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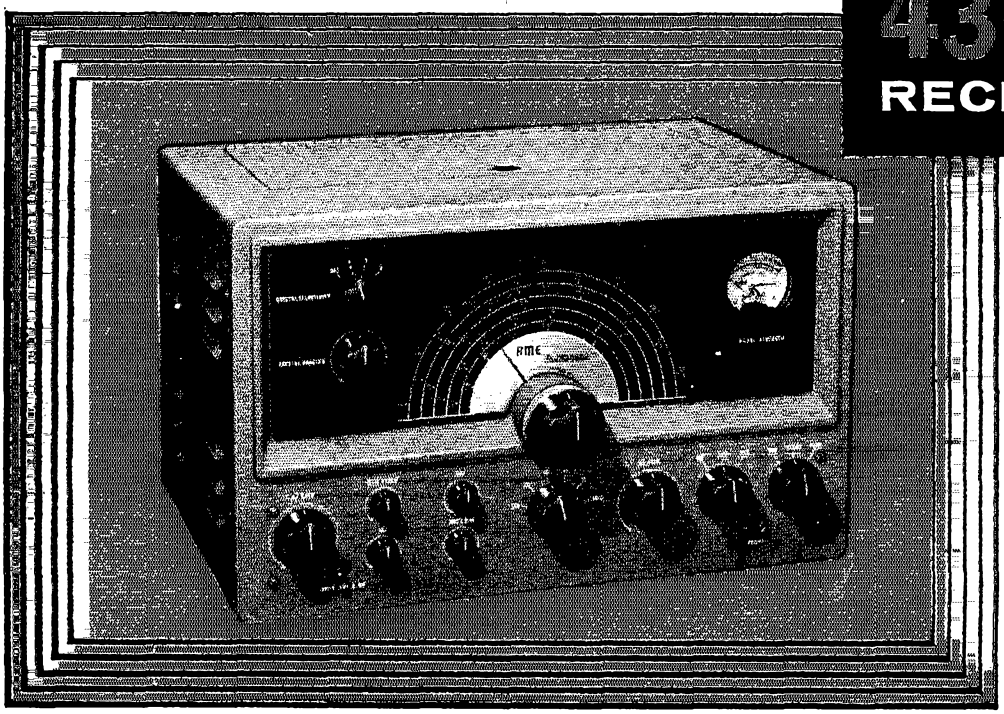

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High Selectivity and Rejectivity
Precisely tunes the signals you want, even at high frequencies. Rejects unwanted signals and undesirable noise.

Easy Tuning and Smooth Operation
Unique two-speed control knob provides smoother, accurate tuning and scanning.

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Highly stable components and construction prevent frequency shift or drift.

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Heavy steel chassis, cast aluminum panel and rugged steel cabinet assure stable, long-life service.

This completely new receiver includes many deluxe features usually found only in higher priced models. It provides injection control of the beat frequency oscillator. Particularly useful for CW and SSB reception.

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Controls include: Dual-speed tuning, AF gain, BFO pitch, BFO injection, antenna trimmer, calibration adjust, band selector, RF gain on-off, function switch, 3-position receive—standby—transmit switch, 4-position crystal selectivity control, crystal phasing-rejector control, ANL. Size: 10 in. high, 16½ in. wide, 10 in. deep. Finished in attractive instrument-gray. 117 volts, 50-60 cycle AC.

To own the 4300 means more QSO's!

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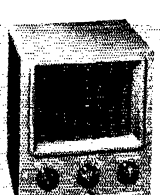
MODEL 4301 SIDEBAND DETECTOR-SELECTOR



New RME 4301 provides easy-to-tune, stable SSB reception of both carrier present and carrier suppressed types. Plugs directly into the RME Model 4300 receiver or easily connects between IF and audio stages in any other communications receiver. Built-in power supply. Size: 10 in. high, 8½ in. wide, 10 in. deep. Net $75.00

Model 4302—Matching Speaker in enclosure. Net $17.50

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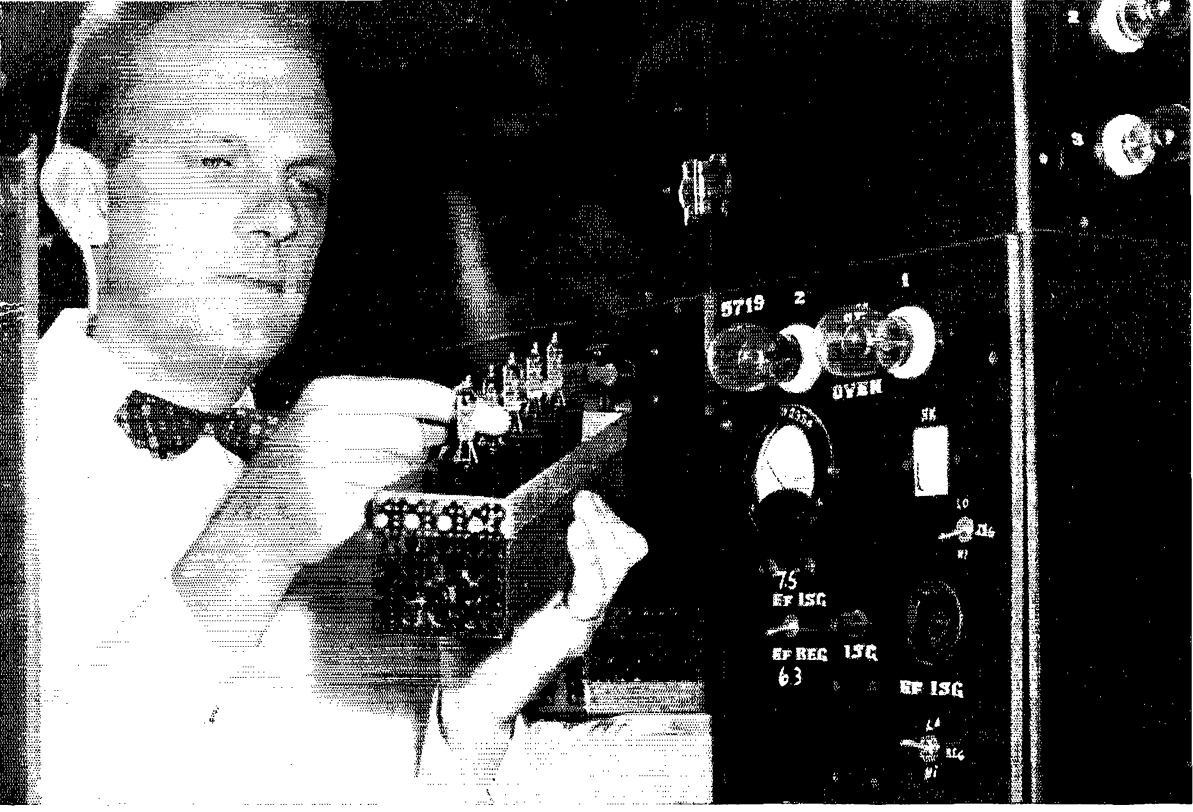

Ham experience helps W4SEV evaluate tests of G-E 5-Star subminiature tubes!

LESS than 1½" in seated height, General Electric 5-Star high-reliability subminiatures do key jobs in advanced military and commercial applications. These tiny oscillators, amplifiers, and rectifiers must be dependable at high operating temperatures. Factory tests involve elaborate equipment and instrumentation.

Yet, says John H. Phelps, W4SEV—who, as supervising engineer, helps set tube test limits and analyzes results—a radio amateur is right at home when it comes to translating test findings into performance facts. Tube reliability, low microphonics, electrical stability—these qualities mean the same to the ham working a Civil Defense rig, as to the jet pilot phoning his field or carrier for landing instructions.

An active amateur since 1940, Phelps' special hobby is radio control of model airplanes on 6 meters. He also operates 40-meter CW. Like other amateurs, Phelps is accustomed to check theory by practical application. General Electric benefits from this work approach, which helps assure a G-E tube product that will meet or surpass design requirements. For tubes built and tested with the aid of amateur know-how, see your G-E tube distributor! *Electronic Components Division, General Electric Company, Schenectady 5, New York.*

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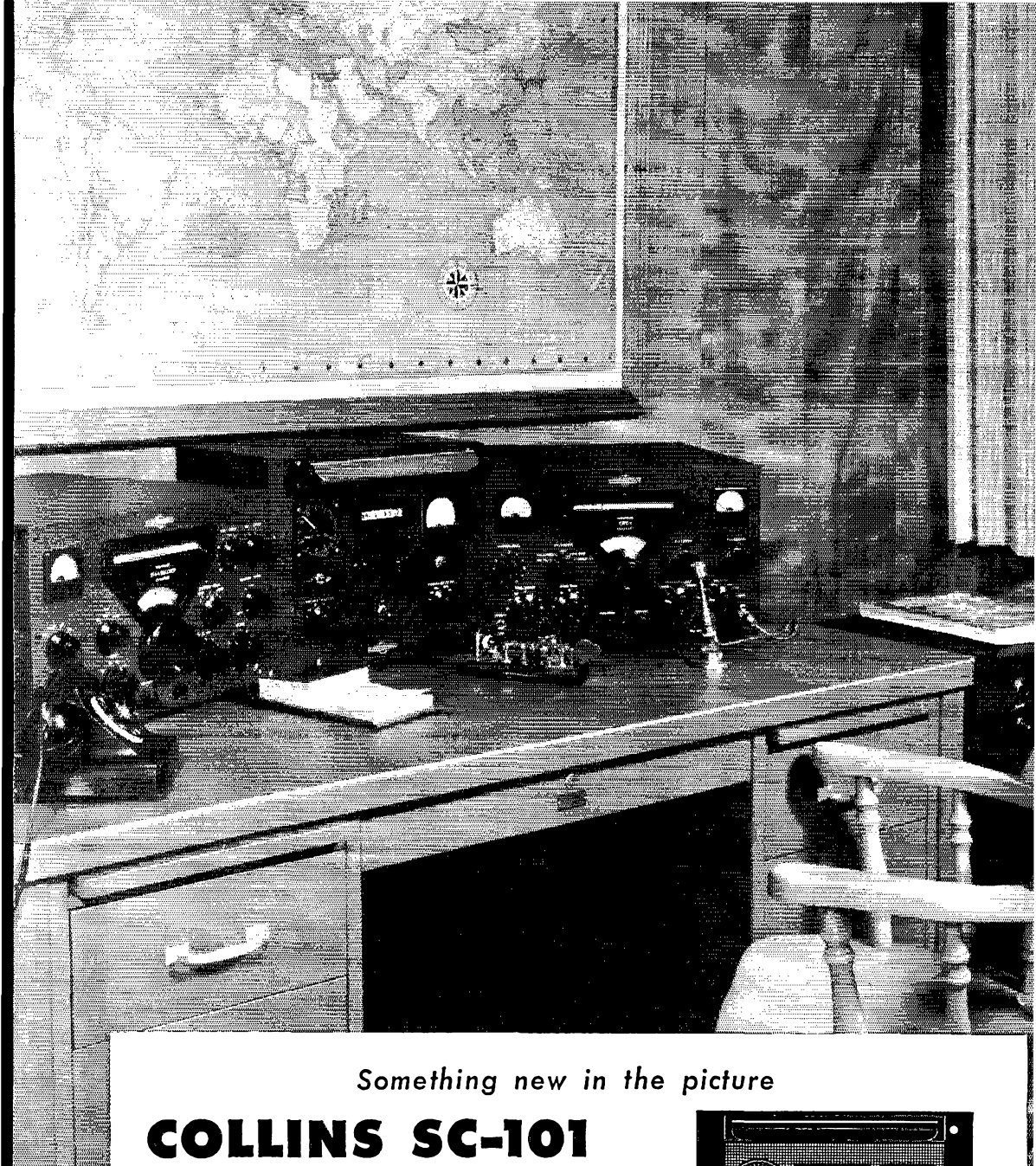
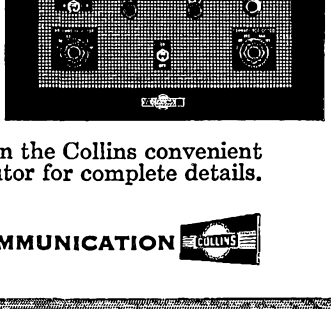
166-186



Something new in the picture

COLLINS SC-101

Station Control System



The superior performance of Collins SSB is smoothly coordinated into an orderly system with Collins SC-101. It provides the necessary equipment to connect the transmitter and receiver, beam direction indicator, beam control, phone patch circuit, standing wave ratio meter and remote selection of any one of six antennas.

Like all Collins equipment, the SC-101 can be yours now on the Collins convenient Time Payment Plan. Contact your nearest Collins distributor for complete details.

Collins CREATIVE LEADER IN COMMUNICATION

QST

NOVEMBER 1956

VOLUME XL • NUMBER 11

PUBLISHED MONTHLY, AS ITS OFFICIAL ORGAN, BY THE AMERICAN RADIO RELAY LEAGUE, INC., WEST HARTFORD, CONN., U. S. A.; OFFICIAL ORGAN OF THE INTERNATIONAL AMATEUR RADIO UNION

OFFICES

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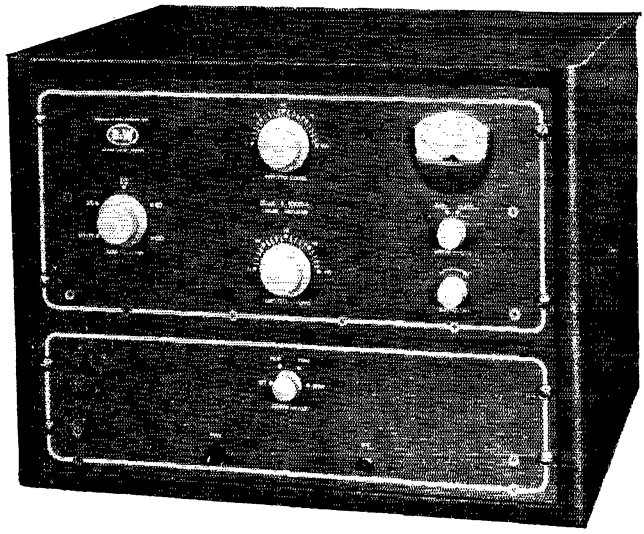
—CONTENTS—

TABLE-TOP KILOWATT AMPLIFIER



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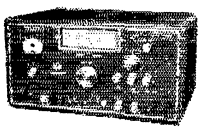

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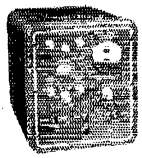

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Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports are also desired by SCMs for inclusion in *QST*. **ARRL Field Organization station appointments** are available in the areas shown to qualified League members. These include ORS, OES, OPS, OO and OBS. SCMs also desire applications for SEC, EC, RM and PAM where vacancies exist. *All amateurs* in the United States and Canada are invited to join the Amateur Radio Emergency Corps (ask for Form 7).

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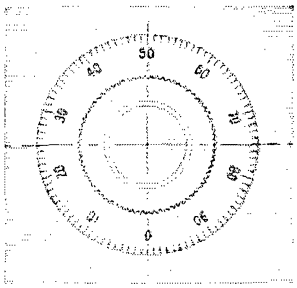

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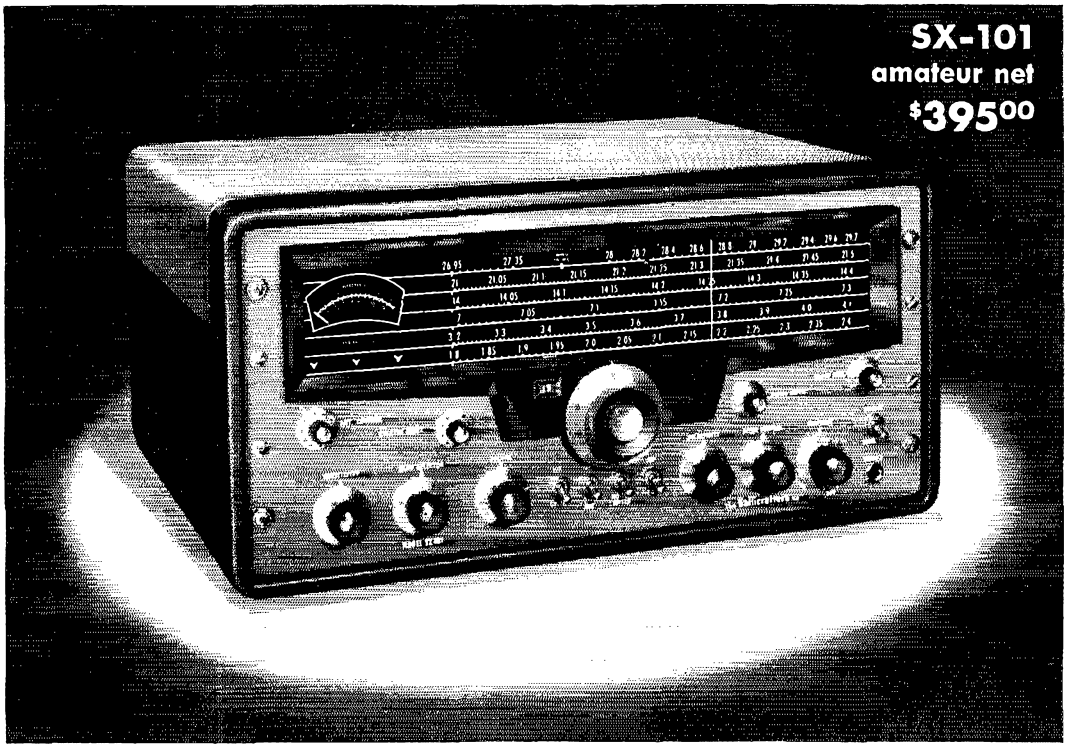

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It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

Inquiries regarding membership are solicited. A bona fide interest in amateur radio is the only essential qualification; ownership of a transmitting station and knowledge of the code are not prerequisite, although full voting membership is granted only to licensed amateurs.

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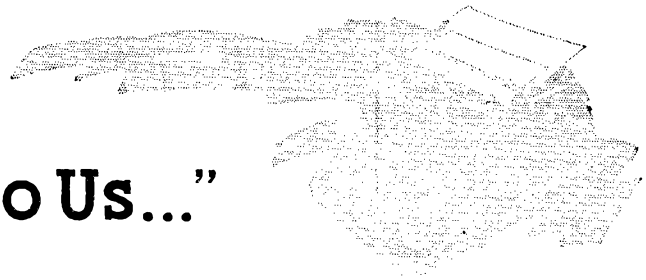
Vice-Director: John F. Skelton W5MA
1916 Briarwood Lane, Irving, Texas



"It Seems to Us..."

WHEN PHONE CAME OF AGE

Today, something over fifty percent of amateur operation is on voice. Even the newcomer finds it technically — and economically — feasible to fire up with A3 emission early in his ham career.

It was not always so. In the early days of phone — these were the early days of c.w., too — equipment was crude, knowledge of technical principles almost zero, and performance so awful (modulated oscillators splattering all over the band) that ham phone was practically legislated out of existence. Came crystal control, which solved the problem of "wobbulation" by stabilizing the carrier frequency, and a gradual awakening to the underlying principles of modulation, climaxed when *QST* scooped the field with the first practical information on 100-percent modulation. (Aside from ham interest, this was the cause of a deluge of inquiries to Hq. from broadcasting stations wanting to adopt the new technique.)

But even this was not enough. The Heising or "constant current" method of modulation was the only one known; based on Class A modulators, it was inefficient and expensive. (You needed a tube costing several hundred dollars to get as much as 100 watts of audio power.) The only alternative, for reasonable amounts of r.f. power output, was the linear amplifier — itself a low-efficiency device on a.m. Phone continued to be expensive, technically difficult, out of reach of most amateurs.

And then, literally overnight, the whole picture changed. It was as striking a change as from spark to c.w. — and it happened more rapidly. What did the job was an article in *QST* just 25 years ago this month — the first published useful data on Class B audio modulation. Technical Editor Jim Lamb had learned that a new system was under development, was able to persuade Loy Barton of RCA to give us a story — even prior to its release to professional journals. Here, for the first time, was high-power phone with small tubes. Here was a scheme of modulation that any ham could understand, one that didn't require fooling around with tube curves, distortion rules, and engineering calculations. The November, 1931, issue quickly became a collector's item.

Lamb and Assistant Technical Editor Grammer followed up the theory article with practical dope: design of transformers, how many turns, and how to build and test the new Class B modulation system. Shortly, commercially-built transformers became available.

So, finally, an effective radio-telephone transmitter became practical for the ordinary ham. Phone was really on its way, and there began a whole new era of amateur radio.

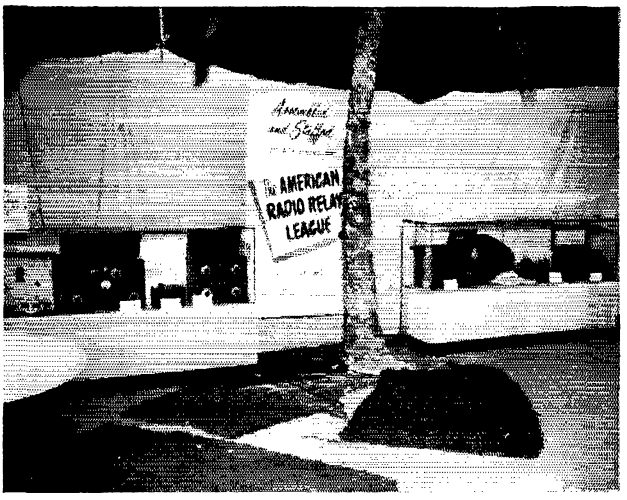
NEW YEAR'S RESOLUTIONS

No, Indian summer hasn't affected the automatic typesetting machines of our printer — "New Year's Resolution" is what we wrote. There's an important resolution each and every active ham in the country must make and put into effect by the first of next year. Now is not at all too soon to begin doing something about it.

We refer to the new rules which will put CONELRAD procedures into effect in the amateur service as of January 2, 1957. When a radio alert is issued, every amateur station must cease operation — except for c.d. networks licensed in RACES, which may continue under certain restrictions.

Surely you're familiar, from nationwide tests this past summer, with the basic system as it operates in the broadcast service — with the receipt of a warning, standard b.c. stations will announce the alert and then either close down or join the controlled operations on special c.d. frequencies of 640 or 1240 kc. (FM and TV stations announce, and then leave the air completely.) FCC leaves to us amateurs to decide for ourselves what individual systems we set up to insure reception of an alert. The ideal system is one with automatic features, such as the gadget described on page 21 of this issue. But any system may be used, so long as it *works*. For example, you can check a local b.c. carrier every ten minutes to ascertain whether CONELRAD is in operation; but that can be mighty inconvenient, and there is always the probability you'll forget. CONELRAD will, in all likelihood, be with us for a long time, so we suggest that you set up a businesslike system right at the start. Get out your 1956 *QST*s and look up these references to give you some ideas:

January, p. 34; June, p. 17; this issue, p. 21 and 46. Then, warm up the soldering iron and get your CONELRAD unit started, so you won't be caught at the January 2nd deadline.



♦

Among the hundreds of exhibits at WESCON (Western Electronic Show and Convention) held in Los Angeles during August was an historical exhibit prepared under the chairmanship of Don C. Wallace, W6AM. The photo at the left shows only a portion of the 60-foot display, which brought favorable attention to amateur radio and the ARRL. Booth attendants included W6CMN (booth chairman), W6GJP, W6MBA, W6GYH, W6DDE, W6MEP, W6LIP, K6ELW, and W6JQB.

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HAMFEST CALENDAR

Kansas — The Fourth Annual Dinner of the Johnson County Radio Amateurs Club of Kansas will be held at the Quivera Country Club starting at 6:00 P.M. on November 10. The Division Director will be the speaker of the evening, followed by the first showing of the movies of the Socorro Island DX-pedition, XE4A, together with a discussion by its participants. A dance will be held following the movie. Pre-registration cost is only $3.25 until November 5; after that each ticket will cost $3.75. Reservations should be sent to James R. Gossett, WØGLN, 7507 Lowell, Overland Park, Kansas.

Oklahoma — The Tulsa Amateur Radio Club will hold its annual hamfest November 11th at Spartan Cafeteria, opposite the Municipal Airport, Tulsa, Oklahoma. An auction and many other activities will entertain the entire family. Hours 10:00 A.M. to no later than 3:30 P.M. No pre-registration as the cafeteria will be open.

OUR COVER

Our cover this month shows W1VLH with a high-powered linear amplifier for the v.h.f. If you're interested in high efficiency for 144, 220, and 420 Mc., you'll be interested in the story on this, next month.

Strays

Last month we promised you a story on the low-noise converter developed by the Naval Research Laboratory for the satellite-tracking program. Unfortunately, the necessary clearances were late in coming through, and so we can't have the dope on that until next month. However, upon discovering that the NRL story would be late, we came up with a converter story of our own, as presented by W1VLH starting on the very next page.

—•••—

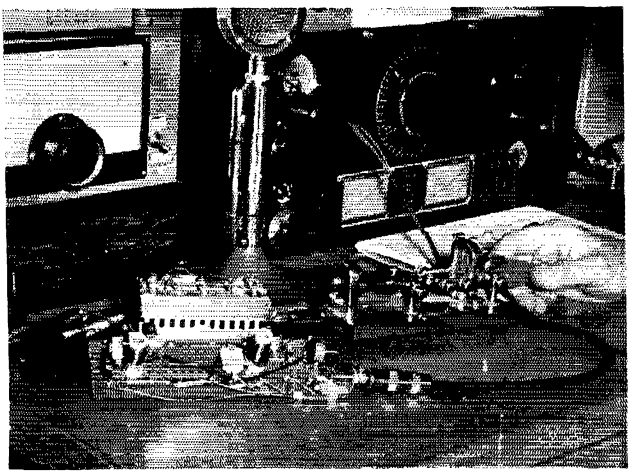
What's in a name? K6GAQ is *V. Wheeler.*

—•••—

Fast QSL service! SM5DO walked into W2KPU's New York office four days after working him, with QSL and station photo. He apologized for bad weather having held him up a day.

—•••—

Again, what's in a name? W1BFV is Charles Wood*hams*, who lives on Ded*ham* St., in Wren*tham*, Mass.



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W1OGU, of Chelmsford, Mass., has been using the little rig at the left to do some outstanding work on 14 Mc. Using a Raytheon CK761 as a crystal oscillator on 7 Mc., and a 2N1131/CK761 doubling to 14 Mc., he is running 78 milliwatts input. With a 3-element beam, W1OGU has worked KP4, TI2, OZ7, and G3, and has reportedly been heard in VK.

♦

A Low-Noise 108/144-Mc. Converter

Using the 417A in a Design Suitable for Earth Satellite Tracking or Two-Meter DX

BY MASON P. SOUTHWORTH,* W1VLH

• *QST* for July, 1956 told the story of the coming International Geophysical Year, and the small, unmanned earth satellites to be launched during this period under Project Vanguard. A system was proposed which could be set up by groups of amateurs and used to track the satellites by radio. This article describes the construction of a low-noise 108-Mc. converter suitable for use with such a system. Bonus! It can be built for 144 Mc., too.

ONE OF THE MOST INTERESTING aspects of the coming International Geophysical Year, as nearly everyone knows by now, will be the launching of several small earth-circling satellites. These will carry low-power 108-Mc. transmitters for tracking and telemetering purposes. A system which can be set up by ambitious groups of amateurs for tracking the tiny spheres by radio, and the reasons for setting up these systems were discussed in the July, 1956 issue of *QST*.[1] The purpose of this article is to describe the construction of a suitable receiving converter for such a system. Since it is realized that relatively few amateurs will be willing to construct such a unit exclusively for a nonstandard (from the ham's viewpoint) frequency, details for 144-Mc. operation are also given.

Because of space and power limitations within the satellites, the output power of the tracking transmitter will be limited to about 10 milliwatts. This means that any receiver to be employed must be capable of operating with signals quite close to the noise level. This quality is also desirable, of course, in any converter to be used for serious work on our 144-Mc. band.

The subject of noise figure, which to a considerable extent determines the weak signal capabilities of any receiver having a given bandwidth, has been kicked around quite a bit in recent years. Some 2-meter operators constantly strive for the lowest possible noise figure, and claim considerably improved reception for their 1- to 2-db. beauties. There are others whose checks consistently fail to show any advantage in having a super-low noise figure except the ability to hear more antenna noise. Theory and careful observation tend to show [2] that with a reasonably well-designed receiver (let's say, with a noise figure of 4 or 5 db. in the 100- to 150-Mc. range), external noise (meaning galactic and the like — not man-made) may be the limiting factor in weak signal reception as high as 200 Mc. Admittedly, however, this is a somewhat controversial matter.

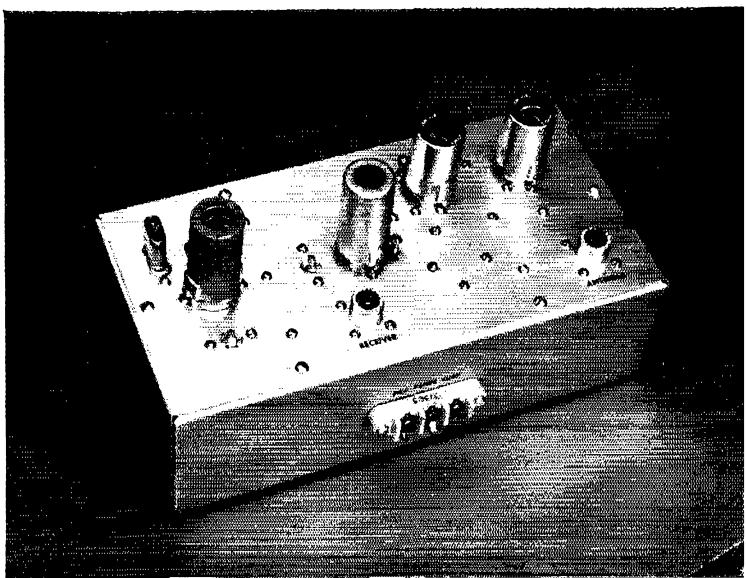
To be sure of the best possible performance, it was decided to employ the rather expensive 417A tube in the converter to be described, in an effort to obtain a noise figure close to the best which can be had. Most satellite tracking stations will be set up in locations where man-made noise is at an absolute minimum, and a low noise figure should show up to the best advantage. The cost of a new Western Electric 417A should pose no problem for a satellite-tracking group with the backing of a university or other scientific organization.

As for 144-Mc. applications, the low noise figure obtainable with the tube certainly does no harm, and there is much amateur interest in

* ARRL-IGY Project Coordinator.

[1] Easton, "Radio Tracking of the Earth Satellite," *QST*, July, 1956, p. 38.

[2] Cottony and Johler, "Cosmic Radio-Noise Intensities in the VHF Band," *Proc. IRE*, Sept., 1952, p. 1053.



View of the assembled converter showing the top plate layout and the terminal strip used for power connections.

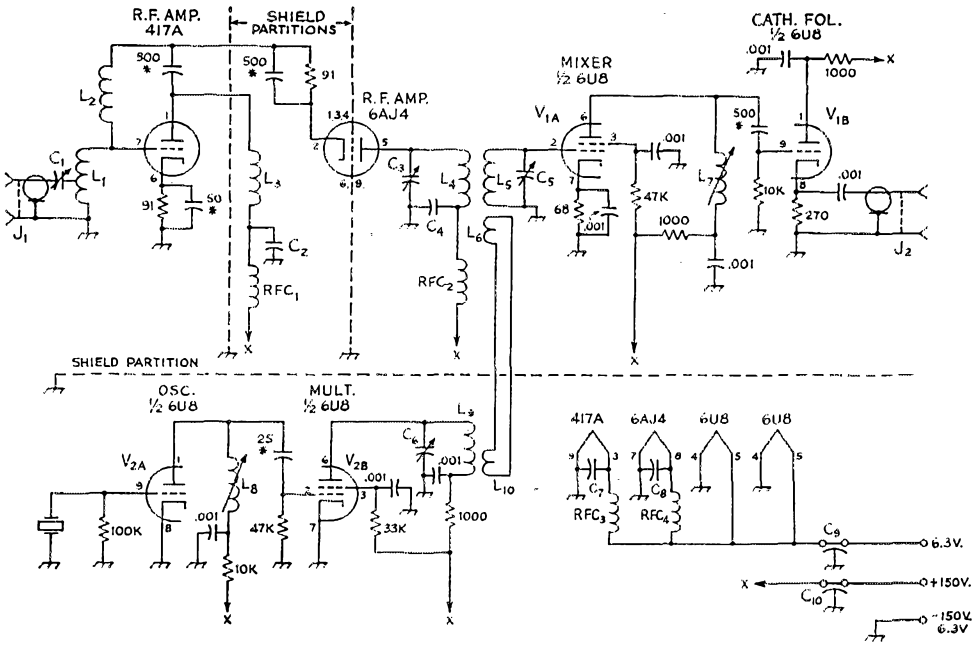


Fig. 1 — Schematic diagram of the converter. Capacitances below .001 μf. are in μμf. Capacitors marked * are tubular ceramic. Others not listed below are disk ceramic. Resistors are ½-watt composition.

C_1 — 7-45-μμf. ceramic trimmer (Erie Type TS2A).
C_2, C_4, C_7, C_8 — 500-μμf. button bypass (Centralab ZA-501).
C_3, C_5 — 1-6-μμf. tubular ceramic trimmer (Centralab 829-6).
C_6 — 15-μμf. miniature variable (Johnson 15M11).
C_9, C_{10} — .001-μf. ceramic feed-through (Centralab T-1000).
J_1, J_2 — Coaxial connector, chassis mounting (Amphenol 83-1R).
L_1 — 108 Mc.: 4 turns No. 16, ⅜-inch diam., c.t. Start with turns spaced about one wire diameter
144 Mc.: As above but 5 turns ¼-inch diam.
L_2 — 108 Mc.: 20 turns No. 24 enam. close-wound, ¼-inch diam.
144 Mc.: As above but 15 turns.
L_3 — 108 Mc.: 6 turns No. 16, ⅜-inch diam., spaced about one wire diameter.
144 Mc.: As above but 4 turns.
L_4 — 108 Mc.: 5 turns No. 16, ⅜-inch diam., spaced one wire diameter.
144 Mc.: As above but 4 turns.
L_5 — 108 Mc.: Like L_4 but 4 turns.
144 Mc.: As above.
L_6 — 1 turn hookup wire cemented between L_3 and L_5.
L_7 — 7 Mc.: One inch long winding of No. 28 enam. on ⅜-inch diam. iron slug-tuned form (National XR-91).
14 Mc.: As above but 32 turns.
27-28 Mc.: As above but 15 turns.
30.5 Mc.: As above but 12 turns.
L_8 — 9 turns No. 24 enam. on ⅜-inch diam. iron slug-tuned form (National XR-91).
L_9 — 72-110 Mc.: 5 turns B & W No. 3003 Miniductor (16 t.p.i. No. 20, ½-inch diam.).
82-122 Mc.: Same but 4 turns.
100-140 Mc.: Same but 3 turns.
L_{10} — 2 turns hookup wire wound around ground end of L_9 and cemented in place.
RFC_1, RFC_2 — 1 meg. ½-watt resistor wound full of No. 30 enam. wire.
RFC_3, RFC_4 — 6 turns No. 22 enam. wound on 1 meg. ½-watt resistor.

its use. The result of using the 417A in this converter is a noise figure which was measured at under 3 db. with the 5722 noise generator described previously in *QST*.[3] Readings made with this unit have checked out well in the past against those obtained with a commercial laboratory-type instrument. The only tube type which shows greater promise than the 417A and can be considered at all available is the 416B, a coaxial type triode. This is much more expensive, however, and since its construction makes it more suitable for grounded grid than cascode circuitry, the noise figure obtained with it is only slightly lower than with the 417A.

Receiver Considerations

When the converter is used for 108-Mc. reception, an i.f. output of 7 Mc. is recommended. This will enable almost any communications or short-wave receiver to be used as an i.f. strip. When choosing such a receiver, however, it should be remembered that even with a low-noise converter, good i.f. selectivity characteristics are necessary for the best signal-to-noise ratio.

In 144-Mc. operation, a band of frequencies must be tuned by the receiver. This brings up the problem of securing a good tuning rate. Because of the wide variety of dials and tuning ranges available on today's communications receivers, each user must take a look at his own set and pick an i.f. tuning range suitable for it. The tried and true arrangement has been to tune from 7 to 11 Mc. or from 14 to 18 Mc. with the main tuning dial of one of the various two-dial receivers. This doesn't work out with the single-dial, ham-bands-only receivers, of course, so most fellows owning them divide the four megacycles

[3] Tilton, "Noise Generators — Their Uses and Limitations," *QST*, July 1953, p. 10.

(or as much of it as possible) as best they can between the ranges provided for 10 and 11 meters.

Not to be overlooked is the possibility of using the bandspread dial on a two-dial set and an i.f. in the 10–11-meter range. This will often provide the required frequency coverage and a good tuning rate. Lastly, we have the newer single-dial receivers which provide a special range and scale for use with v.h.f. converters. The bandspread provided with this setup may not be all that the weak-signal c.w. or s.s.b. fan might desire, but it is certainly a convenient arrangement. Table I lists the crystal frequencies and multiplier tuning frequencies required for various i.f.'s. With this information in hand, the required coils can be picked from the parts list.

Circuit Details

The r.f. amplifier circuitry borrows heavily from a design by W2AZL which has been widely duplicated but never published. The original cascode arrangement is used as opposed to the simplified or series connection. Both were tried, and top performance was somewhat more readily obtainable with the former. W2AZL employed two 417As — one in the grounded-cathode stage and one in the grounded-grid stage. Little or no difference was noted in our case when a less expensive 6AJ4 was substituted for the second 417A, so this was done in the final design. The capacitor in series with the antenna is helpful in reducing interference from out-of-the-band signals. As pointed out previously,[4] the use of a low-value cathode bypass in the first stage yields an improvement in noise figure. This is believed to be due to a series-resonant effect resulting in a low-impedance cathode return. Extensive shielding is provided between tuned circuits in the r.f. stages, and no trouble with instability should be experienced if the layout shown is followed.

The pentode section of a 6U8 is used for a mixer. Oscillator injection is coupled in by a link adjacent to the grid tank. The triode portion of the 6U8 serves as a cathode follower, providing a low-impedance output for the accompanying receiver. Over-all gain is sufficient for most receivers without using an i.f. amplifier stage. If the gain is too high for proper S-meter operation, it can be reduced by detuning the i.f. coil, L_7, or by using a lower value grid resistor for the cathode follower stage and hence loading L_7 more heavily.

A second 6U8 triode-pentode is used for the oscillator and multiplier stages. With the v.h.f. crystals supplied by International Crystal Manufacturing Company, the simple oscillator circuit shown will suffice, no feedback external to the tube being necessary. A third shield plate is employed to confine the injection to that coupled in by links L_6 and L_{10}.

The plate and heater leads of the r.f. stages employ r.f. chokes and button bypass capacitors for isolation purposes. Elsewhere disk ceramics are used for bypassing, except for feed-through capacitors which bring plate and heater voltages into the converter chassis. These feed-through capacitors, plus complete shielding, keep the pickup of spurious signals by other than the antenna to a minimum.

Layout and Construction

The converter is built on a 5×10-inch aluminum plate which can be screwed to an inverted 3-inch chassis to achieve shielding. This layout system allows easy access to all the components during wiring. The only parts mounted on the chassis itself are the three-post terminal strip and feed-through bypasses C_9 and C_{10}. The latter are just visible in the top view below the power terminals. Note that no connection is made to these terminals inside the chassis. Instead, they are cut off flush so as not to radiate any spurious signals which the outside portion might pick up. Inside connections are made to the inner ends of the feed-through capacitors, and to the ground terminal, with wires long enough to permit soldering before the plate is screwed in place. The outer ends of the feed-throughs then connect to the binding posts outside the chassis with lugs under the post screws, bent down and soldered to the capacitors.

Looking at the top view again, the tubes, as seen from left to right, are the 6U8 oscillator-multiplier, the 6U8 mixer-cathode follower, the 6AJ4, and the 417A. The coaxial connectors for cables to the receiver and antenna are along the forward edge near the middle and right end, respectively. The crystal is to the left and toward the back. The tuning slugs for the oscillator and i.f. coils may be seen in front of and to the right, respectively, of the first 6U8. The multiplier tuning capacitor shaft is hidden behind this same tube. The tuning screws for the tubular capacitors used in the mixer grid and 6AJ4 plate circuits can both be seen between the second 6U8 and the 6AJ4.

Most of the other components can be picked out in the view showing the underside of the plate. In this picture the r.f. stages are to the left, and the oscillator-multiplier section to the right. The three interstage shield plates are visible as vertical lines. They are mounted just

[4] Tilton, "Hints on Lowering Noise Figures," *QST*, Nov., 1953, p. 65.

TABLE I
Required Crystal and Injection Frequencies

Signal Freq. (Mc.)	*I.F. (Mc.)*	*Crystal Freq. (Mc.)*	*Multiplication Req'd.*	*Injection Freq. (Mc.)*
108	7	50.500	× 2	101.0
144–148	7–11	45.667	× 3	137.0
144–148	14–18	43.333	× 3	130.0
144–148	26–30	39.333	× 3	118.0
144–148	27–31	39.000	× 3	117.0
144–148	30.5–34.5	37.833	× 3	113.5

to the right of the 417A socket, across the middle of the 6AJ4 socket, and about one third of the way from the oscillator-multiplier socket to the mixer and cathode-follower socket. Each shield is made from a piece of flashing copper 3¼ by 3¾ inches in size. Each has a ½-inch lip bent across the long dimension. This is used to fasten the shield to the plate. The left-end shield has two ⅜-inch diameter holes drilled in it, one above the other, near Pin 1 of the 417A socket. The one nearest the plate passes the wire from the second stage cathode resistor and bypass to the junction of L_2 and the 500-$\mu\mu$f. blocking capacitor. The second hole passes the lead from L_3 to Pin 1. A smaller hole near the other end of this shield passes the 417A heater lead. The middle plate must be drilled near one end to pass the heater and plate leads from the 417A stage, and at the other end cut to fit down around the 6AJ4 socket. When doing this, first make two hacksaw slots to fit over the walls of the small metal cylinder shield in the center of the socket. Then cut or file away enough material to make a snug fit around the rest of the socket. Pins, 1, 3, 4, 6, 7, and 9 on this socket are bent over to touch the center shield and soldered. The copper shield is then soldered in place across the socket. The right shield plate requires two small holes for the 6U8 heater and plate leads, and a larger hole for passing the spaghetti-covered wires connecting links L_6 and L_{10}.

The construction of these links is quite simple. First, two turns of hookup wire are wound around L_9 and cemented in place. The wire ends are cut off fairly short and bared. At this point, L_9 can be mounted in place. The other link and the connecting wires are made from one piece of hookup wire about 7 or 8 inches long. The ends of this wire are slipped in opposite directions through a ¼-inch length of insulating tubing and pulled up to form a loop about the same diameter as L_4 and L_5. The wire ends are now bent parallel, and run through another piece of insulating tubing across the plate and through the right end shield. They can now be cut to the proper length, bared, and soldered to the ends of the two-turn link around L_9. L_6 can be cemented lightly to the cold end of L_5.

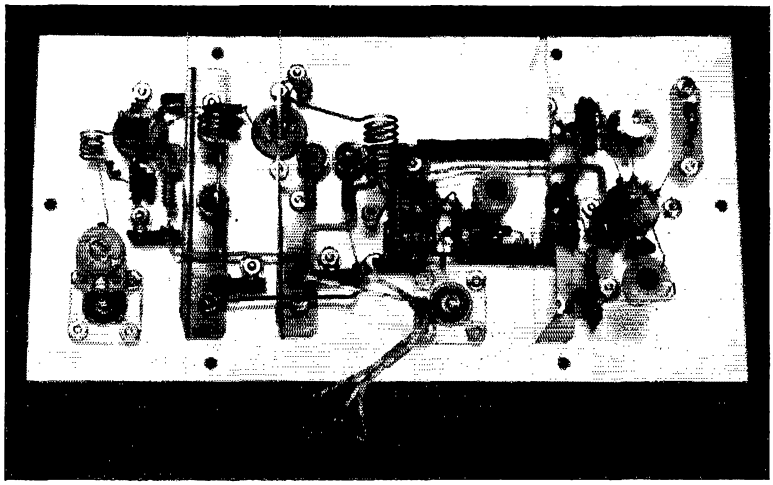
The input coil, L_1, is visible to the left of the 417A socket. L_2 is positioned across this socket perpendicular to L_1. L_3 is immediately to the right of the first shield plate. L_4 and L_5 are positioned about ¼ inch apart near the mixer socket. Note that these coils are wound in opposite directions, and are mounted with their ground ends adjacent. The two slug-tuned coil forms are plainly visible, and the multiplier coil can be seen mounted between C_8 and a tie point. The two tubular ceramic capacitors are mounted as close as possible to Pin 5 of the 6AJ4 socket and Pin 2 of the mixer socket.

Most of the wiring consists of mounting the various small parts by their leads. Liberal use is made of tie points, and the four button bypasses also perform this function. The only spot which is at all crowded is around the mixer-cathode follower socket where there are quite a number of resistors and capacitors to be positioned. Wiring even here is not difficult, however, if a little thought is given to placement, and the layout in the photo is followed. The series antenna capacitor is shown mounted by soldering one of its terminals to the coaxial connector. Some constructers may wish to turn this capacitor over and mount it through a hole in the chassis so that it can be adjusted from topside. The arrangement shown has proved perfectly satisfactory, however.

Exact layout dimensions have not been given because, in general, precise placement is not that important. Most of the dimensions can be scaled approximately from the layout photo, or can be easily determined with the actual parts on hand. It would be well, however, to follow the general layout and parts orientations to minimize trouble in getting the converter going.

Adjustment

Circuit alignment must, for the most part, be done before the converter plate is mounted on



Bottom view of the converter plate showing the three shield partitions and the various components. The r.f. stages are at the left.

its chassis, since several of the circuits are not adjustable from above the plate. The three shields will do extra duty, at this point, as supports to rest the plate on, and will be found quite handy. Apply a source of 6.3 volts a.c. capable of delivering at least 1.5 amp. to the heater string, and connect a 150-volt d.c. source to one of the B+ tie points. The plate supply should be rated at 60 ma. or more. It can be regulated or not, but should not exceed 150 volts, since this is about the upper limit for the 417A.

Getting the oscillator and multiplier stages going is the first step in the adjustment procedure. This is most easily accomplished with an indicating absorption wave meter. This can be a grid-dip meter with plate voltage switched off the oscillator tube. Simply tune the wave meter to the crystal frequency, couple it to the oscillator tank, and adjust the slug in L_8 for maximum indication. This is then repeated at C_6–L_9 with the wave meter tuned to the proper harmonic of the crystal frequency. No trouble should be experienced in making these stages work if the crystal is a good one, the wiring is correct, and the leads in the multiplier tank circuit are reasonably short, so that the tuning range of this circuit approximates that of the original.

Now it is time to try and get a signal through the converter. Connect the output jack through a length of 50–70-ohm coaxial cable to the antenna terminals of a receiver tuning the desired i.f. A 108/144-Mc. signal generator is very handy at this point, but if none is available, then on-the-air signals will have to do. Start with C_1 at maximum capacitance (solder blobs adjacent), and C_3, C_5, and L_7 at the centers of their ranges. When a signal is heard, adjust C_3, C_5, and L_7 until it is the strongest. C_3 will tune quite sharply, whereas C_5 will seem very broad.

The converter should be a fairly good one, even at this point, if the coil dimensions have been followed closely. If the circuits mentioned above do not seem to be tuning, the insertion of small iron and brass slugs may help discover whether the coil is too large or too small. If the signal peaks up when the iron slug is inserted, add another turn or two to the coil in question. Take off turns if a brass slug produces resonance. If you are getting those awful squawks that indicate oscillation, try and find which stage is at fault by noting which tuned circuits affect the noises. Then check the wiring against the diagram and the layout against the photograph. It may be of help in this case to use a larger cathode bypass for the first r.f. stage, or to remove a few turns from the neutralizing coil, L_2.

If everything seems to be working normally, the converter is ready for the final set of adjustments. The only proper way to do this is to use a noise generator as described in *QST* for July, 1953.[3] A tube-type generator will be necessary only if you want to see just how good your converter is. For relative measurements the crystal diode model is perfectly OK. You just work for maximum increase in noise output when the generator is turned on. The things to adjust using the noise generator are primarily C_1, L_1, and L_2. L_3 will be found to be very uncritical, and the remaining circuits including the oscillator and multiplier tanks may simply be tuned for maximum signal or noise output.

Using the noise generator, adjust the turn spacing of L_1, and at the same time adjust C_1 — both for lowest noise figure. You may want to try changing the tap position on L_1, also. You will probably find, however, that much the same result can be obtained by varying C_1. When the input circuit has been optimized, try the iron and brass slugs in neutralizing coil L_2. Remember that what you want is not maximum gain, but lowest noise figure. Work for the greatest increase in noise output when the generator is turned on. When satisfactory operation is obtained, the converter plate may be mounted on its chassis. Now check the tuning of C_3, C_5, L_7, L_8, and C_6. At this point the unit is ready for use.

It would be nice to say that all you have to do is to hook up the converter as shown, turn it on, peak up all the stages, and have a 2-db. noise figure right off the bat. Actually, this design seems to be fairly foolproof. It was constructed initially as a breadboard arrangement, and made to work. The whole unit was then rebuilt in the form shown in the photographs. No oscillation troubles were experienced, and only minor adjustments to the tuned circuits were necessary to duplicate the performance of the original. Thus it would seem that if you do the same thing, you should be able to duplicate our results. It should be pointed out, however, that low-noise v.h.f. converters frequently require at least as much tinkering as any other type of ham gear. Therefore, if your results do not completely satisfy you, don't hesitate to try a few variations in coils, etc. It doesn't take much, sometimes, in the way of a layout shift to require a change in one of these electrically small components.

If your 417A is not one of the brand-new variety, you can probably expect to have a bit more tinkering to do. The tubes obtained through surplus and reject channels show very wide variations in performance and characteristics. Readjustment when switching tubes is usually necessary. In addition, quite a few of these poor-relation 417As turn out to be no better than the less expensive tubes. This is one advantage in having only one of these bottles in the converter. If you own two of them, you can pick the best one and use it.

Just for the record, it might be well to point out here that 417As do not take kindly to large amounts of r.f. on their grids. If you are running fairly high power on 144 Mc., and have much coupling between the contacts on your antenna relay, you may find yourself quite shortly with a very dead front end. One remedy is to use one of the newer relays which short out the receiver coax on transmit or provide a shielding device.

