attached. \$350.00 for all. W5BWA, 4 Ida St., Alexandria, Va.

COMMUNICATIONS Transceiver, Motorola 152-162 Mc., any reasonable offer, write for info. WV2QEB, 8 Broad St. Greenport, N.Y.

SELL: New SX-111, few hours. Excellent; SX-100, SX-28A, push-to-talk DX-100, and 250W. C.W. Hallie, HT-19, Market prices or better, need tuition money, W9HBP, 3917 Ballard Rd., Appleton, Wis.

WANTED: 2000 watt 60 cycle, 110 volt, generator (only). W3YDF, Mike Arnold, Jr., W3YDF, RD 1, Box 261, Cheswick, Penna.

REAL Bargains: House-cleaning! 700-watt phone/c.w. diagrammed xmtr in 50-in. castered 7-meters rack cabinet, \$120; 400-watt phone/c.w. VFO xmtr, \$115; 600-volt 400-Ma. supply, \$18; 4kVA supply kit, \$16; RME Preselector, \$12; BC454 V-regulated VFO, \$12; variac, \$7; Autotransformer, \$8; TVI suppressed Meissner Deluxe VFO, \$22; unfinished BC458, SSBer, \$12; new Eico oscilloscope, signal generator, audio generator, 810s, 1929-36 run QST, plate transformers, KW tank parts, etc., etc. Hurry! K2KGU, Veranc, 420 Riverside Dr., New York 25, N.Y. Tel. MO 6-8513.

WANT: AF67. Have camera Minolta Autocord "L." acces. Exclnt. What's the deal? W2MNY, 21 Adam Rush Rd., Peckskill, N.Y.

COLLINS KWS-1 (#958), \$1000 and 75A-4 (#5165), \$550 F.o.b. Cedar Rapids, Iowa. Both in exc. condx. Robert Olson, W0MTR, 2134 Country Club Parkway, Cedar Rapids, Iowa. Tel. Empire 2-0863.

KNIGHT Rcvr. \$18.00. KN5EJV.

MUST Sell: DX-40, \$60; S-40, OF-1, \$60; keyer (Feb. '59), \$20. Or best offers. K8MGT, 224 West Homestead, Medina, Ohio.

COMMUNICATOR III in perf. condx. All cables, instructions, JT-30 microphone, 6 xtals. Will ship in original carton for \$210. Ted Gibson, W3DGX, P.O. Box 62, Pine Grove, Penna.

SELL: Brand new factory guaranteed NC-109 with xtal calibrator, \$140; HC-10 like new, \$90. KWS-1, perfect, \$980. W3VDE.

LEAVING States. HQ140X rcvr. \$150; Viking II w/VFO and Matchbox, \$175. Excellent condx. Frank Blode, W2CJ3 3 Lake Ave., Lake George, N.Y.

BRAND New gas gen. 750W 110V AC and 12V DC. \$100; B&W audio freq. meter, \$25; Measurements Corp. pulse generator, \$30; Millen grid dip meter, \$38; audio sig. generator, \$26; Heath equip: O-meter, \$38; LCR bridge, \$38; ant. imp. bridge, \$8; reg. pwr. supp., \$24; resistor box, \$3; cond. decade box, \$10. Also 3CM microwave test equipment, W6ELZ, 14533 Dickens St. Sherman Oaks, Calif. Tel. STate 4-3891.

SACRIFICE, need cash: Pacemaker, \$250; Valiant, \$300. Both are in excellent condition. K2HU, Box 102, Wickatunk, N.J., tel. WHiNEY 6-4750.

BEGINNERS: Code memorized in one hour. New method. Used in Armed Services, Ham Radio, Scouting. "Ketchum's Hour Code Course" \$1.00 postpaid. Money back guaranteed. O. H. Ketchum, 10125 Flora Vista, Bellflower, Calif.

COLLINS 32S-1, 516F-2, 75S-1, 312B-4. This is my set, has had very little operative time, and is in first-class condx. \$1100.00. Dr. John Langston, W5LDB, 1170 Castlevale Drive, Louisville 17, Ky.

COLLINS 75A1 with spkr, calibr. and manual, \$190, 310C2 VFO, \$45; new 4-25A, \$40; OW 6-meter RF section, 9903 final, \$30; mobile trans. and rec., Morrow 3BR conv. with FTR, 10 meter 20W transm. 2 12V dyn., \$85. F.o.b. W2KJF, 62 Bacon Hill Rd., Pleasantville, N.Y.

SELL: NC-240D receiver, \$75. Molyneux, 4551 Shadesview Dr., Mobile, Ala.

SELL: HRO Sr. In exc. condx. w/A coil only, \$40.00; Model 26 printer with sync. motor, table and standard keyboard, exc. condx. \$55.00. Rav Sherwood, W9DRY, 703 Charles St., Aurora, Ill.