(*Continued on page 130*)

How To Adjust Phasing-Type S.S.B. Exciters

Test Setups — What To Look For

BY ROBERT W. EHRLICH,* WØJSM

A WELL-ADJUSTED phasing-type s.s.b. exciter usually holds its adjustments over a reasonably long period, but it seems there comes a time in the life of every piece of equipment when the OM says to himself, "I'd just like to get in there and give the thing a good going over." Because a good adjustment job is so important in determining performance of this type of equipment, it behooves the owner to avail himself of the best techniques available. The purpose of this article is to review these techniques and to point up certain of the tricks that will help (and pitfalls to be avoided) to achieve the utmost in performance.

• The step-by-step adjustment procedure described here should lead to optimum performance of your phasing-type exciter. You'll be able to recognize that "optimum" stage when you reach it, and will get some ideas of where to look for trouble if you don't achieve it at first trial.

This article, together with the same author's "How To Test and Align a Linear Amplifier" (May, 1952, *QST*, also in *Single Sideband for the Radio Amateur*) gives you the complete story on setting up the s.s.b. transmitter for the cleanest possible signal.

Principles

To start off, let's take a look at the exciter itself — the circuits that need to be adjusted and what they are supposed to do. Fig. 1 is a block diagram of a typical exciter. It should be possible to identify the corresponding circuit sections in any phasing exciter.

First, there are two balanced modulators, each of which consists of a *pair* of crystal diodes or tube sections. Associated with each pair is a balancing control, usually on the front panel, and usually called "carrier balance" or just "carrier." The two controls must be adjusted alternately until there is no output from the exciter when there is no modulation. This is a very simple thing to do; any simple r.f. indicator or even the plate meter of the final can be used to tell when the carrier is balanced out.

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The remainder of the circuitry in Fig. 1 is involved in achieving side-band suppression. Keep in mind that carrier suppression and side-band suppression are different things, and either can be out of adjustment without affecting the other. It is the side-band suppression adjustment which is the more difficult of the two and will be the principal subject of the remainder of this article.

The function of the r.f. phase-shift network (in the upper part of Fig. 1) is to accept a signal from the local oscillator and divide it into two r.f. driving signals for the balanced modulators. The two driving signals must be *about* equal in amplitude but *precisely* 90 degrees out of phase. Fig. 2 shows two typical phase-shift-network circuits. In the transformer type (Fig. 2A), tuning

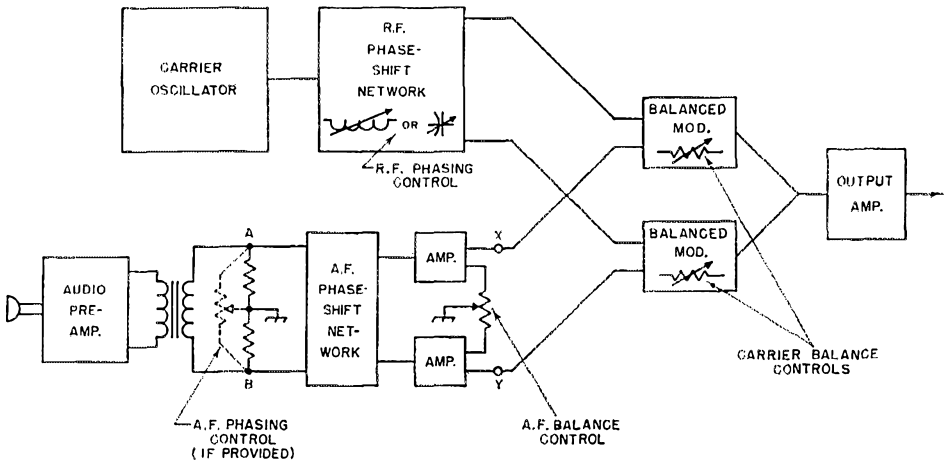


Fig. 1 — Block diagram of typical phasing-type exciter, showing locations of significant controls and adjustments.

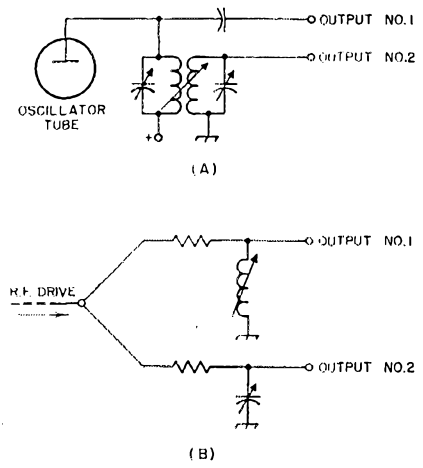


Fig. 2 — Two of the many possible types of r.f. phase-shift networks. Adjustments are described in the text.

the primary simply resonates it to the oscillator frequency, while tuning the secondary will cause a phase change between the two outputs; hence the tuning element in the secondary becomes what we will call the "r.f. phasing control." In the other type of network (Fig. 2B), either of the reactive elements may affect phase shift, so it is customary to leave one of them at about mid-position and use the other for the "r.f. phasing control."

The second control involved in getting side-band suppression is called "audio balance." As shown in Fig. 1, it is connected between the two sides of the audio amplifier driving the modulators. Its purpose is to make the audio drive to the two balanced modulators effectively equal; that is, to make the side-band output from each balanced modulator equal for equal audio voltages applied to the audio-amplifier grids.

The remaining element in obtaining side-band suppression is the audio phase-shift network (Fig. 1). Its function is to take the audio speech signal and produce two audio output signals that are exactly equal in amplitude and precisely 90 degrees out of phase. To do this job over the whole range of speech frequencies is quite a trick, and it requires precise values of resistance and capacitance within the network. Fortunately, several manufacturers make prealigned plug-in phase-shift networks at very reasonable cost, so for the purpose of this article we shall assume that the network has been factory wired and is OK. (The only remaining stumbling block here is to make very sure that the socket connections to the network are wired correctly!)

There is one additional point about the audio phase-shift network. Most present-day networks require an audio driving signal that is push-pull in nature (180 degrees out of phase) and unbalaced in amplitude in the ratio of 2 to 7. Referring to points A and B in Fig. 1, the required voltage division is usually accomplished by wiring a pair of precision resistors, with a resistance ratio of 2 to 7, between the input terminals and ground. In some exciters, however, an adjustable potentiometer (shown by dotted lines) is used in place of the precision resistors. If used, this potentiometer becomes a third control which must be adjusted to obtain side-band suppression. It may be called the "audio phasing control."

Test and Measurement Methods

Now having identified the controls in the exciter to work with, let's take a few minutes to look at the means for testing and measuring side-band suppression. Fig. 3 illustrates the features of a typical test setup.

The audio oscillator should put out a good sine wave. Most commercial designs (and kit designs) will be satisfactory. In addition, the frequency of the oscillator should be capable of being set within about 100 cycles of the specified test frequency for the audio phase-shift network being used. In particular, if your exciter uses a Central Electronics PS-1 network, the frequency should be 1225 cycles, while the B & W 2Q4 network requires 1000 cycles. For other networks, refer to the manufacturer's instructions.

Potentiometer R_1 is introduced in Fig. 3 to avoid overloading of the audio stages in the exciter. Such overload is frequently a source of trouble, as it distorts the sine wave and gives

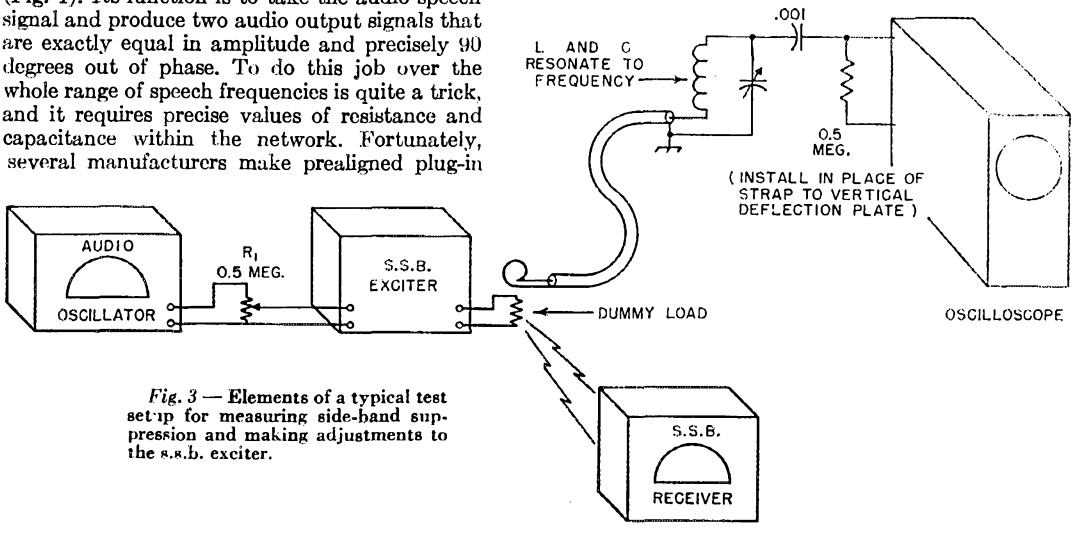


Fig. 3 — Elements of a typical test set-up for measuring side-band suppression and making adjustments to the s.s.b. exciter.

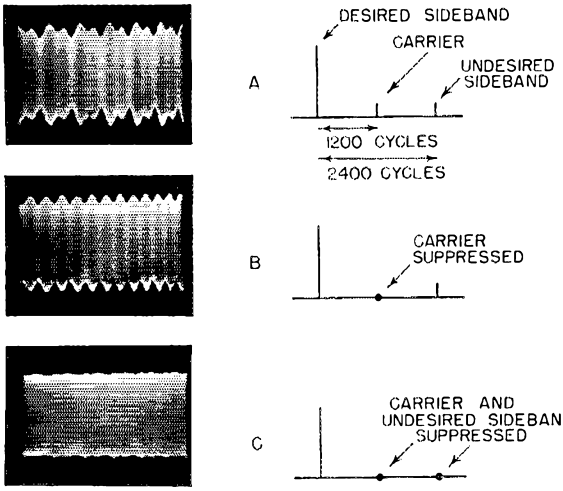


Fig. 4 — Typical oscilloscope patterns and corresponding signal-spectrum diagrams. For these photos the audio test frequency was 1200 cycles and the scope sweep rate was 200 cycles.

erroneous readings. The recommended procedure is to keep the audio gain control on the s.s.b. exciter up at its normal operating level — say, 12 o'clock — and use the external potentiometer, R_1, to control the audio level going through the exciter during tests.

Over on the output side, Fig. 3 shows two optional methods of observing side-band suppression, the oscilloscope and the s.s.b. receiver. Each has its merits, and some discussion will be in order.

The oscilloscope method is based on the principle that if a pure audio tone is sent through a perfect s.s.b. exciter, only one r.f. signal will come out: the desired side band. On the scope, this will look like a c.w. signal — that is, a smooth stripe. If there are any other signals present, unwanted side band or carrier, they will beat with the desired signal and produce ripples on the scope pattern. The object, then, is to adjust the exciter until the pattern is a smooth stripe with no ripple.

Fig. 4 shows some of the typical scope patterns. Note particularly that ripples due to the carrier are twice as wide (half the frequency) as those due to the unwanted side band. In this way it is possible to tell what kind of adjustment is needed. Another feature is that the amount (height) of ripples gives a convenient measure of the amount by which the unwanted signal is suppressed. Table I gives some guide figures for evaluating suppression in db.[1]

The oscilloscope method has its drawbacks when getting down to high degrees of suppression. To begin with, it's difficult to see the ripple when it's only 1/100 of the total pattern height. (This would be 40 db. suppression; see Table I.) Something a little more tricky is the effect of the audio third harmonic. This harmonic falls at a frequency that is two times the fundamental audio frequency away from the wanted side band, but the unwanted side band is separated from the wanted side band by precisely the same frequency in the opposite direction! The scope can't distinguish the two signals, so it is entirely possible to find yourself making adjustments to introduce just enough unwanted side band in the correct phase to cancel out the insidious third harmonic. As can be imagined, this condition becomes important when there is some distortion in the sine wave from the audio oscillator or in the exciter audio system. Generally speaking, with practical equipment, it may be said that the oscilloscope method breaks down in the vicinity of 30- or 40-db. suppression, depending on the degree of audio distortion.

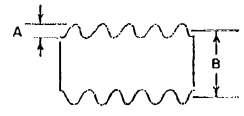
The second method for observing side-band suppression, as shown in Fig. 3, is through the use of a s.s.b. receiver. The idea, of course, is to listen to the signal on the unwanted side band while making adjustments to null it out. The receiver method overcomes the disadvantages discussed above for the oscilloscope method, but it has some difficulties and tricks of its own.

First of all, it is almost impossible to use a receiver successfully for aligning an exciter of the type which uses a v.f.o. directly on the operating frequency. Direct radiation from the oscillator comes into the receiver and tends to block it. Use of the receiver method, therefore, is generally restricted to heterodyne-type exciters such as Central Electronics, Lakeshore, etc.

Next, it is imperative not to overload the re-

TABLE I

RATIO A to B	Approx. Suppression
1:10	20 db.
1:15	24 db.
1:20	26 db.
1:30	30 db.
1:50	34 db.
1:100	40 db.



[1] See also "Technical Topics," *QST*, September, 1955, and "Feedback," *QST*, November, 1955.

ceiver. The strongest signals should not exceed S9. This may require shorting the antenna terminals and similar precautions.

It is also important to keep in mind that the output spectrum of the exciter contains many signals, as depicted in Fig. 5, and this can lead to confusion. One technique to help identify

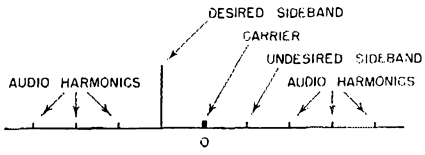


Fig. 5 — **Typical output spectrum of s.s.b. exciter driven by an audio oscillator.**

which signals are which is to unbalance the carrier temporarily or to remove the audio. Another is to set the exciter temporarily to transmit the opposite side band so that the unwanted signal will become strong and can be tuned in carefully, after which the exciter can be returned to the first side band while making adjustments.

Once the undesired side-band signal has been identified, it may be helpful to detune the s.s.b. receiver away from its normal setting at zero beat with the carrier, and toward the unwanted side-band signal. This will bring the signal you're concerned with through the receiver at a low pitch, which makes it easier to identify it by ear apart from any other signals that may be present. One-time c.w. operators will recognize this technique as being similar to the matter of digging a weak signal out from under some strong QRM.[2]

Adjustments

Let's get down to the job. Just how should the adjustments be made in order to realize the best in side-band suppression? We'll take it on a step-by-step basis.

Initially, we'll confine the discussion to the type of exciter that has fixed precision resistors at the input to the audio phase-shift network (e.g., Central Electronics).

Let's assume that everything has been set up to measure side-band suppression (Fig. 3). Set the exciter to transmit either of the two side bands — we'll call it Side Band 1. Now make alternate adjustments of the "r.f. phasing" and "audio balance" controls until the opposite side band is completely suppressed. This should be fairly easy to do if the exciter is working properly, but there are certain points that should be watched in order to stay out of trouble:

1) Be sure the audio system is not being overloaded. Keep the audio gain control of the exciter up, and use minimum signal from the oscillator, under control of R_1 (Fig. 3).

2) Be sure the r.f. portion of the exciter is not being overloaded. Select an audio driving level that is considerably below that required to produce any noticeable saturation or flattening of r.f. output. If a final amplifier is available, another guide is to select a driving level that will cause the amplifier to operate at about half its peak input.

3) If the oscilloscope method is being used, there may appear to be some carrier unbalance (Fig. 4A) even though the carrier was previously balanced out with no modulation. It happens that most phasing exciters exhibit this characteristic to some degree. Don't worry about it; feel free to make carrier adjustments at any time in order to get the desired pattern (Figs. 4B and C).

Having made the adjustment for Side Band 1, don't be misled into thinking the job is done. It will be necessary to do some checking on the other side band, too. Perhaps a few words on this important point will be in order.

Suppression of one audio frequency on one side band is a good indicator but not a final check of exciter performance. It is possible, for example, to have both audio and r.f. phase shifts something like 85 degrees instead of 90 degrees and still obtain what appears to be good side-band suppression for *one* frequency on *one* side band. Under these conditions, suppression will fail for all *other* audio frequencies and on the opposite side band, too. It is necessary, therefore, to check suppression under at least one other set of operating conditions. The most convenient "other operating condition" is simply to switch the exciter to its opposite side band.

From the foregoing, it follows that it is not too good to try to "favor" one side band, even if operation on the other is never contemplated.

Let's get back to adjustments. Switch the exciter to Side Band 2. The usual condition will be that suppression on the new side band is good but not perfect. It should then be possible to regain almost perfect suppression by finding a new setting of the "r.f. phasing" control. Note how much the adjusting screw has to be turned, and finally set it midway between the first and second positions.

At this point, a typical exciter in good condition will exhibit about 25–30-db. suppression on either side band. This can be checked easily with the oscilloscope by reference to Table I. In an s.s.b. receiver, the unwanted side band will be barely audible when the wanted side band comes through at moderate level.

If the suppression so obtained is not good enough, or if you want to try to go for more than the typical 25–30 db., the next step will be to go on into some refinements of the voltage division at the input to the audio phase-shift network. To do this, it will be necessary to connect a high-resistance potentiometer (50 or 100 thousand ohms or so) across the fixed resistors in the network as indicated by the dotted lines in Fig. 1.

[2] By "s.s.b. receiver" the author means just that — a receiver that has the type of selectivity necessary to reject one side band while receiving the other. This is not the same thing as setting up a conventional receiver for s.s.b. reception, by turning off the a.v.c. and turning on the b.f.o. The conventional receiver can be used, however, if it has a variable-selectivity crystal filter. With the crystal filter in the sharpest position, tune in the signal component being inspected and use the phasing control to notch out the desired side-band signal. The b.f.o. can be set to a tone convenient for checking purposes, as described by the author. — *Ed.*

This will become an "audio phasing" control. It will also be desirable to go over to the use of the s.s.b. receiver exclusively for adjusting sideband suppression, inasmuch as the scope has its limitations beyond 30 db., as discussed previously

Start with the new potentiometer at about mid-position. Go back and try adjustments on both side bands as described earlier, using different arbitrary settings of the new "audio phasing" control. Eventually a setting should be found which gives good suppression on either side band and requires almost no readjustment of "r.f. phasing" as between one side band and the other. The results should be considerably better, such that the unwanted signals can hardly be heard on the s.s.b. receiver when the wanted signals are quite loud. Meanwhile, on the scope there should be only a trace of ripple when transmitting either side band.

Coming back to the type of exciter that already has a potentiometer for "audio phasing," the technique is, as you might suspect, much like that described in the preceding paragraph. The only difference is that, at least in most of the circuits observed by the writer, the setting of this potentiometer will be very critical. Initially, some rather widely-separated settings may be required to come even close to normal behavior, but once the exciter begins to act normally, as described above, only the smallest shifts in shaft positions should be made between one trial and the next. The final setting may involve as little as a degree or so of shaft rotation.

To summarize, it may be well to consider some objectives and possible practical results. Most commercially-available audio phase-shift networks are rated at about 40-db. suppression over a specified audio band. This ideal condition will be affected by such practical considerations as:

At the specified test frequency, the performance on *both* side bands will have to be much better — in the order of 45–50 db.

The input impedance of the audio amplifier following the phase-shift network should theoretically be infinite; usually there is a certain amount of input capacitance.

There can be no distortion in the audio transformers and tubes following the audio phase-shift network.

There can be no difference in audio phase shift through the amplifiers following this network.

There should be no shift in stray capacitance in the r.f. circuit when shifting from one side band to the other; usually the wiring of the side-band switch introduces some of this.

All components must be stable from the standpoints of age, temperature and humidity.

This imposing list of requirements is not intended to be discouraging but rather to point up the challenge involved, both in design and adjustment. As a practical matter, it should be no trick to obtain 30-db. side-band suppression with any good design, and with care and patience it is not at all impossible to get 35-db. suppression. The former appears to be quite acceptable judging from the average performance of signals heard on the air, while the latter comes close to being in a league with the new commercial filter jobs.

Trouble Shooting

The foregoing procedures will work fine provided everything is functioning properly and is wired correctly. Sometimes, however, things just don't seem to come around the way they should, particularly on a brand-new exciter. The problem then is to determine whether the trouble lies in the audio circuits, in the r.f. circuits, or in the balanced modulators themselves. The following paragraphs offer a few suggestions for isolating the trouble, using simple tests.

The audio system is easiest to check. Apply a steady audio tone to the input of the exciter by means of an audio oscillator. Using a high impedance a.c. voltmeter or v.t.v.m. (the usual multitester set on its output scale will usually do), measure the two a.c. voltages at the plates of the audio output tubes, points X and Y in Fig. 1. These voltages should be about the same, or it should be possible to make them equal by adjusting the "audio balance" control.

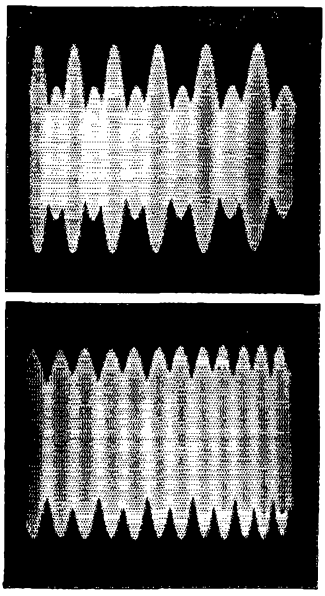
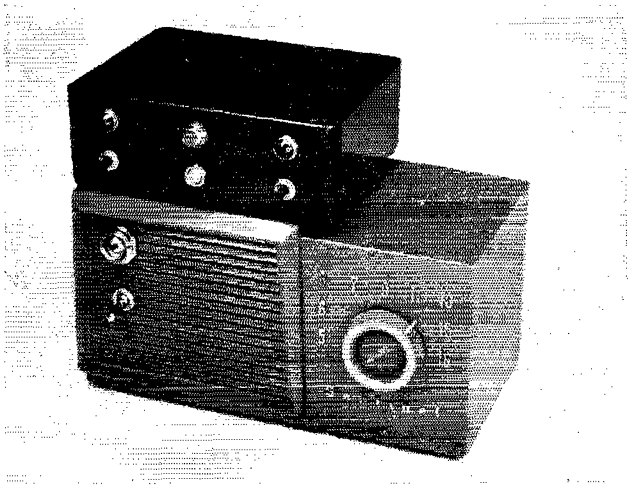


Fig. 6 — **R.f. phasing can be checked by observing the r.f. output envelope under phase-modulation conditions. Correct adjustment is shown at B, where the ripple peaks are all evenly aligned.**

Another check point in the audio system is at the input to the phase-shift network, points A and B in Fig. 1. For most modern networks, the two a.c. voltages measured to ground should have the precise ratio of 2 to 7.[3] In the case of either

(Continued on page 130)

[3] Some earlier network designs, notably that described by W2UNJ, require equal voltages here rather than unequal voltages as described.



The Conelrad monitor is housed in the bakelite instrument case shown resting on top of the control receiver. The "safe" and "warning" lights are in the top row, to the left and the right of the momentary-contact switch, S_2. S_3, R_2 and S_1 are in line from left to right across the bottom of the control panel.

The switch and the pilot-lamp assembly mounted on the front of the broadcast receiver have nothing to do with the circuit described here, having been installed for demonstration purpose in connection with talks on Conelrad given by the author at radio club meetings. They are components of a simple visual monitor of the type designed by W2EBG and shown in *QST* for June, 1956.

An Audible/Visible Conelrad Alarm

A "Fail-Proof" Device for Use with BC Receiver

BY C. VERNON CHAMBERS,* W1JEQ

• If you haven't yet done anything about Conelrad, you don't have much time left — January 2, 1957, is the date when the regulations become compulsory. The alarm described here is fail-proof, gives both audible and visible alarm indications, and insures automatic compliance with the regulations — yet it isn't complicated or difficult to make.

JANUARY 2, 1957 IS THE DEADLINE — the date on which compliance with Conelrad regulations becomes mandatory instead of voluntary. Are you ready — preferably with an alarm of the automatic type so that continual effort is not necessary for monitoring?

The alarm described here is easy to construct and adjust, compared with most of the gear that hams have become accustomed to building. It depends on a small broadcast receiver for control voltage (the set may still be used for normal broadcast reception), uses a relatively small number of components, and has the following features:

With the receiver tuned to a broadcast carrier and the alarm circuit in operation, a green "safe" light indicates that all is well on the broadcast band. When the broadcast carrier goes off, as it will in a Conelrad Radio Alert, the green light goes out, a red "danger" light comes on, a buzzer sounds — at a level nearly equal to that of a small atomic bomb! — and, perhaps most important of all, the 115-volt a.c. line to the transmitter is opened up. In other words, the device does better than tap you on the shoulder and shout "get off the air" — it *puts* you off! The audible and visible warnings also are given in the event of a component failure in either the control receiver or the alarm. Even the disappearance of the 115-volt supply (should the receiver line cord open up, for instance) will not go unnoticed, since in that case the green "safe" light will go out, indicating that the alarm is inoperative.

The Control Receiver

The alarm requires a minimum of 0.7 volts (negative) from the receiver's a.v.c. circuit for dependable operation. Receivers having one stage of i.f. amplification will develop at least this much a.v.c. voltage when tuned to a signal of reasonable strength. But watch out for the "superhets" that do not have an i.f. stage (they actually do manufacture such receivers!); they are of little value as a source of control voltage for the alarm. You can usually find out if the receiver has an i.f. stage by looking at the tube list pasted on either the chassis or the inside of the cabinet. The receiver shown in the photograph is a Sentinel Type 1U-352.

Circuit Operation

The circuit of the alarm is shown in section B, Fig. 1. Section A is a typical a.v.c.-detector-first audio stage of an a.c.-d.c. receiver, and shows how the alarm circuit is tied into a receiver.

The circuit is in many respects identical to the one used at W7FQG.[1] One difference is in the use of a 12AT7 high-μ twin triode (amplification factor 60) instead of a 6SN7GT, which has

* Technical Assistant, *QST*.

[1] "Conelrad Alarm Circuits," *QST*, June, 1956.

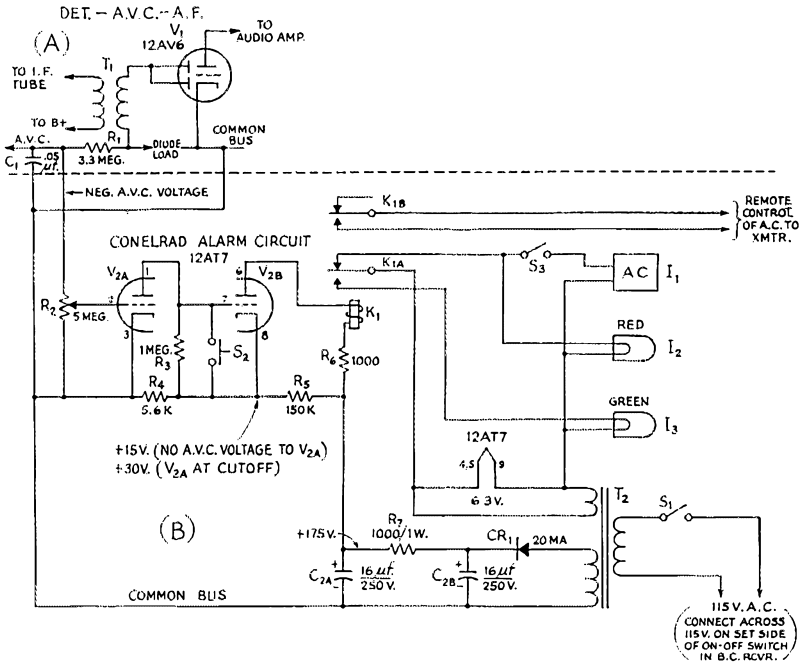


Fig. 1 — Circuit of the Conelrad alarm (B) connected to the a.v.c. circuit (A) of a typical a.c.-d.c. broadcast receiver. Resistors are ½ watt unless otherwise specified. C_1, R_1 and T_1 in section A are components in the broadcast receiver.

I_1 — 6-volt a.c. buzzer (Edwards 725).
I_2, I_3 — 6-volt pilot lamp, No. 47.
K_1 — D.p.d.t. sensitive relay, 5000-ohm coil, 5-amp. contacts (Potter & Brumfield GB11D).
R_2 — 5-megohm potentiometer (see text).
S_1, S_3 — S.p.s.t. rotary canopy switch (ICA 1257).
S_2 — Momentary-contact switch (Switchcraft 101).
T_2 — Replacement-type power transformer, 150 volts, 25 ma.; 6.3 volts, 0.5 amp. (Merit P-3046 or equivalent).

an amplification factor of only 20. The amplification factor is an important consideration in the selection of a tube for the alarm circuit because the a.v.c. voltage required to control the input section, V_{2A}, decreases as the μ is increased. (W7FQG did not need greater sensitivity because he used a control receiver that develops considerably more a.v.c. voltage than is usually available from a simple broadcast set.)

The circuit of Fig. 1 also provides a set of relay contacts, K_{1B}, which may be used for automatically controlling the a.c. line to the transmitter in the event of a Conelrad alert. Also included is a momentary-contact switch that may be used to advantage in weak-signal areas, as explained below. Power for the complete alarm, including 6 volts for the warning lights, buzzer and relay, is furnished by a built-in power supply. Inexpensive replacement-type components are used in the supply.

The alarm circuit functions as follows: With a negative bias (a.v.c.) of 1.5 volts or more applied to the grid of V_{2A}, this triode will draw no plate current. With V_{2A} at plate-current cutoff there is no appreciable drop across R_3 and V_{2B} therefore operates with essentially zero bias. This causes V_{2B} to draw a plate current of approximately 6 ma. — more than enough to actuate the relay, K_1. This in turn causes the green or "safe" lamp to light through contacts K_{1A}, and completes the a.c. control line to the transmitter through contacts K_{1B}.

When the broadcast carrier goes off, the bias is removed from the grid of V_{2A} and the triode will conduct through R_3. This in turn drives the grid of V_{2B} negative and the plate current for this half of the tube will drop below the holding value of the relay. When the relay opens, it lights the red warning lamp, sounds the buzzer, and opens the a.c. control line to the transmitter.

S_2 is used when the available broadcast signals are too weak to develop an a.v.c. bias of 1.5 volts or more. The alarm may be used with a control signal as low as 0.7 volt if S_2 is momentarily closed after the signal is applied to V_{2A}. Closing S_2 drops the bias on V_{2B} to zero, causing the tube to draw full plate current and close the relay. Although the plate current in V_{2B} will drop somewhat when S_2 is released, it will not fall below the holding current for K_1 so long as the a.v.c. voltage at the grid of V_{2A} is at least 0.7 volt.

The switch, S_3, in series with the buzzer is for stopping the hair-raising racket when the alarm "goes off."

R_6 is a shunt for an external milliammeter used during the initial adjustment of the relay-control tube, V_{2B}. If the alarm circuit constants as given are duplicated, including use of the relay specified, no adjustment will be required and R_6 can be omitted.

The potentiometer, R_2, was originally intended as a sensitivity control. Several months of operation have shown that a variable control is of

little value. R_2 might just as well be a ½-watt composition resistor.

Connections to the Broadcast Receiver

Section A, Fig. 1, shows the detector circuit of the Sentinel receiver. This particular set uses a 12AV6 (V_1) but the basic circuit will be the same for other makes of receivers using a duo-diode high-μ triode tube. The diode section supplies the a.v.c. voltage with which the alarm is controlled.

Finding the a.v.c. line in the jumble beneath the chassis of the ordinary a.c.-d.c. receiver is not always easy. Here are a few hints:

Using section A, Fig. 1, as a guide, locate the detector tube socket. Trace out the leads going to the secondary of the last i.f. transformer, T_1. This transformer usually will be adjacent to the detector tube. The lower end of the secondary winding will be connected to several different resistors, one of these being the diode-load filter resistor (approximately 50K in most circuits) and another the a.v.c. filter resistor, R_1. The value of the latter resistor is ordinarily above one megohm. Trace through R_1 in the direction of the arrow, Fig. 1, until you locate the fairly high value (0.05 μf. or so) a.v.c. filter capacitor, C_1. Now you have the a.v.c. line clearly identified and the tap for the alarm circuit may be made.

Notice in Fig. 1 that the cathode of V_1 and the cold side of C_1 are both returned to a *common* bus or −B line, not directly to the chassis. Also observe that the return for the alarm circuit is made to the common bus in the receiver, not to the chassis of the set. *Do not ground this lead to the chassis or connect it to any exposed metal parts.* If there is any difficulty in locating the common bus in the vicinity of the detector stage, check back from the negative side of the power-supply filter capacitors, as this point is always attached to the common bus.

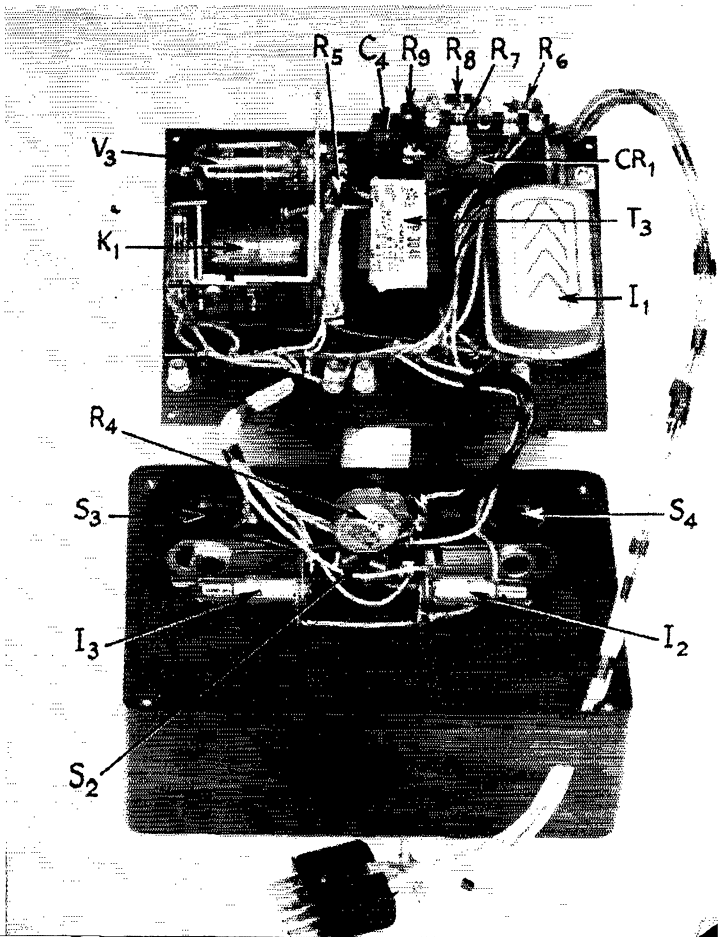
Construction

The alarm is built in an ICA type 8202 instrument case that measures 2⅜ by 5¼ by 6¾ inches. The bakelite case is ideal for the application, but it must be handled with care during construction, to avoid scratching, chipping, or breakage. Be especially careful when drilling large holes such as those used in mounting the pilot-lamp assemblies and switches, because a large drill tends to bind and crack the case.

The relay and the socket for V_2 are mounted on a homemade aluminum bracket 2 inches high, 3 inches wide and having a ⅜-inch lip for mounting. A small rubber grommet for the two leads to the relay coil is mounted at the exact center of the 2 × 3-inch surface.

The dual-section filter capacitor (C_2), the selenium rectifier and a tie-point strip are stack mounted as shown in the interior view of the monitor. To form this assembly, run a 2-inch 6-32 machine screw through the bottom plate,

(*Continued on page 132*)



An interior view of the Conelrad monitor. The pilot-lamp assemblies, the control switches and the sensitivity control are mounted inside the instrument case shown in the foreground. All other components are mounted on the bakelite cover, which is used as a bottom plate in this case.

Operation Earthworm

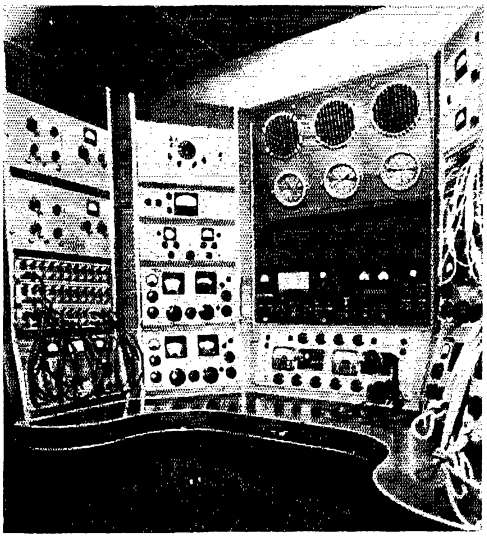
• 1 October 1956, 12 noon EDT, will long be remembered by hundreds of 14 Mc. s. s. b. amateurs and by the personnel of W3WTE. It just happened that W3WTE was, of all places, 60 feet below the Cleveland, Ohio, Railway Terminal station. The events leading to this situation started some years prior to what came to be dubbed "Operation Earthworm." This is a report from W3WTE, the White House Signal Agency.

IN 1942 it became apparent that the President of the United States would require extensive communications from a railroad train. A railroad combination (baggage-coach) car was secured and the first station was installed using 250 watts c.w. From this beginning, during the war the station developed to radio teletype and voice.

As a result of the years of experience a new car was begun in 1950 and completed in 1952. The new communications car, the Albert J. Myer, was conceived, engineered and constructed utilizing conventional communications equipment consistent with the stage of the art at that time. Several test runs were made and the shakedown proved successful on the official circuits.

Mobile operation in the amateur bands being very much in evidence today, it appeared to the amateurs in this organization that during the 1956 campaign of the President, advantage should be taken of the opportunity to advance the amateur cause and bring to the attention of appropriate parties a tremendous existing communications facility, dedicated to public service — a facility composed of a large fraternity of people in all walks of life, in all parts of the world, using all types of equipment, each and all bonded together by the common denominator of communications.

WTE has long been a familiar call on the official airways but W3WTE is not as well known. There are a number of amateurs in close association with the White House. Herbert Hoover, jr., W6ZH, is one, and not the least known is Al Hart, W4FB. To Al fell the job of working the station. The word had been passed by QSOs and a tentative schedule was set.



The operating position on the Albert J. Myer

Circumstances seemed to be against the operation, however, because for their own reasons the railroad people could not move the train into the open in time to meet the schedule. The result was that the first contacts were made from underground. Despite the handicap of beginning, while located under the Union Station in Cleveland, W3WTE, operated on 14 Mc. single side band by Al Hart, W4FB, completed a record-breaking series of contacts with stations in 45 states and 14 foreign countries.

With W2KR, K2AAA, K4IGA, W2KH, and W8DLD helping to line up the anxious callers, W4FB worked intermittently from 12:00 noon to 8:40 P.M., while the train moved around on tracks underground. The President left the train in the early morning to prepare for his appearance upstairs in the square, and with official business over the amateur program began. At 8:40 P.M. the train was hooked up and left the station for the trip east, and the real rush was on.

The outstanding features of the event were, of course, the fact that there are very few railroad mobile stations and only one belonging to the President of the United States, and the fact that the transmitter and receiver were new and untried under such conditions.

The transmitting equipment was an Eldico SSB 100A exciter and a SSB 1000A amplifier. The receiver was a military 390A, which is manufactured by Collins. The antenna was the permanent system which is normally used for official circuits, and so was several megacycles off resonance. The operation of this type antenna is in substance a capacity-feed grid network atop the "Myer"; this network excites a field which flows in lines of force to ground with the return

(Continued on page 134)

The "Little Monster" Automatic Key

• The name of this key is the inventor's idea, not that of an unsympathetic editor. Actually, the key uses one of the simplest electrical circuits imaginable, but the mechanical work involved in duplicating the key is such that we thought you would be more interested in reading about the key than in building a duplicate.

AUTOMATIC KEYS are fascinating devices to many code men, and they have ranged all the way from the simple "Corkey" of W3FQB to the near-miraculous "Ultimatic" of W6SRY. Alex Tremblay, W1GQJ of St. Johnsbury, Vt., got interested in automatic keys some time ago and has come up with the interesting variation shown on this page. It is somewhat related to "Corkey" mentioned above, but only one s.p.d.t. relay is used. However, before you rush out to buy a relay and build this latest key, you should know about some of the work involved in it.

From the circuit shown in Fig. 1, it can be seen that the basic circuit is quite simple. The relay has two windings, L_1 and L_2, shunted by large capacitors, C_1 and C_2, respectively. Depending upon the position of the key lever, either L_1 or L_2 is energized and its respective capacitor is charged to the battery voltage. The armature pulls in, disconnecting the battery, and the relay holds in until the capacitor discharges to the drop-out voltage of the relay. If the key is still closed, the cycle repeats, for as long as the key is closed. In the several units W1GQJ has built, L_1 and L_2 have the same resistance (the windings are as near identical as could be made at home), and the variation between dot timing and dash timing is obtained by the choice of capacitor values. Armature travel and tension are varied to control the "heft" and speed respectively of the characters, and considerable reworking of the relay was required to give a smooth speed variation that wouldn't change dot/dash/space proportions appreciably. Incidentally, the windings on the relay, L_1 and L_2, consists of 5000 turns each of No. 40 enameled; total winding time, 1 hour and 40 minutes. For those who haven't worked much with wire of this size, W1GQJ points out that a jeweler's glass is a "must" when scraping the enamel prior to soldering the ends of the coils.

In another version of the key (not shown), a reversing switch to the two key-lever contacts is included so that the key can be used for right- or left-hand sending. The unit shown here does not include this feature. For a keying lever, W1GQJ built his own, but he has used an ordinary Vibroplex. This was done by removing the connecting strap between the dot and dash contact posts, inserting a small block of wood in the U spring on the dot side, and adjusting the stop screws until a s.p.d.t. switch with the right "bug" feel was obtained. — *B. G.*

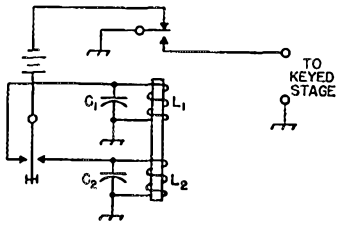
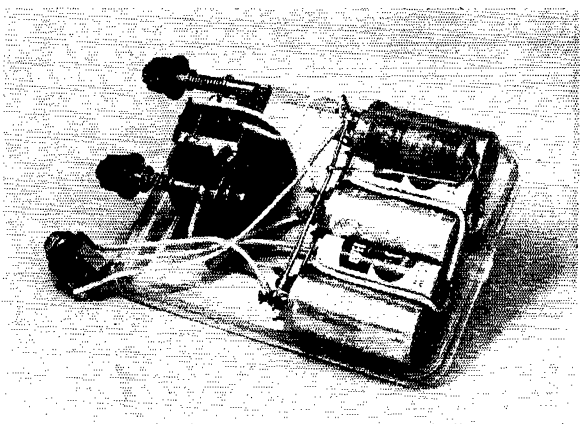


Fig. 1 — The circuit of the "Little Monster" automatic key. A double-winding relay coil is used, and the capacitors are large electrolytics of different values. Timing depends upon the ratio of the capacitors and the armature travel and tension. With a 6-volt battery (4 penlite cells), the operating drain is 5 ma.



One version of the automatic key built by W1GQJ. The relay has been reworked by rewinding the coil and adding the "front panel" contact spacing and tension adjustments. The tension adjustment consists of a strap of light spring material soldered to the armature and extending out beyond the armature to the upper adjustment knob.

A 4X250B Linear

High-Power Amplifier for C.W., A.M. or S.S.B.

BY IRWIN R. WOLFE,* W6HHN AND HUGO ROMANDER,** W6CH

• This 1-kw. linear amplifier is completely bandswitched from 80 through 10 meters with a single control. The parallel 4X250B's permit construction in a minimum of space. The diagrams of complete power, control and protective circuits are included.

HISTORY PERSISTS in repeating itself. Hertz discovered electromagnetic waves using u.h.f. equipment, but it was many years before we got around to using those frequencies. The spark transmitter of the early twenties was an excellent "pulser," but it wasn't until the advent of radar around 1940 that professional attention was again given to the problem of "shock" exciting a resonant transmitter circuit. And now we find the linear amplifier of pre-Class B audio-modulator days again becoming popular with the A3 set, thanks to single side band.

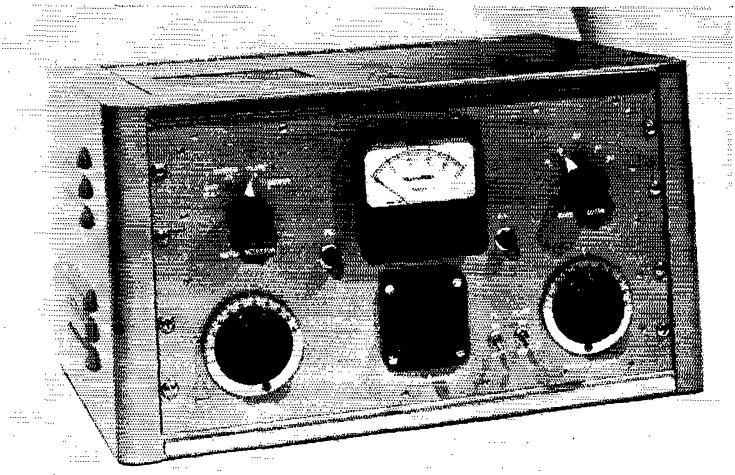
This is not to imply that the linear amplifier should be the exclusive tool of the single-sideband er. The old low-level a.m. jobs that used a good linear final always seemed to pack an extra wallop, and one can remember the satisfaction in noting that a 70-per-cent-modulated low-power stage would come out modulated 100 per cent(or more!) by simply increasing the bias on the linear! But the linear is a natural for s.s.b. for the excellent reason that with modern tubes flea power can become horsepower in a single stage. All of this and good efficiency, too!

* 3467 Rambow Drive, Palo Alto, Calif.
** 158 South Palomar Drive, Redwood City, Calif.

The Tube

Inspiration for the subject amplifier came from the newly developed 4X250B tetrode. A glance at some of its characteristics shows why.

Transconductance:	12,000 micromhos, to assure low drive requirements.
Size:	So small it will almost fit inside a tennis ball, permitting compact circuitry with attendant stable operation.
Plate dissipation:	A generous 250 watts with thermal inertia or "heat-sink" capability to take momentary overloads incurred in speech transmission.
Special socket:	Built-in screen by-pass capacitance provides effective grounding of the screen from the lowest amateur frequency clear into the u.h.f. region.



The amplifier is built with a 10½ × 19 × ⅛-inch panel, and the unit has a depth of 12½ inches. The switch controls in the upper corners are (left) for switching the meter to read grid, screen or plate current, or r.f. output, and (right) for bandchanging the output tank. The control for the grid tuning capacitor is at the lower left and the one for the output loading capacitor is at the lower right. In between is the counter-type dial (from a BC-375 antenna-tuning unit) for the vacuum plate tank capacitor. The left toggle switch, S_4, turns on the filaments, starts the blower and lights the green lamp I_1. The other toggle, S_5, operates a relay in the power-supply section that turns the high-voltage and screen supplies on. S_5 simultaneously lights the red warning lamp I_2.

Circuit and Construction

The amplifier described here was built by W6HHN to cover all bands from 3.5 to 29.7 Mc. with bandswitching. Two 4X250B tubes are used to provide ample power capability up to 1000 watts input, and they are connected in parallel for simplification of circuit and components. (See Fig. 1.) Thus both grid and plate circuits use single-section tuning capacitors and what little neutralization is required is provided by fixed capacitor, C_3, from the rotor of the grid-tuning capacitor, C_2, to ground, the voltage across C_3 being fed to the plates through C_4. The latter is simply a ½-inch-wide strip of aluminum, adjustable in position, and bent as shown in the end-view photograph (next page) to provide a very small amount of capacitance to the plate of the nearest 4X250B tube.

The grid circuit is below deck in a totally-enclosed compartment into which the blower injects air which can only escape past the tube sockets (Eimac air-system) and plate-cooling fins. The grid tank-circuit inductors are assembled along the periphery of a two-gang ceramic-wafer rotary switch, and all are cut from lengths of B & W Miniductor. A few turns of plastic-insulated wire, wound around the low-voltage end of each coil, suffice for inductive coupling to the r.f. input through coaxial connector.

A special three-deck rotary switch was used for the pi-network plate circuit. Two decks are used to change coils and one to vary the amount of fixed capacitance across the variable output-coupling capacitor. Two of the band-switch sections, S_{1C} and S_{1D}, select the proper inductance for each band. The 80-meter coil, L_{13}, is tapped for 40 meters; the 20-meter coil, L_{14}, is tapped for 15 meters. A separate coil, L_{15}, is used for 10 meters. This method reduces "end effects."

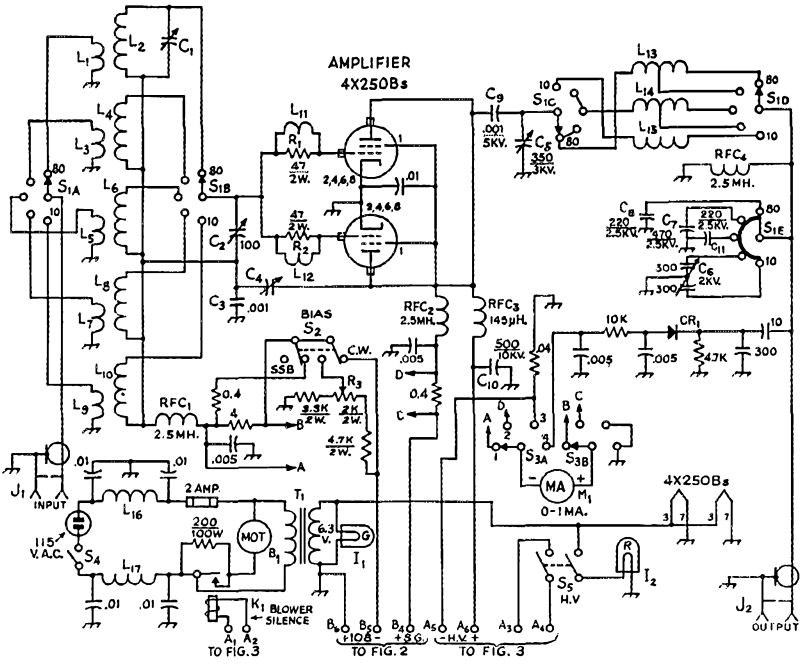


Fig. 1 — Circuit of the 4X250B amplifier. S_2 is used to change bias to values appropriate for either s.s.b. or c.w. operation. S_5 is a remote control that operates the power relay K_1 in Fig. 3. The coil of K_1 in this diagram is connected across the contacts of K_1 in Fig. 3. During stand-by periods when the high voltage is off, a 200-ohm resistor in series with the blower motor decreases its speed to reduce noise from the blower. The relay shorts out this resistor when plate power is applied.

All capacitances less than 0.001 μf. are in μμf. Unless otherwise specified below, all capacitors may be 600-volt, mica or ceramic. All resistors are ½ watt, unless otherwise specified. *RFC*3 is a National R-175A.

C_1 — Midget air trimmer.
C_2 — Midget air variable.
C_3 — Mica.
C_4 — Neutralizing capacitor (see text).
C_5 — 3000-volt variable (Jennings UCS-10-375 vacuum or Johnson 350E30).
C_6 — Dual variable (Johnson 300ED20 or equivalent).
C_7, C_8, C_{11} — Mica.
C_9 — Ceramic (Centralab 858S-1000).
C_{10} — Ceramic (Centralab TV3-501).
CR_1 — Germanium diode.
I_1, I_2 — 6.3-volt panel lamp.
J_1, J_2 — Coax panel jack (SO-239).
K_1 — 115 v. a.c. single-pole relay.
M_1 — 46 ohms resistance (Simpson Model 29).
B_1 — Blower (Dayton Electric 1C39).
R_3 — Linear bias adjustment.
$S_{1A,B}$ — Ceramic rotary, 2 wafers, 5 positions required, 30-degree indexing (Centralab 2511 or similar).
$S_{1C,D,E}$ — Ceramic rotary, 3 wafers, 5 positions required, 30-degree indexing (see text).
S_2 — D.p.d.t. toggle.
S_3 — Ceramic or bakelite rotary, 1 wafer, 2 poles, 4 positions required (Centralab 2505 or 1405).
S_4 — S.p.s.t. toggle.
S_5 — D.p.d.t. toggle.
T_1 — 6.3-volt, 6-amp. filament transformer.

tank circuit entirely, and an r.f. choke, RFC_4, is connected from the low-impedance end of the network to ground as an additional safety precaution. Note the mechanical linkage, between the plate rotary switch and the grid rotary switch, which eliminates a panel control and helps give the unit that "professional" appearance.

A single large (4-inch) meter, in conjunction with a selector switch, S_3, Fig. 1, was chosen to monitor the grid, screen, plate and output currents. Shunts are provided to give the 1-ma. meter appropriate full-scale readings. These full-scale readings are 10 ma. when S_3 is in the first position reading grid current, 100 ma. in the second position when reading screen current, 1000 ma. in the third position when reading plate current, and 1 ma. in the fourth position when checking r.f. output. When the bias switch S_2 is in the c.w. position, an added shunt changes the grid-current range to 100 ma.

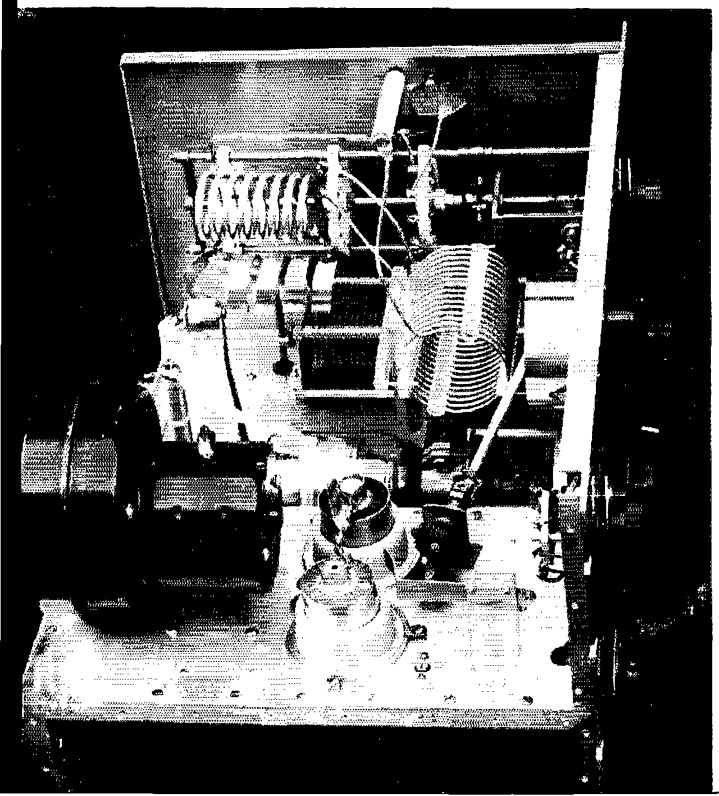
The vacuum variable plate-tuning capacitor is a "honey" for the job but, of course, a well-spaced air-dielectric variable could be used. It's to the credit of the linear amplifier that peak plate voltages are not as severe, generally, as with like-powered amplitude-modulated stages. Nor are the harmonics as prominent, one might add, for the attention of those who must worry about TVI. The output or coupling capacitance is designed for a 50-ohm coaxial load.

When this rig was first fired up everything went well until we tried ten meters. We overestimated the amount of neutralizing capacitance needed at C_4, and replaced the disk-type neutralizer shown in the rear view with the gadget shown in the end view, and increased C_3 to 1000 $\mu\mu$f. Since we had a vacuum-tube voltmeter, adjustment of neutralization was simply a matter of opening the plate d.c. circuit (not just turning the plate voltage off) and connecting the voltmeter to the high side of the pi network. With full excitation (but no grid current), and with the plate circuit in resonance, C_4 was adjusted for a minimum indication on the voltmeter. Neutralization may also be accomplished by adjusting neutralizing capacitor C_4 until the grid and screen currents peak at the same point on the plate tank capacitor. Once adjusted, preferably on 21 or 29 Mc., no readjustment should be needed on any of the other bands.

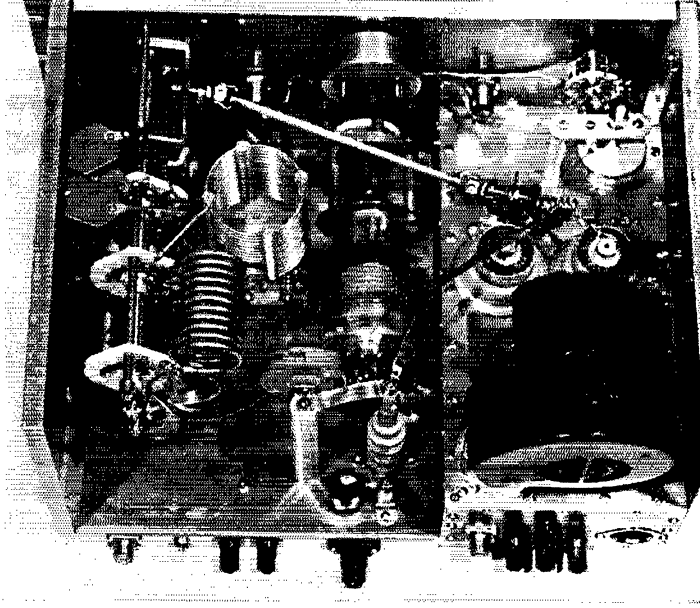
On ten meters we were puzzled to find that the plate circuit couldn't be properly resonated. Then it was discovered that very high r.f. voltages existed at one end of the inactive 80-meter coil! This proved to be due to inductive coupling to the 10-meter coil and a small amount of capacitance across the big coil cleared up the 10-meter situation, but got us into hot water on 15 meters. More fixed capacitance got rid of resonance in that band, but now operation in the 20-meter band really started some fireworks! So L_{13} was moved to its present rather odd position and we were relieved to find the induced voltage was very moderate and the small fixed shunting capacitance could be eliminated.

The germanium-diode detector coupled to the output of the pi network seems to be a pretty good substitute for an antenna ammeter in determining the maximum power-output point when adjusting the loading on the amplifier. The d.c. voltage developed by the diode may simultaneously be used to power a transistorized c.w. monitor, as has been described in *QST*.[1]

[1] Klein & Slusher, "A Transistor Self-Powered C.W. Monitor," *QST*, January, 1954.
Klein & Slusher, "The Paratone — An R.F.-Powered Monitor for Break-In," *QST*, August, 1954.



The neutralizing capacitor is shown in the foreground mounted on a piece of polystyrene which is slotted to receive the ½-inch aluminum strip. The strip is locked with two screws. The 10- and 15/20-meter coils are soldered directly on the bandswitch. The 40/80-meter coil is mounted on a plastic panel. The fixed coupling capacitors are also mounted on the switch. Note the meter shield and grid-turret mechanical linkage. The r.f. wiring is done with ½-inch tinned copper strip for minimum wiring resistance.



Rear view of the high-power linear amplifier. A few of the details (neutralizing capacitor, plate-coupling capacitor, plate parasitic suppressor, and tank-coil arrangement) were changed after this photograph was made.

Adjustment

Proper adjustment of a linear amplifier is not as simple as with a Class C stage, and a pi-network output circuit perhaps adds some additional complexity. Much has been written on these subjects and we only wish to add a note of caution: it is easy to overload the 4X250B and get excessive plate dissipation, and it is even easier to *underload* it and get excessive screen-grid dissipation! The bias should be adjusted to give a plate current of 200 ma. with a plate voltage of 2000 and a screen voltage of 350. When making initial circuit adjustments, it is recommended that the output (loading) capacitor be set at its maximum to avoid starting with an overloaded plate circuit.

Resonance in the plate circuit may be determined by a dip in plate current, a peak in screen current, or a maximum reading of the r.f. output indicator. One should start out with a small amount of excitation and tune the input capacitor until there is an indication of r.f. output. Then the excitation may be increased until the screen current is about 50 ma. From this point on, plate-

Coil	Approx. *Lμh.*	*Turns*	*Diam. In.*	*Length In.*	*Wire Size*	*B&W No.*	*Airdux No.*
L_1	...	3	See Note 1	...	22	...	...
L_2	7.5	45	½	1⅜	24	3004	432
L_3	...	3	See Note 1	...	22	...	...
L_4	3.2	24	½	¾	24	3004	432
L_5	...	2	See Note 1	...	22	...	...
L_6	0.9	12	½	¾	20	3003	416
L_7	...	2	See Note 1	...	22	...	...
L_8	0.5	7	½	½	20	3003	416
L_9	...	2	See Note 1	...	22	...	...
L_{10}	0.25	5	½	¾	18	3002	408
L_{11}, L_{12}	...	3	⅜	Wound on R_1 and R_2			...
L_{13}	8	16 [2]	2½	4	12	...	2004
L_{14}	1.2	8 [3]	1⅜	2¼	5/16" copper tubing		
L_{15}	0.2	4	1⅜	3	½" copper strap		
L_{16}, L_{17}	...	20	⅜	No. 22 hook-up wire Close-wound			

[1] Wound over low-potential end of corresponding grid coil.
[2] Tapped at 8 turns from S_{1G} end.
[3] Tapped at 5 turns from S_{1G} end.

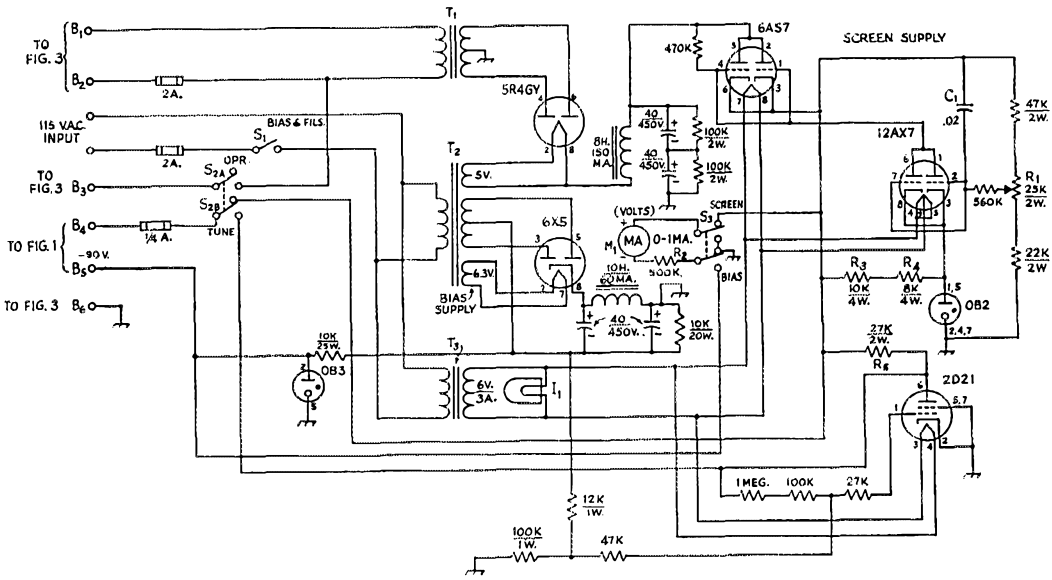


Fig. 2 — Circuit of the bias and screen supply for the 4X250B linear amplifier. The screen supply is regulated and its output voltage is adjustable (R_1). The bias-supply output voltage is regulated by the 0B2. The 2D21 is a thyratron that will conduct sufficiently to reduce screen voltage to a low level in case of bias failure. S_1 turns on the bias supply and the filaments in this unit. The screen supply is turned on by K_1 in the high-voltage unit of Fig. 3. K_1, in turn, is actuated by S_5 in the amplifier diagram of Fig. 1. In the TUNE position, S_2 reduces screen voltage (through R_5) to about 100 and, through Terminal B_3, actuates K_3 in Fig. 3 to reduce plate voltage. M_1 and R_2 comprise a voltmeter for checking screen and biasing voltages.

All capacitances are in μf. All capacitors except C_1 are electrolytic. C_1 may be ceramic, mica or paper. All resistors are ½ watt unless otherwise specified.

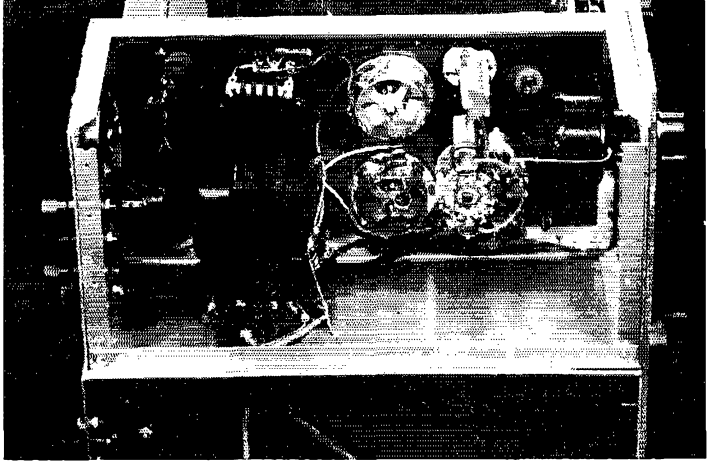
C_1 — See mention above.
I_1 — 6.3-volt dial lamp.
M_1 — 0-1 d.c. milliammeter.
R_1 — Clarostat 58-25K or equivalent.
R_2 — 1 per cent tolerance, 1 watt.
R_3 — Two 4.7K 2-watt resistors in series.
R_4 — Two 3.9K 2-watt resistors in series.
R_5 — See mention above.
S_1, S_2 — Toggle.
S_3 — D.p.d.t. rotary.
T_1 — 660 volts r.m.s. each side of center, 75 ma. (Merit P-3157).
T_2 — 520 volts r.m.s., c.t., 60 ma., 5 volts, 2 amp.; 6.3 volts, 3 amp. (Stancor PC-8404).
T_3 — 6.3 volts, 3 amp. (Stancor P-6466).

circuit resonance should be judged by a peak in screen current. Check the plate current and, assuming it is below the 500-ma. target value, decrease the output capacitance in small increments, always retuning the input capacitor for maximum screen current.

One should be thoroughly familiar with the manufacturer's recommended values of plate and screen voltages and currents so that when he starts to decrease the output capacitance he will not exceed these values. It will be noted that as the pi-network-circuit loading is thus increased the screen current will decrease. This calls for more excitation, followed by more loading, until a plate current of 500 ma. (for the two tubes) is obtained simultaneously with about 50 ma. screen current and with the grid drive usually at a level just enough to show a very small amount of grid current.

The reader may question the practical validity of assuming that the target values of screen-grid and plate currents will be achieved, when progressively increasing the loading, simultaneously with a grid drive having a peak value only slightly greater than the bias voltage. If the tubes have the "bogey" values for the various characteristics as assumed by the manufacturer in recommending operating currents and voltages, this apparently fortuitous circumstance will occur. However, different tubes from a production line will differ in this respect, and all must pass tests which prove that each tube falls within allowable tolerances. It has been found that if the plate current is low when the screen current and excitation have reached target values, a moderate increase in screen voltage will bring it up. When increasing the screen voltage, the bias must also be increased, of course, to establish the desired value of "resting" plate current. If, on the other hand, target values of screen and plate current are obtained with 350 volts on the screen and *no* grid current, no further adjustments are necessary.

The power supply for the screen of the 4X250B linear must be voltage-stabilized for a wide range of load current. Voltage-regulator tubes in various combinations can be used, but it is desirable to be able to make relatively small adjustments to the screen voltage without impairing its regulation. In this instance, an elec-



Input-circuit box with side and bottom plates removed. The box is 6½ inches wide, 4 inches high, and 12½ inches deep and is made with 18 gauge aluminum plates and ½-inch aluminum angles. Parasitic suppressors are mounted directly on tube grid terminals. The air trimmer, C_1, for the 80-meter coil is above the grid turret. The fixed capacitor, C_3, used in the neutralizing circuit, is to the right of C_1. The grid tuning capacitor, C_2, on the right is insulated from the panel.

tronically-regulated screen supply was used with very satisfactory results. The bias supply is no problem, since little or no grid current is involved; a single 0B2 will provide stabilization.

The screen-grid tube as a linear has an interesting advantage over the triode in that it is less affected by transient voltage changes in the plate power-supply filter. Good regulation and a high C/L ratio in the filter is, of course, always desirable, but the screen-grid linear can tolerate those 20 or 30 per cent transient dips in plate voltage, so common in filtered plate supplies, with

(Continued on page 186)

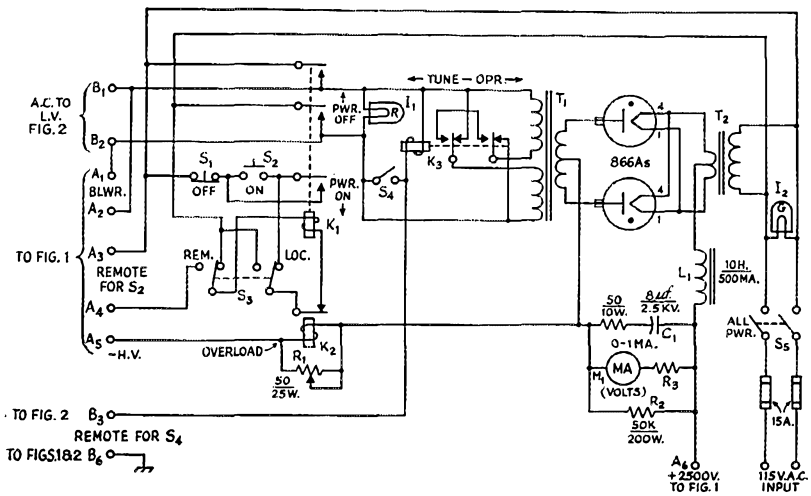


Fig. 3 — Diagram of the high-voltage supply for the 4X250B linear amplifier, including all control circuits. S_5 is the main power switch. With S_3 in the LOCAL position, momentarily closing S_2 will close K_1, applying power to the high-voltage transformer T_1, and also, through Terminals B_1 and B_2, power to the screen transformer T_1 in Fig. 2. Through Terminals A_1 and A_2, K_1 also operates K_1 (Fig. 1) in the amplifier unit. With K_1 open (plate power off) a 200-ohm resistor (Fig. 1) is connected in series with the blower motor, reducing the motor speed and noise from the blower. When K_1 closes (plate power on) the resistor is shorted out and the blower motor resumes full speed.

The bottom contacts on K_1 hold K_1 closed until the coil circuit is broken by momentarily opening S_1. With S_3 in the REMOTE position, K_1 may be operated by S_5 (Fig. 1) on the amplifier panel. K_2 is an overload relay in the negative high-voltage lead. When the plate current exceeds the value to which K_2 has been set by R_1, K_2 opens, opening the coil circuit of K_1 and turning off the high- and low-voltage supplies.

With K_3 in the normal position shown, the two 115-volt primaries of T_1 are in parallel. When S_4 is closed, K_3 connects the primaries in series, cutting the plate voltage in half (to about 1000 volts) for tune-up purposes. Through Terminal B_3, K_3 may also be operated by S_{2A} (Fig. 2) in the screen-bias unit.

M_1 and R_3 comprise a 2500-volt voltmeter.

C_1 — Four G.E. 2-µf. 2500-volt Pyranol capacitors in parallel.
I_1, I_2 — 115-volt panel lamp.
K_1 — 3 p.d.t. relay, 10-amp. contacts, 115-volt a.c. coil.
K_2 — Overload relay, 6-volt 0.25 amp. d.c. coil.
K_3 — D.p.d.t. relay, 10-amp. contacts, 115-volt a.c. coil.
L_1 — Filter choke, 10 h., 500 ma.
M_1 — 0–1-ma. d.c. meter.
R_1 — See mention above.
R_2 — Two 25K 150-watt units in series.
R_3 — Five 500K 1 per cent 1 watt units in series.
S_1 — Push-button switch, normally closed (Switchcraft 1002 or similar).
S_2 — Push-button switch, normally open (Switchcraft 1001 or similar).
S_3, S_4 — 5-amp. toggle.
S_5 — 20-amp. toggle (Cutler-Hammer 8825-K5 or similar).
T_1 — 2000 volts d.c., 500 ma. (Electro Engineering Works, Oakland, Calif., No. 5017).
T_2 — 2.5 volts, 10 amp., 10 kv. insulation.

The "Wonder-Bar" Antenna

Using TV Biconicals on 10 Meters

BY E. T. BISHOP,* K6OFM

• In this article, K6OFM describes the results he has had on 10 meters with a simple loaded dipole only 8 feet long. Measurements indicate that fanning of the conductors brings considerable increase in bandwidth over a similar antenna with conventional elements.

Most of us are confronted with antenna problems whether it be from the standpoint of space, appearance, finances or, last but not least, from the consideration of efficiency and performance. The little rotary shown in the photograph, measuring only eight feet from tip to tip, is my contribution toward at least a partial solution to these obstacles. Since the 10-meter band has improved, the need has been felt for a miniature 10-meter antenna to add to the present array; also, the antenna should be something not too difficult to construct. This antenna meets both of these requirements and, in addition, the cost is minimal and the performance has been beyond all expectations for a simple antenna of this type.

Since I have been using this antenna, I have had many requests for pictures, diagrams, and specifications. Many readers will most likely have better constructional ideas. However, I am certain that, if the original plans are followed, the results will be well worth the little effort it takes to build this antenna.

Construction

If you can obtain a cone-type TV antenna, you will then have all the parts needed except two stand-off insulators, a B & W Miniductor No. 3013 (12 turns No. 16, 1 inch diameter, 3 inches long), and a few nuts and bolts — it's that simple! As can be seen from the photographs, many variations in construction are possible. If a TV antenna of this type is not available, ½-inch o.d. light-weight aluminum tubing can be substituted. This costs about ten cents per foot in surplus houses. Four 48-inch lengths of the tubing are needed for the radials and two 30-inch lengths are needed for the cross bars on the outer ends.

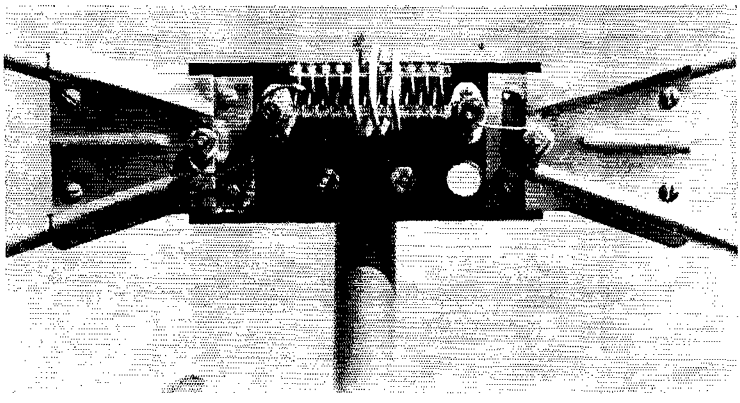
The outer ends of the four 48-inch lengths of tubing, and both ends of the 30-inch lengths, are placed in a vise and pressed flat for a distance of approximately 1 inch. The flattened ends are then drilled to accept whatever size machine screws you may have on hand.

Following this, the center mounting panel is cut to size and drilled. This panel may be constructed of any nonconducting weatherproof material, such as plastic, Formica, etc. The dimensions of the panel are not critical and may vary depending upon the method of construction used for the center section.

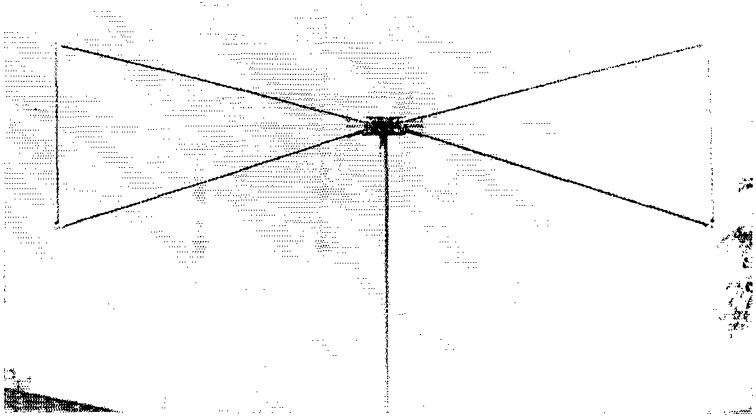
The halves of the cone-type TV antenna used in this construction are held in place by two of the original aluminum clamp mountings. Either set of plates can be used in the assembly of the antenna. If the reflector mounting plate on the TV antenna is used, it will have to be sawed through the center and mounted as illustrated. If the antenna mounting plate is used, the plastic block will have to be removed and the inside borders of the mounting plates will have to be straightened so that the radials will lie in the same plane.

The two 1-inch stand-off insulators are now mounted 3 inches apart on the insulating panel. The Miniductor coil is mounted on the insulators. (You may construct your own coil if you so desire, of course.) One end of the Miniductor is connected to one of the antenna sections with a short length of No. 12 bare wire. The other side is tapped on the opposite end of the Miniductor

* M.D., 4550 Orchid Drive, Los Angeles, Calif.



Miniductor is used for the center loading coil. The 3-turn link was replaced with a 2-turn link that provided a better match for 52-ohm line. The hole is for a coax fitting.



The elements of the "Wonder-Bar" antenna for 10 meters are made up of two 18-inch radials, and a 30-inch tie bar joining the ends. Standard TV biconical elements and hardware may be used.

coil so that there are approximately 10⅜ turns between the connections. Two turns of plastic-covered solid No. 14 electrician's wire were formed and these were loosely coupled around the center of the loading coil as illustrated. This will work satisfactorily in most cases. However, optimum match will be achieved if a standing-wave indicator is used and both the loading coil and the coupling adjusted for minimum s.w.r.

The ends of the coupling loop are connected to 52-ohm coaxial feedline (RG-58/U or RG-8/U) either by using coax fittings or by soldering the leads to the coaxial cable and then taping the joints well. In order to maintain the centered position of the coupling coil, the leads were cemented to the mounting panel with waterproof plastic cement at the point where they pass through the holes in the panel. Now the antenna can be given several light coats of Krylon spray. This completes the construction of the antenna.

It has already been noted that other methods of mounting are possible. The inner ends of the radials could be fastened to the center mounting panel with machine screws or aluminum clips, or they might be fastened to a small piece of hardwood on stand-off insulators. It is important to note that in any method of assembly used, the inner ends of each side must be joined electrically (with a metal strip, or No. 12 wire, etc.) since this is not a folded-dipole type of antenna.

Mounting

The antenna is fastened to a mast with a U-bolt clamp similar to that used on a TV antenna. The feedline can be run down through the inside of the mast if so desired. Since this antenna performs equally well from either side, only 180 degrees of rotation is necessary. Any of the several methods of "Armstrong" rotation may be used, or it may be turned by a TV-type rotator. In many instances fixed mounting may be employed since this is a bidirectional antenna. The writer's antenna was mounted 8 feet above a 20-meter beam using a common mast. No evidence of interaction between the two antennas has been apparent. Perhaps two separate fixed antennas at right angles would be the solution to one's needs. With the aid of a simple change-over switch, all directions would then be covered. Finally, the antenna is small enough so that it could be mounted on a portable stand, clamped to a window ledge, a car bumper, a house trailer, etc. By using wing nuts in assembly of one of the sides, the antenna could be taken apart in a matter of seconds and placed in the luggage compartment of the car for portable use.

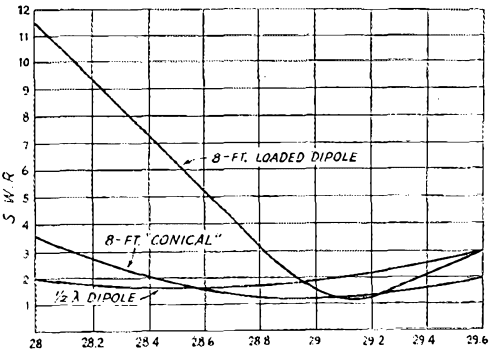


Fig. 1 — Curves comparing s.w.r. on a 52-ohm line feeding the "Wonder-Bar" antenna, an 8-foot dipole using 1-inch aluminum tubing, and a full-size half-wave 10-meter wire dipole.

Performance

The antenna was first tested on a 17-foot mast leaning against the shack.[1] With 130 watts input to the transmitter, East Coast stations and Middle West stations were worked with ease, and all signal reports were most gratifying. A maritime-mobile station was contacted near Hawaii with the antenna mounted in this same manner. The antenna was then mounted above a 20-meter rotating beam and elevated to a height of 38 feet. Naturally, the 10-meter band conditions would be poor on the first afternoon of the "test run" at

(*Continued on page 138*)

[1] S.w.r. measurements made at ARRL Hq. on an antenna of this type are shown in Fig. 1. Also shown for comparison are measurements made with an 8-foot loaded dipole with conventional elements, and a standard half-wave dipole. If shortened elements are to be used, the curves show the considerable improvement in bandwidth obtained with the fanned elements. — *Ed.*

The "Universal" Voice-Control Circuit

Sure-Fire Anti-Trip and VOX Operation

BY L. O. LEIGH,* KT1LS

• There is no need to spell out the advantages of voice-controlled break-in operation to any active phone man. However, there are good and there are mediocre circuits used to accomplish the result, and here KT1LS describes one of the better arrangements.

JUDGING FROM THE COMMENTS heard among the s.s.b. gang these days, the voice control system is not a subject settled and forgotten with the finality of, say, the s.s.b. *vs.* the a.m. debates.

In the quest for a solution at KT1LS, we have been trying to find a simple circuit which would satisfy the following conditions:

1) The circuit should not require critical adjustments of relays or levels for proper operation.

2) Blocking biases to the transmitter and receiver should be electronically developed, have limits from absolute zero to a definite voltage and have reasonable power capabilities.

3) The operation of relays for auxiliary control of antenna change-over relays, etc., should be accomplished without extra tubes, and the relay coil currents should have limits from zero to a fixed value to eliminate the necessity for delicate relay adjustments.

4) The anti-trip part of the circuit for loudspeaker break-in should be positive and not affect or alter the time delay constant on the transmit side.

5) It should do all this without resembling an electronic computer.

* c/o RCA Communications, Inc., British P.O. Box 57, Tangier, Morocco.

Circuit

The circuit finally evolved is shown in Fig. 1. In the static state, with no voice input, there is practically zero voltage between the grid and cathode of tube V_{3A} and this half of the 12AT7 draws a fairly heavy plate current of about 6½ ma. This current develops about 50 volts to ground across its plate resistor, which is used to block off the transmitter and, at the same time, drops about 6½ volts across the 1K common cathode resistor of V_3, so that V_{3B} is completely cut off and develops no voltage across its plate resistor, which supplies the receiver blocking bias.

When speech is applied, the condition changes abruptly. Voice voltages applied to the input of transformer T_1 are amplified by V_{1A} and rectified by diode V_{2A}, causing a voltage to be built up across the timing circuit, R_1C_1, which biases V_{3A} to complete cut-off. With V_{3A} cut off, the voltage

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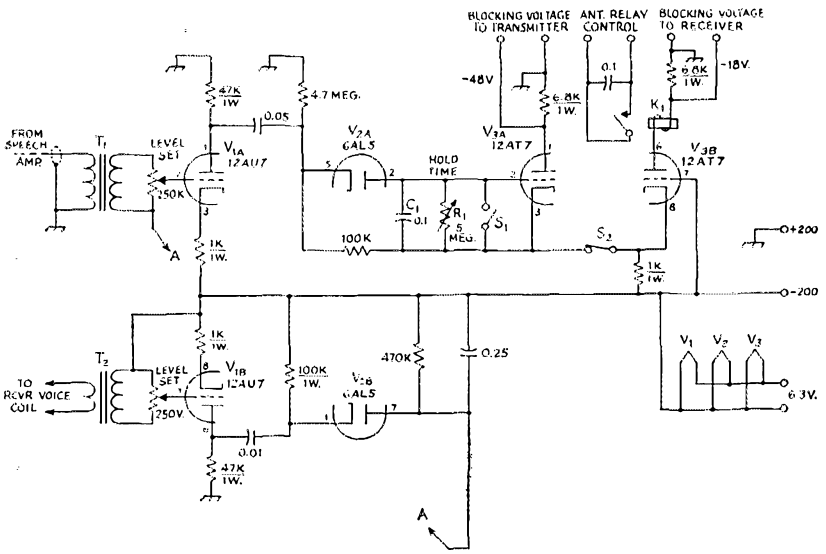


Fig. 1 — Schematic diagram of the "universal" voice-control circuit. All capacitances are in μf. All resistors are ½ watt, unless otherwise specified.

S1, S2 — S.p.s.t. toggle switches. See text for functions.

T1 — Interstage transformer.

T2 — Low-power tube-to-voice-coil transformer.

Values of T1 and T2 are not too important, as pointed out in the text.

The Band Checker

A Simple Low-Cost Absorption-Type Wave Meter

BY LEWIS G. McCOY,* W1ICP

• Although this gadget was developed with the Novice in mind, a wave meter of some sort should be in *every* amateur's shack. As W1ICP points out, it's bad enough to get an FCC notice for operating out-of-band, but there is nothing so disconcerting as to discover that you have been listening for replies on 14 Mc. while the rig was actually putting out on 21 Mc! In other words, friends, $2.00 is a pretty cheap price to insure that you hit the right band.

A COMMON PROBLEM for the Novice is determining whether his transmitter output is in the correct band. All the controls on the rig may handle properly even though the transmitter is putting out a signal on the wrong band. For example, a Novice may think he is tuning his transmitter to 3.7 Mc. when actually the rig is doubling in the amplifier and the output signal is on 7.4 Mc. It also happens frequently that the operator thinks he is tuned up on 21 Mc. but instead is transmitting on 14 Mc. Such mistakes cannot happen with *all* transmitters, but they can with many. Fortunately, it is a condition that is easy to check, by using a wave meter such as the one described here.

The Band Checker is a tunable circuit that can be resonated in any of the amateur bands, 3.5 through 28 Mc. A small dial lamp indicates the presence of r.f. in the tuned circuit. When the wave meter is held close to a circuit that has r.f. present and is tuned to the frequency of the energy, r.f. is coupled to the wave meter and the dial lamp lights. Because the wave meter is calibrated for the various bands, it is then a simple matter to determine the wave length of the r.f. being checked. This, of course, enables the user to determine what band he is on.

Circuit and Constructional Details

The circuit diagram of the Band Checker is shown in Fig. 1. It consists of a dial lamp, I_1, the coil, L_1, and the variable capacitor, C_1. One end of a clip lead is connected to the stator of C_1 and the other end can be connected to a tap point on the coil. When the entire coil is in the circuit, the wave meter can be tuned to the 80-, 40-, and 20-meter bands. With the clip lead attached to the tap point, a large part of the coil is shorted out and the wave meter will cover the 15- and 10-meter bands.

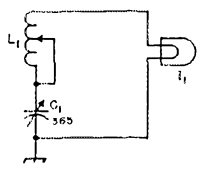


Fig. 1 — Circuit diagram of the Band Checker.
C_1 — 365-$\mu\mu$f. variable capacitor, broadcast replacement type.
I_1 — No. 18 lamp, 2 volts, 60 ma.
L_1 — 24 turns No. 20 tapped at 3rd turn from lamp, 16 turns per inch, 1-inch diam. (B & W 3015 Miniductor).

The parts for the Band Checker are mounted on a 4 × 5½-inch piece of aluminum bent to form a right angle. The base portion of the angle (the part on which the coil and capacitor mount), is 3 inches wide, and the panel is 2½ inches high. A 1¼-inch length of 1-inch diameter wooden dowel is used as a support for the coil. The inside diameter of the coil stock used for L_1 is slightly smaller than the outside diameter of the dowel, so the end of the rod should be sanded down to take the coil end. When purchasing the dowel get a piece at least 7 inches long, since a 5-inch piece is used as a handle for the wave meter. Wood screws are used to secure the handle and the coil mount.

For checking the amateur band your transmitter is tuned to, it's hard to beat the simplicity of a wave meter. The Band Checker is a wave meter that covers the bands 80 through 10 meters.

The dial lamp and assembly are held in place by a soft rubber grommet. If desired, the lamp assembly can be dispensed with and the leads to the lamp soldered directly to the shell and base of the lamp. However, there is always the chance of overcoupling to the transmitter and burning out a lamp, so the addition of the lamp assembly eliminates the possible inconvenience of soldering lamp connections.

(Continued on page 142)

* Technical Assistant, *QST*

Economy Modulator for the Heathkit AT-1

Simple Provision for Voice Operation

BY JOHN GALLAMORE,* W0UJM

• Owners of AT-1 transmitters will find this a quick and easy way of getting on phone after passing the General Class examination.

FOR MANY A HAM who has recently graduated from Novice to General Class, arises the question, "How can I get on phone with a minimum of trouble and expense?" To most hams who want to get started on the phone bands, cost is the biggest obstacle, since a plate modulator for a thirty-watt rig costs almost as much as the original transmitter.

I decided to build a self-contained unit because of its convenience and compactness. I found that there was room behind the front panel and above the 6AG7 oscillator of my Heathkit AT-1 to build the unit described here. Although this unit was designed for the AT-1, it may be used with any small c.w. transmitter by changing the mechanical layout to suit.

The Circuit

The modulator circuit[1] shown in the wiring diagram is capable of modulating about 80 per cent with low distortion. It requires no separate high-voltage supply, since it gets its B plus from the cathode circuit of the r.f. amplifier. A separate 6.3-volt filament transformer for the modulator was included to prevent overloading of the transmitter's filament supply. The modulator output is connected in series with the r.f. amplifier cathode making it a type of cathode modulation. No transformer is required in coupling to the r.f. stage.

The speech amplifier uses a high-μ double-triode to give two stages of resistance-coupled amplification. Sufficient gain is obtained for use with a crystal microphone. Resistors R_3, R_7 and R_{10} with C_1 and C_2 provide filtering of the d.c. from the r.f. amplifier cathode circuit. The audio voltage is developed across L_1 and R_{11}. By means of a s.p.d.t. toggle switch the rig can be changed from phone to c.w.

Construction

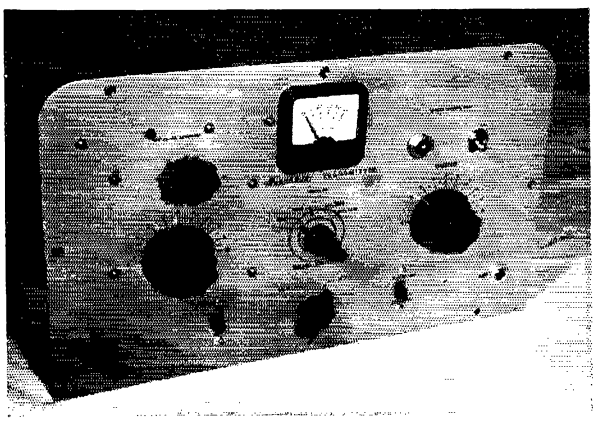
The method of mounting the components behind the front panel, in order to get the modulator into the cabinet, has proved very satisfactory. Dimensions may vary with different components, but the parts used here are standard and the dimensions of others should be close.

The sockets for the 6SL7GT and 6Y6G are mounted on 1-inch threaded brass spacers 1½ inches from the top of the panel. The first spacer is ⅞ inch from the left side and one is as close to the meter as possible. The others are placed according to the spacing of the mounting holes.

The top hole for mounting the filament transformer is drilled 1⅝ inches from the left side and 2½ inches from the top of the panel. The bottom hole is 2½ inches below it. The top of the choke is mounted 4⅞ inches from the left and 3 inches from the top, the bottom being 2½ inches lower. Between the tube sockets, and 2½ inches from the top, is the gain control. The phone-c.w. switch and microphone connector are mounted 2⅛ inches and 3⅞ inches, respectively, from the right edge and 2½ inches from the top.

Wiring

The wiring is straightforward and there is nothing tricky. A three-terminal soldering-lug strip is mounted on the second brass spacer from



Panel view of the AT-1 showing the mounting of the audio gain control above the oscillator tuning control, and the mike jack and phone-c.w. switch above the amplifier tuning control. Mounting screws for the sockets, T_1, and L_1 are also visible.

* Route 1, Fairbury, Nebraska.

[1] Gardner, "The Simplest Modulator," *QST*, Sept., 1953.

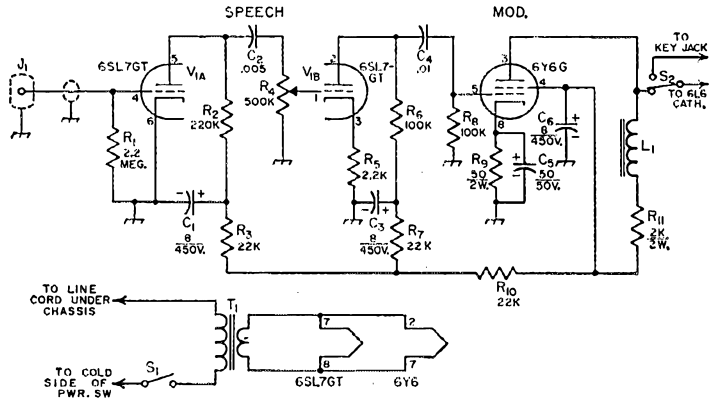


Fig. 1 — Circuit diagram of the simple modulator. All capacitances are in μf. Capacitors marked with polarity are electrolytic. Others may be mica, ceramic or paper, 400 volts. All resistors are ½ watt unless otherwise specified.

J_1 — Microphone connector.
L_1 — Receiver-type filter choke, approx. 8 henrys, 10 milliamperes.
S_1 — Power switch, combined with R_4.
S_2 — S.p.d.t. toggle.
T_1 — 6.3-volt, 1-amp. filament transformer.

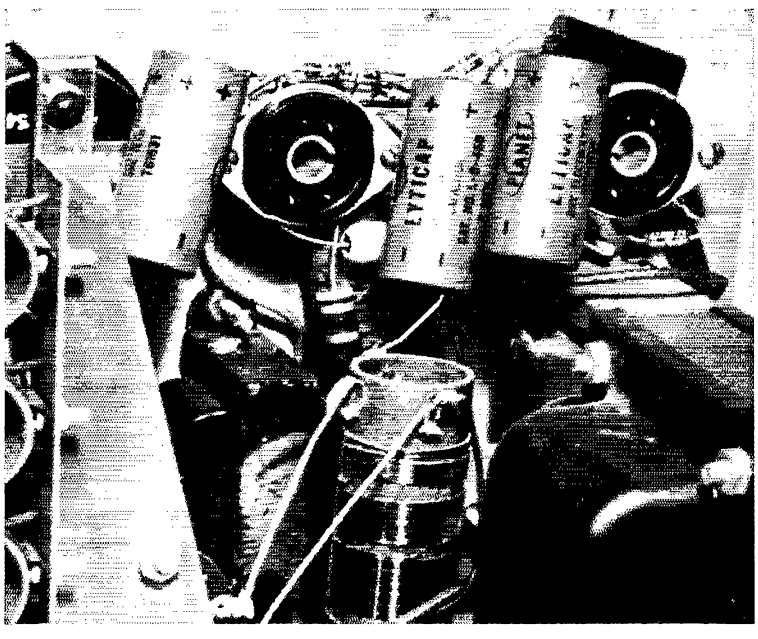
the right as viewed from the rear. The junction of C_1, R_2 and R_3 is at one terminal; of R_3, R_7 and R_{10} on another lug; and of C_3, R_6 and R_7 on the third. Pin 6 of the 6Y6G socket, which has no connection in the tube, is used as a tie point for connecting L_1 and R_{11}.

C_6 is located between the 6Y6G socket and the meter, C_2 and C_4 between the two sockets, and C_5 between the cathode connection of the 6Y6G and the ground lug already on the transmitter chassis. As shown in the circuit diagram, the wire from the arm of the s.p.d.t. toggle switch connects to the cathode of the 6L6 in the transmitter. One of the contacts connects to the modulator output and the other to the key jack where the original wire from the cathode was connected. The cable from the microphone connector runs between the tank coils and front panel, under the modulation choke and filament transformer and up to the 6SL7GT socket.

Adjustment

To use the modulator, throw the phone-c.w. switch to c.w. and tune the transmitter as usual. Then put the switch in the phone position and you are ready to operate. The current drawn with the modulator on should be about half the normal current on c.w. On voice peaks the meter may kick downward slightly.

Running about 15 watts, we have worked up to 300 miles on the 75-meter band during the day, and as far as New England on 20 meters.



Components are mounted in the upper right-hand corner of the panel as viewed from the rear. The 6SL7GT socket is to the right, with T_1 immediately behind the power transformer. L_1 is to the left, below the socket for the 6Y6G. The gain control, R_4, is hidden by the two electrolytic capacitors.

The Balanced Twin-Lamp

An Improvement on a Well-Known S.W.R. Indicator for 300-Ohm Line

BY REGINALD L. WOOD,* K2BUZ, ex-XE1PE

• By connecting a twin-lamp s.w.r. indicator to each side of a 300-ohm line, K2BUZ finds that insertion of the indicator causes a negligible discontinuity in the line impedance and that the line remains balanced. Since the power consumed by the indicator is negligible, it can be left in the line for continuous checking of the s.w.r.

How would you like to keep an eye on the standing waves on your 300-ohm line for less than five bucks?

The original "twin-lamp" s.w.r. indicator [1] has been the inexpensive right hand for thousands of hams. But there has always been one trouble with it — a tendency to unbalance the line when the twin-lamp is inserted. The balanced twin-lamp gets around that trouble. Also, as the *Handbook* states, installation of the original twin-lamp introduces a discontinuity in the line impedance which causes the s.w.r. from the twin-lamp back to the transmitter to differ from the s.w.r. existing between the antenna and the twin-lamp. For this reason, removal of the indicator from the line after a check has been made has been recommended. Tests here with an impedance bridge operating at radio frequencies have failed to show that the balanced twin suffers this ill to any observable extent, and field-strength measurements show no measurable difference with the balanced twin in or out of the transmission line.

The circuit of the balanced twin-lamp is shown in Fig. 1. It will be seen that it actually consists

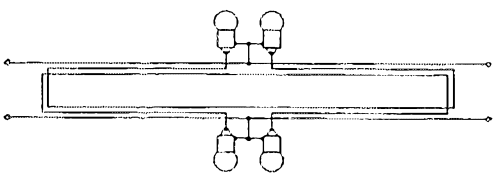


Fig. 1 — The balanced twin-lamp s.w.r. indicator consists of two single twin-lamps, one connected to each side of the 300-ohm line.

of two of the original twin-lamp indicators, one in each side of the line. The unit to be described was designed for Amphenol 14-022 transmitting-type line, and a maximum of about 200 watts. Higher power can be used by shortening the pick-up loops.

* 93 Walsh Lane, Westbury, N. Y.

[1] Wright, "The Twin-Lamp," *QST*, Oct., 1947. *The Radio Amateur's Handbook.*

Construction

While it might be possible to use the simple type of construction suggested in the *Handbook*, taping one twin-lamp on each face of the Twin-Lead, the author built his up in more permanent fashion. A section of 300-ohm line consisting of a pair of No. 12 wires is built into a $3\frac{1}{8} \times 2\frac{1}{2} \times 17$-inch aluminum chassis. The L.M.B. Co., 1011

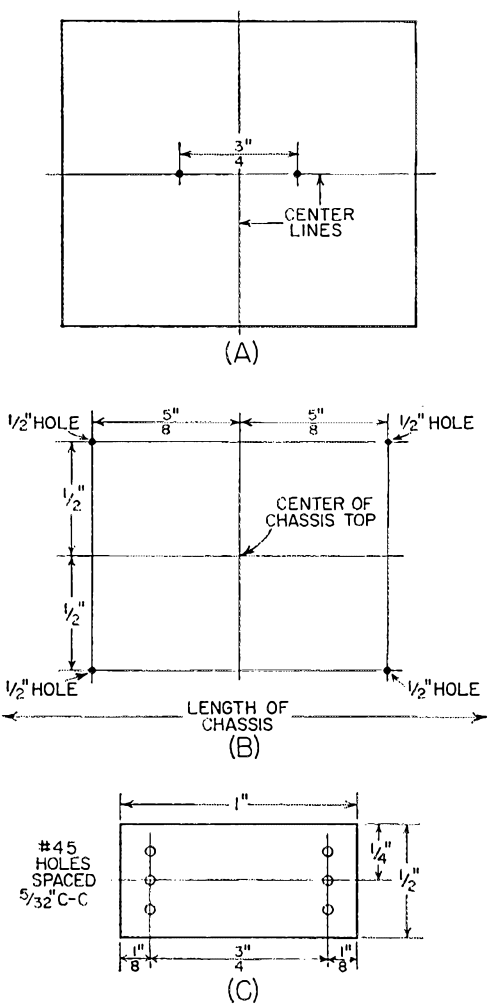


Fig. 2 — Constructional details. A — Hole spacing for the banana jacks in the ends of the chassis. B — Hole spacing for the lamps in the top of the chassis. Arrows at bottom indicate the 17-inch dimension of the chassis. C — Dimensions of the Plexiglas spacers.