KWM-2 AC supply, \$1000. W1HYF, Ridgefield, Conn. Tel. ID 8-4228.

WANTED: Eimac SK-400 air system socket and chimney, also flange choke B&W F-C15, W9VUO, Bob Ruffer, 2035 So. 24th Avenue, Broadview, Ill. Phone FI 4-2319.

HQ-129X, perf. condx. \$125; Central Elec. Mod. B, SSB slicer, \$35; Central Elec. gated compression amplifier, \$35; CML-10M broadband converter, \$10. K2POA, 29 Boone St., Bethpage, L.I., N.Y. Tel. WE 1-3374.

LOCAL Sale: Lettine 240 transmitter, antenna tuner, crystals, Electro-Voice crystal mike, Harvey-Wells R9A receiver and speaker, \$100 for all. K2HB, Plandome, L.I., N.Y. 18 Willes Lane, Paul Elliott, Tel. Manhasset 7-1211.

FOR Sale: Globe Scout 680, \$45.00. Vilar Kelly, Sleepy Hollow, New Canaan, Conn.

SELL: Communicator III 2M xtals. excellent, \$195. Heath tent xtals. Good \$85. Heath Vibrator supply 6PC-260V 60 m. \$8.00, W4ZBPL, 6 Edwards St., Apt. 2D, Roslyn Heights, N.Y.

WANTED: HRO-7. Super Pro or similar receivers. K. W. Zander, 328 Hill Bldg., Bakersfield, Calif.

SELL: Hammarlund Pro 310 rcvr. \$300, factory-wired, in exc. condx.; Telrex Triband beam, \$100; Tristo tower with bearing, 40 ft. crank-up, \$125.00; Ham CDR rotator, \$75.00. All equipment never used. Justin Schultz, Rte. 2, Lansdale, Penna. Phone: OXbow 9-4742.

FOR Sale: Collins 75A4 with 3.1 Kc. filter \$450.00. Johnson Pacemaker with frequency shifter for RTTY, \$275.00. Johnson Viking Kilowatt \$795.00, matching left or right hand desk \$75.00 each, Johnson audio amplifier (#250-33) \$50.00, Johnson power divider (#250-34) \$15.00, Concertone professional tape recorder model 22 \$275.00, RME voice clipper \$15.00, Vibroplex (original) key \$10.00, Vesto 61 foot tower and platform \$295.00, Telrex (20M-56-365) 4 element 20 meter beam \$150.00, FOB North Syracuse, N.Y. (Prices do not include packing) Paul P. Blum W2KCR, 101 Kristy Road, North Syracuse, New York.

FOR Sale: Globe Hi-Bander 6 and 2 meters trans. 65W. output; Hallicrafters S-102 rcv. 2 meters. Both in like new condx. at 110V AC, \$150.00 for both. Felix Rivera, Jr., 101-26 45th Ave., Corona 6R, L.I., N.Y.

SELL: Six meter station, 50 watts transmitter uses 815 in final, spwr. supply, International crystal converter w/power supply, \$100. W4VNU, McSwen, RFD 4, Harriman, Tenn.

VIKING Valiant, factory w/t, in exc. condx. \$325.00; Heath-Kit 10-meter transceiver w/vibrator supply, \$40.00; TA-33 Jr., \$50. W4ZIVS, Lippman, 192 Lyons Ave., Newark, N.J.

FOR Sale: Hammarlund HX-500 transmitter in new condition, \$550. Want KWS-1, high serial number. Prefer deal within 75 miles here. Eric Johnson, WIRKA, Box 120, So. Norwalk, Conn.

HT-37, \$365; HQ170C with matching spkr, \$275. Robert Ransch, 1931 East Prospect (rear), Ashtabula, Ohio.

NC-109 receiver, like-new condx. \$100. C.o.d. W. Reynolds, 2162 Oiemann, Houston, Texas.

WANTED: BC474A transceiver. W2AWS, R. Bartel, 198 O'Neil St., Kingston, N.Y.

HIGHLY Effective home-study review for FCC commercial phone exams. Free literature. Wallace Cook (O4), Box 10634, Jackson 9, Miss.

TECH Manuals, new original maintenance books, APA-10 \$5.00, APA-38 \$8.00, APN-1 \$6.50, APN-4 \$8.00, APN-9 \$10.00, APR-1 \$7.50, APR-4 \$7.50, APX-6 \$9.50, ARC-1 \$10.00, ARC-2 \$8.50, ARC-3 \$8.00, ARC-5 VHF \$8.50, ARC-27 \$10.00, ARR-2 \$7.50, ARR-5 \$8.50, ARR-7 \$8.50, ARR-15 \$10.00, ART-13 \$12.50, BC-224, BC-348 (specify model) \$8.50, BC-375 \$7.50, SCR-274N command sets \$8.50, SCR-522 \$10.00, SCR-750 \$8.50, URC-4 \$8.00, TS and TM manuals in stock, send requirements, free list. Bill Slep Company, Drawer 178Q, Ellenton, Florida.