Venice Blvd., Los Angeles, Calif., makes a chassis of this size. Although the characteristic impedance of the line will vary with the cross-sectional dimensions of the chassis, the change should be but a few per cent if the more-standard 3 × 4 × 17-inch size of chassis is used.

The line terminates in a pair of banana jacks set in each end of the chassis. Each pair of jacks should be mounted on the horizontal center line, and symmetrical with respect to the vertical center line, as shown in Fig. 2A. The jacks must be insulated from the chassis with insulating washers.

Four ½-inch holes are needed in the top of the chassis for the lamps. These are spaced at the center of the chassis as shown in Fig. 2B. The bulbs are held in sockets of the bracket-mounting type. The brackets are fastened underneath the chassis with machine screws and are bent so that the lamps are centered in the ½-inch holes. The shells of the sockets must not touch the chassis.

Inside the chassis, the two pick-up loops are suspended from the two wires that form the 300-ohm section of line by means of four Plexiglas spacers ⅛ inch thick. The dimensions of these spacers are shown in Fig. 2C. It is best to cut the pieces about 2 inches long until after the holes have been drilled. Then they can be trimmed to the correct size. Drilling is made easier if the pieces are clamped to a block of wood and all drilled at the same time. The holes should be of a size to permit sliding over the wire easily, but rather snugly.

The banana jacks should now be mounted in the ends of the chassis. The jacks should be provided with soldering lugs. After the wire has been stretched straight, cut two pieces that will fit closely between the ends of the chassis. Bend one end of each wire to fit the hole in the lug at the banana jack. Feed these wires through the central holes in the Plexiglas spacers, so that a spacer will be near each end, and two near the center.

The loops are made from the same kind of wire as used in the line section. Cut four pieces 16¼ inches long, and make a right-angle bend 1⅛ inches from *one* end of each wire. Take a pair of these wires and slide them through the bottom holes in the spacers from opposite ends of the assembly, so that the two pieces will form a loop when they are soldered together, as shown in Fig. 3. Similarly thread the remaining pair of wires through the top holes to form the second loop.

The spacers will hold the wires in proper relationship while the soldering is done, but be careful that the heat does not soften the Plexiglas. A small piece of damp cotton or tissue will help protect the spacers. Cut off any excess wire after soldering. Also, cut a gap of about 1/16 inch in the middle of one side of each loop, making the cuts come on opposite sides as indicated in Fig. 1.

Now mount the assembly in the chassis by soldering the ends of the line section to the lugs on the banana jacks. On each side, the shells of the lamp sockets are connected to the transmission line with short lengths of wire, while the center contacts are connected to the loop, as shown in Fig. 1.

When the job is complete, slide a spacer toward each end, and the other two toward the center to keep the wires spaced as evenly as possible throughout their lengths.

The lamps on the input side should be of such a current rating that they will light to full brilliance

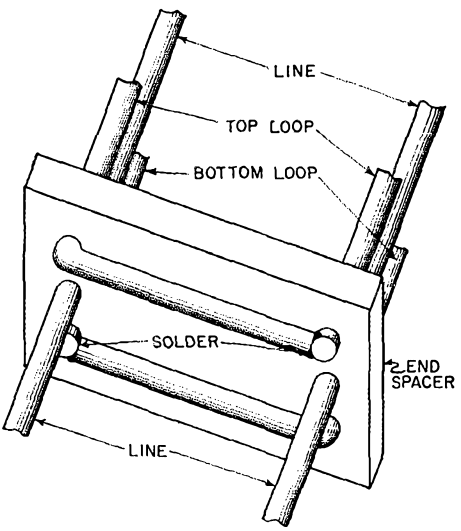


Fig. 3 — Sketch showing the method of joining the bent wires to form loops.

with the transmitter operating at normal input. Then any lighting of the bulbs on the antenna side will indicate reflected power due to a mismatch at the antenna. With a proper match, the lamps *on* the antenna side should *not* light at all.

No. 49 lamps (60 ma.) are sufficiently sensitive to work on the lower frequencies at low power. With about 130 watts input, we use No. 45 lamps (350 ma.) on the input side, and No. 49 lamps (60 ma.) on the antenna side for greater sensitivity. The No. 49s remain dark unless it rains, a lead breaks off the antenna, or something unexpected happens to upset the match. Then they flash a warning immediately. In selecting lamps for your particular installation, choose lamps according to their current ratings. Either 6- or 2.5-volt lamps may be used, provided the current rating is appropriate.

MEMBERSHIP CHANGES OF ADDRESS

Four weeks' notice is required to effect change of address. When notifying, please give old as well as new address. Advise promptly so that you will receive every issue of *QST* without interruption.

• Recent Equipment —

The Morrow MB 560-A Transmitter

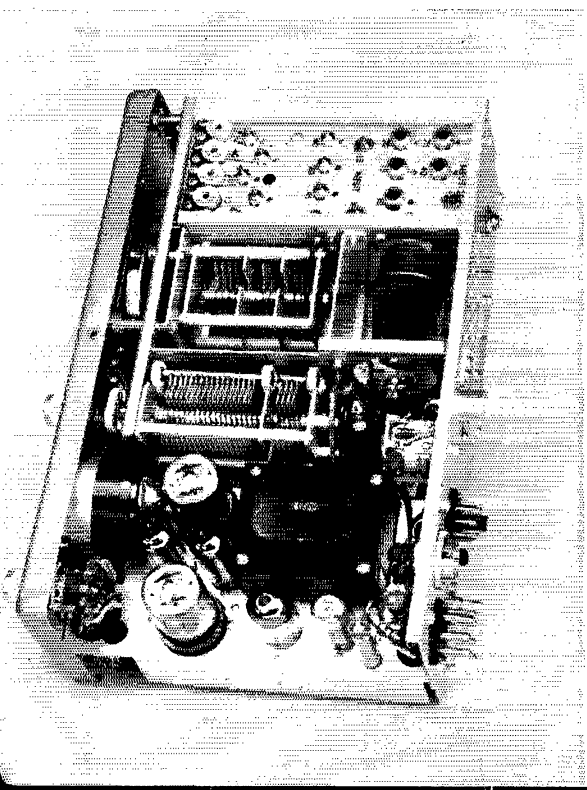
THE MB 560-A TRANSMITTER is a companion unit for the MBR-5 receiver [1] and is built in a matching cabinet of the same dimensions (12 inches wide, 4½ inches high and 6½ inches deep). Obviously it is designed primarily for mobile operation but, like the receiver, it should serve well as a fixed-station transmitter of modest power. The rated power output is 50 watts at 80 meters and over 40 watts at 10 meters, so it could be used to drive most big amplifiers in a home installation. Like the companion receiver, the MB 560-A has some circuit considerations worthy of study by any ham, and the instruction book is full of good practical information with no punches pulled. We'll get around to these things after a brief description of the unit.

A block diagram of the transmitter is shown in Fig. 1. One triode of a 12AU7 is used as the v.f.o. (Clapp circuit) and the other triode is used as the Pierce crystal oscillator circuit. A panel switch selects between v.f.o. and crystal operation; the crystal socket is on the panel. The triode section of the 6AN8 buffer is connected as a cathode follower between grid of the v.f.o. and control grid of the pentode portion of the 6AN8, to isolate the v.f.o. The output of the crystal oscillator is coupled to the grid of the 6AN8 pentode. To add still more isolation between oscillator and power stages, the 6AN8 pentode section is operated Class A, and to build up the signal at this point the plate circuit of the pentode is gang-tuned with the v.f.o. to the v.f.o. frequency. The 5763 is always operated as a frequency doubler, and its plate circuit is also gang-tuned with the v.f.o. and 6AN8 buffer. Since the 5763 stage is the only stage where frequency multiplication occurs, the v.f.o. is always tuned to half the output frequency of the transmitter. The output stage is a *neutralized* 6146 with a pi network output tank. Neutralization is obtained through a small capacitor from the 6146 plate to the bottom of the grid tank circuit, and it is interesting to note that no attempt at compromise neutralizing was made; the adjustable neutralizing capacitors, from the bottom of the grid tank to ground, are switched along with the tuning coils on the various bands. This is a good tip for anyone who has nursed along a frequency-sensitive neutralizing system. The manufacturer states that while it is possible to operate the 6146 without neutralization, the neutralizing circuit was included in the interests of maximum stability. For c.w. operation, the screen of the 5763 is keyed, and constants for a key-click filter (shaping circuit) are included in the instruction book. Fixed bias is used on the modulator, and a combination of fixed and grid-leak bias is used on the 6146.

In the audio section, a pair of 6AU5s operating in Class AB1 furnish the audio power for full modulation of the 6146 screen and plate. The screen supply of the 6AU5s is regulated by two 0B2 regulator tubes. Drive for the modulator stage is furnished by a 12AT7 phase splitter, which in turn is driven by a 6AV6 speech amplifier. Either a crystal or a carbon microphone can be used, with full provision for push-to-talk operation. An antenna relay is included in the transmitter.

Like the companion receiver, the MB 560-A covers 3.5 to 4.0 Mc., 7.0 to 7.3 Mc., 14.0 to 14.35 Mc., 21.0 to 21.45 Mc. and 28.0 to 29.7 Mc. The dial is one of the slide-rule type, with all scales visible at any time, and it requires 10 revolutions of the tuning knob to cover any band.

[1] See May, 1956, *QST*.



The MB 560-A transmitter has an output of 50 watts from a 6146 output stage. The upper capacitor tunes the v.f.o., buffer and driver, and the lower capacitor is the plate tuning of the output stage. The audio section is at the bottom of the photograph.

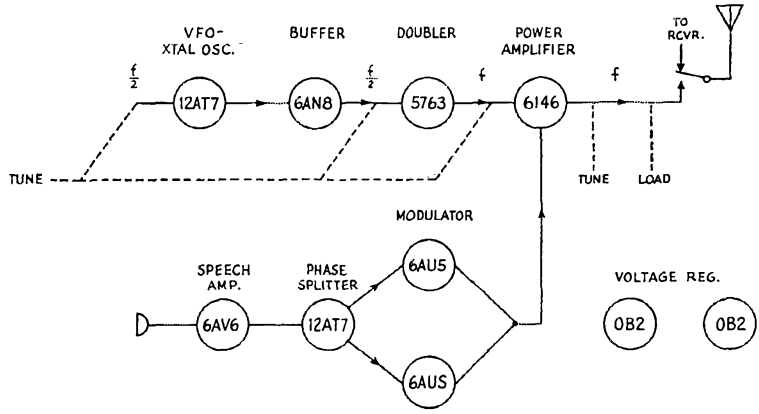


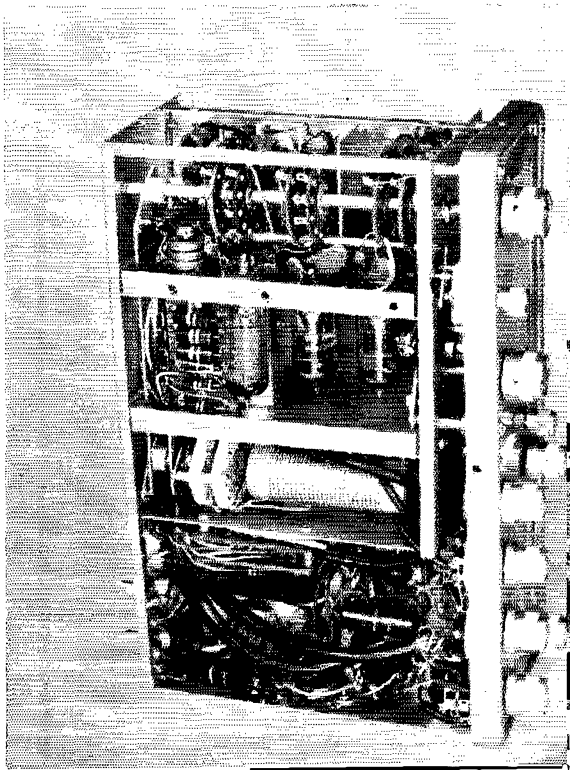
Fig. 1 — Block diagram of the MB 560-A transmitter. The v.f.o. always operates at half the output frequency, and a cathode follower and a Class-A amplifier isolate the v.f.o. from the power stages. The regulator tubes stabilize the v.f.o. plate voltage, the screen voltage of the modulator tubes and, on c.w., the screen of the 6146.

As a c.w. man, the writer couldn't help but notice that the bandswitch is marked 10, 15, 20, 40 and 75 (instead of the more inclusive 80), but he is not one to stand in the inevitable path of progress. A small adjustable capacitor in shunt with the v.f.o. tuning capacitor is brought out to a panel control marked CAL, for bringing the frequency scale into exact calibration at one point. Other panel controls include the obvious PA TUNE, DRIVE (5763 screen voltage), COARSE LOAD and FINE LOAD. Unlike many transmitters using pi output, both of the latter two controls are switches that cut in fixed mica capacitors. A 2-inch meter and a meter switch allow final grid, combined plate and screen, and screen current to be read separately, as well as the modulator plate current. The last panel control is a four-position switch marked OFF, TUNE, OPR and ZB (zero beat). The tune position reduces the 6146 screen voltage and permits tune-up without the possibility of damage to the output tube.

If you have been keeping track of the panel controls, you may have noticed the absence of such old standards as a PHONE-C.W. switch, AUDIO GAIN and a KEY jack. Logically enough for a transmitter of this small size, these infrequently-used controls and adjuncts are on the rear panel, together with the modulator bias control (marked MOD LEVEL), jacks for the antenna and a lead to the receiver, a microphone jack and two power plugs.

In mobile operation, the MB 560-A is intended to be hung underneath the dashboard, and "Jiffy brackets" are available to facilitate this installation with or without the companion receiver. The instruction book gives full information on the possible power supply combinations for 6- or 12-volt d.c. operation and 115-volt a.c. operation, with or without the receiver. Power supplies are available for these various combinations, as well as interconnection cables already made up. For those who wish to brew their own, power supply requirements are itemized — the high voltage recommendation is 400 to 600 volts at 200 ma.

(*Continued on page 144*)



Looking underneath the chassis, one can see the low-level coils and bandswitch (top) and the output stage coil (center). The bandswitch (top knob) is linked to the output-stage bandswitch through a linkage at the rear of the transmitter.

Strays

Most everyone knows that the calls 1AW and W1AW (now assigned to the League Headquarters station) belonged to the late Hiram Percy Maxim, co-founder and president of the League. Few realize that he first obtained the call 1AW after the first World War, having been licensed as 1WH and 1ZM before the war.

A recent letter sent us to the old call books, where we discovered that an earlier holder of the call was a real ham — Earle G. Ham, now W1BF of Cumberland Center, Maine, who held 1AW in 1915 and 1916.

—•••—

W4PVA reports the following statistics on a new rig he built recently:

Final tube — single 6L6
Plate voltage — 800 v.
Screen voltage — 350 v.
Grid voltage — -67½ v.
Plate current — 200 ma.
Tube life — 3 CQs!

—•••—

Former customers of the Electro Importing Co. are asked by Ross Cutting, R. D. 2, Box 274, Orlando, Fla., to get in touch with him concerning the organization of a "Coherer Club."

S.S.B. Achievements

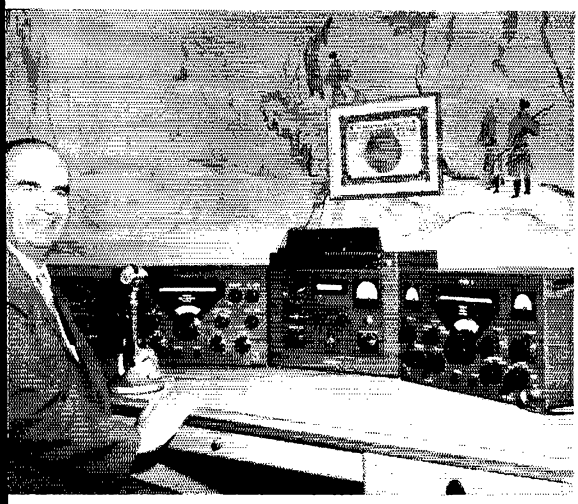
THE NUMBER of s.s.b. stations continues to increase day by day, and so does the list of their accomplishments. Earlier this year W2JXH submitted the first proof of having worked all continents using single side band.

Just in the past couple of months some other outstanding "firsts" have been recorded. George Bailey, W2KH, ARRL President from 1940 to 1952, is the first to have submitted satisfactory evidence of having used single side band to work other amateur stations in each of the 48 states. Old-timers will recall that George, W2KH, then W1KH, and Miles Weeks, W6ZZ, then W1WV, were known as the "radio twins," having been born in Boston within a few days of each other, fraternity brothers in college, and licensed hams at about the same time. Miles, as W1WV, received WAS number one in 1936 — it has taken W2KH some 20 years to catch up with him!

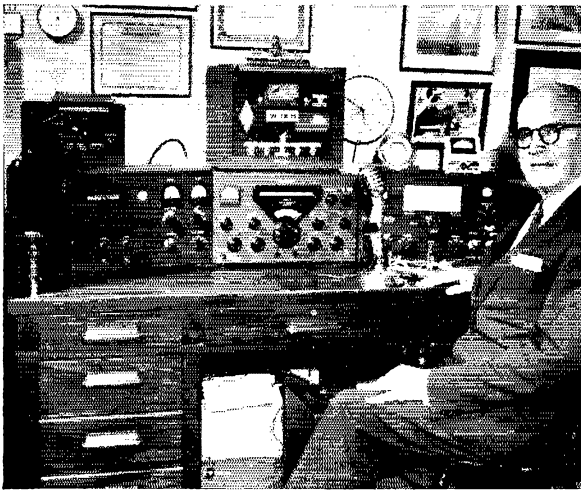
Another man who has made his mark in ham radio throughout the years is Reg Tibbetts, W6ITH. Back before WW II, W6ITH made some notable records in the phone SS competitions — running up some high scores by using all of the commonly-available phone bands. Since the war, Reg has been active on both RTTY and s.s.b., with some flings at DX that have brought gladness to the hearts of many of the gang. His DXpeditions to FS7RT and PJ2MC gave two new countries to thousands of DXers. Now, Reg has combined s.s.b. and DX to be the first to submit proof of having worked 100 different countries using single side band.

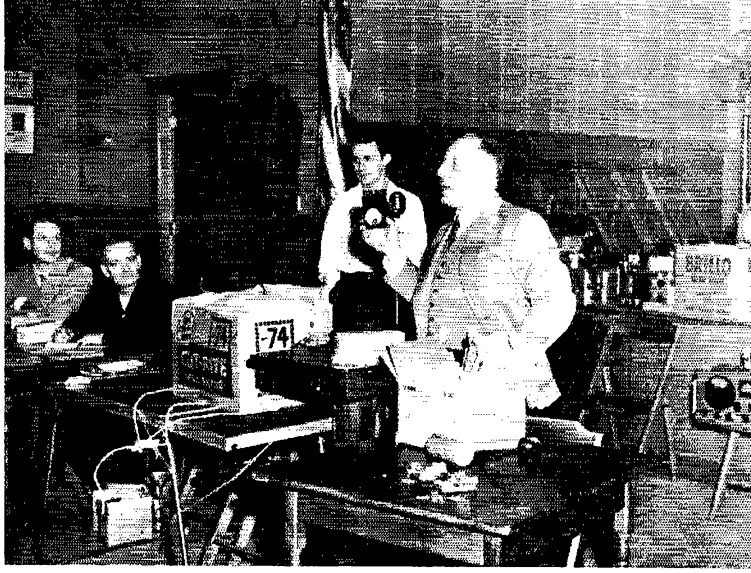
Congratulations to both these men, not only for having worked the stuff but for having been able to produce the necessary cards!

W6ITH



W2KH





One of the more popular auctioneers in the New England area is Louis Rizoli, W1AAT. At the Yankee Radio Club auction in Salem, Mass., Lou's comedy helps to sell quite a bit of merchandise. Lou uses two assistants, with only W1GHD being shown in the photo. At the extreme left are the two treasury men for the evening, W1SAK and W1COH.

Let's Have An Auction!

Fun and Profit for All

BY EUGENE H. HASTINGS,* W1VRK

I THINK it was a W5 mobile I was in QSO with. I was talking about the usual things — signal strength, modulation, etc., when I mentioned that I had to sign off soon so that I would not be late for the auction. "What auction?" he replied, kidding me about buying an old lamp or a ceramic umbrella stand. "The radio auction," I replied, "what would I do with an umbrella stand?"

Now this W5 seemed a likeable chap — not in the least behind-the-times, for I had just had an enjoyable chat with him. How could he not know about ham auctions? "Never heard of anything like that down here," he said, "Sounds like a good idea!"

I began to wonder how many others "down there" or anywhere, for that matter, did not realize the fun to be had at a good old New England radio auction. Where else can you pick up a box of ceramic insulators for 65 cents or an 813 for $2.75? How was I able to build my 4-125A final for less than I had to pay for the parts for the exciter? I got parts at the auctions — and at the same time, got cash for a lot of the junk that had been cluttering up the shack for quite a while.

Most all the radio clubs in this area hold an auction at least once a season and often twice — usually spring and fall. The system is simple. The club treasurer takes a fee of 10% of the sale price of the merchandise for the club treasury — up to a maximum of 50 cents per item. The club member who has the loudest voice (or who has a p.a. system) and the best selling ability is chosen as auctioneer. Often two or three act as auctioneers as it is easy to get hoarse (carbon mike style) and a breather is usually welcomed.

What You Can Expect

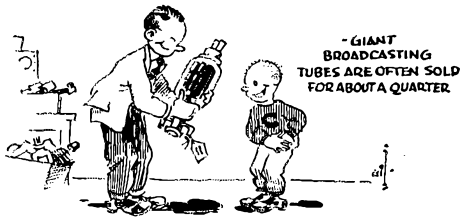
Some gear is donated to the club. Boxes or crates of odds and ends — feed-thrus, broken window antennas, pieces of aluminum from a TV antenna, tubes that the old timers (and *only* the old timer) will recognize, a chassis with 532 holes drilled and filed here and there, panels with room for 5 or 6 meters (not supplied) tubes from an old TV set (warranty expired), an a.c.-d.c. chassis (less a few parts), coax cable (unmarked and unknown), u.h.f. TV antennas (this is a v.h.f. area) and all sorts of other unmentionables — all are gladly given to the club, in hopes that some one (the beating some of these fellows take!) will bid 25¢ and take the box home — lest the owner have to take it back to the basement from whence it came!

Large gear such as complete transmitters and receivers seldom are sold by the gavel. They are put up for bid, and often receive no bids at all and are put aside. But after the auction a would-be purchaser will contact the owner and there you are!

Meters are an important and popular auction item. These go from one dollar to three, depending on the whim of the crowd. Used television sets go for around $15 and variable capacitors from 25 cents for the smaller ones to two or three dollars for the large transmitting type. 866's go for around 50 cents and often a pair of sockets are thrown in too. Filament

* 28 Forest Ave., Swampscott, Mass.

transformers will sell for a dollar up — even real huskies! Coils will be auctioned for around one-fifth of their original price. Homemade coils are given away to the youngsters. Giant broadcasting tubes are often sold for about a quarter to be used as shack ornaments, and microphones are bought for an average of $5. Fixed capacitors, the



high voltage type that often cost $9, will sell for 50 cents to a dollar each. Resistors will be sold for about one dollar per paper bag full! Crystals bring as much as 75 cents per box, and pilot light assemblies a dollar a bag.

Then of course there is the surprise of the evening -- the grab bags. Some will contain money donated by the treasury (these are auctioned off first to get things rolling!) but most will be assorted resistors, capacitors, and hardware. The grab bags (with the proper spirit generated by the auctioneer) will sell for around a dollar to a dollar and a half each.

There is the sad story of home-brew equipment that brings so little on the auction block! It seems there is no faith in the skill of one's fellow man! But what a bargain in parts is to be had. The big job is to keep your eyes open and quickly realize what is being auctioned may work into the new rig (with a slight change) and at a fraction of original cost! It is this quest for a bargain that keeps sleepy hams awake 'til nearly midnight, trying to see each piece of gear from what always seems like the back row of the hall!

One piece of equipment seldom found at auctions is a good used rotator. Another rare one is a power supply, for these items are much in demand. Quantity is the word when it comes to surplus gear — hundreds of pounds of khaki

equipment pass through the auctions each year, at a very low price. The majority of hams do not know the use to which several of these surplus items can be put (and I'll admit I'm one of these fellows) but much gear is available for parts alone — parts which are usually very much underrated when it comes to current capacity or voltage breakdown.

Equipment comes in old cartons or baskets, and there are always bundles of *QST*'s that bring from 75¢ to $1 per bundle — only to show up at the next auction to be read by someone else! These copies range from the nineteen-thirties up, and make interesting reading. Backdated *Handbooks* and *Call Books* are frequently offered.

How It's Run

The front of the hall is usually set up with several tables. On these tables the gear to be auctioned is on display for about a half-hour before auction time. Each piece of equipment must have on it a tag, telling the auctioneer just what the piece of equipment is, its ratings, and who owns it. The treasurer and his assistant (and an assistant *is* necessary) note the price the gear is sold for and this figure is written on a file card -- a separate card for each person who has gear to offer. This filing system is necessary to keep the records easy to find, for when the auction is over (usually near midnight) everyone wants to get his money and go home! One fellow usually marks the cards and figures the club commission and the other weary ham is the paying and receiving teller. The gear is paid for by the purchasers as it is bought. The card tally must be

accurate, as gear is auctioned at a rapid rate and mistakes are easy to make!

The auctioneers, junior grade, are important too. These happy hams keep the auctioneer at his rostrum supplied with things to offer the eager audience. An assistant's job often consists of holding a power transformer high above (*uhg!*) the table so it may be seen by all! The assistant is also responsible should a carton break open and three pounds of lockwashers scatter hither and yon, as often they do!

Most clubs use the "minimum" method of merchandising — that is, if a fellow has a piece of gear to sell, and he wants to get at least, say, $2 for it, he will put "Two dollar minimum" on the tag. The auctioneer may try to get the bid up to $2 by starting it at the usual 25¢, but must announce the two dollar minimum if the bids don't get that high, so the $1.75 bidder, for example, will realize he won't buy the gear for his bid of $1.75. The protection thus afforded the seller helps guarantee some good gear at the auction, and often as not the bids do get above the minimum. An alternate method is to have no

At an auction at the North Shore Radio Association, Lynn, Mass., there were three assistants and one auctioneer. Larger gear on display includes a scope, panadaptor, and several receivers. (*Photos by W1VRK*)

minimums at all — but have the seller (unknown to the crowd) bid himself on the merchandise, trying to get the price up to the desired level. He can buy back his own gear, and pay the club treasury the usual 10% fee — up to a maximum of 50 cents. Of course this way the seller has to be constantly "on guard" so that his gear does not get auctioned off during the time he is rag-chewing. Many do not prefer this method, although there are some who strongly favor it as a time saver when there's lots of gear to be auctioned.

How To Get Started

As the photographs show, there's nothing fancy about a ham auction! To really get an auction going, help clean out the cellar or attic of a ham you know has lots of stuff he doesn't need. Convince him that he can get some cash for things that he really has no use for. Some of the old timers really have some good parts for building new rigs and power supplies — parts which they themselves will not want to use again.

Local radio supply houses are often willing to donate items for the goodwill and publicity gained thereby. Usually these items, ranging from soldering irons to grid-dippers, are raffled off — the money going to help the club treasury swell. Tickets usually sell for ten cents each or three for a quarter. Near the end of the evening, usually at a specified time, the winning ticket (or tickets) is drawn and the lucky holder goes home with his prize.

Very often the meeting hall regularly used by the club is not big enough to hold the capacity crowd of a ham auction. The attendance often consists of members from several other neighboring clubs, as well as those seldom-seen members of your own organization. Locally, clubs have been able to use the school auditorium or gymnasium, legion hall, or a civic group building.

Publicity well ahead of time is important. Often the most effective are frequent over-the-air mentions of the auction, and invitations sent to clubs in nearby towns. Just before the big night, a paragraph in the local newspaper helps bring in those who have missed hearing of the sale over the air.

Auction night is a wonderful time to catch up on those delinquent membership dues, for a fellow may miss several meetings but is most always on hand for an auction! It's a good time to collect for those overdue *QST* subscriptions, too!

Auctions are a lot of fun — why don't *you* try one soon?

Strays

The Professional Group on Vehicular Communications of the Institute of Radio Engineers will hold its 1956 Conference on Nov. 29–30 at Detroit, Mich. Commercial two-way mobile communications equipment will be on display, and papers will be delivered on related subjects. Further details may be obtained from Mr. A. B. Buchanan, The Detroit Edison Co., 2000 Second Ave., Detroit 26, Mich.

—...—

K2DEM has been using what we suppose must be classified as a "curtain" of some type. He's had numerous QSOs on 75 phone with an antenna consisting of some 15 feet of RG58/U feeding a window screen. The feedline length was found to be critical.

—...—

W1VNH made a big hit at the Eastern States Exposition this year. It seems that Dorothy Lamour was on the stage, singing into a tiny mike which she carried on her person and which operates on 46 kc. The 700-watt 50-Mc. signal from W1VNH got into the mike system, and so the vast audience at the show was regaled not only with Miss Lamour's vocal efforts but also those of W1VNH operating in the V.H.F. Contest!

Hints and Kinks For the Experimenter

VISUAL INDICATOR FOR CONELRAD MONITORING

ANYONE WHO HAS YET to prepare for observance with the Conelrad rules that go into effect January 2, 1957, may be interested in the simple visual alarm used here at W7UWO.

The indicator circuit, shown here as Fig. 1, is the familiar electron-ray indicator arrangement described in recent editions of *The Radio Amateur's Handbook* (Signal Strength and Tuning-Indicators Section). It uses a type 1629 electron-

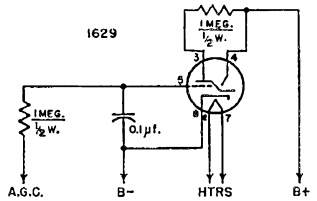


Fig. 1 — W7UWO uses this circuit as a Conelrad alarm. The visual indicator is a type 1629 removed from a surplus Command transmitter.

ray tube which, incidentally, was lifted from a Command transmitter that had been assigned to the junk box. A small five-tube a.c.-d.c. broadcast receiver provides the control voltage (a.g.c.) and the power for the plate, target and heater elements of the tube. The filament of the 1629 is connected in series with the heater line of the broadcast receiver. This results in slightly reduced heater voltage on all of the tubes, but this appears to have no adverse effect on the operation of the receiver or the indicator tube. Remember to return the B— lead of Fig. 1 to the *common* ground in the broadcast receiver — not to the receiver's chassis or the bracket that supports the tube. This method of installation will eliminate shock hazard.

The 1629 may be conveniently located at the operating position. The *eye* of the tube will remain closed as long as the receiver is tuned to a broadcast signal. When the eye opens, it is time to cease transmitting and then retune the receiver to one of the two Conelrad frequencies — either 640 or 1240 kc.

This simple indicator works quite well in actual practice and about the only cost involved was a little time on my part.

— *Charles A. Lofgren, W7UWO*

Editor's Note: Newcomers are referred to *QST*, January, 1956, for complete information about Conelrad rules as they affect radio amateurs. A symposium of radio-alert ideas appeared in *QST*, June, 1956.

HOMEMADE "HEAVY-DUTY" SOLDERING LUGS

WHEN HEAVY-DUTY soldering lugs just don't seem to be available for mobile or antenna installation work, try the following idea.

Find a piece of copper tubing having an inside diameter that will accommodate the wire to be used. Decide how many lugs you need and then cut that number of pieces — each approximately 1¼ inches long — from the tubing. Using a vise, mash flat each piece of tubing for about one half its length. After mounting holes are drilled in the flattened sections, you'll have lugs that are sturdy and easily soldered to.

— *James W. Carter, W4JAU*

BAMBOO FEEDER SPREADERS

FEEDLINE SPREADERS that are light in weight, rugged and as inexpensive as they come can be made from a bamboo pole. Very little labor is involved in making the spreaders and, when finished, you'll have some insulators that won't chip or break when bumped or dropped. One of these homemade spreaders is shown in Fig. 2.

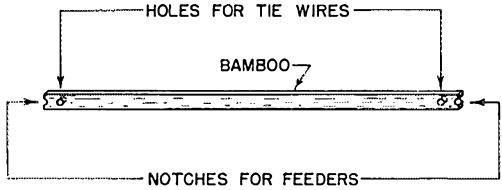


Fig. 2 — Sketch of a neat, inexpensive and rugged feeder spreader made from bamboo.

Using a hack saw, cut sections the desired length between nodules of a bamboo pole. Make the cuts exactly at right angles and all of the spacers will be the same length. Now split the full length of the tubes with a sharp knife. Start all splits from the same end of the bamboo sections as this makes the pieces more uniform. The first split requires the application of considerable force, but from there on the lengths are easily lopped off. The spreaders don't have to be very wide, so you can get quite a few of them from a single length of bamboo of reasonable diameter.

If you are lucky enough to have an electric hand drill or a drill press, it is quick work to drill the tie holes. A round needle file can be used to notch the ends of the spreaders for the feeder wires. To make them stand the weather, dip in lacquer and hang up to dry.

— *P. C. Holden*

OPAL 1956

A Summary of Reports Received on Amateur and RACES Activities in the Nationwide Civil Defense Test

BY GEORGE HART,* W1NJM

THIS WAS THE BIGGEST Operation Alert yet. Amateurs in nearly every state in the union, as well as possessions and Canadian provinces, were in on it in a big way. The North American continent has never taken such a simulated beating in all history. Destruction of lives was assumed to have been in the multimillions from blast and burns alone, and this was followed by additional millions of casualties caused by radioactive fallout from the hundreds of nuclear weapons peppered into every target area. It was a monstrous exercise developed from a monstrous assumption of what could happen.

No simulation of nationwide disaster can give us a true picture of the confusion and chaos that would prevail if the real thing ever happened. Operation Alert was a means merely of bringing to our attention some of the details we would have to cope with. Thousands of people had to be evacuated from contaminated areas; this necessitated keeping a watch on prevailing wind directions, arranging for the necessary transportation facilities to convey evacuees, welfare facilities to feed, house and clothe them, medical facilities to take care of the sick and injured. Wardens had to report their situations and needs, rescue crews had to be directed to damaged areas needing their attention, after fire trucks had extinguished flames. Police had to be on the job to protect lives, property, and direct traffic. Radiological crews had to go into contaminated areas to determine degree of radioactivity before any other operations could take place.

All of these operations required communication. Without it, they simply could not have operated. Amateurs and RACES weren't the only communication available, but in many places they were a large part of it. Our purpose here is to report those amateur operations which were reported to us, or which we were able to dig out of incoming bulletins and correspondence. Reports received or gleaned were from 26 states and two Canadian provinces. Some were voluminous, some brief, some merely an indication that someone or some group was active. Since no report forms were used, we think the best way of organizing this report to you is to go down the states and Canadian provinces alphabetically to summarize what we know about what the amateurs did in OPAL 1956.

Alabama

Communications were furnished by the Gadsden Radio Club for Etowah County and Gadsden civil defense. Both local coverage and state coverage were effected on 29,560 and 3955 kc. respectively.

California

San Diego operated nets on ten and 75 meters, the former integrated into the Warden Service and the latter forming a hospital net for the major hospitals in the city. Eleven amateurs were in the ten meter net, 12 mobiles and one fixed station in the 75 meter hospital net. Operation was controlled from atop Mt. Soledad. Red Cross was also represented by W6KBT, chairman of San Diego Red Cross.

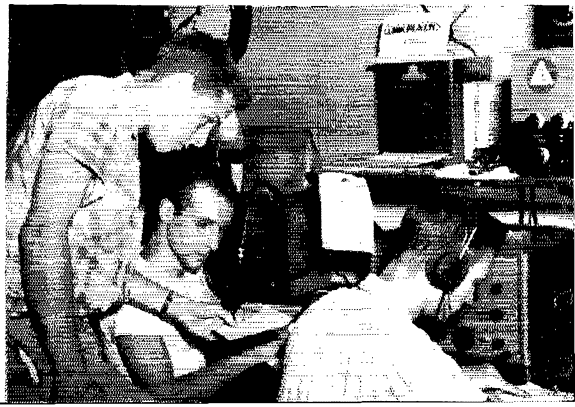
In Fresno, use was made, by special FCC permission, of the two-meter repeater station, in preference to depending on 75 meters. Excellent coverage was effected throughout Region 3C. Over 150 messages were handled in the three-hour test period.

Operation Alert was started three hours early in Alameda County (Oakland) in order to give all RACES personnel a chance to participate. Alamedo County c.d. headquarters was net control center until after the first drop, when control was shifted to Santa Rosa prison. Sealed messages were picked up by mobiles and transmitted to the control center. Nineteen mobiles took part, with two additional amateurs operating at the communications center.

Santa Clara Valley SEC W6NVO reports OPAL activities from San Mateo County, Millbrae, San Bruno, Daly City, Burlingame, San Mateo, San Carlos and Menlo Park. The county setup had trouble on 2 meters and handled their traffic on 1775 kc., but found competition pretty stiff. Millbrae was active on 6, 2, and 160 meters, with many mobiles. Burlingame had transmitters

* National Emergency Coordinator.

♦



This photo was made during a lull Saturday morning at the Tallahassee (Fla.) control center. The tired-looking operators, left to right, are *W4s* CHZ YUU and BKV.

set up on 1775 kc. and 2 meters, with mobiles conducting local tests. San Mateo, San Carlos and Menlo Park were also on the air exchanging traffic with Area 6 headquarters on 1775 kc.

Nineteen amateurs turned out in Contra Costa County, using two meter equipment as portable stations at various control centers. The entire county, with the exception of the city of Richmond, was covered for the test.

Connecticut

The Bridgeport RACES station was operated for thirty hours on 2, 6 and 10 meters, using both amateurs and permit operators, under the direction of W1IM. Over 210 pieces of traffic amounting to over 4000 words were handled. Besides covering c.d. headquarters, a mobile was assigned to the local Red Cross chapter for relaying information and requests.

Connecticut's Area 3 was activated from its control station at Rocky Hill, with about 20 towns in the area reporting into the net from their control centers. Both ten and two meters were used, and some of the towns conducted local operations on these bands as well, using their assigned frequencies. RACES frequencies and abbreviated calls were used. The state net was also in operation using tactical calls.

Florida

Delay in delivery of the two-meter c.d. equipment forced the Tallahassee gang to go into Operation Alert with only their control station. This station kept in touch with state control in Jacksonville on 3500.5 kc. and handled much important statewide traffic.

South Pinellas County EC W4WPF reports only that Operation Alert went off okay and that 25 local amateurs participated.

Orange County's W4PLB, control station in Orlando, was continuously manned during the two days July 20th and 21st with thirteen operators variously on duty. In addition, nine mobile stations and thirteen fixed stations were active. The standard plan was put into effect. Communications Officer W4NW states that there is need for more channels between counties and from counties to state.

Georgia

Upon receipt of "lemon juice," Georgia State Civil Defense Radio Officer W4TJS called the Georgia RACES net into operation. Approximately 2500 messages were handled on 3995 kc., utilizing practically all of Georgia's 173 RACES operators. Severe weather conditions (*not* simulated) hampered operation and brought a touch of reality into the activities. The Operation was in progress for three days, many operators working straight through without relief. Said State C.D. Director Hearn: "Such devotion to duty by the volunteer radio amateurs gives us the hope, faith and courage to carry on, sometimes in the face of seemingly unsurmountable odds."

Illinois

The Target City Net, controlled by K9CLW, operated for 24 hours under the direction of Radio Officer W9PSP, handling a total of 185 messages in that time. K9CLW was manned by 13 operators for a total of 152 man hours. W9PSP received a personal letter from State C.D. Director Woodward congratulating the group on its performance

The Skokie C.D. Communications Group was out in full force for Operation Alert, virtually every member (about 25) active in some phase of the drill. The group's new communications bus was used for the first time, operating on 2 meters and ten through 80, both phone and c.w., from its own power source.

DuPage County's fine RACES group conducted a threefold operation to establish communication with Chicago and Cook County, to establish contact with the State Civil Defense through the Target City Net, and to maintain communication with a civil defense plane flying over DuPage County for observation purposes. The DuPage mobile unit was sent to LaGrange to accomplish the first objective; the unit is a "copy" of the DuPage control station at Wheaton. The second was accomplished on 3997 kc., with good contact throughout the day. Communications with the plane were handled by 2-meter hand-carried units. A total of 104 messages were handled at Wheaton control. Independent emergency power was used throughout.

In Danville, Ky., use was made of the home station of SEC W4CDA for control purposes. That's the OM himself at the operating position. *Photo by John Nave, A & M Photos, Danville, Ky.*

The Point Shirley, Mass., C.D. Unit in operation. This was a part of the Winthrop C.D. drill in Operation Alert. The operator is W1MQB.

Indiana

Operation was quite widespread in Indiana. W9TT reports that over 100 members of the River Forecast Net worked in the exercise, supplying communications between the State Control Center and the various control centers in the state, six stations operating simultaneously on 3910, 3656, 3504.5, 147.3 and 50.7 Mc. The Indiana Phone Net and QIN cooperated completely in relaying the statewide traffic. SEC W9QYQ reports that 31 ECs were active during the operation, mostly in relaying traffic. Six meters showed a marked increase, and more activity is planned for that band in the future.

The Control Station at Terre Haute (W9CBR) was alerted at 1000 Friday and remained in continuous operation until 2145 Saturday. Both local traffic and through relays were handled, much of the latter from Evansville to Sullivan County. Local operations were conducted on 50.58 Mc., with mobiles dispatched to assist local groups participating. Nineteen amateurs participated.

EC W9KRJ of Gary reported that their greatest problem was in getting officials to originate traffic. Some trouble was also experienced with QRM from Chicago groups.

The Vanderburgh County civil defense unit had continuous radio communications available through the Tri-State Amateur Radio Society's emergency trailer unit from 1800 Friday until 2100 Saturday. During that period 14 operators kept W9LIT/9 going and handled a total of 26 record messages. Contact was maintained on ten and six meters from c.d. headquarters. Mt. Vernon c.d. was contacted through a system of ten-meter mobile relays. About seven mobiles were used for this purpose.

Iowa

Radio Officer WØAUL indicated that operation in Iowa was limited. The state warning system utilizing the police radio was implemented to get amateurs on the air. Six state-affiliated stations were activated on 3560 kc. by this means, plus WØPZO who acted as NCS. WØCUB acted as the Region Six RACES station in Iowa and was operated by six volunteer amateurs for a total of sixty hours. Messages were relayed from the Region 6 FCDA headquarters at Denver to Iowa State Civil Defense.

Kansas

WØZGK reports for Wyandotte Co., Kansas. The new role of support city gave them many new experiences. Two 2-meter links were used between the communications trailer and headquarters control center, and another 2-meter link between the trailer and the state Area 7 NCS. Ten meter mobiles were controlled from the trailer unit. Eighty meter c.w. was used to pass traffic direct to state control. Operation was for 36 hours.

Kentucky

The Fifth Mobile Support Group operated on 3600, 3945 kc. and on 50 Mc., using twenty operators. Forty-two messages were handled by amateur radio during the operation. The Third Mobile Support group operated on 29.5 and 147.3 Mc. jointly between Jefferson County, Ky., and Clark and Floyd Counties, Ind. Communications were supplied for the Louisville and Jefferson County C.D. Coordinator and through the c.d. coordinators of both Clark and Floyd Counties, Ind. Since Third Mobile Support and State Civil Defense headquarters were only 200 yards apart, radio was not needed for this contact. The AREC handled upward of 85 messages during the exercise. Thirty-one amateurs participated.

In statewide operations, Radio Officer W4CNE reported 38 amateurs were active. Phone was used until 1700, after which time the c.w. net took over on 3600 kc. All traffic was handled promptly.

Louisiana

Naval Reserve station W5USN operated on 3990 kc. guarding the Louisiana State Civil Defense Net. SCM W5FMO was net control for Louisiana MARS handling traffic between New Orleans and points throughout the state, assisted by W5JFZ and W5KHX. About thirty other amateurs reported civil defense activities during the alert.

Maine

W1LKP reports twelve amateurs active on 80 and 2 meters in York County.

Massachusetts

Operation in Framingham started at 1600 Friday and continued until 2300 Sunday. Routine messages were handled between c.d. headquarters and Section 1C Headquarters. Eight amateurs maintained the control station in shifts.

Twenty stations at strategic points around Winthrop reported into the local net during the test. In addition, contact was made with Area I Sector F Headquarters in Lynn on 6 and 2 meters circuits. Radio Officer and EC W1BB reports

that the drill was well attended, with all but four units on the air, all on emergency power, a total personnel of 35 participating.

In the Beverly RACES net control stations W1DWY/1 on 2 meters and W1QQL/1 on six meters operated continuously from 1030 to 2200 Friday and from 1100 to 2005 Saturday. Seven operators were on duty.

The communications center in Easthampton was set up at the town hall on six meters for contact with surrounding towns, including Northampton, Amherst and South Hadley. Over 30 messages were handled. There were four regular operators and several trainees on duty.

In New Bedford, W1CTZ and W1WGN operating control station W1WKM held tests with the state regional setup at Sassaquin Sanatorium. W1AVY operated on 80, 75, 40 and 20 in conjunction with civil defense. In Sandwich, W1AKN reports activity in relaying messages for other towns, but reports no Operation Alert activity in that town.

Michigan

Operations in Ottawa County began at 1100 Friday on 3507.5 and 29,610 kc. Local nets on 2 and 10 meters functioned well, but some difficulty was had on 80 meters. At 1900 the Zeeland c.d. director set off a test alert within the city. W8LTY and W8LEL set up a portable control station at city hall, in operation three minutes after their arrival, making a very favorable impression on city fathers.

Missouri

WØSAK sends in a half-humorous, half-tragic account of his operation at the alternate control station just outside Jefferson City. He and KØCTG, state RO, set up the transmitter on Thursday and put it into operation early Friday morning. Plagued with transmitter, receiver and antenna troubles, they nevertheless operated for 33 hours, handled 70 messages, operating the station in one-hour shifts throughout the night. Several other amateurs came in to assist during the operation.

Nebraska

In Omaha, operation of the control station was set up in six hour shifts consisting of four operators each, and went off like clockwork, starting at 0800 Friday and lasting for 36 hours. Traffic was handled on 75 and 80 meters to Lincoln, and via 2 meters to the relay point, thence to Lincoln on 2-meter f.m. In addition, an RTTY link was set up between Lincoln and Omaha and worked very well. About 22 amateurs participated, all told, and the group received a very nice complimentary letter from the Omaha/Douglas County Director of Communications.

New Brunswick

C.D. Officials in New Brunswick asked amateurs to set up a two-station network between St. John and Moncton for a two hour test period on July 21st, to back up landline facilities. VE1EE made his station available in St. John and VE1YM in Moncton, and a number of c.d. messages were handled between the two cities. On one occasion the St. John center had to send a message via amateur radio to ask them to clear the landline when telephone difficulties were being experienced. Six additional operators assisted at the two points, and five other stations were standing by to assist if needed.

New Hampshire

In Manchester, the problem was maintenance of communication between temporary c.d. headquarters in Manchester and state headquarters in Concord. Operation was on 3850 kc., as part of the New Hampshire Emergency Net. W1WHU

The Gadsden, Ala., Radio Club, furnished communications for Etowah County civil defense on 10 and 75 meters. Here is the station lineup, including operators (l. to r.) W4CWF, K4BTO, K4CXC, KN4IMD, W4PAC, KN4HCZ.

(RO) and W1YHI (assistant RO) operated W1YHI/1 from 1200 Friday until 2200 Saturday. Over 100 messages were handled.

New Jersey

The Camden County control center was active on July 20 and 21 with twelve operators monitoring four frequencies. In addition to maintaining constant communication with the state control center in Trenton, nine municipal control centers reported on 2 and 10 meters, with 13 other stations either fixed or mobile. A total of 26 messages were handled on 80, plus 36 local messages on 2 and 10.

New York

The East Meadow Radio Club station, K2HEM, engaged in a mock bombing of the local c.d. headquarters. During the exercise, K2HEM handled all local vehicular traffic control, controlling a network of five mobiles.

The Rochester control center commenced operation at noon on Friday. The GRS-RARA truck was perched on a high hill with the mission of relaying traffic for stations which could not hear each other, and this station did a lot of business.

Operation in Chatauqua was conducted on 145.53 Mc., their regular RACES assignment. All 14 aid check points were contacted, and each operator checked in as scheduled.

Ohio

Thirty-five amateurs answered the alert in Dayton. The club station of the Miami Valley Radio Alliance, W8RXM, was placed in operation from 1000 to 2300 EST on Friday and from 0900 to 1200 EST on Saturday. Frequencies of 3993 and 29,600 kc. were used, in addition to several 2-meter frequencies. RACES was declared to be in effect. Thirty-six amateurs participated in the test. Traffic was handled over several networks, including one to state Area One, W8RUM, and another to W8HEQ at Red Cross headquarters. On the evening of July 20th a mobile test was conducted utilizing seven two-meter units and six ten-meter units. Operation on 75 meters was difficult due to conditions.

Belmont County's participation was under the auspices of the Belmont County Amateur Club using the station of W8HZJ, Communications Officer for Belmont County C.D. Transmitters were maintained on ten and 75 meters, with two mobile units available to handle communications with adjacent cities who had simulated communications disruptions. Another neighboring city had a fixed station on the air. Operation on 75 meters was disrupted by a severe thunderstorm, but otherwise the test went off well. Eight amateurs took part in the 2½ hour test.

The Van Wert Amateur Radio Club station was operated in the Van Wert Civil Defense Control Center, with six amateurs cooperating. Two other fixed stations and a 6-meter mobile also participated. Contact was maintained successfully with Ft. Wayne, Ind., on six meters.

Lorain County Amateur Radio Association members operated six mobiles and seven fixed stations in the alert. Fixed stations were set up at City Hall, the Lorain stadium and at county headquarters near Amherst. Mobiles were sent out to simulated disasters and reported back. In Lorain city about 35 messages were handled during the period 1155 to 1600 EST, after which fixed stations were secured, but mobiles continued operating for 36 hours. Traffic was handled from county sources to 5th Area at Chagrin Falls and to state headquarters at Columbus.

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WØSAK says he never got to operate this rig, but they took his picture at the operating position for publicity purposes. It was taken at the Alternate State Net Control Station, outside Jefferson City, Mo.

♦

Ohio SEC W8UPB says that the alert in Ohio was the best ever. State and area stations were on the air continuously from 1000 Friday until 2200 Sunday, and again from 1000 to 1800 Monday.