SELL: SX-25, \$55.00; spkr in gray steel cabinet, \$5.00; S-20R, \$25; in gud condx. F.o.b. Poughkeepsie, N.Y. W2HMG, 30 Sheldon Drive.

WANTED: Navy RBL receiver. George Kasser, 1107 Grand Ave., Washington, Ind.

DX-20, in perf. condx. \$25.00. K9TVC.

WANTED: used electronic books. Wilkins Rt. 5, Box 299-A, San Antonio, Texas.

SELL: Drake I-A receiver. Creampuff, never operated over 15 wpm. \$190. W2OIC, PR 9-0639, Clifton, N.J.

HQ-170C Hammarlund receiver. In perf. mechanical and electrical condx. \$275.00; Heath HW 29 "Sixer" transceiver. Factory modified for 8 Mc. xtals. 110V AC and 12V DC pwr. supplies included. \$49.50. Either or both units shipped prepaid in the U.S.A. Still want 75A4 mechanical filters. W5TGO, 8207 Fairhope Place, Houston, Texas.

MAGAZINES: QST, 233 volumes, 1940 to current date; CQ, 86 vols., 1945 to 1953; 3 Handbooks; 1945-1946-1948. Best cash offer for lot. W8SWF, Dearborn, Michigan.

HEATH DX100B, \$200; RME4350A, speaker, \$230; HA-1 electronic keyer with paddle, brand new, \$85. Bentley Adams, Jr., K8KVV, Shoreward Hills, Sawyer, Mich.

FOR Sale: Communicator III with PTT mike, xtals, Saturn halo, mast, coax, bumper mount, \$175. Heath VTVM, \$10.00. Used 304THs, \$5.00 each. Gonset #3066, 6 meter converter, new, \$30.00. Pair GL-8008 used, \$5.00. K2ZCC.

SELL: Viking Valiant, like-new, \$300; L.A. area only, W6BYT, 8454 Tunney Ave., Northridge, Calif.

FOR Sale: Central Electronics 20-A exciter and Vantron 300 linear amp., both for \$160.00; DX-100, latest modifications, like new, \$150.00. Ray Minichiello, 4420 Boonsboro Rd., Lynceburg, Va.

FOR Sale: HQ-150 receiver and speaker, \$225.00. Used approximately 50 hours. Write to Dr. J. W. Jordan, Box 188, Dunn, N.C.

B&W 5100 with 51SB-B. \$370 and HRO-60T with A.B.C.D coils, \$340.00. All are in exc. condx. H. Dagle, Box 209, Morton, Ill.

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SELL: Treasure finder and metal locator Goldak, \$82.00, Model 520, \$50; DuMont 5" scope, 208B, \$35; Hy-Gain Tribander 350; V.F.B. 52-15 Mc receiver 933B with 110V AC pwr. supp. and spkr, \$20.00; Gonset converter, 6M to 1200 Kc, \$18; beautiful xfrmr, 2800VDC, 800MA (full wave), \$35.00; B&W butterfly xmtg. condns. CX62C, \$12; CX49C, \$10; CX13C, \$3.00. J. Gillson, 109 Mullin Rd., Wilmington 3, Del.

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COLLINS 75A4, speakers, 500 cycle and 3.1 Kc filters, in mint condx, \$565.00; B&W 5100B with 51SB-B, perfc., \$450.00 or accept \$1000 for all above listed items and include Johnson Matchbox, D104 mike and stand, Paul O'Connor, W5KBG, 203 Betty Dr., Richardson, Texas.

GO SSB but not bankrupt, SB-10, \$80; Apache transmitter, \$230.00; W6AAZ, 7622 Highway 128, Healdsburg, Calif. Telephone ID 3-1060.

COLLINS 75S-1, in exc. condx, with spkr, \$350.00. No trades, please! W7NOI, 1126 S. W. Curry, Portland 1, Oregon.

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SACRIFICE: Valiant F/W, perfect, \$275.00; SP400SX, all band Super Pro, \$110.00; Brand new Gonset G-63 revr, spkr, cost \$259.00, sell \$175; new 1 Kw Super Mod. unit 1UM4B, cost \$95; sell \$50; new 117C 500 watt mod. transformer, cost \$90, sell \$50; Sylvania 7 in. 'scope, \$50.00. Jennings vacuum variable 40M50, \$40, also paris list, Don Cordray, 6803 Amestoy Ave., Van Nuys, Calif. Tel. Dickens 4-1736.

FOR Sale: Johnson Valiant, \$270.00 or best offer, Chris, WA6HTJ, 2515 N. Vermont Ave., Los Angeles 27, Calif.