Ontario

VE3AIB reports that 32 amateurs in the Toronto area operated in shifts to keep central headquarters in operation continuously from 1400 EST July 20th to 0900 July 22. The new Ontario C.D. Communications System linking provincial c.d. headquarters to and from the seven regional headquarters was in operation for the first time. Circuits less than 70 miles used two and six meters, 75 and 80 meters being used for the more distant regions. Most regions operated their own regional nets on other amateur frequencies.

Ontario SEC VE3KM reports that the alert for the Hamilton district was controlled from St. Catherines on 145.5 Mc. The Hamilton Amateur Radio Club and the Mohawk Amateur Radio Club of Hamilton worked together in the local exercise, which lasted three hours.

Pennsylvania

The Luzerne County RACES plan was activated at 1000 on Friday and continued until 1950. Scores of messages were relayed to W3DXT at Pittston C.D. Headquarters, to W3GTK at Exeter and to W3ZIH at Dallas. American Red Cross in Wilkes-Barre was furnished liaison through W3VZJ. Four mobiles were in action. Six operators furnished relief for fixed locations.

In Schuykill County, W3ZRQ reports operation on 75, 80 and two meters. Every active local amateur reported into the county net. The county control station was activated at 1230 and re-

(Continued on page 146)

Announcing the 23rd ARRL Sweepstakes

Certificates to C.W. and Phone Winners in Each Section and to Top Club Scorers; Special Novice Awards

CONTEST PERIODS

Time	*Start* Nov. 10th & 17th	*End* Nov. 12th & 19th
EST	6:00 P.M.	3:01 A.M.
CST	5:00 P.M.	2:01 A.M.
MST	4:00 P.M.	1:01 A.M.
PST	3:00 P.M.	12:01 A.M.

NOW IS THE TIME to get your station in shape to compete in the 23rd ARRL Sweepstakes. This popular annual activity affords you the opportunity to pit your skill against the best operator in your ARRL section and to fill in states and provinces needed for WAS and WAVE. Every licensed amateur in the ARRL field organization is urged to participate. All scores reported in accordance with the rules will be listed in the final results in *QST*.

The contest period will run over two consecutive week ends, with a maximum allowable total operating time of 40 out of a possible 66 hours for each entry (phone and c.w.). You may take part on both phone and c.w., but separate logs must be filed for each mode.

Certificates will be awarded to c.w. and phone winners in each of the 73 ARRL sections. Within a club, single-operator entries compete for certificates given to the club's top scorer on phone and c.w. A cocobolo gavel, with an engraved silver band, will be offered to the club whose members post the highest aggregate score. A special certificate also goes to the top-scoring Novice or Technician in each section in which three or more such licensees submit valid entries.

It doesn't take the newcomer long to learn the contest procedure. Simply call "CQ SS" or answer such a call, exchange preambles in the form shown on the facing page, and keep your log properly. ARRL will gladly send you log forms upon request, or you can draft your entry in accordance with the sample.

One change in the rules should be noted. The power-multiplier level has been adjusted from 100 to 150 watts input. This seemed a realistic step in view of popular final-amplifier tube types and manufactured transmitters available which perform comfortably at inputs ranging up to 150 watts. C.w. scores should be multiplied by 1.25 and phone scores by 1.5 if 150-watts-or-less input power is used at all times during the contest.

For the purposes of this Sweepstakes, VE8s may be considered attached to Yukon. Similarly, Newfoundland and Labrador count as Maritime section.

Whether you expect to operate the full forty hours or just a few minutes, hundreds of amateurs will be eager to trade SS messages with you. To get an idea of your local competition, scan the results of last year's contest in May and June *QST*s. Then read over the rules below and get set for two November week ends crammed with operating fun.

Rules

1) *Eligibility:* The contest is open to all radio amateurs in (or officially attached to) sections listed on page 6 of this issue of *QST*.

2) *Time:* All contacts must be made during the contest periods indicated elsewhere in this announcement. Time may be divided between week ends as desired, but a total of 40 hours must not be exceeded for each entry. Time spent in listening counts as operating time.

3) *QSOs:* Contacts must include certain information sent in the form of a standard message preamble, as shown in the example. C.w. stations work only c.w. stations and phone stations only other phones. Valid points can be scored by contacting stations not working in the contest, upon acceptance of your preamble and/or receipt of a preamble.

4) *Scoring:* Each preamble sent and acknowledged counts one point. Each preamble received counts one point. Only two points can be earned by contacting any one station, regardless of the frequency band. The total number of ARRL sections (see p. 6) worked during the contest is the "sections multiplier." It is not necessary for preambles to be sent both ways before a contact may count, but one must be received, or sent and acknowledged, before credit is claimed for either point(s) or multiplier. Apply a "power multiplier" of 1.25 to c.w. entries and 1.5 to phone entries if the input power to the transmitter output stage is 150 watts or less at all times during contest operation.

The final score equals the total "points" multiplied by the "sections multiplier" multiplied by the "power multiplier."

5) *Reporting:* Contest work must be reported as shown in the sample form. Printed contest forms will be sent free on request. Indicate starting and ending times for each period on the air. All Sweepstakes reports become the property of ARRL and none can be returned.

There are no objections to one's obtaining assistance from logging, "spotting" or relief operators, but their use places the entrant in the multiple-operator class, and it must be so reported.

A single-operator station is one manned by an individual amateur who receives no assistance from other persons during the contest periods. He may not have assistance in any manner in keeping the station log and records, or in spotting stations during a contest period. The operation of two or more transmitters simultaneously at single-operator stations is not allowed. Contest reports must be postmarked no later than December 5, 1956, to insure eligibility for *QST* listing and awards.

6) *Awards:* Certificates will be awarded to the highest

HOW TO SCORE

Each preamble sent and acknowledged counts one point.

Each preamble received counts one point.

Only two points can be earned by contacting any one station, regardless of the frequency band used.

For final score: Multiply totaled points by the number of *different* ARRL sections worked; that is, the number in which at least one bona fide SS point has been made. Multiply c.w. scores by 1.25 and phone scores by 1.5 if you used 150-watts-or-less transmitter input *all times* during the contest.

EXPLANATION OF "SS" CONTEST EXCHANGES

Send Like a Standard Msg. Preamble, the	*NR*	*Call*	*CK*	*Place*	*Time*	*Date*
Exchanges	Contest serial numbers, 1, 2, 3, etc., for each station worked	Send your own call	CK (RST report of station worked)	Your ARRL section	Send time of transmitting this NR	Send date of QSO
Sample	NR 1	W1AW	589	CONN	1812	NOV 10

c.w. scorer and to the highest phone scorer in each ARRL section. A c.w. certificate will also be awarded to the highest scoring Novice or Technician in each section where at least three such licensees submit c.w. logs; similarly, a phone certificate will be earned by a Novice or Technician in each section where a total of three such licensees submit phone logs. Only single-operator stations are eligible for certificate awards. Multiple-operator scores will receive separate *QST* listing in the final results.

A gavel will be awarded to the highest club entry. The aggregate scores of phone and c.w. reported by club secretaries and confirmed by the receipt at ARRL of contest logs constitute a club entry. Segregate club entries into phone and c.w. totals. Both single- and multiple-operator scores may be counted, but only the score of a bona fide club member, operating a station in local club territory, may be included in club entries.

The highest single-operator c.w. score and the highest single-operator phone score in any club entry will be rewarded with a "club" certificate where at least three single-operator phone and/or three single-operator c.w. scores are submitted.

7) *Disqualification:* Failure to comply with the contest rules or FCC regulations or the necessity for avoiding interference with channels handling amateur emergency communication shall constitute grounds for disqualification. In all cases of question, the decisions of the ARRL Contest Committee are final.

Sample of report form that must be used by contestants

LOG, 23rd A.R.R.L. SWEEPSTAKES

Station..... *C.W. or Phone* ..... *Section*.....

Freq. Band (Mc.)	*Time On or Off Air*	*Sent (1 point)*				*Time*	*Date (Nov.)*	*Received (1 point)*				*Time*	*Date (Nov.)*	*Number of Each Different New Section as Worked*	*Points*
		NR	*Stn.*	*CK-RST*	*Section*			*NR*	*Stn.*	*CK-RST*	*Section*				
3.5	On 1810	1	W1AW	589	Conn.	1812	10	7	W2IFP	589	E. N. Y.	1814	10	1	2
"	"	2	"	589	"	1815	"	6	W1BFT	599	N. H.	1817	"	2	2
"	"	3	"	579	"	1820	"	6	W1TYQ	579	Conn.	1821	"	3	2
7	"							24	W5MSH	479	Ark.	2005	"	4	1
"	"	4	"	479	"	2115	"	38	VE7ZK	579	B. C.	1815	"	5	2
"	"	5	"	579	"	2128	"	45	W6BIP	479	S. F.	1820	"	6	2
"	"	6	"	589	"	2133	"	9	K2HVN	589	E. N. Y.	2134	"	..	2
"	Off 2135 Time: 3 hrs. 25 min.														
	On 1845														
14	"	7	"	569	"	1915	11	94	KH6IJ	569	Hawaii	1418	11	7	2
"	"	8	"	569	"	1925	"	127	W7KVU	569	Mont.	1728	"	8	2
"	"	9	"	469	"	1935	"	114	W7HRM	569	Wyo.	1730	"	9	2
3.5	"	10	"	579	"	2110	"	130	WØEOZ	579	N. D.	2005	"	10	2
"	"	11	"	589	"	2112	"		W5MSH		Ark.				1
"	Off 2115 Time: 2 hrs. 30 min.														

Total Operating Time: 5 hrs. 55 min. 3.5, 7 and 14 Mc. used. 10 Sec., 22 Pts. 140 Watts Input Power

Assisting person(s), name(s) and call(s) .....

Claimed score: 22 points × 10 sections = 220 × 1.25 (140 watts input) = 275

Type transmitter (tube line-up if home-built).....

Receiver..... Antennas.....

I have observed all competition rules as well as all regulations established for amateur radio in my country. My report is correct and true to the best of my knowledge.

Signature.....

Number different stations worked..... Address.....

Happenings of the Month

ELECTION RESULTS

In four of the eight ARRL divisions currently holding elections, incumbent directors have been returned to office without opposition, remaining on the job for another two-year term beginning January 1st. They are Hudson Director **George V. Cooke, jr., W2OBU**; Northwestern Director **R. Rex Roberts, W7CPY**; Rocky Mountain Director **Claude M. Maer, jr., WØIC**; and Southwestern Director **Walter R. Joos, W6EKM.**

Three other candidates were similarly unopposed and were declared elected. **Milton E. Chaffee, W1EFW,** SCM of Connecticut since 1954, will become the next New England Director. Milt is treasurer and a member of the board of directors of two Connecticut banks, and also active as EC, ORS, and an AREC member. He holds an A-1 Operator Club certificate.

Assuming office as Hudson Vice-Director the first of next year is **Lloyd H. Manamon, W2VQR.** Lloyd is an electronics engineer with the Signal Corps at Fort Monmouth, and is presently assistant director and also SCM, Northern New Jersey — posts he has held since 1950 and 1952, respectively. He is also Radio Officer for New Jersey.

The new Rocky Mountain Vice-Director will be **Carl L. Smith, WØBWJ,** a captain with Western Air Lines; he has been piloting for them since 1946. Carl has just finished terms as assistant director of his division, and as president of the Denver Radio Club. He is involved in local c.d. and MARS operations.

All other offices are contested,[1] and ballots have been sent to Full Members of the divisions concerned. A total of 30 eligible candidates has been recorded for the 16 posts in the current elections.

RENEWALS ON 405-A

The "streamlined" renewal form 405-A has speeded up license-processing operations at FCC's amateur license section, but occasionally there is a misunderstanding on the part of the amateur as to use of the renewal certificate when received. Once more let us say that of the three card sections which you fill out when applying for renewal, two are kept by FCC as file records and the third is authenticated and mailed back to you as the renewal certificate. This must be kept together with your original ticket as evidence of possession of a valid license; either one alone is not sufficient. Another common error is that an amateur receiving the card thinks it is merely an acknowledgement of receipt of application, and eventually writes FCC to complain his license renewal application was never acted upon!

[1] Except that of Central Division Vice-Director, for which office no eligible nominee was found; the incumbent therefore continues in office for the ensuing term.

RADIOASTRONOMY FILING

FCC recently solicited comments from interested and affected parties on a proposal to restrict the use of a number of frequency bands — government and commercial as well as amateur — where interference-free reception is necessary in the conduct of radioastronomy investigations. In the amateur service, the 50- and 5650-Mc. bands are involved. The League opposed any restrictions on amateur operation, pointing out that in the unlikely event interference occurs, the problem can be solved on an individual basis. Our comment follows:

FEDERAL COMMUNICATIONS COMMISSION

In the Matter of Interference Protection to Radio Astronomy } Docket No. 11745

COMMENT OF THE AMERICAN RADIO RELAY LEAGUE, INC.

Pursuant to paragraph 17 of the Notice of Proposed Rule Making in Docket 11745, released June 22, 1956, The American Radio Relay League, Inc., files these comments on behalf of the more than 55,000 members of the League possessing amateur radio operator licenses:

1. The League fully recognizes the growing importance of the field of radioastronomy. Indeed, radioastronomy investigations by an Illinois amateur radio operator in the 1930's are generally accredited as a pioneer effort in the field.

2. Two of the frequencies for which interference protection is requested fall within amateur assignments — the 50–54 Mc. amateur band, and the 5650–5925 Mc. amateur band.

3. As concerns the request for protection at 53 Mc., the League concurs with the view of the Commission, as expressed in paragraph 7 of the Notice, that the possibility of long-distance transmission on this frequency places the subject in the field of international regulation. However, as a practical matter, the League believes that no real problem exists within the United States. Currently amateur use of 50–54 Mc. tends to concentrate at the lower edge of that band. Thus the likelihood of an amateur station being both located within normal communication range of a radioastronomy observation site and also operating in the 52–54 Mc. bandwidth segment requested is remote. In such unlikely event, the problem can be handled as an individual matter with mutual cooperation as suggested in Paragraph 10 (F) of the Notice of Proposed Rule Making.

4. As concerns the request for protection at 5680 Mc., the League again concurs with the view of the Commission, as expressed in paragraph 7 of the Notice, that there will be little use of such frequencies in any one particular area for years to come. Again, we believe that in the unlikely event that interference occurs on this order of frequency, the problem can be handled as suggested by the Commission in Paragraph 10 (F) of the Notice.

5. Although the League is opposed to the deletion from availability the two amateur-band frequencies mentioned, it is of the view that no real problem will exist for radioastronomy observations on 53 Mc. and 5680 Mc Any case of interference should be handled as an individual matter and can be solved on a cooperative basis. Therefore any action by the Commission at this time is unnecessary.

AMERICAN RADIO RELAY LEAGUE, INC.
By PAUL M. SEGAL
General Counsel

A. L. BUDLONG
General Manager
September 28, 1956

Radio Amateurs of the Soviet Union

BY F. VISHNYEVYETSKY *

• We present, without comment, an article on amateur radio in the Soviet Union. This summer, as a result of the renewed activity in QSOs and QSLs from the Soviet, we wrote the editor of a newspaper in Moscow, *Komsomolskaya Pravda*, which had recently printed an article on amateur radio, asking for a similar contribution to *QST*. Because we had previously had no reply to any of our letters since back before WW II, you can imagine our surprise at receiving this manuscript. Without the aid of one of our volunteer translators, however, we couldn't have done much with it, for the entire reply was in the Russian language. We are much indebted to Joseph Zelle, W8FAZ, for his excellent translation. Incidentally, the diagram and photographs included did not come along with the manuscript, but were prepared by members of the *QST* staff.

IT WOULD be difficult to find a town or village in the Soviet Union, where there would be no radio amateurs, those rabid enthusiasts of radio technique, devoting leisure time to their favorite pastime. Among them are people of all ages, occupations, and professions. School children and scientific workers, physicians and laborers, teachers and artists, composers and members of the Colfarms (collective farms) are interested in amateur radio. All of them grasp the fundamentals of radio technique with enthusiasm, study the code, operate shortwave and v.h.f. radio stations. They build radio receivers and phonoplayers, television sets, and measuring instruments, developing electronic apparatus and bringing beneficial results to the industry.

Favorable conditions have been set up for the expansion of amateur radio in the USSR. In all large towns of the country, there are radio clubs which provide well equipped classes, radio technical laboratories, collective radio stations and receiving stations. In plants and factories, in transportation and establishments, in schools

* Acting Editor-in-Chief of the Soviet Journal *Radio*.

The hearts of DXers are gladdened these days by the arrivals of QSLs which have been absent from the scene for several years. Packets of Soviet QSLs in modest numbers have been arriving at League Hq. from Moscow's Box 88, and we took advantage of a recent shipment to photograph a few of them for the edification of you who have yet to receive your share. If you have trouble reading some of that crazy alphabet, note the diagram on the next page.

and institutes, farmers' artels (agricultural associations) and machine and tractor service stations in the villages — hundreds, thousands of Soviet people, especially young boys and girls, are interested in radio technical circles and various radio courses.

Soviet amateur radio, uniting the broad working masses, extending greater public service work in spreading radio technical knowledge among the people, has earned universal recognition in the country. Soviet radio amateurs, whose ranks are continually growing, persistently improve their skill, apply their inherent ability to the work of spreading radio technique, and contribute to the forward progress of native science and technique.

As far back as the Twenties, in the town of Gorki, our oldest radio amateur, Olyeg Losyev, invented and built a radio receiver, in which he first used a crystal detector. The experiments of this talented radio amateur, in a certain measure, promoted the development of semi-conducting apparatus, diodes and triodes, at once obtaining greater amplification and effecting a revolution in radio technique.

Soviet radio amateurs presented no less a distinguished contribution with the expansion of shortwave radio communications. Innumerable experiments of amateurs indicated the possibility of using shortwaves for practical purposes. A pioneer in this field was one of the first Soviet shortwavers, Fyedor Lvov. The use of shortwaves among radio amateurs for radio communication in the Arctic, on various expeditions in railroad transportation and forest exploitation, showed that a better future belonged to shortwaves.

Not a few of the prominent Soviet scientists and most of the radio specialists have come from the midst of radio amateurs. Corresponding members of the USSR Academy of Sciences, A. Mintz and V. Siforov, Professor Z. Modyel, Constructors I. Nyevyazhsky, E. Gyenishta, B. Kuksyenko, B. Myelnikov, B. Lazaryev, and many other prominent workers, engineers, and inventors in the country and beyond its borders, started their creative careers in amateur radio.

The photo above of UA3AW was on its way through the QSL Bureau when we snared it for a quick reproduction for *QST*. In the background is the familiar shape of the Kremlin.

А	A	Р	R
Б	B	С	S
В	W	Т	T
Г	G	У	U
Д	D	Ф	F
Е	E	Х	H
Ж	V	Ц	C
З	Z	Ч	MN
И	I	Ш	MM
Й	J	Щ	Q
К	K	Ы	Y
Л	L	Ю	IM
М	M	Я	AA
Н	N	Ь	X
О	O	Э	UI
П	P		

This shows the Russian alphabet and the equivalent English letters. Note that there are five additional letters in the Russian alphabet for which there are no equivalent single characters in the Latin.

The success of Soviet radio amateurs in the field of radio technical expansion can best of all be judged by their works. They are demonstrated in every national, republican, district, oblast (minor civil division) and regional exhibition by the creations of radio amateur-constructors. Suffice to say, that for the 12th nation-wide radio exhibition alone, held in the past year in Leningrad, radio amateurs of the country prepared more than eleven thousand different exhibits. New strides forward are manifested by the arrangements for the 13th national exhibition of amateur radio creations to be held in August of the present year in Kiyev. It demonstrates the further growth of the skill of Soviet radio amateurs.

To introduce ourselves, to show how Soviet radio amateurs apply their strength and knowledge to the solution of some problems, we will briefly describe their activities. Muscovite radio amateur, I. Akulinichyev, for example, made an electronic apparatus, the vector-electrocardioscope, which was an irreplaceable aid to surgeons during an operation on the heart. Leningrad radio amateur U. Manoyev constructed a special electronic hygrometer. In the process of a few seconds' operation, it is possible to determine the degree of moisture in trees. The second Leningrad radio amateur S. Shyeryemyetinsky built a simple but very effective piece of equipment, a metal-spotter, for application in coal-enriching factories. Svyerdlovsk radio amateur L. Kolosov built an electronic balance apparatus. It permitted quick and sufficiently accurate balancing adjustments to eliminate vibrations of the moving parts of a workbench imperceptible even to the eye. Riga radio amateur A. Chyepurnoy built equipment for quick and painless cutting of a dental crown in the cavity of the mouth with the aid of electro-erosion. There are hundreds of such examples. As regards this, it may be said that Soviet radio amateurs,

with all their activities, with all their creations, aim to bring good to their nation, to assist in the technical progress of the motherland.

With every year, amateur radio is spreading ever wider in the Soviet Union. The number of amateur radio stations grows constantly. Boys and girls, yes, and older people, too, operate every day on the air at collective and individual radio stations. Shortwavers in Moscow and Vladivostok, Murmansk and Odessa, Ashkabad and Svyerdlovsk, Saratov and Pyenza, Kiyev and Riga, in many other large towns and small villages are constantly establishing radio contacts with each other.

Our radio amateurs display especial interest in long-distance radio contacts. In this respect, their results have been not bad. Many Soviet shortwavers have on record scores of contacts, established with radists of the scientific drifting station, "North Pole," with the Soviet Antarctic observatory in the village of Peaceful, and with the whaling fleet, "Slava," sailing far away from native shores. To get to the point, the majority of the radists operating there are radio amateurs.

Participation of Soviet radio amateurs in systematically organized national and international competitions helps them improve their skill and achieve high sports successes. One of the more experienced sportsmen — Master of Amateur Radio Sport, L. Labutin — established the nation-wide record for the largest number of two-way radio contacts in 12 hours of continuous operation. In that time, Labutin made 453 radio contacts with shortwavers of 72 oblasts in the fifteen union republics. Each of these contacts lasted only 80 to 90 seconds in all.

Good results were obtained in the national individual-team competitions for the USSR 1955 championship by radio amateur, N. Tartakovsky. He copied a ciphered radiogram at 415 characters per minute.

F. Roslyakov, Master of the Amateur Radio Sport, attained an outstanding sports achievement. During the international competitions of radists-high speed telegraphers, F. Roslyakov received and typed on a typewriter a radiogram which was transmitted at 450 characters per minute. Teams of the USSR, Bulgaria, Hungary, Roumania, Poland, and Czechoslovakia participated. Such a result, as far as is known to us, has failed to be registered by even one radist in the world!

In the international competitions of shortwavers for 1956, Soviet radio amateurs attained a new significant victory. Accumulating 2770 points, the USSR team took first place. Receiving-transmitting amateur stations UA9CM, UA9KAB, UA6KTB, UA4KCE, UB5KAA, UB5WF, UB5KAD, UA4KPA, UA4KKC, and UA4CB entered in the composition of the team. In the individual division of these competitions, the championship was won by USSR representative, A. Ryabchikov, from the town of Lower Tagil (Nizhni Tagil). His call is UA9CM.

Lately, more and more women are joining the radio amateur game. In the ranks of masters of sport, honorable place was occupied by the 1955 USSR champion, Galina Patko, the 1956 USSR champion, Zinahyda Kubikh, record-holder Alyeksandra Volkova, many-time winner of competitions shortwaver Mariam Bassina, and many others. The number of individual amateur radio stations in the country belonging to women grows every day. Zoya Kurilko of Leningrad, Maria Kolotilkina of Dzyerzhinsk, Vyera Pyeryesadina of Svyerdlovsk, Vyera Zahytsyeva of Yelyets, and hundreds of other sportswomen, whose names are widely known to radio amateurs in the USSR confines, are actively operating on the air.

Our radio amateurs are showing greater interest in v.h.f. Until very recently, there were few v.h.f. stations in the USSR. Now their number is increasing very rapidly. Thus in the past two or three months, scores of new v.h.f. radio stations have been constructed by radio amateurs in Moscow, Leningrad, Kharkhov, Rostov, Gomyel, Kuibishyev, and other towns. Preliminary successes have already been established for long-distance contacts on v.h.f. Not long ago, for example, in the 38–40 mc. band, a two-way radio contact was established over a distance of 3,100 kilometers between Radio Station 068030 (Operator Skripnik of Novochyerkassk) and 049003 (Operator Nagornov of Barnaul). Radio contacts have already been established over the Cau-

(Continued on page 150)

РАДИОЛЮБИТЕЛИ СОВЕТСКОГО СОЮЗА

В Советском Союзе трудно найти такой город или село, где бы не было радиолюбителей – этих страстных энтузиастов радиотехники, посвящающих свой досуг любимому делу. Среди них люди самых различных возрастов, занятий и профессий. Радиолюбительством занимаются школьники и научные работники, врачи и рабочие, педагоги и артисты, композиторы и колхозники. Все они с увлечением овладевают основами радиотехники, изучают телеграфную азбуку, работают на коротковолновых и ультракоротковолновых радиостанциях, строят радиоприемники и магнитофоны, телевизоры и измерительные приборы, создают новую электронную аппаратуру, способную принести пользу промышленности.

Для развития радиолюбительства в СССР созданы благоприятные условия. Во всех крупных городах страны имеются радиоклубы, которые располагают хорошо оборудованными классами, радиотехническими лабораториями, коллективными радиостанциями и приемными пунктами. На заводах и фабриках, на транспорте и в учреждениях, в школах и институтах, в сельскохозяйственных артелях и машинно-тракторных станциях на селе – сотни тысяч советских людей, особенно юношей и девушек, занимаются в любительских радиотехнических кружках и на различных радиокурсах.

Советское радиолюбительство, объединяющее широкие массы трудящихся, своей большой общественно-полезной работой по распространению радиотехнических знаний среди населения, заслужило в стране всеобщее признание. Советские радиолюбители, ряды которых непрерывно растут, настойчиво совершенствуют свое мастерство, вносят свой посильный вклад в дело развития радиотехники, способствуют движению вперед отечественной науки и техники.

And here's what the original manuscript of this article looked like, before W8FAZ took over.

NEW BOOKS

Transistor Circuit Handbook, by Louis E. Garner, jr., published by Coyne Electrical School, distributed by Howard W. Sams & Co., Inc., 2201 E. 46th St., Indianapolis 5, Indiana. 410 pages, plus index, 6 by 8¼ inches, cloth cover. Price, $4.95.

The author, a frequent contributor to the popular radio press on applications of transistors, has come up with a circuit handbook that certainly ought to have plenty of appeal for the transistor do-it-yourselfer. The book is divided into four principal parts: I — Laboratory Practice, in which the practical aspects of handling transistors are discussed; II — Basic Circuits, covering numerous types from elementary amplifiers to multivibrators; III — Circuit Applications, the largest section of the book and full of make-it-yourself projects from simple receivers to controls and gadgets; IV — Reference Data.

This is not an engineering-type handbook but definitely one for the hobbyist. The circuits are practical ones, tested by the author, with construction data and photos.

Rider Review Series and **Electronic Technology Series,** edited by Alexander Schure. Published by John F. Rider Publisher, Inc., 480 Canal St., New York 13, N. Y.; 5½ by 8½ inches, paper covers. No. 7, *Multivibrators,* 52 pages, 90 cents; No. 8, *R-F Transmission Lines,* 72 pages, $1.25; No. 9, *Amplitude Modulation,* 64 pages, $1.25; No. 10, *Blocking Oscillators,* 72 pages, $1.25; No. 12, *Superheterodyne Converters and I-F Amplifiers,* 56 pages, 90 cents; No. 15, *Inverse Feedback,* 56 pages, 90 cents.

The first six books of this series were described in October, 1956, *QST.* The same style of treatment is continued in the present volumes; one of its virtues is the fact that the amount of material covered, while sufficient to give a good over-all picture together with elementary design information, is not so voluminous as to discourage the seeker of general information. Any reader with an elementary technical background can absorb the basic aspects of the subject discussed, and will be in a position to go on from there to more detailed texts if he wants.

Nos. 8 and 9 of the present group deal with subjects directly in the amateur's province; No. 12, too, for those who build (or at least are interested in) receivers. The others cover somewhat specialized circuit applications which, while not at all foreign to amateur practice, are less universally employed.

TV Repair Questions and Answers, by Sidney Platt, a series published by John F. Rider Publisher, Inc., 480 Canal St., New York 13, N. Y.; 5½ by 8½ inches, paper covers. Vol. 4, *Deflection and H-V Circuits,* 128 pages, $2.10; Vol. 5, *Sound and L-V Circuits,* 120 pages, $2.10.

These two books continue a series initiated some time ago, the first three volumes having been described in *QST* for August, 1956. The direct answer to each question is followed by supplementary discussion on related points or "reasons why." Typical question: "How can a split-sound receiver be converted to intercarrier?"

RCA Transmitting Tubes, published by Tube Division, Radio Corporation of America, Harrison, N. J. 5½ by 8½ inches, paper cover, 256 pages. Price, $1.00.

A new edition of the transmitting counterpart of the well-known Receiving Tube Manual. Over 80 pages of basic tube information, circuits, methods of determining operating conditions and power output from characteristic curves, and practical suggestions on operation of tubes in transmitting circuits. Ratings, typical operating conditions, and other data on RCA transmitting types up to 4 kw. plate input occupy the remaining space.

Silent Keys

IT IS with deep regret that we record the passing of these amateurs:

W1QJK/W1SMC, Emelio Remondi, Sr., Mattapan and Boston, Mass.
W2BIM, Newton Sweet, Dumont, N. J.
W2EIE, George W. Fallot, Massapequa Park, L.I., N.Y.
WN3ENB, Phillip H. Brookes, Willow Grove, Penna.
W4AKY, Dr. Russell G. Tappan, Knoxville, Tenn.
W4HJA, George O. Foxworth, Pensacola, Fla.
W4RJW, Charles P. Epps, Jr., Richmond, Va.
W5GVS, William R. Baker, Enid, Okla.
W5KWT, Fred L. Hoyt, Oklahoma City, Okla.
W6BOZ, Elmer G. Regier, Paso Robles, Calif.
K6GAL, Norman J. Daschner, San Diego, Calif.
W6GD, Oliver Wright, Palo Alto, Calif.
W6JQC, Edward W. Hintz, San Francisco, Calif.
W6ZE, Earl E. Griffin, Santa Ana, Calif.
W7LSQ, Vernon S. Shuman, Boise, Idaho.
W8AES, Joseph G. Tabor, Detroit, Mich.
W8LVV, Melvin E. Jewett, Huntington, West Va.
W9CNN, Cecil C. Gregson, Chicago, Ill.
SM5SV, Johan C. Lagercrantz, Stockholm, Sweden
VK5WG, W. N. Govan, Crystal Brook, South Australia
VP5AD, Thomas Myers, Kingston, Jamaica, B.W.I.

November 1931

. . . The lead article in *QST* twenty-five years ago dealt with the Class B Push-Pull Modulator as a replacement for and improvement over the commonly used Class A Audio Amplifier and was hailed as a means for giving more 100% modulated watts for the dollars.

. . . Ross Hull, associate editor of *QST,* contributed an article entitled "Television — What About It?", in which he discussed the various problems confronting the television laboratories. Mr. Hull's conclusion was that television was still "around the corner."

. . . An article by the ubiquitous George Grammer discussed economical crystal control while showing a transmitter using a pair of Type 10's and an 03A tube. To those of you who don't remember, the Type 10 was to ham radio in those days what 807 has been in recent years.

. . . In the book review section it reported a paper entitled "The Regulation of Amateur Radio Communication," by Paul M. Segal, appearing in Air Law Review. Twenty-five years ago it was reported that "for many years" Mr. Segal had been the General Counsel of the ARRL.

. . . And if you think that cost of hamming has gone up, consider some of these prices. 80 meter crystals were priced anywhere from $5.00 to $9.00 each. 866 rectifiers were advertised at $4.50. Even a surplus dynamotor with 24 volt input and 1000 volt output was listed as $50. On the other hand, you could buy a UX201A for only 45¢.

FEEDBACK

In Fig. 1, page 18, *QST,* September, 1956, L_7 should have an inductance of approximately 40 μh. A North Hills type 120-F (36–64 μh.) was used in the original converter.

Your Novice Accent

And What To Do About It

BY KEITH S. WILLIAMS,* W6DTY

A LANGUAGE is a means of communication. It is most efficient when all who speak it follow the same grammatical rules and pronounce its words in the same way. Isolated groups of a given linguistic stock tend to develop differences in speech habits. They speak with different accents, follow different rules of grammar, the difference growing with continued isolation until each group finds it difficult to understand others even though all speak the same basic language.

International Morse code is, in a way, a language. It has been efficient because all of us have followed the same procedure and used the same "*QST* English." Now, however, isolation is beginning to make itself felt. A new accent, a new dialect, the "Novice Accent" is beginning to be heard. It is the one defect in an otherwise excellent innovation in amateur radio.

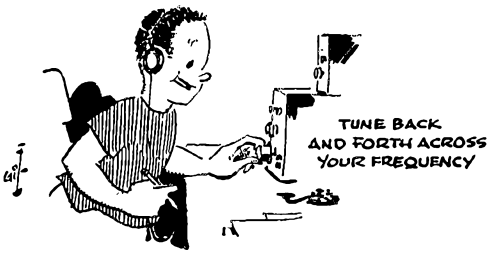
In pre-novice days an amateur launched forth in the main stream and in very short order lost his beginner's accent and was taken for a native. Now, on the other hand, most beginners start out on 80 or 40 meters confined, by novice status, to band segments populated almost entirely by other novices. They are the isolated linguistic group mentioned above. People speak a language with the same accent as those with whom they live and work. New hams pick up habits and operating procedures of the gang they chew the fat with.

It is increasingly easy to pick out a new General Class operator on c.w. bands. His speed may be up to par and he may have an excellent fist, but his procedure is apt to be rather odd. He has difficulty in understanding just what is going on and his transmissions can be very confusing to the general run of amateurs. Standard ham operating procedure has been established by years of usage. In many cases it is established because it is the most efficient or intelligent way of doing it. In other cases a certain procedure is used because it has always been done that way and everybody understands what everyone else is doing.

I would like to comment on some specific points concerned with ham operating. I trust it will not be too boring. You old timers can go to the DX department as I want to talk to novices.

Tune Around

When you, Bill Novice, heat up the filaments and prepare for a session of brass pounding, don't be too hasty. It is not good practice to start calling CQ while you're waiting for the receiver to come to life. Check your gear, and when you're satisfied it's all ready, take a few minutes to listen. See what's going on near your own frequency and then tune back and forth a bit. More than once I've heard some good DX going to waste while the brethren are busy honking out CQ's without, apparently, having listened more than two seconds after turning on the rig. Pick



some station who is already calling CQ and answer his call rather than adding to the bedlam with a CQ of your own. On the remote chance that you hear no CQ's, go ahead and try one.

Two things are important: (1) your receiver has a tuning dial; use it — it keeps corrosion from setting in and you may hear someone calling you off your frequency. Many a time I've heard a WN or KN station call CQ time after time and be answered by stations in other parts of the band with no QSO resulting. If a fellow calls CQ, signs and says "K", then starts another CQ in ten seconds you know he's not tuning. He just sits there like a lump, expecting a call on his own frequency. He has few QSO's and he creates beaucoup QRM with his useless calling. (2) Don't make your calls too long. Contrary to your first impression a long call does not attract eager prospects. Rather, just the opposite . . . the longer you call the fewer the answers you receive. People are a restless lot. After waiting through ten or twelve CQ's the average operator will lose patience and start looking for someone else. One night, by actual count I heard one novice operator send 57 CQ's before signing his call! This is pure madness! This applies as much to your calling another station as it does to a CQ. Make your calls short. With a little thought you will realize that if the other station hasn't heard you in the first minute or less he's probably not going to hear you at all.

Three-by-three

A CQ pattern that has proved very successful over a long period is the old three-by-three. CQ three times, sign your call three times, and repeat the whole thing three times. Personally, I punch out four CQ's, sign three times and repeat three. This is more than sufficient and results have been satisfying. When answering a CQ, make your

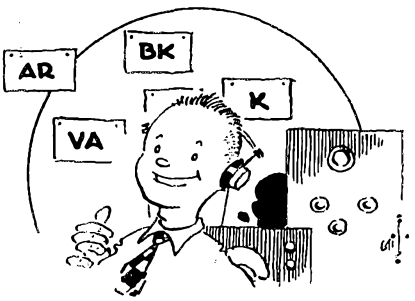
* 355 E. Laurel St. Oxnard, Calif.

call as short as conditions warrant. For instance, on 40 meters, on a weekday morning about ten o'clock you hear W6DTY calling CQ near your frequency with practically no activity on the band; you only need call about three times, sign your call three times and you're in. If you're 25 kilocycles away, call a bit longer, but not too long because it doesn't take the receiving operator long to tune through the band when activity is light. On the other hand, when QRM is heavy, make your call somewhat longer because it takes a receiving operator longer to comb through the mess. In other words, make the length of your call suit conditions. It is seldom necessary, even under the worst conditions, to call a station more than eight or ten times before signing your own call.

Don't fall into the habit of expecting all call signs to begin with WN or KN. There are about two hundred other call prefixes in use throughout the world. Once I heard WH6AWU call CQ half a dozen times on the 40 meter novice band, putting in an S9 signal. Now, while most novices on the band would dearly love to QSO the Hawaiian Islands, no one answered until finally some poor soul came up calling W5BAWU!

Procedure Signals

Most novices misuse the procedure signal DE. DE means "from" and it is sent only once before each series of a call sign. Do not repeat it before each transmission of your call sign in a series. It is common to hear something like this, "CQ . . . CQ DE KN6ZZZ DE KN6ZZZ DE KN6ZZZ CQ . . . ETC." This is not good practice. Under poor receiving conditions it is very confusing to the receiving operator who is trying to dope out your call letters. The extra DE throws him every time.



KNOW YOUR OPERATING SIGNALS AND USE THEM PROPERLY—

When you sign for the last time on a CQ don't be fancy. Just send the procedure signal "K". This invites anyone who heard your CQ to answer. Do not send AR, either by itself or followed by K. When making calls, AR is used only when you have called another station but are not yet in contact with him. AR is a procedure signal sent as one character, di-dah-di-dah-dit. It is not sent as the two separate letters A and R. Examples of current, standard procedure are (1) . . . CQ CQ CQ DE KN6ZZZ KN6ZZZ KN6ZZZ K, and (2) . . . WN4YYY WN4YYY WN4YYY DE KN6ZZZ KN6ZZZ KN6ZZZ AR.

When you have established contact there are certain preliminaries you should get squared away before you begin discussing the weather. At the beginning of a QSO, on the first transmission from the other station, each operator is interested in two pieces of information first. He wants to know how his signals are being received and where the other station is located, *in that order*. Most operators, for some odd reason, want to know the other fellow's name, but that is third in importance. Until recent years all hands were very happy to be called OM or OB and nobody cared what your name was. Giving the signal report, location and name, *in that order*, has become standard throughout the world and is always sent *first*, prior to everything else. It saves time and avoids confusion if you follow that standard. Example: . . . WN4YYY DE KN6ZZZ R GE OM ES TNX FER CALL BT UR RST 579 579 HR IN PODUNK PODUNK CALIF BT NAME IS BILL BILL BT RIG HR . . . etc. Once the preliminaries are out of the way proceed with the QSO as it may develop. Rag chewing is lots of fun.

Abbreviations

Ham radio is full of abbreviations. There is good reason for this. It saves time. You can say more with less wear and tear on the key. A great many abbreviations are standard the world over. You'll find them listed in handbooks. Don't go overboard, but learn to use the universally understood shortcuts in operating. A good example is "AND." This is a word which is heard only on the novice bands. Learn to send "ES" instead of "AND." It's standard practice; it's quicker and easier to send. While you're at it, learn the proper use of abbreviations. If in doubt, look them up in the handbooks.

Signals for period and comma were practically never heard on the ham bands until the novices got going. They are still not in use except in novice bands. You may need to know them to pass a code examination, but they are clumsy and awkward in ham communications. All punctuation can be handled by the question mark and by the signal "BT" (dah-di-di-di-dah). What do you need with a comma? Nothing! Don't bother to use it. Anyway, some of the old timers might not recognize it (unless they thought it meant an exclamation mark, which is what it stood for until fairly recently). Most novices are currently sending a comma between the name of their town and the name of their state. This is a waste of time and effort. No punctuation is needed there at all. Forget the lengthy, time-consuming signal for period. Just use the long break sign BT between sentences or thoughts. It is much easier to send and sounds smoother. The only time in ham radio when formal punctuation signals are called for is in such things as official bulletins, etc.

When you sign over to the other station make

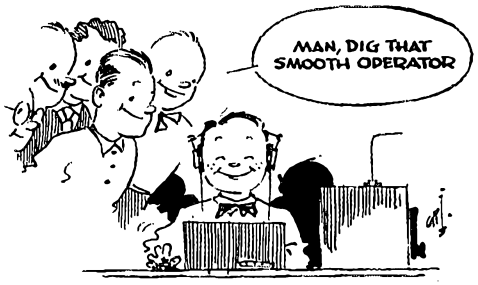
it quick and easy and use one of the standard methods. I have heard novices say, ". . . NOW I AM TURNING IT BACK TO YOU SO HERE IT COMES . . ." Long winded gulf is okay in its place, but it shouldn't become a habit on c.w. Some of the boys are now sending, ". . . SO BK TO YOU . . ." This is an improvement, but it's not universally understood because "BK" means *BREAK*, not BACK. All you need to say, really, is "HW?" or "WATSA?" Either signal indicates to the other fellow that you are through for the moment and are about to sign over to him. If it's your last transmission it is customary to part with a certain amount of love and kisses. Don't drag it out into an absurdity. Haven't you heard some fathead send, "WELL BILL NOW I MUST QRT AND WISH YOU MANY 73S 73S TNX FOR THE SWELL QSO BILL AND 73S BEST OF LUCK AND LOTS OF DX AND BEST WISHES TO YOU AND THE FAMILY SO 73S AND I WILL SEE YOU AGAIN SOON BILL 73S . . . etc.?" All you have to say after you've told Bill you must QRT is something like this: TNX QSO OM 73 GN VA WN4YYY DE KN6ZZZ. Note that it is not necessary to add an "S" to 73. By itself 73 means "best regards." If you say 73's you are, in effect, saying "Best Regardses," which is just plain silly.

More Procedure

Now a word or two about correct procedure when signing over to the other station or when ending a QSO. It's all very simple but much confusion is evident. When you are turning the QSO over to the other operator you proceed as follows: . . . SO WATSA OM? AR WN4YYY DE KN6ZZZ K. The AR indicates that you are through for the time being. The K says, "go ahead and transmit to me." Incidentally, there is a variation of the K signal. You may have heard it and wondered what it meant and as like as not you have misused it. I am referring to the procedure signal KN. This signal indicates that you are engaged in a QSO, that you are inviting the other operator to go ahead with his transmission and you do not wish a third station ("the breaking station," so called) to interrupt by calling either of you. This signal was originated as an aid in DX operating and is not often needed in domestic communications. Therefore I don't advise its use in ordinary QSO's. But if you have occasion to use it do it right. It is definitely *not* a substitute for the plain signal "K". I have heard novices end a CQ with KN. This is obviously simple-minded. Translated to English it means, "I am calling a CQ, a general call, inviting anyone to answer, but please do not call me!"

When ending a QSO use the signal, VA. This is easy. VA is never the last signal sent. The last item is either your call or the letter K. If you have made your last transmission but will stand by for the other station's closing remarks you send, ". . . 73 ES CUL GN VA WN4YYY DE KN6ZZZ K." The VA indicates that you have made your last transmission. If you have completely finished the QSO and wish to remain open for business you just naturally don't put anything at all after your call. If you intend to "close station" and hit the sack you should indicate this fact by adding the signal "CL" immediately after your call. Listening operators are thus informed that you will not be in the market for another QSO. It saves them needless calls.

C.w. operating procedures are fixed by long usage and in part are called for by law. The correct procedure is just as easy to learn and use as is the Sloppy Joe type. If you are just starting on your ham career you might just as well start right. Bad habits are difficult to break. If you



find it hard to remember what to send and when to send it make up a sheet with standard forms and keep it on your operating desk. Refer to it when in doubt; first thing you know your procedure will be automatic. Once learned it isn't forgotten.

R?

Being long winded, I don't mind adding a few items which can be classed as Miscellaneous (or, The Bleatings of an Old Goat). First on the agenda is an ancient complaint about birds who come back with "R" when they have copied only part or perhaps nothing at all of your last transmission. This particular scream of mingled rage and pain has been heard since Marconi first sent three dots across the Atlantic. You'd think that, after all these years, the R-for-Roger pest would have become extinct, but it is not thus. Every day some fellow manages to come back to you with something like this: ". . . WN4YYY DE KN6ZZZ R R R OK OK BUT PLEASE REPEAT MY REPORT AND YOUR QTH ALSO MISSED YOUR NAME AND DID NOT COPY YOUR LAST QUESTION IN THE QRM . . .!" The simple fact is that if you send "R" you are indicating that you copied solid everything the other operator sent. Do not send a single R if you missed any part of his transmission. Just send a break sign, BT, after your call when you go back to him, if you missed anything, and tell him what you missed. There is nothing more exasperating than to hear, "R BUT MISSED EVERYTHING OM!"

In connection with this business of receipting (R), one other point might be mentioned. If you have copied the other fellow's transmission solid

(Continued on page 152)

YL NEWS and VIEWS

BY ELEANOR WILSON,* W1QON

YL Clubs

The 1956–57 club season is well under way. If you are not already a member of one of the existing sixteen YL clubs, you may wish to consider joining one of the groups. (Of course, we're assuming that all good readers are first members of the ARRL!) And if there isn't an established club in your city or state, and there is interest enough to warrant one, why not consider doing some organizational work yourself? That's how our present clubs came about. A few YLs envisioned that getting together as a club could do much to stimulate feminine interest in amateur radio, foster activities and further cooperation and friendship among licensed women operators, promote better operating practices, and in general, give collective support to the hobby we're grateful to have. We like to think our clubs are working toward such goals.

Just what do YL clubs do? Primarily they offer the camaraderie that is basic to most clubs. The members enjoy getting together and working together for a common cause. Most of the clubs engage in one or more of a variety of activities, such as the conducting of nets, code and theory classes, and contests; the programming of activities for YLs and XYLs at hamfests and conventions; the issuance of operating incentive awards and others. Some maintain their own stations and man them during emergencies, tests, and contests.

The largest YL club, the Young Ladies Radio League, with more than six hundred members, is preparing to sponsor its second international convention next year. A recent intensive YLRL newspaper campaign for publicity for amateur radio reaped excellent results throughout the country. The annual contests the YLRL conducts and the several certificates it offers attract the interest of OMs as well as YLs.

The majority of our YL clubs have come into being only fairly recently. Given time and additional growth there are other projects they may consider, as well as expanding on those already mentioned. Spreading good will for our hobby via the television, radio, and newspaper mediums and through school, church, and civic groups seems ideally suited to the talents of women radio operators. A YL club could "cover" a given locality in organized fashion. Perhaps someday an A-1 YL daytime transcontinental traffic net or system of nets will be developed. W6NZP has suggested that an international YL net be tried. Surely many of us would profit by increasing our knowledge of the technical end of radio. At each meeting of the Portland, Oregon, YL club, a member is prepared to give a ten minute talk on such subjects as s.s.b., antennas, construction, etc. This sounds like a solid idea and one other club may wish to start copying right away. Don't forget too that the ARRL has technical instruction films which YL clubs are just as able to borrow as OM groups. The SCM of Illinois, W9YIX, wonders why there are so few YLs holding ARRL appointments, such as OPS, OBS, OO, PAM, etc. This suggests another sphere of influence for YL clubs. During an emergency, with probably the majority of members at home during the day, a YL club could provide real assistance in operating, whether it be at the club, c.d. or RACES, or home stations. These are but a few of the possibilities that might be considered.

For those YL groups who choose to be primarily social, that is fine too. We merely wish to point out some of the channels for service which seem particularly adaptable to the concerted efforts of a YL club.

Up-to-the-minute information on the YL clubs on record with us follows. All of the groups welcome new members. For further details, please write to the club president.

INTERNATIONAL

The Young Ladies Radio League — has a number of affiliated clubs; organized 1939; approximately 600 members, all licensed women amateurs, including novices; dues $2.00 per year; President Cris Bowlin, W9LOY, 6563 North Tahoma Ave., Chicago, Ill.; publishes *YL Harmonics* bimonthly; sponsors YL-OM Contest and YLRL Anniversary

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

♦

Organized in July 1955, the Portland Roses of Portland, Oregon, is one of the newer YL clubs. Nine of the eleven members are shown in the photo. Seated — WN7CCF; W7QKU, President; W7s RVM QXH and WFO. Standing — W7s SPC ZKY TVU and REV.

♦

YLRL Net Schedule

Here is the scheule of nets registered with the YLRL for the 1956–57 term, as received from the YLRL Vice-President. Please address inquiries direct to Gloria Matuska, W9YBC, 2322 South Second Ave., North Riverside, Illinois.

PHONE

Freq. (kc.)	*Day*	*Time*	*NCS*
3970	Mon.	10:00 A.M. CST	WØUDU
3900	Mon.	3:00 P.M. PST	W7HHH, W7NJS Alt.
3900	Tues.	8:00 A.M. EST	W4HLF (Blue Ridge Net)
3838	Tues.	9:00 A.M. EST	WØKJZ (Pi-Net)
3900	Wed.	8:00 A.M. EST	W1TRE (Yankee Lassies Net)
3820	Wed.	9:00 A.M. PST	W7QYN (NYLON)
3915	Wed.	9:00 A.M. PST	W6PJF (Ironing Board Net)
3900	Wed.	9:30 A.M. EST	W8ATB
7215	Thurs.	9:00 A.M. EST	K2IWO
7235	Thurs.	10:00 A.M. CST	W5EGD (Texas YL Round-Up Net)
14,240	Thurs.	11:00 A.M. PST	W9RUJ, W7IDO Alt.
21,390	Fri.	1:00 P.M. PST	W6QGX
29,000	Tues.	1:00 P.M. EST	W9GME, K6EXQ Alt. (Hair Pin Net)
28,900	First Tues. each month	9:00 P.M. EST	Canal Zone Round Table

C.W.

3610	Wed.	9:00 P.M. EST	W1WPX

Party annually; conducts phone and c.w. nets (see complete schedule); issues YL-WAS, YL-WAC, and YLCC certificates.

South African Women's Radio Club — organized 1952; more than 100 members; overseas YLs who wish to join may do so for 8 shillings per annum, or approximately $1.14 American currency, and they will receive the club magazine published bi-monthly *YL Beam*; President Mrs. Marie Cormack, ZS6KK, 2 Dana Court, 96 Dunbar Street, Bellevue, Johannesburg, South Africa; issues Worked ZS YL certificate.

EAST

Women Radio Operators of New England — organized 1955; approximately 60 licensed members; meets two or three times annually; dues $1.00; Executive Committee: Barbara Harrington, W1TRE, Haverhill Rd., Topsfield, Mass., Chairman; *WTs QON RYJ SVN VOS*, members; conducts net Monday 8:00 P.M. EST 28,800 kc., W1RLQ NCS; Wednesday 8:00 A.M. EST 3900 kc., W1TRE NCS.

Rhode Island Young Ladies Radio Club — organized 1955; 16 licensed members; meets four times annually; 50¢ dues per year; President June Burkett, W1VXC, 24 Roger Williams Ave., Rumford, R. I.; conducts R. I. YL C.W. Net Wednesday 1:30 P.M. EST 3743 kc., W1VXC NCS; also Two Meter Phone Net Thursday 8:00 P.M. EST 145.3 Mc., W1WPX NCS; issues R. I. YLRC certificate.

New York City Young Ladies Radio League — a YLRL affiliate; reorganized 1942; 21 licensed members, 4 unlicensed members or associates; meets on the Friday nearest the 15th of the month at the Civil Defense Headquarters Building, N. Y. C.; dues $1.00; President Ruth Kalish, W2IGA, Winate Ave., Parsippani, N. J.

Long Island Unit of the Young Ladies Radio League — a YLRL affiliate; organized 1950; 14 licensed members, 4 associates; dues $1.00; Secretary-Treasurer Dorothy Gutman, W2KDP, 9 Rebecca Lane, Oceanside, N. Y.

Philadelphia YL Club (name to be selected) — organized 1956; 17 licensed members; meetings the second Friday of the month; dues $2.50; President Evelyn Wikoff, W4VCB/3, 941 Huntingdon Pike, Huntingdon Valley, Pa.

Washington Young Ladies Amateur Radio Club — organized 1955; 20 licensed members; meets the second Saturday of the month at Rector's Restaurant, Washington, D. C. at 1:00 P.M.; dues $1.00; President Claire Bardon, W4TVT, RFD 5, Box 173, Vienna, Va.; conducts net on 28,900 kc. the 2nd and 4th Wednesday 10:00 P.M. EST.

Saint Petersburg Amateur Radio Club Young Ladies — organized 1955; President Frances Foley, W4BIL, 3726 19th St. North, St. Petersburg; conducts net Monday 8:00 A.M. EST 7230 kc., W4BWR, NCS.

MIDDLE WEST

Chicago Young Ladies Radio League, Inc. — a YLRL affiliate; organized 1953; 9 licensed members, 3 associates; meets the 4th Saturday of the month at 1:00 P.M. at the Club's Room, Gompers Park Field House, 4222 Foster Ave., Chicago; dues $1.00; President Helen Kennedy, W9MXI, 5056 North Winchester, Chicago 40, Ill.; conducts code and theory classes for beginners.

Ladies Amateur Radio Klub — a YLRL affiliate; organized 1952; 41 licensed members; meets the first Wednesday of the month at 7:30 P.M. at the Austin YMCA, 500 North Central Ave., Chicago; dues $3.00 per year for active members, $2.00 for out-of-state members; President Adeline Weiland, W9LDK, 3039 West Fargo Ave., Chicago 45; issues LARK certificate and bi-monthly newspaper, *Pin-Feather*; conducts net Friday 10:00 P.M. CST 29,640 kc., W9LDK, NCS; C.W. net Thursday 2:00 P.M. CST 3750 kc.; W9MYC NCS.

North Star Young Ladies Club — organized 1955; 14 members; meets 2nd Tuesday each month at members' homes; President Nell Coil, WØMSW, 1664 Thomas Ave., St. Paul 4, Minn., conducts Pi-Net Tuesday 9:00 A.M. CST, 3838 kc., WØKJZ NCS.

WEST

Portland Roses — organized 1955; 11 licensed members; meets first Monday of the month at members' homes; dues $1.00; President Donna Gettman, W7QKU, P. O. Box 334, Oak Grove, Oregon.

Young Ladies Radio Club of San Francisco — a YLRL unit; organized 1954; 25 licensed members, 16 associates; meets third Friday of the month at members homes; dues $4.00 annually pro-rated quarterly; President Peggy Detsch, W6PCN, 123 Robinhood Drive, San Francisco; conducts code and theory classes for beginners.

Los Angeles Young Ladies Radio Club — a YLRL affiliate; organized 1946; 75 licensed members; meets 2nd Saturday of the month at Schabers Cafeteria, 720 S. Hill St., Los Angeles; dues $1.00 per year; President Harryette Barker, W6QGX, 16011 East Fairgrove Ave., Puente, Calif.; issues Lads 'N Lassies Certificate; sponsors annual YL-OM Valentine Dinner; conducts net Friday 9:00 A.M. PST 7250 kc.

Young Ladies Radio Club of San Diego — a YLRL affiliate; organized 1947; ten members; meets second Friday of the month at the American Red Cross Building, 3650 5th Ave., San Diego; President Mary Poe, W6MWU, 4574 Adair St., San Diego 7, Calif.

The Texas YL Round-Up Net is not classified as a club, but it does elect a president, who this year is Lillian Beebe, W5EGD, 2503 Forest Oaks, Houston 17, Texas. Forty-seven licensed members from several states call into the club net (see YLRL Net schedule); dues are $1.00 per year, and the club issues three certificates.

We are not sure of the present status of the YLRL Club of Milwaukee and the YL Club of Anchorage, Alaska. After four years of meeting, the Canal Zone QRMarys voted to cease to exist as a club in September, 1956.

There are several active XYL clubs or auxiliaries. If the president of such a group will forward information, we'll be glad to publish it.

(*Continued on page 156*)

All YLs

Remember the annual YLRL Anniversary Party

November 7th and 8th — Phone

November 14th and 15th — C.W.

See last month's column for the rules.

Correspondence From Members-

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

S.S.B. ASSOCIATION

Dover-Chester Road
Ironia, New Jersey

Editor *QST:*

. . . The next meeting of the Single Side Band Association should prove very interesting in as much as we plan to complete the establishment of our many aims "For the Furtherance of Single Side Band" and the amateur radio fraternity as a whole. In addition, plans to establish the completion of charter membership, our constitution, meeting place and the like will be discussed.

It is apparent, from the results of our endeavors to date, that an association of this type is desired on an international basis. We hope that through world-wide affiliation we can aid those outside of the United States in their single side band attempts by assisting them technically and physically to provide information and equipment not readily available to them at the present. This appears to be a major factor and one which ha already been given consideration at our meetings . . .

. . . A group of our members plan to meet on 20 meters in the mornings at 7:00 A.M. to "talk-it-up." Among others, they will include W2EWL, K2BWQ, W2AEF and K2QNF. If you have the opportunity, please call in.

— *Benjamin J. Harris, K2KSW*

AMATEUR TV

Waldron, Indiana

Editor, *QST:*

I am greatly interested in amateur television and would like to see articles on this type of amateur transmission. I am in correspondence with several British amateurs who are active with cameras and flying spot scanners. I would like to invite other interested hams to correspond with me so we might exchange ideas along these lines . . .

— *Don C. Miller, W9NTP*

SECLUDED

23012 Virginia Avenue
North Olmsted, Ohio

Editor, *QST:*

This letter will probably get me laughed into total seclusion. If it does, I don't care. I am stuck with my opinion, so here it is.

I don't care for s.s.b. I never have, and as time goes on, I hate it more. But — I believe this. If some of the boys want it, fine, let them play with it. But not at my expense. When it first came out it was OK because they were keeping in one place, usually the high and low spots on the band, however now as anyone can see without any difficulty, these characters operate all over the band, not caring a hoot about who they hurt. Of course I have been told my receiver is not of proper design, it's too broad, etc. All this by them of course, and the fact I have a pair of receivers (pre-war) I am told this and that about receivers. Well I like both of my receivers and don't intend to change them for their benefit. . . . I propose that legislation should be set up that would put a.m., s.s.b., and c.w. in their respective places. Set up frequencies that would separate these services from annoying each other . . .

— *William F. Balch, W8FQM*

NO DREAM

64 Barrie Street
Galt, Ontario

Editor, *QST:*

I wish to thank the ARRL organization for so much help given me.

Your code practice from W1AW and the fine *Handbook* helped me to pass the Canadian Amateur License in May. Without their help I would still be dreaming about ham radio.

I have been on the air for over two months on 40 c.w. using my new call VE3EGG, and a homebrew 25 watts.

Thank you again and keep up the good work.

— *Ernie Crump, VE3EGG*

QSL PAT

10 North 10th Avenue
Mount Vernon, New York

Editor, *QST:*

I have heard a certain amount of carping and complaining about the W2 QSL situation. I cannot, in truth, understand the seeming impatience of some of the newer operators that seem to form the main body of the "kickers." I, for one, am quite happy to have W2JTL handling the QSL chores down here . . .

When I find a fellow trying hard to please, I feel that he deserves a pat on the back, and not a slap in the face! Most secretary's assignments are thankless jobs, anyway; so let's hang on to a good QSL manager like this — after all he can't print those rare and exotic cards himself — and he can't begin to handle 12,000 K2, W2 hams, all by special delivery!

— *Neil A. Johnson, W2OLU*

NAA

Tallahassee, Florida

Editor, *QST:*

Where in the world did you get the photograph of NAA that appears in your September "It Seems to Us" . . . column? If memory serves me right, the antenna shown draped between the 600-footer and the two 450-footers was (or is) the same antenna that was up there when I, as an Apprentice Seaman (Radio), USN, served a brief hitch at NAA . . .

Several of us were en route to the Great Lakes Training Station for our indoctrination into Naval Radio — or Wireless, as it was then known — and owing to an outbreak of something or other, we were sent to NAA for a couple of months. During our stay there we were introduced to NAA's great spark transmitter, with its big rotary gap and tall towers. That gap was a thing wonderful to behold when it got wound up and sent its signal crashing out! It was driven by a monstrous electric motor and remotely-controlled from Washington. All we had to do was start the motor.

While there we had a terrific wind and sleet storm, which iced up the antenna wires. All leads were brought down to a common point, ending on an insulator set into a concrete "dead man" just outside the shack. The weight of the iced wires and the wind blowing them up and down just pulled that dead man out of the ground and there it swung on the end of the lead-in. It would swing up to the windows and just when we thought it would crash thru, it would stop and swing back. Finally, the officer in charge went out and lassoed it, then secured it to the base of one of the towers . . .

When I read of NAA's decommissioning several weeks ago, it was with a little sadness, but I guess that that is the way the water runs. Make way for progress.

— *S. M. Douglas, W4ACB*
4846 Eden Drive, N.W.
Roanoke 12, Virginia

Editor, *QST:*

Your article about the passing of NAA brings to mind a little incident regarding those big towers that an old-timer, who has seen them, either close up or from afar, will understand.

(Continued on page 158)

How's DX?

CONDUCTED BY ROD NEWKIRK.* W9BRD

How:

At this time of year every h.f. ham band throbs with DX potentiality. Our 20- and 15-meter bands already are DXploited thoroughly on both phone and c.w. but radiotelephone DX possibilities on 75, 40 and 11 never have been fully realized, even during the busiest hours of DX contests. Why? Apparently habit. It seems we're all too imbued with that "tune just below the American phone band" routine.

There are plenty of DX phones, rare ones included, using the 3.5- and 7-Mc. bands. But you won't find them "just off the low end." You see, on these bands overseas A3 suballocations may be only a few kc. wide, and their upper limits may be, and often are, well below 3800 and 7200 kc. It's almost a cross-band situation.[1]

We have indications that Yank DXers are chiefly at fault in failing to work this one out. Their high-powered CQs DX, or just plain CQs, raise plenty of DX replies on 40 and 75 but they regularly fail to swing their receivers low enough. This state of affairs further degenerates when DX stations, convinced that W/Ks are oblivious to them, in turn take to ignoring Yank phone segments. This season let's *tune.*

Our 11-meter band is another case in point and the circumstances are similar. In actual DX practice this range can be put to work advantageously as a second North American radiotelephone suballocation for the 10-meter band, much of the DX world having no 27-Mc. transmitting privileges to begin with. E.g., overseas DX phones transmitting in the sub-28,500-kc. range find plenty of QRM-free answers in our 11-meter segment by simply stating "tuning eleven" when they CQ or sign QSO. Moreover, when 28.5 Mc. is close to m.u.f., as often it is, such use of 27 Mc. pays off in more solid signals. Once again, let's tune!

And now that old familiar plea directed to overseas DX phones: *You* fellows are in the driver's seat. When you call CQ, or sign QSOs, *please state what frequencies you will tune.* Then stick to it. Nothing is more ridiculous to hear than the whole 28.5 — 29.7-Mc. range reverberating with the call sign of a single DX station. Such fruitless bedlam indicates that you're getting out, to be sure, but it more pointedly emphasizes that your signal strength may far exceed your mentality. Short calls, plus tuning instructions, please.

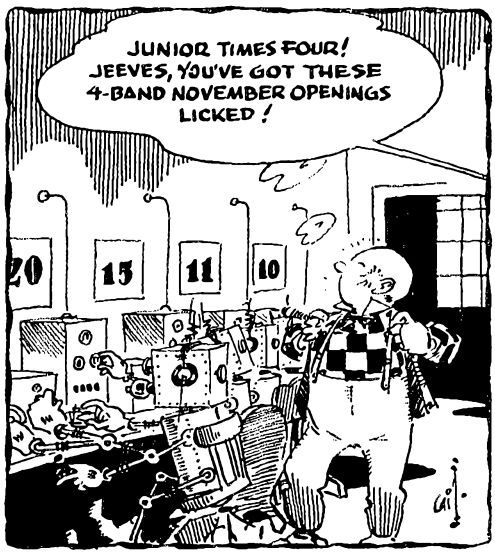
Brother, if you think 10-meter QRM was appalling during the last sunspot maximum you ain't seen nothin' yet! Are you aware that the number of radio amateurs in 1956 is almost double that of 1948? Despite the availability of 15, with the present heavier distribution of multiband rigs we won't be far amiss in estimating that 28-Mc. activity and QRM soon will double that of the late '40s. Refinement of our DX tuning techniques thus is more of a dire necessity than a mere desirability.

What:

10 phone stirrings are a surer trait of autumn than frost on one's pumpkins. And when the fish are biting this angling spot has *everything.* Its capriciously selective skip, unlike 20's nation-wide ionospheric sweeps, can feed five fast Asians to a 20-watt WØ while a W8 kilowatter hears naught but Europe. With the accent on Africa, W4TFB rammed through to **CRs 6AJ 6BH 7DS, EA8BF, EL12H, FF8AP, GD3IBQ, HB9OP/HE1, KA2s EB KS, KT1s** AG PU, **LX1AI, OD5AB, TG9JW, VQ3ES, ZLs, VKs** and **4X4BL.** Unusual QSO: ZS4F piping ZS8I's 80-meter voice across the pond on 10 . . . . . **VQ2AW, ZP5IT** and **ZS3AB** cheered W9FTL, while W8YIN captured **ZD6RM** (100) . . . . . W1WXC's 85-ft.-high 5-element wide-spaced whirler warmed up on plenty of VKs, ZLs, **JA1s** BFJ CO, KA2EB, **VR2BC** and **ZB1AJX** . . . . . **ZE2JE** (230) and an EA8 enthused K4DAS about 10 phone . . . . . K2MMF preferred **HP1BR, OQ5BK, ZB1AY, ZC4VP** and **4X4CW** . . . . . Other goodies rolling through: **CR6AI, EA6AS, MP4KAC, VS1FE, ZDs 4AF 8SC** (300) 22 and **4X4FV.** Yes, ten is back in business!

10 c.w. reports concur. **XW8AB,** disdaining 14 Mc., gave Laos to K2s EQD DSW and W1YYM via 28-Mc. code . . . . . K2HZB collected **DM2ACN, HA5BI, LZ1WD, SP6GB, UC2KAB** and **YU1FC** to reach 67 . . . . . K4DAS got that **HA5** plus **UC2AA** (95) and **YU3AE** (65) . . . . . Miscellaneously at *K2DSW:* **ZD6RM, 4X4BX.** *K2EQD:* **HK3PC** (100), **HP1BR** (19) 0, **VS2CR** (97) 15, **ZD6BX** (70) 15, 4X4. *W4LDD:* HP1. *W9FTL:* **DM2AEN.** And this is only the beginning.

20 c.w. is in that unpredictable short-skip-plus-long-path mood during daylight hours. This is rough on the rotator bearings but allows diggers like W2HMJ to

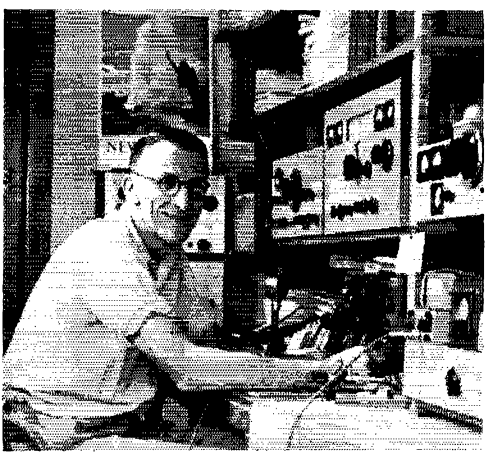


* 4822 West Berteau Avenue, Chicago 41, Illinois.

[1] We are requested from time to time to make available complete accurate listings of world-wide phone suballocations. At present this is not feasible for several reasons, the most compelling being that in much of the world these band specifications normally are in state of flux. However, "How's" regularly presents information on the subject as such comes to our attention.

VS1CZ's fat phone signal is responsible for some 130 countries on 20 meters. That cabinet provides spacious quarters for a 65-watt 807 rig modulated by 807s, and the receiver is one of those ubiquitous AR-88s. Ken's rotary is a phased 2-element affair 30 feet high. (*Photo via W7PHO*)

unearth **CR7**BS (82) 21, **KG1**BF (41) 0–1, **LU3ZM** (62) 11 in So. Orkneys, **UA9s** CR (37) 1, DX (56) 1, KDL (90) 4, KYB (80) 3, **VQ2s** GR GW (55) 22, **VS1**GV (86) 11, **VU2**RM (72) 12–13, YA1AM (55) 2–3, **YI2**OT (105) 3, and **4S7**PT (68) to reach No. 235. **UI8**KAA (50) 2–3, **UL7**KAA (40) 12 and an XW8 escaped Aug. . . . . W8DLZ clicked with **ET3**AF (70), **FB8**BX (23), **KG1**FA (78), **LZ1**KNB (35), **UQ2**KAA (50), **UR2**KAA (38), YO8CF (62) and **4X4**CK (87) for 143/131 . . . . . M1PDN, a PX1, **UA9s** CM (40) 1, DN (25) 2–3, **UR2**AK (75) 5, **VP5**FH (3) 0 and a 4S7 returned W8YIN's 73 . . . . . K6DNH made away with a CR7, **KM6**FAA (19) 4, **OQ5**BB (27) 15, two SP8s, UAs, **UAØs** KFC (33) 6, KJA (41) 14, seven UB5s, **UC2**KAB (15) 14, **VP3**AD (78) 3, VQ2W (55) 15, a VR4, **YO3s** FT RD and **ZD2**GWS (35) 15, now 139/114. Jim scored a not-bad 70 on our stiff September DX Geoquiz . . . . . W1DBA cornered EA8BF (60) 3, **FF8**DA (50) 1, one FY8AB, IT1AGA (60) 2, **KG1**LZ (50) 20, **LZ1s** KAA KFZ KSZ all 1–3 (55–65), SP8CP, **UB5s** KBA UB, **VP7**ND (60) 1, **4X4s** FA (65) 23, GS (80) 3, **9S4**DE (65) 1 and other niceties . . . . . On the Asian tangent W7DJU worked **JA1s** ACU CJ NT, KAs 2OZ 2PG 2UW 3CY 7HH 9MF, **KR6**RR and **VS1**GL. Dale still misses *QST*'s old "Calls Heard" columns from days when he was 9BWK in Aurora, Ill. . . . . Still out west, W7YAQ pinned down **JAs** 2BL 6AD 8AA 8AH ØAQ, **KA3**AC, **KJ6**BM (12) 6, UA9VB (52) 14, **UAØ**CJ (37) 16, a Nauru VK9, **VR3**B (23) 6, **VS1s**, GX (81) 15, HC (43) 15, **VS6**DE (91) 16, **ZS3**KG (104) 7 and **4S7**LJ (92) 15 in short order . . . . . Swinging south, look what W5VIR ran down: **AP2**RH (28) 13, BV1US (45) 14, **CEØ**AC 3, **CR7**LU 13, **CT3**AB (80) 1, **FB8ZZ** 13, **FK8**AO 14, GD3UB 23, **I5**RAM (70) 4–13, **KR6**NI 13, **KW6**CD 12, KX6AF (50) 15, **SU1**IC (78) 2, UAØs and UB5s, UR2, VQ1, VQ5GC 14, **VQ8**AB 13, **VK9**DB 15, VRs 3 and 4, **VS1s** HA HJ, **VS2s** DZ FB FD all 11–13, **VS6s** AE CO DI all 13–15, **YI2**AM 14, **ZK1**BS 5, **4S7s** MR 12, WP 13, **4X4s** CJ FK and IV all 2–3, this with a mere 100 watts and 2-el. hand-cranked rotary . . . . . **CR7**CK (14) 15, **CN8**AF, **DU9**JO (57) 15, **OA5**C (47) 14, UAØs, **SP3**PL (31) 6, **VR2**BZ **YJ1**RF (76) 8, YV5BJ (6) 8 and **PZ1**AP (44) 5 are among W6RLP's trophies . . . . . W1HMP/3 made a friendly wager with neighbor W4DJI/3 this summer to see who could grab 100 countries first. This spurred Walt's success with **CN8**CL, **CP3**CD, **CR6**AI, **CT2**BO, EAs 8BR 9AD 9DF, **EL2**C, **FG7**XC, **FM7**WP, **HC1**LE, **HH3**DL, **HZ1**HZ, **KGs** 1BO 4AB, **LX1**AC, **LZ1**KSI, **PJ2**AE, **PZ1**AH, **TF2**WBG, **VPs** 2DJ 5RR 7NM, VQ4EO, **YN1**CAA, **ZBs** 1CH 2T, **ZP6**CR, **3V8**AN and a 4X4 . . . . . W4FRO (W7BCO/4) raised **CN8**MN 22, **FA8**DA 1, **HK3**PC 1, **HAs** 5KAZ 8WI 9KOB all 1–5, **YO2**KAB 20, **XE1**MB 12, **4X4**GC 4 and **9S4**AX 22 . . . . . Callphabetically and concisely, at *W1BPW*: **CN8**JX, CX5CO, **HR1**JZ, **OX3**SL, **TF3**KA, **UC2**AA, **YO3**RCC with a c.c. 50-watter. *W1CCM:* **UB5**UB (72) 23. *W1HPM/3:* newly added **FY7**YB, **HC8**GC (90) 3–4, **HR1**EZ, **OY1**R, antarctican UA1KAE, **UQ2**AS, **9S4**AZ. *W1ODW:* **KW6**CB (75) 12, VQ5GJ (35) 19–20. *W2GVZ:* **UI8**AE (52) 19, **VP8**BW (118) 1 of Deception Isle **VU2**s AC (58) 1, JG (40) 0, **ZDs** 3D (12) 20, 9AE (36) 20. *K2BJA* EL2F (70) 23, FA8RJ (80) 2, UO5AA (70) 2, **UQ2**AK (50) 3, a YI2, **ZD2**ROC (60) 0. *K2DSW:* **HI8**FR, VR4. *K2ENO:* YUs in number. *K2EQD:* **CP3**CA (51) 2, HB1MX/**HE1** (52) 3, **HE9**RS (28) 0, **HP1**EH (78) 2, **UB5**KKA (68) 0, **UP2**KBC (70) 21. *K2GMF:* **FY7**YE (60) 23, EA8, **LUØ**AC, an FY8, VR4, 3V8AO (3) 0. *W3CMN:* KV4AA (80) 19–23, **YV4**AU (45) 22. *W3TYW:* **OX1**AP (45). *W3VZJ:* observes stabilizing conditions through 1-hr.-plus RCC effort with GM8CH. *K4DAP:* Nauru, VR3 and 4, **KW6**CA. *K4DWF:* **FO8**AB 23, **HZ1**AB 3, **VK9**XK 3, VR4, 9S4. *W4LDD:* **HA5**BO, 4X4. *W4NBV:* **VSs** 1GZ 2CR, VU2BK, **ZS7**D for 163/137. *W4TFB:* **KG6**AGC, **KB6**BA, **KW6**CD, **ZB2**Q. *W4UWA:* Luxembourg, YV. *W5HNS:* **HB1**OU, KA2OZ, JA2AG. *K5BGB:* **CR6**CK, HR1MM, **KR6**QW, **VP2** 1HA 4KL. *W6RLP:* **CE9**AW (19) 2, **FL8**AB (37) 15, both still stalked. *W6RZS:* CR7 VQ4 VR3. *W6YY:* observes **AP2**U, **FR7**ZC (52) 13, **ZD6**BX (10) 12, **ZS2MI** (61) 15–16 of Marion Isle, **4X4**IM. *K6JQJ:* Cocos **VK1**RW (46) 18, **VQ8**AG (61) 14, **XW8**AB (5) 18 to reach 183. *W8GLK:* YI YJ ZD3. *W8IBX:* **ZB1**BF (18) 2. *W8QVQ:* **ZA1**A. *WØYQE:* JA1VX, UAs logged. *VE1PQ:* **VQ6**LQ, W7EMY/**KJ6**, VK9s, antarctica UA1. *VE2AFC:* SP, UAs galore, **LZ2**KST. *I1ER:* all W/K call areas and (at last)! W7FBD for Idaho . . . . . No. Calif., So. Calif., Wilamette Valley and W. Gulf DX Clubs batten down the 20 c.w. hatch with specs on **ACs** 3SQ (92) 14, 5PN (90), **AP2s** AD (40) 13, Q (80) 14, **CN2**AE (67) 9, **CRs** 4AH (83) 2, 6AM (17) 15, 6CF (17) 22, **1Ø**AA (40) 8–9, **DUs** 1JFD (78) 12, 1VQ (42) 13, 3DO (67) 10, 7SV (92) 13, **EL2**S (20) 1, **ETs** 2US (65) 15, 3LF (52) 15, **FB8s** BK (50) 13, BR (30) 4, **FE8s** AE (57) 20, AG (37) 20, **FF8**BI (48) 21, **FG7**XD (90) 3, **FM7**WD (60) 4, **FO8**AO (30) 6, **FP8**AP (70) 13, **FQ8s** AF AR AX AY al 16–23, **FU8**AA (20) 17, GC2FZC (40) 6, **HH2**F (40) 0, **KC6**UZ (90) 10, **KJ6**BP (60) 5, **KT1**TW (35) 1, KX6NC/**KC6** (52) 5, **LU8**ZW (40) 14, LX1ML (32) 6, **OQ5**BT (55) 14, **PKs** 3US (53) 14, **7A**DM (100) 11, **PZ1**AM (9) 3, **SU1s** IB (93) 4, JL (60) 0, **SVØWS** (35) 22, **UA9s** AA AC CC CL DH DT FAB KCA KQB KUA OC, **UAØs** AA CE KFE KMA KC1, PA SK, **UD6s** AL (67) 3–4, KAB (50) 16, **UF6s** AB KAC KAE KAF, **UG6s** AB (22) 13, AG (52) 14–15, **UH8s** BA (10) 8, KAA (55) 14, **UJ8s** AF (95) 13, KAA (36) 14, **UL7s** CB (80) 2, KBK (10) 13, **UN1s** AA (40) 4–5, KAA (75) 21, **UO5s** AA (75) 16, KBR (80) 5, **UP2s** AH AK AS KBA, UQ2AH (27) 3, **UR2**AO (80) 0, **VKs** 1IJ (72) 9 of Mawson Base, 9OQ (2) 7, 9SP (65) 11–12, 9WP (27) 12, **VP8s** BS (42) 1, BW (100) 1–2, BY (58) 14, **VR2**2 BA (35) 11, CV (75) 6, **VSs** 1GY (20) 17, 1HB (35) 12, 2FE (13) 13, **VU2s** AX EJ HF JK JU all 11–16, **XZ2**OM (58) 15, **YK1s** AC (28) 12, DF (58) 6, **ZB1s** HKO RK ZR, **ZB2s** R (52) 1, V (10), **ZCs** 4IP (36) 15, 5SF (20) 13, 6UNJ (50), **ZDs** 1FG (73) 1, 2DCP (56) 0, 2JAB (21) 2, 4BQ (80) 0, 4BT (63), 6RM (33) 14, ZE1JO (80) 14, **ZS8**D (82) **3A2**GG (35) 5, **4S7s** EM (91) 11, MG (37), **4X4**FV (54) 3 and **5A2**FB . . . . . .



ZL2GX tops the Oceania area on the DXCC Awards free-style ladder and wages a nip-and-tuck battle with ZL1HY (pic on p. 68, Dec. 1953 *QST*) for Oceania radiotelephone DXCC supremacy. Jock has a DXpeditionary assault on the Kermadec Islands up his sleeve. (*Photo via W6YY*)

W4TO, who needs only UN1 to clinch postwar all-U countries, is informed by *UP2AS* that U.S.S.R. call-area boundary changes are afoot. UN1s, for instance, become ordinary UA1s. . . . . PK7ADM now is **JZØADM.**

20 phone turbulence varies inversely as 10 and 15 A3 conditions improve. **W2IWC's** 100 watts, Mosley beam and crank-up tower account for **CN2BD** (230) 23, **CR4AF** (111) 0, **CR5SP** (163) 22, **FA3GZ** (225) 22, **FB8BC** (133) 5, **FO8AD** (110, 305) 11, **GD3UB** (130) 0, **HR1CB** (184) 14, **KA2AC** (190) 13, **KJ6BM** (275) 8, **LX1DA** (100) 4, **UC2KAB** (105) 22, **VQ5FS** (137) 22, **YJ1RF** (150) 6–7 and **4S7YL** (109) 12. That's a heap o' hollerin'! . . . . The **4E27** at K6JQJ clobbered **KC4USV's** s.s.b. (280), **HP1CC** (204) 6, **TG9AD** (140) 8 and VR4 . . . . . W6YY reports snappy sigs from **BV1US** (113) 14, **CR7CO, DU7SV, ET2US, FB8ZZ** (135) 14 on Amsterdam Island, **VS6AE** and **ZK1BL** . . . . . Here and there, at *W1APA:* **KC4USA** regularly, **KG1FA** (260), VE8MC on Prince Pat Isle, hears **ZK1BS** (256) 10. *K2BJA:* **TG9SJ** who is fast with an airmail QSL. *W5GAH:* VR4 for 81 on phone. *WØQGI:* **KC6UZ, KG6FAE** for 82 on phone with his little 2E26 . . . . . **AP2s** U (112) 13, Z (110) 1, **CN8MM** (115) 5–6, **CRs 6BW 7CS** (113) **7, CT3s AI, AN, DM2ADL** (220) 22, **EA8s AI BB** (130) 4, **EA9BK, EL2ZG, ET2PA, FF8AK, FM7s** WF WN WQ WS, **HC8GI, HI6EC, HZ1TA, I5RAM, K6KNY/KW6, KAs** 3KB 9JG, **KGs 1FR 4AA 6GX 6NAA, KM6FAA, KT1PU, KX6BQ** (143) 14,

HB9CZ uses this miniature 7-pound station on such Alpine sorties as his July DXpedition to Valais canton (HB1CZ/VS). Its VFO-6AK6-5618 transmitter (7 watts) and regen 1T4-1T4-1S5-1S4 receiver perform well on bands 80 through 10 meters. (*Photo via W3GHS*)

LZ1s KAA (100) 21, KPZ (130) 3, **MP4KDS, OK1MB** (113) 6, **OQ5s** FH 4, LA, **PX1YR, SP2BI, SU1AS, SVØWE** of Crete, **TFs** 2WBG 5TP, **UAs** 3AI 3CR 3KAH 3KAM 4FE **9AA, UB5s** KAA KBE KCA WF (190) 5, **UC2s** AA KAC, **UP2KBC, UQ2AN** (110) 4, **UR2s** AA KAA (240) 21, antarctican **VK1IJ** (160) 6, **VK9s** BW WG, **VPs** 1EK 2DJ (250), 8BY (165) 4, **VQs 4AQ 4EG 5DES 5FS 5GJ 8AL** (160) 4, **8AR** (177) 4, **VR2AA, VSs** 1GR 2BN 4NW (175) 15, **6CG** (106) 10–11, **XZ2AD** (100) 15, **YI2AM, YK1s** AK DF, **YO3s** RCC RF UI all 4, **ZA1UB, ZC4s** AH TB, **ZD4s** BF CF, **ZM6AS, ZP5s** AY EC CF, **ZSs 2MI** (165) 15, **7C 9G** (140) 5, **3A2BF, 3V8BL** (123) 3, **4X4DK** (130) 4, **5A5TC** (171) 15 and **9S4BN** are 14-Mc. phones spotlighted by WGDXC's *DX Bulletin*, NCDXC's *DXer*, SCDXC's *Bulletin*, ISWL's *Monitor* and W9FDX's MRAC *DX Notes.*

15 phone, combining some of the best features of 20 and 10, is assailed by a murderous ambush of higher power and bigger beams this year. W6ZEM's kw. flattened the receiver response curves of **DU6IV** (240), **HZ1AB** (225), **OQ5BG** (255), **SP5KAB** (240), **UQ2AN** (238), **VP7NF** (190), **VSs 1FE** (230), 2DB (225), **VU2s** CW (196) HF (260), **YO3RCC** (187), **YUs 1AA** (145), 3JN (145), **ZB1AJX** (240) and **ZD8SC** (212) . . . . . However, W4WVM's efficient 25-watter made it 129 21-Mc. A3 countries by way of **BV1US, CRs 6BH** (238) 22, **9AH** (140) 15, an HZ1, **SV6FP, TF2WBG,** a UQ2 and **ZM6AS.** That CR9 also succumbed to W8YIN . . . . . It's 150 15-meter phone countries at W4NQM thanks to such as **KB6BA. VR2BC, VS6AE, VU2RC, ZK1BL** and **9S4BN** . . . . . W9ICL's 147-country 21-Mc. A3 tally was helped by **TF3MB** (210) 22, **VK9RH** (220) 2 of Norfolk Island, Leewards' **VP2AD** (175) 20, **VU2JP** (170) 22 and others already mentioned. Charlie also encountered W6JFM/FO8 (260) 3 . . . . . **EA8BV, HB1TL/HE, HH2JL, OD5AV, OQ5BG, VQ4EG** and **3V8AP** QSLs are awaited by K2JYH . . . . . W6ZZ delighted in BV1, CE3TH, HH2JK, KA8WK (202), **KM6AX, KV4BD, KX6s** BU ZB, **VPs 4TM 7NF** and assorted ZLs, now at 118 on 15 . . . . . Briefly now, at *K4CHK:* **HK2GO's** rockcrusher, VP7. *W6VTR:* CR5, **HC4MK** 2, **ZSs** 7C (230) 20, 9G (150) 19. *W7PEG:* KB6, **KX6BQ** 4, **OA5H, ZK1BS37, ZP5JE** 1. *W7YAQ:* VP7, **ZE3JG** (140) 18. *W8NOH:* **CE1AH** (192), **HR2WC** (420), **VP4LO** (152), YN1BW (225). *WØQGI:* **KG1LH** for 84th phone country . . . . . ISWL, NCDXC and WGDXC team to offer **CRs 6AO 6AH 7AG 7IT, CT3AN, EAs ØAC 9EE, EL2s** B D H, **ET2FM, FB8s BX BZ, FF8s** AP BP, **FM7WS, FQ8AK, HRs** 1LW 3HH, **KA2KS, KG1s** BF CG FR, **KR6s** OV PI QV, **KV4s** AI BB BI BQ, **MP4s KAC KDS, OQ5s** AG BI BW CS GT PU, **OY2s** A Z, **SVs** 1AD 6FY ØWE, **UAs** 3CR 4FA, **UB5WF, UC2KAC, UR2KAA, VK9DB, VPs** 1OY 2AA 3YG 4TE 5FH 7NQ 8AK, **VQs** 2DT 2RH 4EO 4RF 4RR 5EK 5GC, **VSs** 1FP 1GR 1GV 2DV 4BO 6BE 6CT, **VU2BK, YN1HF** (200) 1, **ZA1A, ZDs** 2JHP (115) 20, 4BF 4BQ 4CF 6RM, **ZE2s** JK KR, **ZP5s** AM CF CQ ET, **4S7s** GD GE (160) 18, YL, **4X4s** BD FA LF and **5A1TA** (238) 18 for your 21-Mc. vocal pleasure.

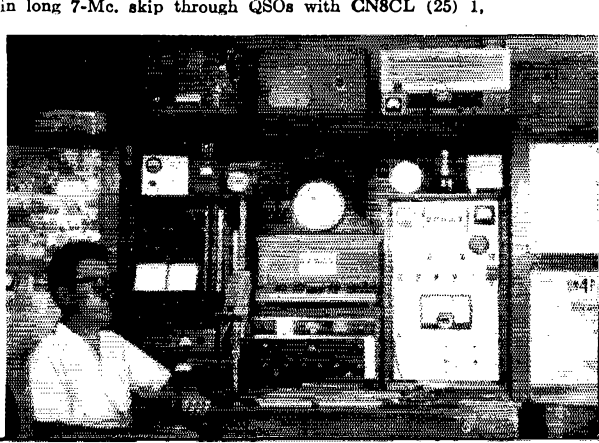
15 c.w. types proliferate as 21-Mc. phone jam-sessions separate lukewarm A3ers from the never-say-die voice men. **DM2s** ABB ABL ACN all 17–19, **FA8CR** 20, **HA5s** AD BW (60) 19, **HB1MX/HE** (80) 14, **HK2GO** (132) 1, **KX6NC/KC6** (73) 4, **OD5AV** (49) 18, **P11LS/MM** (31) 23, **SPs** 1KAA (95) 15, 5AB (81) 20, **TF3MB** (14) 22, **UC2KAB** (73) 19, **VP2GN** (95) 20, **VQ4FJ** (59) 19. W2AIS/VK2 (60) 5, **YOs** 2KAB (31) 19, 8MS (5) 14, **ZB1s AY** (39) 20, HKO (86) 17, **ZE1JV** (86) 17, **4X4IB** (66) 21 and **9S4AX** (24) 21 satisfied W7YAQ and 807s . . . . . W5VIR scored with **CR6AI** 21, **JA1VX** 22, HZ1HZ (100) 22, **OQ5BT** 20, **SVØWT** 19, **VQ2GW** 19, **ZB2I** 21, **4X4s** CK Ø, FA 19 and others . . . . . K2JYH's latest: **DU7SV, FQ8AR, KW6CA, MP4BCA, OY2Z, UB5CI, VP8BZ, VQ5GC, VS6CT** and **VU2HF** . . . . . Key Wester W4GLJ caught **GD3FXN** (34) 21, **SL5AX** (55) 18 of the Swedish military, **SP1BC** and **4X4CK** (155) 22 . . . . . JA1ACB, **LZ1s** KNB WD, **UAs** 3BF 3CR 3EG 4FC, **UB5s AQ BP, TF3MB, VS6AE** and **3V8AD** answered K4GOZ . . . . . An HZ1, **MP4BBL** (55), **LZ1KBD** (38), **SVØWT** (75), **UB5s** CI CR WF, a PX1 and YO hooked W8DLZ . . . . . K4DAP managed GD PX UA ZB1, **VPs 2GN 6GC, VQ2AS, 3V8AO** and **4X4DR** . . . . . Reports from random points, at *W1CCM:* numerous Euros. *W1ETV:* likewise. *K2DSW:* IT1AI, PX VK, **SM1JA, UAs** 1KAC 3AF. *K2ENO:* I1BLF/Trieste, LA6VC/U (see "Whence"). *K2EQD:* HZ PX UC2 VQ5. *K2GMF:* UC2. *W3EVC:* **YU3s** EU LT. *W3TYW:* UC2. *K4AMC:* SP1. *K4CHK:* **CO8AQ, VP6CS,** YN1PM. *K4DAS:* LX SL ZB1. *W6ZZ:* **CN8JX,** LZ UB5 UC2 YO YU. *K6LXE:* Euros in quantity. *K6OVJ:* **EA8BF, KG6FAE.** *W7PEG:* JA **TF2WBG,** ZB1. *W8YIN:* TF 4X4. *W9FNX:* **CN8AS,** . ZB1. *WØQGI:* HZ for No. 164. *KØCER:* **CE3AG, LUØBV/MM, VE8CN, WP4AFH.** *I1ER:* all W/K call areas save 7th and 9th . . . . . WGDXC and NCDXC alert us for **FG7XC** (47) 23, **FQ8s** AG (85) 20, AY (72) 20, **VU2JK** (38) 15, **UA9CC** (94) 18, **XW8AB** (65) 19–20, **YA1AM** (50) 18 and **ZD6BX** (40) 15.

15 Novice activity approaches annual peak and **KN4JFE** did well with **FA8RJ, KA2KS, I1NU/Trieste, SPs** 1BC 3PL, **UC2KAB, XE1PJ, YU3AV** and **ZL4MK.** Among the continents Rod still needs "easy" South America . . . . . **FY7YC, PZ1AH, SP1KAA, ZB1AY** and **DM3KCI/P** made it 21 countries at KN4GNO . . . . . KNØGJD's 50 watts and homespun 3-el. beam raised oodles of Europeans besides **DM2ACG, LZ1KNB, SL5AX** and SPs . . . . . **DU7SV** 15, **HA5AD** 20–21, **VP4TM** 15 and **ZB1HKO** 22 contacted KN2ROR to make it 31. An overdue QSL from Africa will qualify Alan for a tyro WAC . . . . . Hither and yon, at *WN1HZZ:* **OH6SK, OK2KBA.** *WN3EVC* (now W3EVC): **KP4AEF;** *KN4HQD:* FA8, **OH2JC.** *KN4IFB:* **KL7BVV.** *KN4KGQ:* **KL7BPY.** *KN4KKQ:* **OH2s** LP XK, many SMs DLs, **9S4AL.** *KN6RGO:* KA2, **WH6BSP.** *WN7AOZ:* **VS1GX.** *WN7CNL:* EI2R, KA, **KH6BSM, VP9AZ.** *KN8BPM:* **KV4BK, WP4ADK.** *KNØGJD:* added **CE3AG, JA1CR** and **XZ2AD** at deadline.

40 c.w. DX activity through the hot months went down but not quite out. K2EQD notes an autumn upsurge in long 7-Mc. skip through QSOs with **CN8CL** (25) 1,

♦

ZP9AY, chief distributor of Paraguayan c.w. QSOs, mans this neatly compartmented console at Encarnacion, Itapúa province. Roberto used a v.f.o.-813 150-watter, AR-88 receiver, and long-wire antenna to rack up a resounding 136,706-point score in the 1956 ARRL DX Test. "My main difficulty is that I do not have a power line. I work with a gas engine and alternator and must stop from time to time for filling, oiling and cleaning." *Some* handicap!



FL8AB currently is one of the more stellar attractions on 20 meters, singlehandedly representing French Somaliland. Guy is perturbed by the boorish antics of some of his pursuers. (*Photo via CN8MM*)

During the past year the number of amateurs in Poland has roughly doubled. SP3PL has one of the more familiar Polish signals heard Stateside and prefers 14 Mc. (*Photo via W6ITH*)

HH3DL (25) 3, IT1AGA (20) 2, LZ1KBD (9) 3, UB5UB (9) 2 and ZB1ZR (24) 1 . . . . W7UVC's potent 6L6 tritet picked up DU7SV (10), JAs 1ANE (18), 1LR 6PK, XE2s CB NF, YV1AD and ZLs . . . . . FG7XD (22), HH2YD (1), TI2AM (1) and VP3ZA (29) agreed with W2JBL . . . . . Skipping around the land, at *W1ECH:* IT1 KL7 PYs, TI9AA (9) 1. *W1RWS:* YI2DX (2) 3. *K2DSW:* FG7. *K2GMF:* DM2ABE. *K2MGR:* FA8JO, PYs, Euros. *W4GLJ:* FG7, HH2LR (50) 22. *K4DWF:* FG7s XC XE, KG6AGC 5-6. *K6DV:* JA1EF (10) 14 phone-to-c.w. *W7YAQ:* JA1ACA (16) 14. *W8WTO:* HH2Y, TI9 ZL . . . . . Forty's Novice kilocycles are coming back into their own and KV4BK brightened the logs of KN2RKR, WN3EVC and KN6RXK . . . . . WN7CCP tangled with KL7DD and KH6SP, while KN6RGO appropriated WH6BYZ . . . . . WN7CNL worked ZL2IA and juicy KC6KU (168), plus KH6s AXP BLX, WH6s BRA BRN BTR BTX BUF BVD BVM BWG BWL BXE BXF BYG, WL7s BRF BRR BST and BUM.

Eighty and one-sixty, as expected, are awakening much later than usual. Plans are in the formative stage so far as 1.8-Mc. DX tests are concerned, but W4UWA is set for any eventuality: "I'm working as BC engineer for WHUB and have the shift Friday and Saturday nights. I'm planning on hitting 160 meters after closing time, 0500 GMT, Saturday and Sunday mornings, using WHUB's 180-foot vertical." Incidentally, the 160-meter regulations picture has changed considerably since last season. Check p. 66, July 1956 *QST*, and "Feedback" on p. 39, August *QST*, for the full scoop. W1BB's test info next month.

Where:

W3VKD has arranged to clear up QSL matters for the late VP3LF. Art holds Louie's logs for the period September 3, 1952, to April 13, 1956, and is ready to ship VP3LF pasteboards to deserving parties. Stamped self-addressed envelopes and full QSO data are requisite . . . . . From W6YY: Correspondence concerning RSGB DX certifications now can be addressed directly to G4CP . . . . . ZS6VA still receives QSLs from Yank Sixes, Sevens, KH6s, VKs and ZLs for 7-Mc. QSOs made by a spurious ZS6VA in February, 1955. Harry assures W7PQE he has never worked the States on 40 . . . . . From HR1LW: "I was in the local QSL bureau recently and there are quite a few cards for HRØXYL. Sorry; he is a pirate. HRØ is Swan Island but there are no Honduran amateurs there. HR3HH/9 was on from the Bay Islands but there are no resident amateurs there, either." . . . . . XW8AB tells WØQGI he's importing 3000 QSLs to square away his fat 14-Mc. backlog, while W7PHO learns that outbound XW8AC cards are cleared through VS1CZ . . . . . WGDXC reports that HZ1AB opr. Jeff D. Harman returned to W6GCO, Saudi Arabia replacement unspecified . . . . . Box 88, Moscow, still doesn't emit U QSLs in prefreeze fashion but a few stray packets are received here and there. Bureaucratic decentralization in the U. S. S. R. seems to include ham QSL matters because outbound card shipments are by-passing Moscow's Central Radio Club. Incidentally, Russian SWL cards are flooding the market again and we're faced with that old riddle of discerning between SWL reports and bona fide QSO confirmations . . . . . In a sequel to a September "How's" quotation ST2NG tells W2SSC *he has replenished his QSL stock and is exchanging confirmations on a 100-per-cent basis* . . . . . Ex-VR3D, now signing VE7ASL/KM6, shipped out over 700 VR3D veries from Hawaii. This should finish the job but Chas. invites further inquiries sent to the QTH which follows . . . . . From AP2RH: "G2MI has asked me to take on the QSL bureau here and I have agreed. Any cards for Pak hams can be sent to me or via RSGB. AP2CR and I are endeavouring to obtain a list of AP2 hams, of which I believe there now are 23." . . . . . Haitian amateurs' apparent distaste for QSLing may be caused by an exorbitant tax imposed on such outgoing postal items. W6ZZ hears that an early repeal is anticipated . . . . . "Received letter from HKØAI's sister who is now at San Andres Island for good. . . . Said to tell the gang she is working through his QSL backlog as fast as possible and that everyone eventually will get his deserved card." That good word from W6OUN, hovering at the 143/98 almost-DXCC mark . . . . . YJ1RF worked overtime to clear his QSL desk before leaving New Hebrides and WGDXC has it that YJ1AA will forward his mail . . . . . Regarding HB9KB's session as 3A2BH last month, W8KML understands that cards will not be sent to those who worked 3A2BH on previous occasions unless the latest contacts be on different bands. Fair enough . . . . . Now individual recommendations thanks to W1s APA DX ODW WPO YYM ZDP, W2s GBX HMJ JBL WFC, K2s BJA ENO GFQ MMF, W4s FRO TFB TO, W6s RLP ZZ, K6s DNH IEC JQJ, W7DJU, W8s KML NOH YIN, WØQGI, ISWL, NCDXC, SCDXC and WGDXC:

AP2AD, Box 4074, Karachi, Pakistan
AP2BP, Tele-communications Training Centre, Haripur, Hazar, W. Pakistan
AP2CR (via AP2BP)
AP2M, Box 2001, Karachi, Pakistan
CE2CO, K. Werner, Box 24, Llay Llay, Chile
CE3DZ, A. Quintana H., Correo 25, Santiago, Chile
CE3ZO, J. Kirk (G6ZO), P. O. Box 44, Santiago, Chile
CO2USA, c/o U. S. Embassy, Havana, Cuba
CT2AH, Fernando Gamboa, Aeroporto de Santa Maria, Azores
DL4WI, R. W. Cook, Box 2, 603rd AC&W Sqdn., APO 12, New York, N. Y.
ex-**DL4ZL**, M. T. May (to W9BJD)
ex-**DL4ZW**, J. F. Huey, 7762 NW 8th Ave., Miami, Fla.
ex-**EL10A** (to EL12H)
ex-**EL12A** (to W9GTX)
ET2FM, J. F. Meston, Box 252, Asmara, Eritrea
ex-**ET2XX**, Lt. Col. C. S. Breeding, SigC (W7ENP), P.O. Box 2807, Ft. Huachuca, Ariz.
FQ8AF, G. Crauet, Box 438, Ft. Lamy, Tchad, Fr. Eq. Africa
FQ8AX, J. Rozier, Box 218, Brazzaville, Fr. Eq. Africa
FU8AC, V. M. Fonsagrive, Port Vila, New Hebrides
HB9LN, Sig. No. 10, La Chaux de Fonds, Switzerland
ex-**HC1LW** (to BV1US)
HC8GC, Wm. Guzman, San Cristobal, Galapagos Islands, Ecuador
HH2OP, P. O. Box 691, Port-au-Prince, Haiti
HR2GH (via HR1AT)
HZ1AB (see text preceding)
JZØACK (to WIA c/c VK5AB)
JZØADM (see PK7ADM)
ex-**KA2SK**, S. F. Kasper, W3ZGG/2, 609 Eighth St., Riverside, N. J.
KG1LH, APO 858, New York, N. Y.
ex-**KJ6BN**, M/Sgt. J. Marsalis, 200 E. McGuffey St., Roswell, N. Mex.
KW6CB, c/o CAA, Wake Island
ex-**KZ5VO**, Lt. Cdr. H. Gorman, W4RQK, Staff, 2nd Flt., Naval Base, Norfolk, Va.