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DX-100, \$165.00; Johnson Valiant, \$325.00; Heathkit tube checker TC-2, \$20; S20A, new Gonset w/458 VFO \$200; BC221 freq. meter, \$65; Heathkit Model 0-1 "3" oscilloscope, \$20; Johnson Matchbox, \$20. Fred P. Hofferth, W8FXS, 771, Dunwoodie, Cincinnati, Ohio, BE 1-6216.

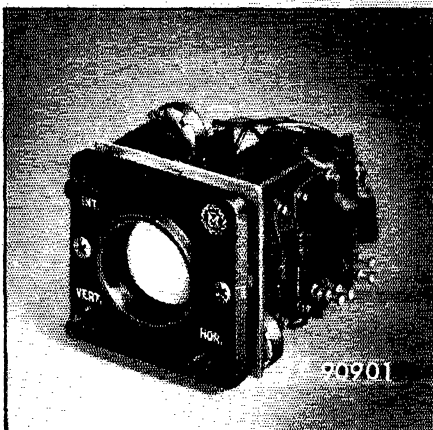
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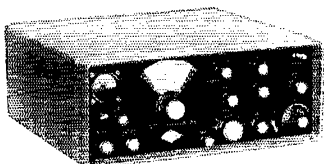
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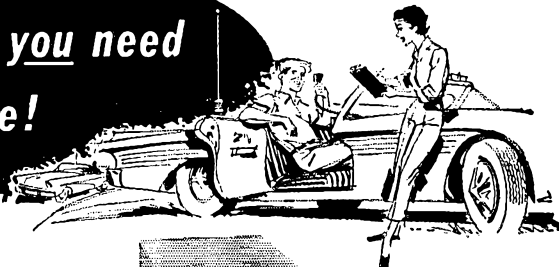


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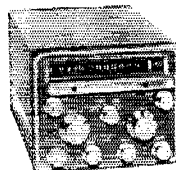
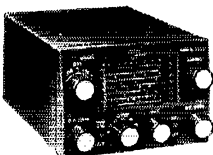


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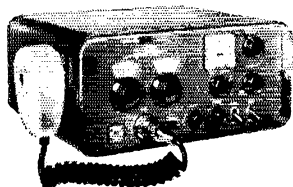
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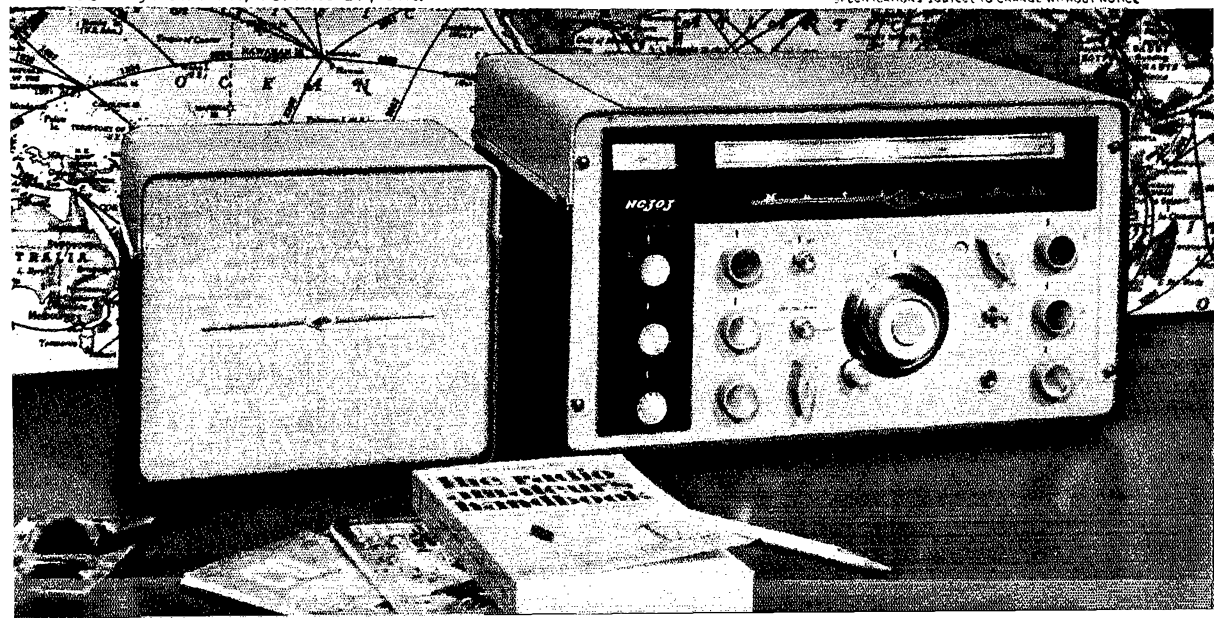
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