M1PDN (via ARI or I1PDN)
ex-MP4QAJ (to G3HEH via RSGB)
OQ5BK, P. O. Box 555, Jadotville, Belgian Congo
PJ2ME, Vincent Labega, St. Martin, N.W.I.
PK7ADM (via RSGB or VERON)
PY3DB, Radio Club de Santo Angelo, Box 72, Santo Angelo, Brazil
PY8BS, Box 417, Ceara Brazil, Fortaleza, Brazil
SM8BMD/MM (via SSA)
SVØFY, G. Dubois (F9HY), French Embassy, Athens, Greece
TG9MR, M. Recinos, 12 Calle "A", No. 13/10, Guatemala City 1, Guatemala
TG9SJ, J. J. Sierra, Coban, A. U., Guatemala
VE7ASL/KM6, C. H. Freeman, c/o Permanente Cement Co., Honolulu, T. H.
ex-**VK9RM**, P. B. Monfries, 74 Park Terr., Parkside, Adelaide, S. A., Australia
VP1JH (via VP1AA)
VP3LF (see text preceding)
VQ2PR, Box 67, Livingstone, No. Rhodesia
VQ2WP, W. Pope, P. O. Box 69, Mazabuka, No. Rhodesia
VQ2WR, P. O. Box 121, Luansha, No. Rhodesia
VQ5GJ, Box 355, Kampala, Uganda
ex-**VR3D**, (to VE7ASL/KM6)
VS4BO, P. O. Box 300, Kuching, Sarawak
VS5AT, A. F. Tipple, BMP Co., Seria, Brunei
ex-**VS6CW** (to GW3IVS)
ex-**VS9AS** (to G3ANK)
XE2BM, R. Blum, P. O. Box 59, Durango, Dgo., Mexico
XW8AC, Lucien Tchitchek (F9FW), P. O. Box 87, Vientiane, Laos
YI2OT (via RSGB)
ZB2V (via ZB2I)
ZC4BV, Box 116, Famagusta, Cyprus
ZD1FG, Prince of Wales School, Freetown, Sierra Leone
ZE6JB, C. Colson, P. O. Box 2313, Salisbury, So. Rhodesia
ZS1MQ, M. H. K. Smith, 49 Lynfrae Ave., Newlands, C. P., So. Africa
ex-**ZS1PD/ZS8** (to ZE1JV)
ZS3AQ, J. Korrubel, Huis 1071, Tsumeb, S. W. Africa
ZS6TV, A. Howard, P. O. White River, Eastern Transvaal, So. Afr.
ZS7L, J. Perry, Mbabane, Swaziland, So. Afr.
4X4CW, H. Osrin, Israeli Army, APO 2587, Israel
ex-**5A2FA** (to 3V8FA).

Whence:

Asia — Specialists needing Asia for WAC-YL are urged by W7PHO to watch for KA2MR's half-kilowatt and 3-element beam on 20 meters. She's K6DLL, ex-W4STU . . . . Japan will join the many nations now installing IGY antarctic bases but W6ITH learns there are as yet no plans for ham radio. Reg also passes along a Radio Peiping announcement to the effect that six Red China wireless operators will compete in an international contest to be held in Czechoslovakia this month. Strangely out of step with the U. S. S. R. and satellites, with a half-billion population Red China still claims no amateur transmitting activity . . . . G3EET, one of VS1GL's mainstays, shortly heads back to the U. K. but assures W7PHO that group station VS1GL will remain as active as ever . . . . AP2BP, currently chasing an s.s.b. WAS around 14,300 kc. at 1-2 and 12-14 GMT, tells W1DX he QRTs at November's end. Neighbor AP2RH battles monsoon humidity and is kept busy running down power-supply short-circuits in a borrowed 500-watter. "Conditions on 20 have, to say the least, been grim. Occasionally the long path to the States is open, though with the advent of the Russian chappies the QRM is terrific at times." . . . . W9ICL nominates CR9AH, MP4s BBW KAC, VSs 1FE 2CR and 2DB as outstanding 21-Mc. phone performers . . . . Undaunted in doggedly digging through the doggerel of 1956 ARRL DX Test correspondence, W1YYM credits JAs with the neatest, most legible logs. HAs are honorably mentioned. Ellen notes that KA2SK, who needed four WAS states at Test kickoff time, worked *all* 48 during the battle . . . . NCDXC has it that YA1AA will become OD5BV, LU8BF soon will sign HS1WD, and ex-EL3A will go to AP2 in future months . . . . K6DNH confirmed a 50-per-cent QSO with Korea through an SWL card from HL-1042.

Africa — VQ5GC's Seychelles plans bogged down but WGDXC ascribes other VQ9 intentions to VQ4AQ. Also, FB8BR is to be replaced by ex-FR7ZA on those periodic Comoros runs . . . . ET2XX swapped Eritrea for Arizona and is about to activate W7ENP . . . . CT3AN, EAØAC, ET2a FM PA, FB8BZ, FF8AK, FQ8AG, VQ6LQ, ZD6RD and ZD8SC get W9ICL's vote for the most outstanding Africa items on 15 phone . . . . Via NCDXC: W6MHB, treading guided-missile ranges down Caribbean way, is another DXer mulling over ZD8 operational possibilities. QSLs via Redstone express) . . . . ELØA/MM and ELØB/MM are Ws 4DGW and 8QOH, respectively.

Oceania — ZL1DA's visit to ZK2, and VP2VB/P's stop at Portuguese Timor are rattling the Pacific grapevine . . . . According to W2IWC, FO8AD forsakes Tahiti this month for California and subsequent U. S. citizenship . . . . Ex-KJ6BN settled in New Mexico and will be searching for ham pals as a Five shortly . . . . W6ITH reports that the joust for custodianship over the Spratly Islands grows more complex week by week. Vietnam has added a strong claim to earlier bids made by DU, BV and Red China authorities. Nope, no ham activity there — yet . . . . KM6FAA, previously A3 almost exclusively, now staffs a c.w. enthusiast . . . . FK8AC, KB6BA, KC6CG, VK9s DB RH, VR2BC, ZK1BL and ZM6AS are the outstanding Oceania 21-Mc. voices on W9ICL's receiver . . . . This year's ARRL DX Test supplied ZL1MQ's 48th phone state, Vermonter W1MMV, after a six-year hunt. ZL1MQ tallied his 20,000th all-time QSO (W7EW) and his 17,000th postwar QSO (VE7VC) during the same affair. W1YYM also noted a neophyte's c.w. logging of rare KS6IJ in the Test (KH6IJ, of course) . . . . Via WGDXC, the current KG6IG operating agenda, times GMT: 8-10, 14,240 kc., A3; 10-11, 7250, A3; 11-12, 14,050, A1; 12-13, 7050, A1; 13-14, 3825, A3; and 14-15, 3550, A1. Anyone for Chichi? . . . . FW8AB's Wallis replacement is expected to be ex-XW8AA complete with potent813.

Europe — Nixing of Yank CS3 activity puts the Azores on the rarer side but K2MMF finds CT2AH ready and willing on 10-, 20- and 40-meter phone. Fernando's usual scheme of things is 14-15 and 18-19 GMT around 28,300 kc. . . . . Norwegians such as LA6VC/U, reported by K2ENO, are raising eyebrows askance. Unless the suffixed letters be "P," "G" or "M" such LA calls merely represent portable work on the Norwegian mainland. See p. 65, June 1956 *QST* . . . . HB9CZ's midsummer HB1CZ/VS visit to Valais canton produced a neat 7-watt c.w.-WAC QSO sextet . . . . G3ESY seeks the Dakotas, Montana and Utah daily 0515-0715 GMT around 14,020 kc. — any help? . . . . W1RAN, available for QSO at DL4ZQ, has been paying personal visits to such DX folk as DLs 1CU 1YA 1BZ 1CS 3FM, HB9s GJ J and OE1FF . . . . WGDXC credits SVØWJ ops with Rhodes and Crete DXpeditionary intentions . . . . NCDXC U-hunters find old RAEM (UPOL) among Russian signals once more . . . . In this year's ARRL DX competition, c.w. portion, F8VJ worked all U. S. call areas in 66 minutes on 21 Mc., 62 on 7 Mc., and just 48 minutes on 28 Mc. Conditions *have* improved! YU3ABC's 93 QSOs in a single hour on 40 meters also impressed W1YYM . . . . DL4ZW shut down after bagging 115/80 on 20 and 15 since last October. Jim also confirmed 44 of 45 United States worked.

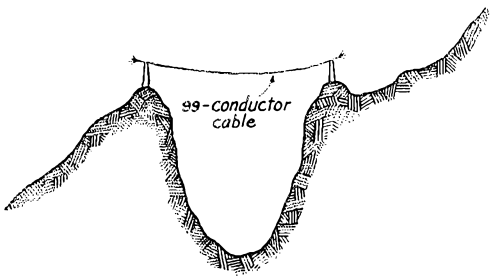
Hereabouts — Sorry for the many W/K/VEs who wrote "1st HR!" on QSLs destined for n.g. HRØXYL, HR1LW offers Honduras schedules at 2200-0100 GMT, Mon., Tue., Wed. and Fri. around 21,240 kc. . . . . In late September W3LEZ/VE1 gave the lads clean shots at scarce Prince Edward Island, long a notorious clot on the

(*Continued on page 162*)

The Gold Coast, usually middlin' rare on DX bands, now boasts sufficient licensees to support a respectable hamfest. Standing, l. to r., are ZD4s BT BV BL BR BO, Mrs. BQ, guest, Mrs. BT, AE AF BF BQ and G3QP; seated are XYLs of ZD4s BR and BF, G3QP's harmonic, ZD4BK, Mrs. ZD4AF and Mrs. G3QP . . . . If you've worked Hongkong you must have swapped signals with one or more of these OMs, pictured at a recent HKARTS gathering. Front, l. to r., are VS6DJ, member Lam, VS6s DA CP CI, member Siu and VS6DK. Middle: member Lee, VS6CG, GPO Chief Wireless Inspector McNeill, VS6s CL AE CV DE and CH. Rear: VS6CJ, KA5JD, VS6CW, XZ2AD, VS6s DI BE BJ CZ DG and VS6BE's former 2nd opr. (*Photo via W6YY*)

Quist Quiz

Mr. Charles F. White, 6024 Bock Road S.E., Washington 22, D. C., sends along this problem with the comment that he thinks it is an "oldie." "Oldie" or not, we thought there might be a few readers who haven't seen it or haven't solved it.



DX4U, located in the mountain regions of Upper Skidonia, strung a 99-conductor cable across a mountain chasm before he realized that the wires weren't color-coded. Working alone, and with only a buzzer and a battery for test equipment, how could he identify each of the 99 wires and how many round trips would it require? (What he planned to do with the 99-conductor cable after identifying the wires is another problem.)

The answer to last month's Quist Quiz will appear in next month's Hints & Kinks column.

Strays

W9WPE sent us a cute little parody on the matter of spelling with phonetics. It seems that a telephone operator was having trouble understanding the name of a town, and asked the man on the other end of the line to spell it. "It's Gopeck", he said. "G for gnome, O for one, P for psychic, E for eye, C for chandelier, K for knight."

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On page 43 of this issue W1VRK writes about ham auctions, but doesn't mention Dutch auctions. In case you don't know what they are (and neither did we until we saw the July–August issue of the *Mueller Clipper*), a Dutch Auction is the public offering of a property at a high price, then at gradually lowering prices, until someone buys it. All prospective buyers are silent until one accepts and then the auction is over. No one knows who his potential competitors are. As in our usual form of auction, human cupidity comes into play. Someone present may covet the property and naturally wants to buy it as cheaply as possible, but if he waits too long as the offering price declines someone else may beat him to it.

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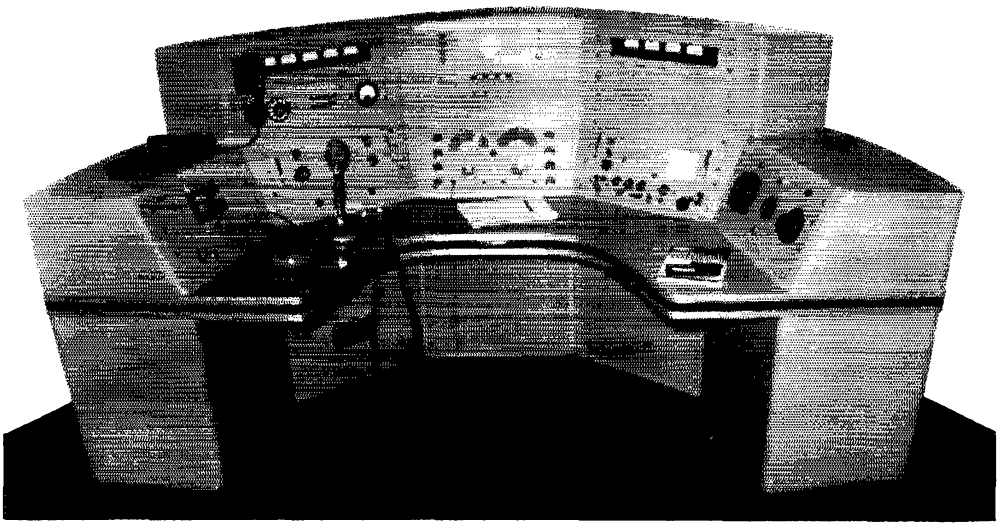
W2WZR and K2TKJ enter their claim to be the first to have a two-way six meter QSO using completely-transistorized equipment, on July 1. General Electric Co. tetrode transistors with a power output of 2 milliwatts were used on 51 Mc.

If you have in mind to build yourself a new operating console, perhaps you can pick up an idea or two from the one pictured below, built by W1RIL. Although it is a pretty large item as it stands, the method of construction is such that it can be broken down into three easily-movable sections. It is built from 2 × 2 stock for the frames, ½-inch plywood for the desk top, and masonite for the sides and tops. Careful finishing (plenty of elbow grease with sandpaper and a good paint job), together with a formica top and some chrome trim, produces a very striking console. W1RIL sent us two color shots of this, which we combined into one picture. Setups such as this can make your ham operating a real pleasure.



The World Above 50 Mc.

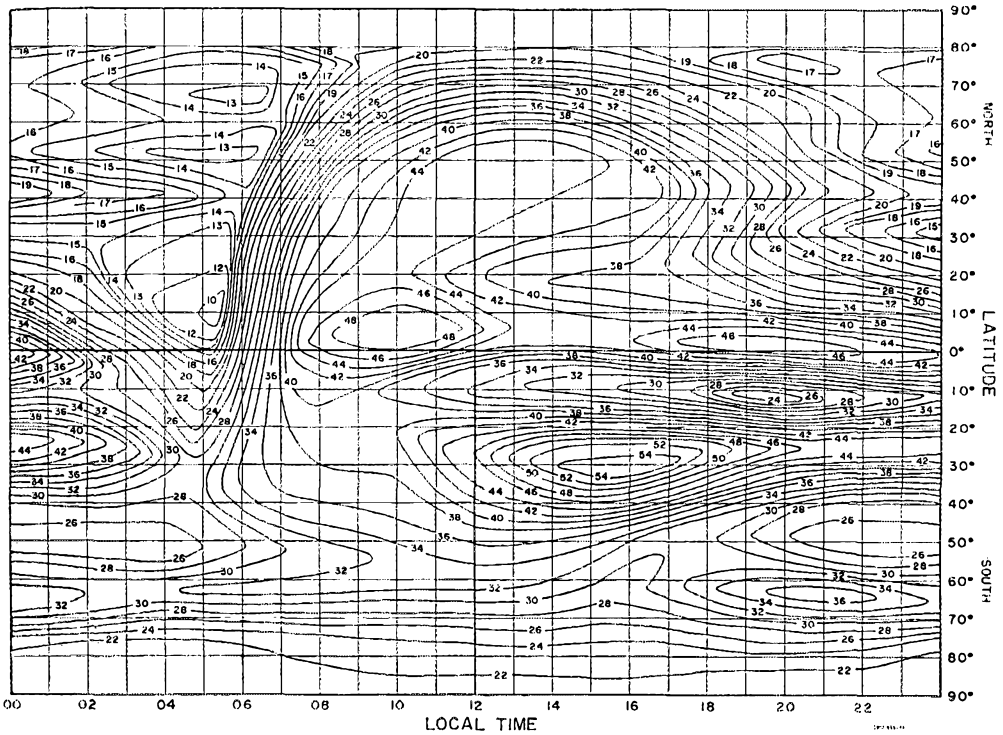
CONDUCTED BY EDWARD P. TILTON, W1HDQ

HAVE YOU SEEN the CRPL predictions for *F*2-layer maximum usable frequency recently? There are some interesting prospects on the chart for the Americas, for November, reproduced herewith. Above the equator this chart looks very much like the one for November, 1946, the month when 50-Mc. signals first crossed the Atlantic. Now look at the figures below the equator. Note that an m.u.f. well above 50 Mc. is indicated for several hours. There was nothing like this in the 1946 predictions. Does this mean that the m.u.f. on north-south paths is going to be much higher on this solar cycle than on the previous one?

Not necessarily. The frequent and consistent work on 50 Mc. between the Americas in the late '40s came as something of a surprise to the people who get out the predictions. Two-way communication by amateurs of North and South America was done at times when the predicted m.u.f. was as low as 36 Mc. This is not so likely to happen during the current cycle. Largely as the result of amateur observation and reporting, it is now known that the m.u.f. for north-south paths is much higher than was previously supposed.

The reason for this is still not completely understood, and the now-recognized ability of amateurs to contribute to the advancement of knowledge will be put to good use in the coming ARRL-IGY program. If you haven't already become familiar with this worldwide plan for making use of amateur observations, the details are in September *QST*, page 15. You will want to be a part of it.

What are the 50-Mc. DX prospects, then? Toward Europe the mechanism will be there, if the predictions are accurate. But unfortunately, the European amateurs will not be; at least, there seems to be very little chance of it. Television has taken over the 50-Mc. band in the European region. We should not overlook the possibility of crossband contacts with European hams who may have 50-Mc. receiving gear, however. Much of the transatlantic work on the previous cycle was done crossband, with the Europeans talking



Prediction chart for November, issued by the Central Radio Propagation Laboratory, shows F2-layer m.u.f. higher than in November, 1946, when American 50-Mc. men worked their first DX.

George Whattam, W2CZE, operates W2QCY/7 during the 1956 50-Mc. expedition to Wendover, Utah. Right, ready for the trip to West Virginia, made over Labor Day week end, Roy Sebring, W2QCY, is flanked by K2GLQ and W2CZE.

back on 28 Mc. We should make every effort to line up similar cooperation this time.

The picture is better in Africa. No 50-Mc. contact has yet been made between Africa and North America, but the prospects are fairly good, and the activity is there. ZS2Y, who handles v.h.f. activities and news for the South African Radio League (IARU Affiliate in the Union of South Africa) writes that more than 50 v.h.f. enthusiasts are in business in South Africa (ZS1, 2, 5 and 6) and in Northern and Southern Rhodesia (VQ2 and ZE). There is interest in Nyassaland (ZD6), Kenya (VQ4), and Belgian Congo (OQ5), though details are lacking.

The South Africans keep the low edge of the 50-Mc. band clear, to be used for DX-calling purposes only. Their stations are well set up, with crystal control, low-noise converters and beam antennas. Their power limit is 100 watts, but this should not be a limiting factor in DX work. They have been watching the frequencies below the band for some time. American mobile services up to about 43 Mc. were heard regularly in September. Toward Europe, the m.u.f. has been close to 50 Mc., and the BBC television on 45 Mc. is heard daily. The m.u.f. will almost certainly rise quite a bit more before the mid-winter decline, and it should go still higher next spring. ZS2Y feels, and we agree, that work between the two USAs is unlikely this fall, but the chances are good enough so that we should be trying. Next spring they should be better.

There is no activity problem to the south. Most Latin American countries already have considerable 50-Mc. activity, and enthusiasm for v.h.f. DX is high. Better brush up on your Spanish, though; anyone speaking their language enjoys a big advantage in working with the South American countries.

Work between western and southern parts of the country and the Hawaiian Islands should be possible on 50 Mc. this fall, though we need more 6-meter activity in KH6. Even Japan and other parts of the Orient appear well within the realm of possibility. Japanese amateurs are already hot on 50 Mc., and they enjoy the advantage of being in one of the world's best spots for 50-Mc. DX. Their m.u.f. is already running up over 60 Mc. in some directions.

Letters of invitation to join in the ARRL-IGY program have gone out to member societies of the International Amateur Radio Union all over the world. Like the IGY itself, the ARRL part in it will be a tremendous program of worldwide cooperation. Already the amateurs of other countries are signifying their intentions of working the 50-Mc. band for all it's worth in the next two years.

The peak of the solar cycle should make things more interesting on the higher frequencies, too. Aurora is more frequent and widespread than for several years past, and it should become more so. The possibility of DX contacts by sporadic-*E* skip on 144 Mc. is also probably due to improve in the next year or two. The years now coming up may well be the most interesting period of v.h.f. DX most of us will ever see. What's more important, because of the coming IGY program, our work will not only be great fun; it could be the most important thing we'll ever get a chance to do to enhance the standing of our hobby, not only in this country, but throughout the world.

Here and There on the V.H.F. Bands

Comes now the time of year when the average operating range of v.h.f. stations pulls in toward the winter minimum, and activity by casual v.h.f. operators drops off accordingly. This more than any other is the season for schedules, to be kept religiously through the winter. They will do more than anything else to keep things interesting, on any band from 50 Mc. up.

W3YHI, Andrews Air Force Base, near Washington, is running such a sked with W4SOP, Burlington, N. C. Using s.s.b. on 144.32 Mc., Jack has been consistently successful in covering this 245-mile hop over irregular terrain. Times

are 2045 EST on Sunday, Monday, Wednesday and Friday, and 2200 EST on Tuesdays and Thursdays. Under poorest conditions, W4SOP (100 watts, 32-element array) has had to use c.w., but up to the middle of September, the s.s.b. of W3YHI was readable close to 100 per cent.

The schedule has become a rallying point for others. A recent 4-way QSO involving W3LZD, Dunmore, Pa., W4SOP, W3YHI, and W4CPZ, Gaffney, S. C., is typical of the sort of thing that can develop from such workouts. W3YHI serves as "middleman" for lining up contacts farther north for W4SOP, who hears stations as far north as New Jersey much more often than most of the W2s realize. He often hears them talking about the "dead band!"

An interesting new-state prospect for easterners is K4EYE, Bristol, Va., who aims 64-element array at the Washington area nightly, making calls on c.w. (144.08 Mc.) at 2100 and 2110 EST, listening for five minutes thereafter. The new-state angle arises from Bristol's dual identity. Its Main Street is the boundary between Virginia and Tennessee. If the skeds pay off, K4EYE will arrange to do some operating from the Tennessee side.

Other 2-meter s.s.b. news from W3YHI: W4SRD, Falls Church, Va., is running 50 watts peak to a single 6-65A on 144.235 Mc. This is soon to be replaced by a 4X150A with a coaxial tank, and more power. W1RJA, Milford, Conn., was heard by W3YHI during his first night on the air with s.s.b., when Ed was running less than 2 watts. Distance is about 250 miles.

W8RMH, Pontiac, Mich., who made his first 2-meter s.s.b. contact in 1952, wants to know why we don't hear more of the advantages of f.m. Ed points out that f.m. (with a modulation index of 1 and a receiver capable of taking full advantage of it) enjoys an appreciable signal-to-noise ratio advantage over double-sideband a.m. And its TVI-curing potential makes life peaceful for many city-dwelling v.h.f. enthusiasts. Guess it's the old receiver problem, Ed. We've given f.m. countless pushes, over the years, but it has seldom gotten far, except as an emergency measure for fellows who have severe neighbor trouble with other modulation methods. There is no question about its effectiveness, when the right receivers are used. But who makes (or perhaps more important, who *pushes*) them?

Do you keep track of the number of different stations you work on the v.h.f. bands? Looking over a record kept for several years will make you wonder where they all came from, and where they have gone! W2IDZ, Denville, N. J., has 1031 different calls on his 50-Mc. stations-worked tabulation. W1ELP, Lexington, Mass., has 702. Your record?

Tropospheric propagation is usually counted on for some real 2-meter DX during September, but so far as most easterners were concerned, the month passed without too much excitement. W1AZK, Chichester, N. H., had a big time the night of Sept. 3rd and the following morning, but the opening did not show to any great extent for stations farther south. Don first heard W8KAY, Akron, Ohio, 86 and very steady, at 2120 EST. From then on W8s WEN GZW MVE ILC LOF RMH and W4VLA, Ft. Thomas, Ky., were worked. Many other W8s were heard, but the prize was WØRUF, Ste. Genevieve, Mo.! W8RMH, Michigan, and W4VLA were new states, the latter being about 750 miles. WØRUF is more than 1000 miles, and if made two-way would have been the year's best tropospheric DX on 144 Mc.

The band was in good shape until midmorning of the 4th. A more localized opening prevailed along the Atlantic Seaboard the night of the 4th, but nothing phenomenal in the way of DX was reported. This was one of those nights when everyone out to 200 miles or so sounded as if he was working portable in the next block.

W4WNH, Elizabethtown, Ky., reports that he and W4HJQ found the 2-meter band good to the south on the night of the 12th. W4HJQ worked W5s RCI JTI and HEZ. W4UUF, Pensacola, Fla., was heard. W4RFR, Nashville, Tenn., is a regular for W4HJQ and W4WNH since he put up his high tower. (See OES Notes.)

We hear that W2WFB/4, Orlando, Fla., is now keeping meteor-scatter skeds with W4HJQ and W2ORI, among others, so Florida may be appearing in the worked lists of some northern 2-meter DXers before long.

The DX being heard or worked via aurora is stretching out, as the antennas get bigger and the power goes higher. W1KCS and W1FZJ report hearing a Nebraska station during an aurora session that got under way around midnight of Sept. 2nd. K4AMX/1, Chesterfield, N. H., got into this one for his first aurora experience. He gave W8WXV his first contact, a 559 report, without stopping to think of what the T in the system refers to. Says Dick, "T9, indeed! That was the ugliest, rawest, most beautiful signal I've ever tried to copy!"

And speaking of big antennas, here's a monster that recently made its appearance on 144 Mc. in Oakhurst, N. J. K2TLI has four 18-element Yagis (dipole, 10 directors and 7 elements working as a plane reflector, in each bay) that can be tilted all the way from slightly below the horizon to straight up. With only 90 watts, Hugo has one of the outstanding signals on 144 Mc.

W7LHL, W7JIP and W7BVK have been working on models designed for reception of TV Channel 27, as a means of developing the most effective configurations for large stacked arrays. The best combination from the standpoint of gain and clean pattern yet tried is 16 6-element Yagis. This is four high and four wide, with one wave-

2-METER STANDING

	U. S. States	Areas	Miles
W1FZJ	21	6	1120
W1REZ	21	6	910
W1RFU	19	7	1150
W1HDQ	19	6	1020
W1KCS	18	6	850
W1AJR	17	6	810
W1IZY	17	6	750
W1UIZ	17	5	680
W1AZK	16	5	750
W1BCN	16	5	650
W1AFO	15	5	810
W1MMN	13	5	520
W2ORI	26	8	1000
W2NLY	23	7	1050
W2AZL	23	8	1050
W2BLV	22	7	1020
W2DWJ	21	6	720
W2OPQ	20	6	970
W2AMJ	20	6	960
K2CEH	20	7	910
W2WFB	20	6	900
W2UTH	19	7	880
W2AZP	19	7	650
K2IXJ	19	6	925
W2CBB	19	6	740
K2IEJ	18	6	745
W2AOC	18	6	660
W2LHI	18	7	620
W2KIR	18	6	—
W2RXG	17	6	675
W2PAU	16	6	740
W2SHT	16	6	650
W2PCQ	16	5	650
W3BGT	28	8	740
W3RUE	25	8	950
W3FPH	21	8	—
W3KCA	21	7	—
W3GKP	21	6	800
W3KWL	19	7	740
W3NKM	19	8	660
W3IBH	19	7	650
W3YHI	19	8	800
W3TDF	19	6	720
W3BNC	18	7	750
W3LNA	16	7	720
W4HHK	29	9	1280
W4AO	23	7	950
W4HJQ	22	7	750
W4MKJ	20	8	725
W4JCJ	20	6	660
W4DWU	19	6	675
W4UMF	19	6	600
W4JFV	18	7	830
W4OLK	18	6	720
W4VLA	17	7	825
W4WNH	17	7	750
W4TLV	16	7	1000
W4CLY	15	5	720
W4ZBU	14	5	800
W4WCB	14	5	—
W4TCR	14	5	720
W4IKZ	13	6	720
W4SOP	13	6	680
W4CPZ	12	5	650
W4UDQ	11	5	850
W4MDA	11	5	680
W4GIS	9	2	335
W5RCI	21	7	925
W5JTI	19	7	1000
W5HEH	15	7	830
W5AJG	14	5	1280
W5ABN	12	5	780
W5QNL	10	5	1400
W5CVW	10	5	1180
W5SWV	10	3	600
W5MWW	9	4	570
W5ML	9	3	700
W5FEK	8	2	580
W5VY	7	3	1200
W6NLZ	6	3	1000
W6WSQ	5	3	1280
W6DNG	5	3	600
W6AJF	5	2	640
W6RRZ	4	2	360
W6ZL	3	2	1400
W6AJF	3	2	640
W6BAZ	3	2	400
W6MMU	3	2	388
W6ORS	3	2	365
W6LSB	2	2	360
W7VMP	6	4	1280
W7LEE	6	3	1020
W7LHL	4	2	1050
W7JU	4	2	353
W7JIP	3	2	850
W7YZU	3	2	240
W7JUO	2	2	140
W8WXV	28	8	1200
W8SFG	26	7	850
W8RMH	27	8	800
W8LPD	25	8	750
W8DX	25	8	720
W8SRW	27	7	850
W8SVI	22	8	725
W8JWV	22	8	710
W8BAX	21	8	685
W8WRN	20	8	670
W8EE	18	7	800
W8PT	18	6	610
W8ZCV	17	7	970
W8RWW	17	7	630
W8ILC	16	8	760
W9KLR	27	8	850
W9ZHL	25	8	760
W9EQC	25	8	820
W9EHX	24	7	725
W9FVJ	23	8	850
W9BPV	23	7	1000
W9GAB	23	7	850
W9WOK	22	8	860
W9UCH	22	8	750
W9UED	22	7	960
W9KPS	21	7	690
W9MUD	19	7	640
W9REM	19	6	—
W9LF	19	6	—
W9ALU	18	7	800
W9JGA	18	6	720
W9MBI	18	7	660
W9JIY	15	7	560
W9LEE	15	6	780
W9DSP	15	6	760
W9DDG	16	6	700
WØEMS	27	8	1175
WØIHD	26	7	870
WØGUD	25	7	1065
WØUOP	18	6	—
WØONQ	17	6	1000
WØINI	17	5	830
WØOAC	14	5	725
WØTJF	13	4	—
WØZJB	11	4	650
VE3DIR	26	8	915
VE3AIB	25	8	910
VE3BQN	17	7	790
VE3DER	16	7	820
VE3BPB	13	6	715
VE2AOK	12	5	550
VE3AQC	11	7	800
VE1QY	11	4	900
VE7FJ	2	1	365

length spacing between bays vertically, and a half wavelength between element ends of the Yagis horizontally. The beam width in both planes is about 12.5 degrees, and the minor-lobe content is very low. Built for 144 Mc., this would make an array 20 feet high and 23 feet wide. Don't be surprised if one or more such appear in the skies over Seattle before long!

And an array that is different, to say the least: W1NSY (formerly K6HEC/1) has 12-quad configuration for 144 Mc. It makes a big noise from Watertown, Mass.

W8ILC, Dayton, Ohio, says that to build up your states total fast on 144 Mc., stay up late at night. (He gets home around midnight, which makes the night-owl stuff easy.) Ron is on the air nightly until 0200 EST, and nearly all his good DX, such as W5s HEZ and JTI, has been worked during this "dog watch." Like many others, W8ILC wonders why more traffic isn't handled on 144 Mc. He points out that only six stations would be needed to hook up New York and New Orleans, for example, and about four for Boston to Chicago. Well, why not?

Work via ionospheric scatter continues on 50 Mc., though the high signal levels of the Perseid meteor shower no longer prevail. It is still possible to get in exchanges of information over most paths of 800 to 1200 miles, however. W4IKK and W4RMU are still being heard regularly at W1HDQ on week-end morning schedules. W6BAZ, Santa Rosa, Cal., has worked 6 states by the scatter method: W7FEG, Washington, W7VMP, Arizona, W7QDJ, Utah, WØCNM, Colorado, W7ACD, Idaho, and W5KWP, New Mexico. This is with 500 watts input to a 4X250B, c.w. Paul finds that his mechanical filter does not provide the best reception during periods of high line noise. A more effective characteristic for high-noise conditions is attained through the use of a low-pass audio filter, with about a 2500-cycle cutoff.

If activity alone will solve the problem, there should be no lack of 50-Mc. contacts with Rhode Island. The Smallest State is alive with 6-meter stations, as witness the attendance of 40 6-meter operators at the first annual picnic of the Southern New England 6-Meter Net. This affair was held at Goddard Park, near Providence, Sept. 6th. Time was taken out for organization of the net on a permanent basis. On-the-air sessions are held each Wednesday at 2000 local time, on 50.7 Mc. Other frequencies will be tuned, though regulars should aim to get set on that channel. Anyone is invited to participate. Sector Control Stations: Rhode Island — W1KCS, Eastern Mass. — W1GRW, Western Mass. — W1HJC, and Conn. — W1FFF.

Better equipment and more general activity over the country have netted many "first" contacts on 144 Mc. recently. These are difficult to keep track of, but for what they may be worth, here are a few claims: Kentucky-Louisiana — W4HJQ and W5HEZ; New Hampshire-Kentucky — W1AZK and W4VLA; New Jersey-Mississippi — W2AZL and W5RCI.

The W2QCY DX-pedition crew has been at it again. A report on their second trip to Utah, for the express purpose of working 50-Mc. DX, came in just too late to make last month's *QST*. The 1956 trip was made by W3UBH, W2CZE and W2QCY, in the panel truck that W2QCY has fitted out especially for these ventures. W3UBH was the new crew member this year, and an innovation was facilities for mobile operation on 50 and 144 Mc. en route. This was done with Communicators loaned to the expedition by W2RGV and K2QIQ.

Equipment for use once the Utah site was reached included Roy's "Big Lulu", a VFO-controlled rig with 50 watts output on 50 Mc., a stacked 3-over-3 array with a 24-foot tower, and a W2IDZ converter and an HQ-129X receiver. Power was furnished by a 2.5-kw. Onan generator. In addition to the three operators above, they picked up W7UPS upon arrival at Wendover, July 2nd.

Though the avowed purpose of the trip was to provide contacts with Eastern stations needing Nevada or Utah for 50-Mc. WAS, no double-hop openings were observed. The band was watched closely for 8 days and nights. All told, 64 different DX stations were worked, but all at single-hop distances. In addition, several were worked in the Salt Lake City area, on both 6 and 2 meters.

An expedition to West Virginia was carried out over Labor Day week end. Setting up at Berkeley Heights, near Martinsburg, W. Va., Saturday afternoon, W2CZE and W2QCY, with K2GLQ as third member this time, worked 93 different 6-meter stations and 29 2-meter stations over the three-day period. W2QCY would like it known that he has still about a dozen QSLs that cannot be mailed because of incomplete or wrong addresses. Anyone who has worked any of the W2QCY expeditions will receive a QSL if he will let Roy know where to send it.

After suffering something of a setback when Technicians first flocked to 50 Mc., the 220- and 420-Mc. bands are staging a comeback. Plenty of talk of these bands is heard on both 6 and 2, and regular activity is holding up well in several areas. W1FOS, Wakefield, Mass., works K2GRI, Porter Corners, N. Y., 135 miles, regularly on 220 Mc. W1FOS runs 300 watts input to a 4X250B, feeding a 16-element array. K2GRI has 60 watts and a 32-element array. W1FOS reports that Tuesday night is 220-Mc. night in the area around Boston. In the Los Angeles area, 220 gets the big play on Monday nights, according to W6SOD, who says he worked 12 stations on 220 last month.

W1UHE, Tiverton, R. I., seeing the Channel 13 TV signal pounding in from New York the night of Sept. 4th, went on 220 and promptly worked a whole batch of New York and New Jersey stations. This was without any warm-up work on a lower band, as Norm is a Technician and must raise his 220-Mc. DX the hard way.

W7WLV, Salt Lake City, Utah, writes that there is a move afoot to get things rolling on 220 in the Great Salt Lake Basin.

S.S.B. on 144 Mc. with the 522

Here's one of the simplest ways we've yet seen for putting a single-sideband signal on 144 Mc. It involves that old workhorse of the 2-meter band, the SCR-522. The system is being used by several of the gang around Dalls, according to W5AJG. He says that he got the idea from W5HHU.

First, catch your s.s.b. exciter unit. W5AJG uses a Central Electronics 20A, with its output on 14 Mc. Next, lift the screen terminal of the final 832A in the 522, and insert a 14-Mc. tuned circuit between it and the screen supply, as shown in the accompanying diagram. The output from the s.s.b. exciter is coupled to this tuned circuit. The 832A cathode is biased with a 500-ohm 10-watt resistor, and by-passed, as shown.

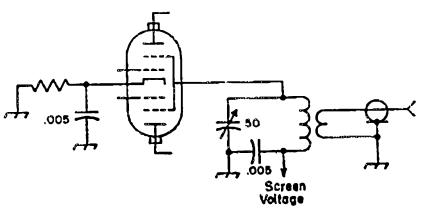


Fig. 1 — 14-Mc. tuned circuit in screen lead of the final 832A in the 522, for injection of s.s.b. energy. The tube is driven on 130 Mc. and serves as a mixer, with output on 144 Mc.

What makes it all so simple is that the 522 is capable of tuning a wide band of frequencies. A 7220-kc. crystal and retuning will put the output of the frequency multiplier stages on 130 Mc. With the 14-Mc. signal fed into its screen, the final 832A becomes a mixer, with output on 144 Mc. W5AJG uses this to drive an 829B which, in turn, pushes a pair of 826s.

The 829B buffer is operated with its screen voltage stabilized by two OA2s, and 20 volts fixed bias on the grids. The 826s run with 30 volts fixed bias and 1300 volts on the plates. A comparable separate rig running 500 watts input on a.m. is available for comparisons between the two modes.

C.W. Subband on 144 Mc.?

For several years now the idea of a c.w.-only segment at the low end of the 2-meter band has been under discussion. Should ARRL request such an exclusive assignment from FCC? Many people want it; of that there is no question, and a good case can be made for it. The big trouble is that too many hams, when they hear the terms "c.w." and "phone," stop thinking calmly, and almost at once we find ourselves in the midst of an argument that proceeds along anything but logical lines.

Such arguments rage on the amateur bands, in club meetings, in convention "open forums," and in the cor-

respondence pages of *QST* whenever phone and c.w. subband are discussed. A political tempest in a teapot was stirred up some years ago by proposing a similar low-end assignment on 50 Mc. Do we want to go through it again on 144 Mc.? And, perhaps more important, do we *need* to?

We hasten to emphasize that what is said here is editorial opinion; it is not "ARRL Policy." That can be set only by your Board of Directors. You make that policy; nobody at Headquarters does. If you want an exclusive assignment for any purpose, in any band, only your Directors can authorize the initiating action by ARRL. And they will do it, if you can sell them on the idea.

But it has long been your conductor's personal opinion that such matters might better be handled on a voluntary basis. If you want a c.w. DX band (and we think it would be a fine idea) you can have it any time you want it badly enough to demand it of your fellow 2-meter men. W1FZJ put it neatly into words when he coined the "My receiver won't tune phone below 144.1" slogan. Some fellows are even going so far as to make that a fact — by automatically cutting in a super-selective i.f. system that will actually render voice unintelligible, when they tune the first 100 kc. (or 200 kc.).

That is for the weak who are not willing to back up their ideas with voluntary action. For the rest of us, we will have an exclusive c.w. band, of whatever width we desire, when we stop answering voice calls made from the segment we would like to have left open for c.w. only. The writer feels sure that the first 100 kc. could be cleared of phone QRM quickly and painlessly by positive and complete adherence to this policy. In any event, to have a mass of heterodynes at the low end of a band 4000 kilocycles wide is the ultimate in thoughtless misuse of valuable territory. Whether we ever expect to work a single dit of c.w. or not, it's high time we moved in the direction of more complete usage of our v.h.f. bands. This applies to 50 as well as 144 Mc., and perhaps even more so.

OES Notes

W1AHE, Stow, Mass. — W1QCC, Bangor, Maine, with 700 watts on 144.13, 32-element array and 417A converter doing fine job. His 8 P.M. sked with W1RUD, 200 miles, is heard by many Southern New England 2-meter men.

K2LRN, Liverpool, N. Y. — Would like to see more 6-meter activity during aurora openings. Syracuse V.H.F. Club sponsoring 6-meter transceiver construction project for members and any others in the area who may be interested.

K2ITN, Ilion, N. Y. — Recent request for letters from others interested in microwaves brought response from K6s SGC HBX and W6ZNP, who are also working on 10,000-Mc. gear. This could be one of the principal worthwhile aspects of OES activity and reporting: to help those of like interests to get together and compare notes.

W2UTH, Victor, N. Y. — Pair of 4E27s now working on 50 Mc., and 4X150A rig ready to go on 144. Net on 50 Mc. operates each Wednesday evening in Rochester area.

W3UQJ, York, Penna. — Holding 220-Mc. schedules each Tuesday, 2000 to 2200, with W4UMF, and W3s UJG, CGU and UJD.

W4IKK, Rome, Ga. — W2IDZ filter, built from article in July, 1954, *QST*, found to be superior to some commercial filters tested here. The home-built filter keeps Channel 2 completely free of TVI, with the 75-watt rig operated from 50 to 50.8 Mc. This is with fringe-area signal from Atlanta, more than 50 miles distant.

Good check on band conditions for scatter, aurora or other DX on 50 Mc. can be obtained from several experimental stations now operating more or less regularly as follows: KK2XEN, 48.3 Mc., and KK2XFS, 49.28 Mc., both on beam heading of about 255 degrees; heard in early-morning hours. KA2XAX (the Collins Colossus) 49.8 Mc., Cedar Rapids, Iowa, heard around the clock. Unidentified, but heard regularly from direction of Nova Scotia, 49.98 Mc. (Last is believed to be at Halifax; provides fine aurora check for W1, 2, 3. — EPT).

W4RFR, Nashville, Tenn. — Recently erected 100-foot tower, with 10-over-10 for 144 Mc. and 6-element 50-Mc. arrays. Now work up to Ohio regularly on 144, and to Knoxville, Birmingham and Louisville on 50 Mc. Extended ground-wave contacts on 50 Mc. include W5RCI, Marks, Miss., worked on both bands, and W9MHP, Indianapolis. W8s worked on 144: IFX GZW ILC KAY and LOF.

W4WNH, Elizabethtown, Ky. — Frequent reception of signals on CAP frequency, 148.14 Mc., when nothing is coming through on low end of 2-meter band indicates DX chances are missed because of no activity in the right places.

W7PUA, Eatonville, Wash. — Complete filtering of bandswitching 6146 rig for 50, 28 and 21 Mc. eliminated TVI previously experienced on Channels 4, 5, 9, 11 and 13. All TV signals are weak, and receiver was close to transmitter. Radiation from power leads cured by mounting small utility box over point where power leads leave chassis. Each lead was bypassed with a .001 disk ceramic, and then fed through a Z-50 r.f. choke to feed-through bypasses on the utility box.

W7QDJ, Clearfield, Utah — Bursts on Bay Area 50-Mc. stations less frequent after Perseid shower, but W6BAZ or W6VDG heard almost daily. Reception of these signals was possible even during vacation trip to Southern Utah, when only a long-wire antenna was used. Checking radiosonde data for past four years at local weather station.

W7YJE, Seattle, Wash. — Keeping 50-Mc. scatter skeds with W6AFC week ends, 0600 PST. V.h.f. or u.h.f. enthusiasts welcome at meetings of Evergreen V.H.F. Society meetings, first and third Thursdays, in North Seattle.

W9GFL, Green Bay, Wis. — Net active on 144.9 Mc. Thursdays, 1900 CST. W9IMQ Net Control.

50 WAS Mc.

WØZJB	48	W4QN	44	W8N8S	46
WØBJV	48	W4FLW	43	W8OJN	46
WØCJS	48	W4OXC	41	W8NQD	45
W5AJG	48	W4UMF	41	W8UZ	45
W9ZHL	48	W4UCH	41	W8RFW	45
W9OCA	48	K4DJO	41	W8SQU	45
W6OB	48	W4MS	40	W8LPD	44
WØINI	48	W4FNR	39	W8HJR	43
W1HDQ	48	W4IUJ	38	W8YLS	41
W5MJD	48	W4IKK	38	W8PCK	35
W2IDZ	48	W4RFR	37		
W1LLL	48	W4AKX	36	W9BRN	48
WØDZM	48	W4NWB	35	W9ZHB	48
WØHVW	48	W4GJO	35	W9QUV	48
WØWKB	48	W4AZC	31	W9VZP	47
WØSMJ	48	W4ZBQ	34	W9RQM	47
WØOGW	48			W9ALU	47
		W5VY	48	W9QKM	47
W1VNH	47	W5SFW	47	W9UIA	45
W1CLS	46	W5LFQ	47	W9UNS	45
W1CGY	46	W5GNQ	46	W9MFH	42
W1LSN	46	W5ONS	45	W9JFP	42
W1AEP	46	W5JTI	45	W9JCI	41
W1DJ	41	W5ML	44		
W1RFU	41	W5FSC	44	WØORE	48
W1FOS	40	W5JLY	44	WØQ1N	47
W1ELP	39	W5JME	43	WØNFM	47
W1SPX	36	W5VV	42	WØTKX	47
W1UHE	32	W5FAL	41	WØKYF	47
W1WAS	23	W5HEZ	41	WØMVG	47
		W5BXA	41	WØJOL	46
W2MEU	47	W5HLD	40	WØTJF	44
W2AMJ	46	W5FXN	40	WØURQ	44
W2BYM	46	W5EXZ	38	WØJHS	43
W2ELV	45	W5HFF	33	WØIPI	43
W2RHJ	45	W5NSJ	32	WØCNM	42
W2RGV	44	W5ZVF	31	WØFKY	42
W2GYV	40			WØPKD	41
K2JNS	40	W6WNN	48	WØZTW	41
K2AXQ	39	W6UXN	47	WØUSQ	40
W2SHY	39	W6ANN	45	WØZTW	36
W2QVH	38	W6TMI	45	WØVIK	35
W2ZUW	37	K6EDX	42	WØWNU	34
W2ORA	36	W6IWS	41		
K2HPN	36	W6CAN	40	VE3AET	45
K2ITQ	33	W6ABN	39	VE3AIB	35
K2HRB	31	W6GGG	35	VE1QZ	34
K2ITP	31	W6BWG	33	VE1QY	32
		W6QJF	31	VE3DER	31
W3OJU	47	K6GTG	30	VE1DF	28
W3TIF	45	K6ERG	27	XE1GE	27
W3NKM	41			CO6WW	21
W3MQU	41	W7HEA	47	VE4HS	20
W3OTC	40	W7ERA	47	CO2ZX	16
W3FPH	40	W7BQX	47	LU9MA	11
W3RUE	41	W7FDJ	46		
W3KMV	39	W7DYD	45	Calls in **bold** face are holders of special 50-Mc. WAS certificates listed in order of award numbers. Others are based on unverified reports.	
W3MXW	38	W7ACD	45		
W3LFC	37	W7JRG	44		
W3UQJ	28	W7BOC	42		
		W7JPA	42		
W4FBH	46	W7FIV	41		
W4EQM	46	W7CAM	40		
W4CPZ	45	W8CMS	47		

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
PHIL SIMMONS, W1ZDP, Asst. Comm. Mgr., C.W.

ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER WIZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

Sweepstakes Opportunity. November once again brings the top operating contest of the year. All U. S. and Canadian amateurs are invited to enter the SS, full announcement and rules for which appear in this issue.

A power multiplier helps all scorers in the lower power bracket. For those who haven't completed working all states here is a special chance to polish it off, since due to the great popularity of the SS ample numbers of stations appear on every band and mode. Even if not out for a specific award this is an inviting chance to see what your station can do. It's the 23rd running of the Sweepstakes; historically it not only adds to station records and puts them on the map but participation increases personal skill in handling stations and knowledge of code as well, if you go into the c.w. competition. Operating time is limited to 40-hours total. ARRL certificates will be presented all section winners. Novice results will be certified separately whenever a section has at least three entries.

If you've never been in one, we suggest you reread the report of last year's SS, the phone section in June *QST*, page 48, and the c.w. section report in May *QST*, page 42. If time doesn't permit full-scale participation, enjoy the opportunity to get in and meet old friends in just such time as you have. CU in the SS!

W1AW on Fall-Winter Schedule. With the return to Standard Time the pattern of operations from W1AW changes to carry out the schedule detailed in these columns this month. If you aspire to work the station and haven't done so, you can consult the *table of general operating periods*. We work the several amateur bands and designate these times to allow for calls from persons wishing to make initial contacts (and exchange station-QSLs) where desired. *Code-practice periods* will start daily at 8:30 P.M. CST, the practice speeds ranging from 5 to 35 w.p.m; the monthly certification speeds are at 10 to 35 w.p.m. Information bulletins addressed to amateurs, CRPL forecasts and any "specials" of hot or regional information are sent starting at 7 and 11 P.M. CST c.w. and 8 and 10:30 P.M. CST voice. —*F.E.H.*

A.R.R.L. ACTIVITIES CALENDAR

Oct. 27th-28th: CD QSO Party (phone)
Nov. 3rd: CP Qualifying Run — W6OWP
Nov. 10th-11th, 17th-18th: Sweepstakes
Nov. 13th: CP Qualifying Run — W1AW
Dec. 5th: CP Qualifying Run — W6OWP
Dec. 19th: CP Qualifying Run — W1AW
Jan. 3rd: CP Qualifying Run — W6OWP
Jan. 5th-6th: V.H.F. Sweepstakes
Jan. 12th-13th: CD QSO Party (c.w.)
Jan. 17th: CP Qualifying Run — W1AW
Jan. 19th-20: CD QSO Party (phone)
Feb. 2nd-17th: Novice Round-up
Feb. 6th: CP Qualifying Run — W6OWP
Feb. 8th-10th: DX Competition (phone)
Feb. 12th: Frequency Measuring Test
Feb. 15th: CP Qualifying Run — W1AW
Feb. 22nd-24th: DX Competition (c.w.)
Mar. 7th: CP Qualifying Run — W6OWP
Mar. 8th-10th: DX Competition (phone)
Mar. 18th: CP Qualifying Run — W1AW
Mar. 22nd-24th: DX Competition (c.w.)

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 W1AW will be made on November 13th at 2130 EST. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7080, 14,100, 21,010, 50,900 and 145,600 kc. The next qualifying run *from W6OWP only* will be transmitted on November 3rd at 2100 PST on 3590 and 7128 kc.

Any person may 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 W1AW each evening at 2130 EST. Approximately 10 minutes' practice is given at each speed. References 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 get sending practice, hook up your own key and buzzer and attempt to send in unison with W1AW.

Date	Subject of Practice Text from September *QST*.
Nov. 1st:	. . . *the Single-Side-Band Exciter*, p. 11
Nov. 6th:	*The ARRL — IGY . . . Project*, p. 15
Nov. 9th:	*A Very Simple Output Indicator*, p. 22
Nov. 12th:	*Notes on . . . Yagi Arrays*, p. 23
Nov. 16th:	*On Erecting Towers*, p. 27
Nov. 20th:	*A Tri-Band Quad*, p. 32
Nov. 27th:	*Compression and Clipping*, p. 34
Nov. 28th:	*Results, 22nd ARRL DX Contest*, p. 52

RTTY NOTES

Merrill Swan, W6AEE, announces that the 1956 RTTY Sweepstakes will start at 9:00 P.M. EST November 2nd and run until 3:00 A.M. November 4th, rules the same as before. Logs should be sent to the RTTY Society of Southern California, 3769 East Green St., Pasadena 10, Calif.

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Boyd Phelps, WØBP, advises that the first two-way strictly-amateur W/ZL RTTY contact took place between ZL1WB, Onerahi, N. Z., and WØBP of Minneapolis on September 4th. The ZL has a Model 401-A printing and received a Model 26 through W6AEE. He transmits at 100 watts with make-and-break keying since New Zealand's amateur regulations do not permit use of f.s.k. As we report this, both W6AEE and WØBP are working ZL1WB regularly on 20 and 40 meters.

W1AW GENERAL-CONTACT SCHEDULE
(Effective October 28, 1956)

W1AW welcomes calls from *any* amateur station. Starting October 28th, W1AW will listen for calls in accordance with the following time-frequency chart:

EST	*Sunday*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
0020–0100[1]	.....	.....	3555[2]	7255	3555	7080[2]	3945
0100–0200	.....	.....	3945	.....	3555	7080	.....
0200–0300	.....	.....	7255	3945	7080	3945	7255
1500–1600	.....	.....	14,280	21/28 Mc.[3]	14,100	.....	.....
1600–1700	.....	14,280	21/28Mc.[3]	14,100	21/28Mc.[3]	21,330	.....
1700–1800	.....	14,100	14,280	21,010	14,280	14,100	.....
1930–2000	.....	7255	.....	7080	.....	7255	.....
2020–2100[1]	.....	7080	3555	7080[2]	3555[2]	7080	.....
2110–2130[1]	.....	3945	50.9 Mc.	145.6 Mc.	3945	3945	.....
2230–2330	.....	3555	3945	7080	1885	3555	.....
2340–2400[1]	.....	3945	1885	3945	1885	3945	.....

[1] General-contact period on stated frequency begins immediately following transmission of Official Bulletin which begins at 0000 and 2000 on c.w. and at 2100 and 2330 on 'phone. Starting time is approximate.
[2] W1AW will listen for Novices (on Novice band indicated) before looking over the band for other contacts.
[3] Operation will be conducted on one of the following frequencies: 21,010; 21,330; 28,060; 28,768 kc.

W1AW OPERATING SCHEDULE

(Effective October 28, 1956)

(All times given are Eastern Standard Time)

W1AW will return to its Fall-Winter operating schedule with the return to Standard Time. General operation covers all amateur bands on which W1AW has equipment. Novice periods include both early and late operation on 3.5 and 7 Mc. (see Footnote 2 in box). Master schedules showing complete W1AW operation in EST, CST or PST will be sent to anyone on request.

Operating-Visiting Hours:
Monday through Friday: 1500–0300 (following day).
Saturday: 1900–0230 (Sunday).
Sunday: 1500–2230.

Exception: W1AW will be closed from 0300 Nov. 22nd to 1500 Nov. 23rd in observance of Thanksgiving Day.

General Operation: Use the chart below for determining times during which W1AW engages in general operation on various frequencies, 'phone and c.w. Note that since the schedule is organized in EST, certain morning operating periods may fall on the evening of the previous days in western time zones. W1AW will participate in all official ARRL operating activities, using scheduled general operating periods for this purpose if necessary.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules:

Frequencies (kc.):
C.w.: 1885, 3555, 7080, 14,100, 21,010, 50,900, 145,600.
Phone: 1885, 3945, 7255, 14,280, 21,330, 50,900, 145,600.
Frequencies may vary slightly from round figures given: they are to assist in finding the W1AW signal, not for exact calibration purposes.

Times:
Sunday through Friday: 2000 by c.w., 2100 by 'phone.
Monday through Saturday: 2330 by 'phone, 2400 by c.w.

Code Proficiency Program: Practice transmissions are made on the above listed c.w. frequencies, starting at 2130 daily. Speeds are 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday. Approximately ten minutes of practice is given at each speed. *Exceptions:* On Nov. 14th W1AW will transmit a special Frequency Measuring Test and on Nov. 13th and Dec. 19th W1AW will transmit ARRL Code Proficiency Qualifying Runs instead of the regular code practice.

BRIEFS

Numerous events of interest to the A3 contingent took place during the summer. At the Rocky Mountain Division Convention at Estes Park, the s.s.b. gang had an enjoyable get-together featuring a round-table review of station facilities. Peoria, Illinois, "the s.s.b. capital" of the nation, was host to about 90 single side banders at a summer dinner. The second annual breakfast of the Sliced Ham Fraternity held in Eugene, Oregon, featured "Side-band Susie" awards for WØCXX and W6EI for outstanding contributions in the field of side-band techniques.

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Police network amateurs, b.c. station operators, doctors, dentists, and other groups of specialists having a common interest in amateur radio have often enjoyed on-the-air get-togethers with their opposites. Sometimes nets are maintained to promote the fraternal purpose. W2UNR has prepared this list of Associated Press staffers who are hams: W1NVM, K2HHO, W2KLD, W2LBM, W2UNR, K2ACN, W2URY, W2ZMK, W4KQI, W4OSJ, W4WXZ, W5DRE, W5OQT, W6AZD, W6RM, W6YKX, W7YFG, W9OAK, WØCPI, WØDEB, WØLCX, G3KNS, LU1AA, PAØPZW, TI2RU, W4TMB, W8HDI, PY3EH. Other amateurs with AP connections are invited to get in touch with W2UNR to be included in the directory.

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Gordon (Pop) Woodruff, W4AKF, comes up with a new abbreviation originated in local circles. Hard to say if it will be accorded wide popularity, but "BL" will be favored by some of the feminine sex. Comments pro and con should probably be directed to W1QON, our Contributing Editor, YLs. For the Orlando Amateur Radio Club, Secy. W4AKF reports: "Our club is now growing very well. We boast a YL division. We have the YLs — but BLs instead XYLs, BLs for Beautiful Ladies."

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.w.* — 3535, 7050, 14,060; *phone* — 3765, 14,160, 28,250 kc.

NATIONAL RTTY CALLING AND WORKING FREQUENCIES

3620 kc. 7140 kc.

It has been gratifying to note that, along with an increase in interest in civil defense organization there is a similar increase in interest in organizing our own AREC, especially among section leaders. Some of our present SECs are real crackerjacks, and new ones being appointed are going all out to organize their section along ARRL-recommended lines. This is a most encouraging trend, and we hope it will continue. The SEC job is a responsible one, and it's no cinch. To do it right requires quite a bit of time, correspondence, traveling and boundless enthusiasm and energy, to say nothing of some individual expense of money which ARRL cannot reimburse. The same trend is evident among ECs, some of whom spend more time than they have doing their jobs.

Naturally, we would like to think that this trend is a result of our continued haranguing on the subject of amateur radio communications for public service, for the overall

W4DRC, North Carolina PAM, EC for District #6, and author of the District's excellent AREC plan, is completely unable to get out of bed, but does his job just the same.

benefit of amateur radio and the common good rather than for ARRL or for the individual or the small group or a single agency to be served. We do what we think is best in our circumstances, each of us, but we keep ever in mind that the AREC is a nationwide organization with a common objective and that some standardization in accomplishing that objective is required if we are to work together as a team.

It is inevitable that the uptrend of interest in organization will cause our correspondence to grow and make more work for us. It is also inevitable that those who are working so hard to accomplish standardized organization will be more critical of what we do or what we don't do here at headquarters. We expect this and welcome it, provided only that the criticism is kept constructive, made after a rational analysis of the practical factors involved, and kept on the basis of "let's do something" rather than "*you* do something." We promise you that any such critical letters will be at least acknowledged, and usually commented on. Whether we agree with you or not is immaterial, unimportant; but if you present one side of a picture, we'll present the other side if there is another side — and there usually is. Praise, back-slapping and agreement for agreement's sake are pleasant social gestures, but they are not progressive or broadening for our purpose; progress and a broad outlook on the many and varied problems we face are requisite. Let's keep them in mind and practice them as we face these problems.

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On July 30, W7BOZ/m came upon an accident on Gore Hill, near Great Falls, Mont. Being one of the first on the scene, he was asked if he could call an ambulance. A "CQ Great Falls, emergency" raised W7UDA in Great Falls who dispatched an ambulance which arrived at the scene in eight minutes, probably saving the life of the lone survivor of the crash. Nice work, W7BOZ and W7UDA!

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West Indies SCM KP4DJ gives us some information on activities by amateurs during Hurricane Betsy. On August 11 at 0015, KP4ABA passed along the first San Juan Weather Bureau advisory to *VP2DJ* and *VP2KG* on 7220 kc. At the 0700 regular net roll call, KP4FAC collected weather reports from all stations of the Antilles Amateur Weather Net on 3815 kc. At 0830 KP4ABA alerted the Antilles Weather Net for hourly weather reports beginning at 0900. Stations filing observations were *KP4s* RE US WT ACI FAC, *KV4s* AA BD, *VP2s* KG DJ DN KB MY GX GG GW VA SI, VP4TI VP5RR VP6TR and FG7XA. Reports were sent on 7220 kc. until 1730. At 2000 the Antilles Weather Net met again on 3815 kc. for reports of damages and last minute plans of the KP4 stations. Numerous stations in the P.R. Emergency Net operating on 3925 kc. stood by all day and night August 11th until 0800 August 12th when electric power failed all over the island. KV5BD, on emergency power, reported the storm passing over St. Croix at 0500. There was also an 0700 session of the Antilles Weather Net controlled by KP4ZW. Stations using emergency power as the storm passed over Puerto Rico were *KP4s* DC WT CO ES WR ZK DV/m and XC/m, many of them under extremely difficult circumstances. Towns in the direct path of the storm were without power for from two days to a week. In Arecibo, KP4RE and KP4YD, by using borrowed equipment and emergency power, were instrumental in procuring an urgently-needed emergency power supply for the Arecibo Municipal Hospital, with the help of KP4WT and KP4FAC. KP4GP near Arecibo operated on emergency power for two weeks. KP4ABA operated portable all day August 15th to maintain contact with KP4CA/KP4 in devastated Yubucoa, to get reports from the mayor and relief officials to the Governor in San Juan. The next day KP4HZ (SEC) arrived with better equipment and set up on the ground floor of the City Hall, the roof having been blown off.

KP4WT handled traffic into and out of Mayaguez for two days for police, civil defense, Red Cross and the telephone company. KP4SZ went to police headquarters at the height of the storm to assist in the operation and traffic handling at KP4DC. Much recognition of the fine work of the amateurs was afforded by the Lions Club and the Weather Bureau. Other amateurs active in hurricane work not already mentioned included *KP4s* DO QC ZT LT VH MV and KV4BA.

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On a certain Sunday morning in September, K6GDG broke into an informal ragchew session with a call of "CQ blood donor." The blood needed, apparently for an emergency in Vallejo was of a rather rare type, but K6AKF/m, who was traveling from Redding to a picnic, broke in to indicate that this was his type. W6SBH then contacted K6GDG with the offer of blood. K6GIB also located three pints of the needed blood in Redding, also five in Redwood City and two in San Francisco. Other stations in the assisting network included *W6s* SYY YSD BDW RXX LRW.

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At 0900 on Sept. 5 K4AAQ, a doctor, called for a Birmingham station with emergency traffic. K4AJG and K4ANB moved off the AENP frequency to give him a clear channel. W4GLR in Birmingham answered his call. K4AAQ was operating mobile about 15 miles from Birmingham following an ambulance with a patient of his. He requested a police escort thru the heavy traffic of Birmingham. His patient was under oxygen and the supply was running short. W4GLR contacted the Birmingham police who met K4AAQ and the ambulance at the city limits with the escort. K4AAQ reported that the oxygen ran out just as they reached the hospital. The entire operation took 15 minutes or less. K4DQL was also helpful in clearing the frequency. — *K4AOZ.*

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The U. S. Weather Bureau, Department of Commerce, has issued public service awards to W4ZRH of Charleston, S. C. (EC for Charleston County) for work performed by him during the 1955 hurricane season in restoring communications between the Weather Bureau offices at Wilmington and Miami; and to K6IRE, a teen-aged amateur from Oakland who provided emergency communications for

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At the Seward County (Nebr.) Fair, local amateurs set up this booth to give publicity to civil defense and RACES, and at the same time an effective demonstration of our hobby. The TV set was operated right alongside the transmitter to demonstrate that TVI can be eliminated. Shown in the picture are, left to right, *WØs* VEY ZWF VGH ZOU and ZWG.

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devastated Humboldt County in the flood in California last year.

W4ZRH also holds three ARRL public service awards for services performed in 1955 hurricanes.

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Nineteen SECs reported July activities on behalf of 5503 AREC members. This is an increase of six over last year's July reporting record, but once again the number of AREC members is slightly lower. Sections reporting July AREC activities through their SEC (new reporting sections in italics): Western N. Y., Vermont, *Ohio*, Ontario, Alabama, Montana, Washington, Missouri, *Georgia*, Eastern Fla., Santa Clara Valley, San Joaquin Valley, Colorado, Eastern Pa., Nebraska, NYC-LI, Oregon, Wisconsin and Minnesota.

RACES News

For reasons which we cannot quite fathom, material to put into this column continues to be as scarce as the proverbial hen's teeth. Perhaps this is just the lax season for civil defense activities, or perhaps the gang are still recuperating from the workout they got in Operation Alert, 1956. Whatever the reason, we hope that more news of RACES activities will be forthcoming so that we will not have to leave this column off of any future issue of *QST*. It is important, for the record, that you let us know what is doing in your RACES group. How about it?

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The Ogden (Utah) Amateur Radio Club's truck has been painted white with a CD-RACES emblem and a sign that reads: "Mobile Radio A Facility of Weber County-Ogden Civil Defense By The Ogden Amateur Radio Club." The truck was used as a c.w. operating position in this year's Field Day and in the July 24th Pioneer Days Parade in Ogden.

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The Chicago YLRL club station, W9DEQ, has been authorized for RACES operation. Club members will assist in a training program for YLs in civil defense. Equipment has been assigned to them by the City of Chicago for this purpose. W9LLX and W9KLB are giving the girls instructions on how to use their equipment. This is the first club to receive such equipment in the Chicago Area. — *W9GME*.

NET DIRECTORY

This list includes all nets registered up to and including Sept. 19, 1956. Registrations received after that date will be included in the January *QST* listing if received prior to November 15th. If you have not yet registered your net, please send us the data requested on page 76, Sept. *QST*.

Nets are registered in the ARRL Net Directory only upon request, and upon receipt of the minimum basic information given below. The complete cross-indexed directory will be available in December (honest!).

Name of Net	*Freq.*	*Time*	*Days*
*Ala. Emerg. Net B (AENB)	3575	1900 CST	Daily
*Ala. Emerg. Net P (AENP)	3955	1800 CST	Daily
		0800 CST	Sun.
*Ala. Emerg. Net T (AENT)	3910	1630 CST	Daily
		0800 CST	Sun.
Anniston (Ala.) Emerg. Net (AENQ)	29,560	1900 CST	Mon.
The Anoka County (Minn.) Radio Club Emerg. Net	29,450	2000 CST	Tue.
Anthracite Net (Pa.) (AN)	3610	1900 EST	Mon.-Fri.
Antilles Amateur Weather Net	3615	0700 AST	Daily
		1730 AST	
Azalea Amerg. Net (Ala.) (AENG)	29,680	1945 CST	Sat.
Badger Emerg. Net (Wis.) (BEN)	3950	1800 CST	Daily
Barnyard Net	3960	0800 EST	Mon.-Sat.
Belleville 29,520 Net (Ill.)	29,520	2000 CST	Friday
Birmingham Emerg. Net (Ala.) (AENR)	29,560	1300 CST	Sun.
Blue Ridge 160 Net (Tex.)	1880	0830 CST	Sun.
British Columbia AREC Net (BCAREC)	3755	1800 PST	Mon.-Sat.
Buzzards Bay, Cape Cod & Islands Emerg. Net (Mass.)	145,260	1900 EST	Mon.
Calumet Area Emerg. Net (Ill.)	1805	1900 CST	Mon.-Sat.
Cape Breton Emerg. Net (N. S.)	3740	1800 AST	Wed.
	3750	1300 AST	Sun.
Capitol Area Radio Emerg. Net (N. Y.) (CARE)	145,000	1500 EST	Sun.
*Central Area Net (CAN) Hurricane Net	3670	2030 CST	Mon.-Sat.
*Central Valleys Net (Cal.)	3535	1900 PST	Mon.-Fri.
		2200 PST	
Civil Defense Net (Mass.)	29,560	1430 EST	Thu.
Clark Co. C.D. Net (Ohio)	3860	1300 EST	1-3 Sun.
*Colo. Emerg. Phone Net	3890	0830 MST	Sun.
*Colo. Slow Speed Net (CSSN)	3570	1800 MST	Mon.-Fri.
Comanche Co. (Okla.) AREC Net (CCEN)	3860	1230 CST	Sun.
*Conn. Nutmeg Net (CN)	3640	1845 EST	Mon.-Sat.
*Conn. Phone Net (CPN)	3880	1800 EST	Mon.-Sat.
		1000 EST	Sun.
Conn. Training Net (CTN)	3640	0900 EST	Sun.
Dade Emerg. Net (Fla.) (DEN)	29,044	1930 EST	Mon.
Delaware Emerg. Net	3905	1830 EST	Sat.
Del. Valley 2 Meter Traffic Net	147,000	1930 EST	Sat.-Thu.
Dragnet	14,280	0830 EST	Mon.-Fri.
East Tennessee Phone Net	3980	0645 EST	Daily
*Eastern Area Net (EAN)	3670	2030 EST	Mon.-Sat.
*Eastern Canada Net (ECN)	3535	1945 EST	Mon.-Sat.
		2130 EST	
*Eastern Mass. Net (EMN)	3660	1900 EST	Mon.-Fri.
Eastern N. Y. Novice Net	3731	1500 EST	KN2SHM
*Eighth Regional Net (8RN)	3530	1945 EST	Mon.-Sat.
		2130 EST	
Essex Co. CD-DC Net (N. J.)	28,590	2000 EST	1-3 Tue.
	50,420		
	145,290		
*Fifth Regional Net (RN5)	3645	1945 CST	Mon.-Sat.
		2130 CST	Mon.-Fri.
Finger Lakes Net (N. Y.)	145,350	2000 EST	Fri.

* Part of the ARRL National Traffic System.

*First Regional Net (1RN)	3605	1905 EST	Mon.-Sat.
Fla. Hurricane Net (HN)	3695	0700 EST	Sun.
*Fla. Phone Traffic Net (FPTN)	3945	0700 EST	Mon.-Sat.
Four Corners Phone Net	3885	0700 MST	Daily
*Fourth Regional Net (4RN)	3547	1945 EST	Mon.-Fri.
		2130 EST	
Gadsden Emerg. CW Net (Ala.) (AENC)	3735	1300 CST	Sun.
Gainesville Amateur Society Mobile Net (Fla.)	29,000	1930 EST	1-3 Tue.
*Georgia State Net (GSN)	3595	1900 EST	Mon.-Fri.
*Granite State Phone Net (GSPN)	3842	1300 EST	Mon.-Fri.
Greater Worcester Phone Net (Mass.)	28,720 29,080	2300 EST	Sat.
The Green Mountain Net (Vt.)	3860	1200 EST	Mon.-Sat.
Gulf Coast Sideband Net	3925	1730 CST	Daily
Ham Butchers Net	7280	1230 CST	Tue., Thu.
*Hi Noon Net (Colo.) (HNN)	3945	1200 MST	Mon.-Sat.
Huntsville Emerg. Net (Ala.) (AENS)	3825	1330 CST	Sun.
*Illinois CW Net (ILN)	3515	1900 CST	Mon.-Fri.
Illinois Emerg. Net (IEN)	3940	1730 CST	Tue., Thu.
		0900 CST	Sun.
Indiana CW Net (QIN)	3656	1900 EST	Mon.-Sat.
Indiana Fone Net (IFN)	3910	1830 EST	Mon.-Fri.
		0900 EST	Daily
Interstate Phone Net (IPN)	3970	1600 EST	Mon.-Sat.
Iowa Des Moines Net	7140	1330 CST	Sun.
*Iowa 75 Meter Phone Net	3970	1230 CST	Mon.-Sat.
*Iowa Tall Corn Net (TLCN)	3560	1830 CST	Mon.-Fri.
Jefferson Co. Emerg. Net (Ala.) (AENJ)	3900	1900 CST	Wed.
		1330 CST	Sun.
*Kansas CW Net (QKS)	3610 1880	1830 CST	Mon.-Fri.
*Kansas Novice Net (QKN)	3735	1830 CST	Sun.
*Kans. Slow Speed CW Net (QKS SS)	3610 1880	1830 CST	Sat., Sun.
*Kentucky Net (KYN)	3600	0900 CST	Daily
		1700 CST	
		1900 CST	
*Kentucky Phone Net (KPN)	3960	1800 CST	Mon.-Fri.
		1300 CST	Sat., Sun.
Ky. Sideband Net (KSN)	3945	2000 CST	Daily
The Kentucky-Tenn. Network (KTN)	3735	1900 CST	Wed.
Kings Co. AREC CD Net (N. Y.)	145,260	1530 EST	Mon.
Lakeland Emerg. Net (N. J.)	147,150	2100 EST	Mon.-Fri.
Lee Co. Emerg. Net (Ala.) (AENX)	3885	1330 CST	Sun.
Mahoning Valley Emerg. Net (Ohio)	7169 29,500 50,500	1900 EST	Mon.
Maritime Fone Net	3750	1900 AST	Daily
Md. Emerg. Phone Net (MEPN)	3820	1830 EST	Mon., Wed., Fri.
		1300 EST	Sat., Sun.
Memphis Six Meter Net	50,500	2000 CST	Mon.
Memphis Ten Meter Mobile Emerg. Net	29,627	1900 CST	Mon., Fri.
Memphis Two Meter FM Net	145,500	1930 CST	Mon.
*Mich. (QMN) TFC Net (Slow)	3663	1800 EST	Mon.-Sat.
(Fast)		1900 EST	Mon.-Sat.
*Mich. Slow Speed CW Net (QMN)	3663	1800 EST	Daily
Mike Farad Traffic Net (MFTN)	7238	1215 EST	Mon.-Fri.
*Minnesota Junior Net (MJN)	3700	1700 CST	Mon.-Fri.
*Minn. Phone Net (Evening)	3820	1800 CST	Mon.-Sat.
		0900 CST	Sun.
*Minn. Phone Net (Noon)	3820	1205 CST	Mon.-Sat.
		0900 CST	Sun.
*Minn. Section Net (MSN)	3595	1830 CST	Mon.-Sat.
Minute Man Net	3970	0730 EST	Mon.-Sat.
Mission Trail Net (MTN) (Calif.)	3854	1900 PST	Daily
*Missouri Traffic Net (MON)	3580	0700 CST	Mon.-Sat.
		1900 CST	
Montana Phone Net	3910	1800 MST	Mon., Wed., Fri.
Montgomery Emerg. Net (Ala.) (AENK)	3910	1100 CST	Sun.
*Morning Conn. Net (MCN)	3610	0645 EST	Mon.-Fri.
Muscle Shoals Emerg. Net (Ala.) (AENV)	29,560	1100 CST	2nd Sun.
*Nebraska CW Net	3525	1900 CST	Daily
*Nebr. 75 Meter Emerg. Phone Net	3983	1230 CST	Daily
Nebr. Slow Speed Net (NSS)	3750	1700 CST	Daily
New Brunswick Amateur Radio Assn Net	3790	1000 AST	Sun.
New Brunswick AREC Net	3790	1830 AST	Wed.
*N. H. Traffic Emerg. Net	3685	1900 EST	Mon.-Fri.
New Jersey Civil Defense Net (CW) (CDNJ)	3505.5	2000 EST	Mon.-Sat.
		1015 EST	Sun.
New Jersey Civil Defense Net (Phone)	3993	0930 EST	Sun.
*New Jersey Emerg. Phone Traffic Net	3900	1800 EST	Mon.-Sat.
		0900 EST	Sun.
*New Jersey Net (NJN)	3695	1900 EST	Mon.-Sat.
		0745 EST	
*N. Y. C. L. I. Traffic Net	3630	1930 EST	Mon.-Fri.
		1915 EST	Sat.
New York City Long Island Phone Net	3908	1730 EST	Mon.-Sat.
N. Y. C. Support Area Net	50,620 147,060	2030 EST	Mon.
N. Y. State Command Net	3509.5 3993	0900 EST	Sun.
*New York State Net (NYS)	3615	1900 EST	Mon.-Sat.
Newport Co. Emerg. Net (R. I.)	29,530	1000 EST	Sun.
*Ninth Regional Net (9RN)	3640	1630 CST	Daily
North Baltimore Net (NBN)	29,510	2030 EST	Tue.
North Central Phone Net	3915	0700 CST	Mon.-Sat.
N.Dak. 75 Meter Phone Net	3845	1800 CST	Mon.-Sat.
*North Texas CW Net (NTX)	3770	1845 CST	Mon.-Fri.
N. Tex.-Okla. Traffic Net (Phone)	3960	1730 CST	Daily
North West Traffic Net	3920	0630 PST	Mon.-Sat.
Northern Ala. 6 Meter Net	50,100	1930 CST	Tue., Fri.
*Northern Calif. Net (NCN)	3635	1900 PST	Mon.-Fri.
		2200 PST	
Oak Ridge (Tenn.) Emerg. Net	50,700	1900 EST	Mon., Thu.
*Ohio CW (Buckeye Net) (BN)	3580	1900 EST	Mon.-Sat.
Okla. Phone Emerg. Net (OPEN)	3860	0800 CST	Sun.
*Okla. Traffic Net (OLZ)	3682.5	1900 CST	Mon.-Sat.
The 160 Meter Fone Net	1995	1930-CST	Daily
Oregon Chatter Net (OCN)	3585	1830 PST	Sat., Sun.
*Oregon State Net (OSN)	3585	1830 PST	Mon.-Fri.
Oswego Co. Civil Defense Net (N. Y.)	147,150	1900 EST	Sat.
*Pacific Area Net (PAN)	3675	2030 PST	Daily
*Palmetto Net (FN) (Fla.)	3675	1830 EST	Mon.-Fri.
*Province of Quebec Net (PQN)	3890	1330 EST	Sun.
R. I. Intercity Net	29,260	1930 EST	Mon.-Fri.
R. I. Novice Net (RINN)	3743	1800 EST	Mon.-Fri.
*R. I. Traffic Net (RIN)	3540	1900 EST	Mon.-Sat.
River Forecast Net (RFN)	3656	0800 EST	Sun.
Rockford (Ill.) Emerg. Amateur Radio Service	28,700	2100 EST	Mon.
Rocky Mount (N. C.) Emerg. Net	29,000	2000 EST	Thu.
Sask. Phone Net	3780	1830 MST	Daily
Schenectady (N. Y.) Emerg. Communications Net	3950	0900 EST	Sun.
*Second Regional Net (2RN)	3690	1945 EST	Mon.-Sat.
Second Regional Phone Net	3980	1100 EST	Mon.-Sat.
Sector 1-B Stoughton, Mass., Net	28,590 147,300	1930 EST	Mon.
Shaw Sumter Emerg. Net (S. C.)	29,626	2000 EST	Thu.
*Show-Me Net (Mo.) (SMN)	3580	1630 CST	Sun.
*Sixth Regional Net (RN6)	3615	1945 PST	Daily
		2130 PST	
South Bay Emerg. Radio Net (Calif.)	3825	1900 PST	Mon.
*So. Carolina CW Net (SCN)	3795	1900 EST	Mon.-Fri.
*So. Dakota CW Net (SDN)	3645	1900 CST	Mon., Wed., Fri.
*S. Dak. 75 Meter Emerg. Phone Net	3870	1830 CST	Mon.-Sat.
		0930 CST	Sun., Hol.

*Southern Calif. Net (SCN)	3600	1930 PST	Mon.-Fri.
The Teen Agers Net	3620	1915 EST	Mon.-Fri.
	3630	1815 EST	Mon.-Sat.
*Tenn. CW Net — Volunteer Net (TN/TENN)	3635	1900 CST	Mon.-Sat.
Tenn. Night Owl Net (TNON)	3970	2200 CST	Daily
*Tenn. 160 Meter CW Net	1817	1900 CST	Sun.
Tenn. 75 Meter Phone Net	3980	0645 CST	Daily
		0800 CST	Sun.
*Tenth Regional Net (TEN)	3545	1700 CST	Mon.-Sat.
		1945 CST	Mon.-Fri.
		2130 CST	Mon.-Fri.
*Third Regional Net (3RN)	3590	1830 EST	Mon.-Fri.
		1945 EST	
		2130 EST	
Topeka Kansas Ten Meter Net	29,600	1930 CST	Thu.
Topeka Kansas Two Meter Net	145,500	2100 CST	Mon.
Traffic Hounds Morning Watch	3540	0700 EST	Daily
Transcontinental Phone Net (TCPN)	3970	1700 EST	Daily
Tri-County Net (Calif.)	3820	1200 PST	Daily
Twin City Ten Meter Net (Minn.)	29,400	1930 CST	Daily
246 Traffic Net — Valley Division (Calif.)	145,080	1900 PST	Daily
Union Co. (N. J.) AREC Net	146,940	2000 EST	Tue.
United Trunk Lines (UTL)			
(East)	3565	2015 EST	Daily
(Central)	3565	2030 CST	Daily
	3590		
(Western)	3565	1930 PST	Daily
Upper Peninsula Emergency Net (Mich.) (UPEN)	3920	0900 EST	Sun.
Valley Emerg. Net (Ala.) (AENI)	3885	1330 EST	Sun.
*Vermont CW Net (VTN)	3520	1830 EST	Mon.-Sat.
Vermont Phone Net	3860	0900 EST	Sun.
Virginia Fone Net (VFN)	3835	1900 EST	Daily
Va. Overflow Net (VON)	29,100	2000 EST	Mon.-Fri.
Waltham CD Net (Mass.)	146,800	1930 EST	Mon.
*West. Mass. CW Net (WMN)	3560	1900 EST	Mon.-Sat.
*West Va. CW Net (WVN)	3570	1900 EST	Mon.-Sat.
*West Va. Phone Net	3890	1830 EST	Mon.-Fri.
*Western Pa. ORS Net	3585	1900 EST	Mon.-Fri.
*Wisconsin CW Net (WIN)	3535	1915 CST	Daily
Wood-Ridge, N. J., C-D Net	145,680	2000 EST	Wed.

TRAFFIC TOPICS

This is being written before the Simulated Emergency Test, but we'll bet that many of you traffic hounds are still trying to recuperate from the flood of traffic that will have descended on you on its way to ARRL, Red Cross and Civil Defense. For those of you who are new in the traffic game, this annual exercise used to call for a message from every AREC member or other amateur participating in the SET to ARRL Headquarters. During the past few years, this mass traffic-handling aspect of the SET was abolished in favor of having participating amateurs each originate a single message to his EC, the EC then originating one to headquarters summarizing results. The idea was more nearly to simulate an actual disaster. This year it occurred to us that the SET might better include something for the traffic men to do as well, so we returned to mass traffic handling. That's why there was more traffic floating around than in recent previous years. Hope you all made BPL, or cut a big notch in the necessary total to achieve it!

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Have you registered your net? If not, better look after this. If you want to get into the annual cross-indexed net directory, your registration should be in by November 15th.

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Transcontinental Phone Net reports traffic totals for August as follows: First Call Area, 913; Second Call Area, 1304; Fourth, Ninth and Tenth Call Areas, 441; Total, 2658. North Texas-Oklahoma Net reports 31 sessions, 715 check-ins, traffic total of 221. Early Bird Net handled 726 messages in August.

National Traffic System. We have been exchanging some most interesting correspondence with W4COU, new RN5 manager — a ball of fire if we ever ran into one. "JP" is full of ideas concerning how both administration and operation of the National Traffic System can be improved. Naturally, we don't agree with all of them; neither would you. Anyone who agrees with anyone else 100% is just a plain apple-polisher (a euphemism) or is a person completely devoid of individualism. We wish we could give you the benefit of his thoughts on the subject here, but space does not permit. The point is that ideas, whether we agree with them or think them practical or not, are what we want and need in NTS. If you give us the benefit of yours, they are bound to have an overall effect on NTS operation and administration, just as your thoughts and desires were instrumental in formation of the system in the first place.

This leads up to the conclusion we are trying to make: that NTS is the *ARRL* National Traffic System, but ARRL is *you*. If you want it, and are willing to support it, it will thrive. If you don't or aren't, it will wither and die. It's very simple. And just as simple is this fact: that if you don't tell us what you want, we can't know. So ask yourself these questions, and let us know the answers:

(1) Do you really want a nationally integrated traffic system?

(2) What changes would you make in the present NTS structure if you had your way? And why? Careful, now, these are loaded questions; they depend on your being fully informed on the subject, so be sure you have studied CD-24 carefully.

(3) Do you have the strength of your convictions? That is, if your proposals are implemented, will you get

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for August traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
WØSCA	21	952	935	2	1910
W7BA	25	914	871	41	1851
W3PZW	28	833	753	80	1694
WØPZO	3	722	713	2	1440
W2KEB	20	649	599	140	1408
KH6QU	54	839	437	68	1398
W3WG	6	661	648	10	1325
W2KFV	8	577	383	95	1063
W6DDE	0	522	507	15	1044
K7FAE	49	467	489	27	1032
K2WAO	529	224	180	27	960
WØCPI	5	466	422	44	937
W9DQ	19	446	426	39	930
W9NZZ	290	313	1	305	909
WØLGG	28	411	391	24	854
WØLCX	14	380	375	5	774
W6GYH	502	106	88	37	733
WØBDR	9	370	344	5	728
WØBLI	4	364	356	4	728
W9CXY	12	323	319	4	658
W7PGY	11	321	297	24	653
W3CVE	72	274	223	51	620
WØKQD	66	274	233	19	592
WØBJP	0	278	278	0	556
W2YRW	8	272	161	103	544
W3BHC	65	235	217	18	535
W8ELW	22	257	235	4	518
W9ZYK	23	238	230	27	518
WØGAR	8	248	252	4	512
Late Report:					
KG6FAE (July)	574	82	0	30	686

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W61AB	37	1194	982	212	2425
Late Report:					
W61AB (July)	45	1137	858	279	2319

BPL for 100 or more *originations-plus deliveries;*

K2DEM	255	K3WBJ	115	W9PQZ	102
KP4WT	209	W3WIQ	110	WØNIY	102
KØHEA	160	W8WTO	108	K4EAQ	101
WØOAQ	160	W1ZME	107	Late Reports:	
K4DWP	135	W1YBH	106	KP4WT (July)	127
KP6AK	128	K2DVT	105	W9DGA (June)	113
W6LYG	126	W88MK	105		

More-Than-One-Operator Stations

W4TLR 163

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W7QKU, W9KTX, W9SHR, WØOHJ.

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.

behind them with the same strength and enthusiasm with which you propose them? Or are you an "idea man" who wants someone else to do the implementing?

August reports:

Net	Sessions	Traffic	Rate	Average	Representation (%)
1RN	27	203	0.39	7.5	80.4[1]
2RN	27	244	0.84	9.1	98.8[1]
3RN	60	241	0.43	4.0	71.1
4RN	21	150	0.42	7.1	42.9[1]
RN5	41[2]	394	0.72	9.6	39.6
RN6	49[3]	472	0.31	9.6	....
8RN	40	169	....	4.0	75.0
9RN	31	696	0.62	22.5	99.2[1]
TEN	73	1460	....	20.0	61.1
TRN	19	34	0.40	1.8	63.2[1]
EAN	25	560	0.84	22.4	86.0
CAN	24	851	0.99	35.4	100
PAN	25	544	0.48	21.8	100
Sections[4]	513	2770		5.4	
TCC Central		1290			
TCC Pacific	139[5]	676			
Total Summary	975	10754	CAN	9.0	....
Record	975	10754	0.99	14.8	100
Late reports:					
RN6 (June)	39	230	....	5.9	....
RN6 (July)	41	169	....	4.1	....

[1] Regional net representation based on one session per night. Others are based on two or more sessions per night.

[2] Reported; several others held but not reported.

[3] Reported, out of 62 scheduled.

[4] Section nets reporting: TLCN (Iowa); Iowa 75 Meter Phone; CN & CPN (Conn.); ILN (Ill.); SCN (Calif.); KYN (Ky.); S. Dak. 75 Meter Phone; TNON, E. Tenn. Phone & Tenn. C.W. Summer; GSN (Ga.); MSN, MJN & Minn. Phone (noon); WVN (W. Va.); AENB, AENP & AENT (Ala.); HNN (Colo.).

[5] TCC out-of-net schedules, not counted as net sessions.

The Thirteenth Regional Net (TRN) has changed its name to Eastern Canada Net. Effective with the next NTS summary, TRN will be replaced by ECN.

W1BVR says that 1RN is a darned good "half a net." K2DXV, K2EWR and W2PHX have received their 2RN certificates. Western Pennsylvania has fallen down in 3RN, with W3LXQ doing most of the work. North Carolina and Virginia were not represented on 4RN in August; but W4KNP (ex-W1AYC) is expected to be active hereafter. W4RLG gets a "well done" from RN5 manager for his August NCS chores; vacations and busy work seasons have taken their toll on the net. W8DSX, 8RN Manager, got himself hopelessly married up recently so expects to be less active for a while. W9MCK and W9CXY have received well-earned 9RN certificates; this net hopes to have a "late" (1945 CST) session going during the busy season. TEN certificates have been awarded to WØLCX, WØSCT, WØPKT and WØTOL; the net is conducting a session at 1700 CST on 3540 to get away from TVI. TRN (now ECN) shows signs of increased activity preparatory to the fall season. CAN representation remains 100%. PAN is girding for the fall active season.

Transcontinental Corps. For the second consecutive month, no report on TCC-Eastern. TCC-Central (WØSCA) handles plenty of traffic, much of it to and from EAN, all on out-of-net schedules. The W1BDI-K6GZ schedule on Thursdays (Stations B & H respectively) is handled by RTTY. TCC-Pacific (WØKQD) is holding up well, with only two roster vacancies at this writing. The TCC roster: Eastern (W8UPB) W1EMG, W1NJM W1BDI W1YNC W2ZRC W3COK W3WG VE3VZ; Central (WØSCA) — WØBDR WØSCA WØKJZ WØDQL WØLGG; Pacific (WØKQD) — W6ADB K6DYX W6VZT K6CNE W6BPT W6YHM K6GUZ K6GZ W6CMA W6RFW W6HC W7FRU W7WJF WØKQD.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH....267
W6AM....267
W8HGW...265
W6ENV...262
W6MX....261
W9NDA...260
W6VFR...259
W8NBK...259
W6WYG...258
PY2CK...257
W3BES...257
W3GHD...257
W2AGW...257
W6DZZ...257
W8BRA...256
W6TT....256
W8KIA...256
G2PL....255
W3KT....255
W3JTC...255
W5A8G...255

Radiotelephone

PY2CK...249
VQ4ERR..243
W1FH....242
ZS6BW...239
W8HGW...231
GM3DHD .230
W3JNN...230
W1NWO...228
W9NDA...227
W9RBI...227
W6AM....227
ON8MM...226
W8GZ....226
W1JCX...222

From August 15, to September 15, 1956 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

W4DQH...216
PY4AO...132
OH2PC...119
W1ICP...115
W4GJW...113
W1ICW...112
OK1KTI..110
W2OTC...108
LU7AS...108
W7GHB...107
ZD6RD...107
K2AAA...106
LA7X....106
HB9BZ...105
PAØJV...105
OK1XQ...104
PAØOI...104
W1JMI...103
W1QXX...103
W2DEC...103
K6EC....103
W9VFZ...103
DL6NB...103
HB9KC...103
OZ5Z....103
W1ZDZ...102
W2JVZ...102
W9EHK...102
G8TY....102
GC2FZC..102
W2GVU...101
W2PZI...101
W4GUV...101
W4UKA...101
W9IGK...101
W9OTS...101
WØPGI...101
W1UBC...100
K2BSM...100
K2EQD...100
W5ZSX...100
W6LTX...100
W6OUN...100
W8UYW...100
W9CMC...100
WØFWW...100
SM5BRO..100
VE3IR...100
VE7EH...100

Radiotelephone

W4DQH...164
DL4QH...126
VE7RX...121
W5DJH...109
W9ICL...109
LU3MZ...106
K2AAA...105
ZD6RD...105
W4ADY...104
W3BVL...102
W9DSP...101
W9IGK...100
W8BGU...100
W5PQA...100

ENDORSEMENTS

W3EVW...250
CE3AG...240
WØELA...235
W1BIH...233
W9HUZ...230
OZ7BG...180
W1VG....175
G3AIM...175
W2IJU...174
W4LQN...173
W1ORP...132
W2CGJ...132
W3CPB...132
W3KHU...132
WØCPM...132
ON8MM...230
W6GPB...221
W6UHA...221
W4OM....220
W8LKH...220
W2TQC...217
W3CGS...213
W4LZF...211
G3HLS...211
K2CPR...210
W6MJB...210
W3ECR...203
W7AH....203
W8KPL...203
W8TMA...201
W6CTL...200
WØNLY...200
ZS1BK...200
ON4FQ...196
W9FDX...191
W5BNO...190
W6JK....190
EA2CA...190
WØANF...183
W3VKD...182
G3AAE...182
HB9ET...182
W5DML...180
W5UX....180
ON4PA...180
W8CED...172
W5DGV...171
W1CUX...170
W7PHO...170
K2BZT...169
VK6SA...162
W3VOS...161
W4AAW...161
W1BGA...160
K2GMO...160
W3RNQ...160
W2ZGB...158
OZ3Y....155
W1LHZ...152
W1JEL...151
W3ARK...151
W3IXN...150
G3AKU...150
W2QKJ...149
W1PKW...145
W5OGS...145
W3PGB...143
G8KS....142
LA5Q....141
WØSQP...140
W9HQF...140
W6FFR...139
W1ZDP...138
W1RB....135
K6CJQ...133
HB9IM...132
W1RW8...131
G6VC....131
W3MDO...130
W4JBQ...130
W8RVU...129
W4PHJ...128
W4DXI...126
W6ULS...125
I1BLF...124
W7GXA...124
W1ZZK...122
W4JUJ...122
W7IQI...122
W9DYG...122
W4JII...121
W5TIZ...121
DL1DA...121
W1NI....120
W2SSC...120
W3W8F...120
W6NJU...120
W3POE...115
WØBPA...115
W4EJH...114
K6ENL...111
W7GXA...111
W9WIO...111
W7BGA...110
KH6WW...110

Radiotelephone

EA2CQ...214
G4ZU....201
G3HLS...200
W3ECR...176
ZP5CF...170
W4AAW...160
ZL1KG...160
W9FDX...154
W1EKU...150
W3VKD...150
WØVSK...150
W4ANE...147
W4JGO...145
HB9ET...145
OZ3Y....141
W9EZD...140
EI2W....137
W2JIL...132
V82DQ...131
W9CPM...130
W2PBI...120
W2WCY...120
W3HIX...120
W1CUX...119
W5TIZ...116
W2GIC...110
W8TMA...110
DL6VM...110

W/VE/VO Call Area and Continental Leaders

W4TO....247
W7AMX...253
WØYXO...250
VE1HG...161
VE2WW...189
VE3QD...210
VE4XO...118
VE5QZ...140
VE6VK...143
VE7GI...212
VE8AW...181
VO6EP...190
Z86BW...244
4X4RE...218
ZL2GX...254

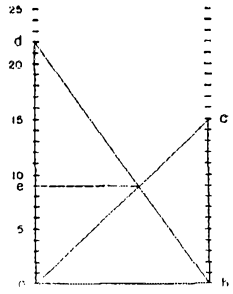
Radiotelephone

W2BXA...203
W4HA....201
W5BGP...218
W7HIA...185
WØAIW...201
VE1CR...120
VE2GQ...118
VE3KF...163
VE5YE...140
VE7ZM...163
ZL1HY...209
OD5AB...170

Parallel Resistors, Series Capacitors, And No Algebra

SOME months ago we presented a discussion of the Decibel and a simple method of calculating db. values without the use of logarithms or other "long-haired" mathematics. Judging from the comments of readers, it must have been a good idea so we offer herewith an easy way to perform another frequently needed calculation.

WE HOPE that no one will accuse us of undermining the science of mathematics — we have the highest regard for mathematics and mathematicians — but we also know that it is easy to forget formulas and that many amateurs, confronted with the necessity of calculating the value of resistors in parallel, are likely to hook them up and get the answer from an ohmmeter. The following geometrical solution is ridiculously simple and we doubt that anyone who learns it can ever forget it. All you need is a pencil, a piece of paper and a ruler; then proceed as follows:



Suppose R_1 equals 22 ohms and R_2 equals 15 ohms. 1) Draw a base line a-b of any convenient length. 2) Draw a vertical line a-d whose length measured in suitable units is proportional to the value of one of the resistors to be used. 3) Draw another vertical line b-c proportional to the other resistor. 4) Draw diagonal lines connecting a and c, b and d. 5) Draw a horizontal line from the intersection of the diagonals to the vertical line a-d. The point where this horizontal line meets a-d can be called e. 6) The distance from a to e measured in the same units is the value of the two resistors in parallel. Solution by the diagram shows this value to be approximately 9 ohms. Solution by conventional formula gives 8.9189 ohms.

Extensions of this process to include three or more resistors, or to determine what value is needed when the desired result is known and one resistor is available, will be readily apparent.

●

THIS procedure may be objected to because it is not accurate. The degree of accuracy depends, of course, on the size of the diagram and the care with which it is measured. But considering that commercial tolerances of components normally used in radio work are plus or minus 10 or 20 percent of their rated values, you would have to be a very bad draftsman indeed to make any significant difference in the result.

EXACTLY the same process may be used to find the value of capacitors in series or inductances in parallel *if* there is no mutual inductance between them. There is nothing new about this method but apparently very few people are familiar with it. We pass it along as an easy short cut for your experimental work.

73

— CY READ, W9AA

Bill Halligan Jr. W. J. Halligan W9AC for hallicrafters

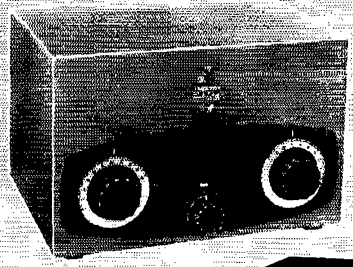
A.R.R.L. AFFILIATED-CLUB CLASS INSTRUCTION

The following chart lists information as furnished by a number of ARRL-Affiliated Clubs. Further class details can be obtained by contacting the individual club through the address given in the "information" column.

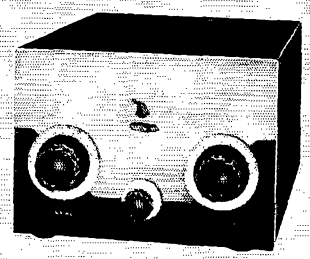
State	*City*	*Affiliated Club*	*Information*	*Code*	*Theory*
Alabama	Anniston	Anniston Radio Club	Wilson James, 1931 Walnut Ave.	X	X
Calif.	Culver City	Hea Amateur Radio Club	R. H. Wentworth, Box 1133	X	X
	Dunsmuir	Dunsmuir Amateur Radio Club	Raymond Rains, Box 692	X	X
	Red Bluff	Tehama County Amateur Radio Club	W. K. McIntosh, 1855 Douglass St.	X	
	South Gate	Southeast Radio Club	Jared Larsen, 10870 Alexander Ave., Lynwood	X	
	Whittier	Rio Hondo Radio Club	Leroy Heath, 10560 Ceres Ave.	X	
Colorado	Fort Collins	Larimer County Hams, Inc.	Ben Michaud, 312 Park St.	X	X
Conn.	Manchester	Manchester Radio Club	R. Reichenbach, 406 Woodland St.	X	X
	Meriden	Meriden Amateur Radio Club	A. A. Jankowski, Oregon Rd.	X	X
Florida	Eglin AFB	Eglin Amateur Radio Society	F. M. Butler, Jr., 28 South Elliot Rd.	X	
	Gainesville	Gainesville Amateur Radio Society	D. C. Bunting, 2038 NW 3rd Ave.	X	X
	Leesburg	Lake Amateur Radio Assn.	R. O. Martin, Box 1023, Tavares	X	X
Illinois	Bloomington	Central Illinois Radio Club Inc.	A. E. Wolff, 1407 W. Grove St.	X	X
	Chicago	Hamfesters Radio Club	Angelo Mascio, 8908 South Constance	X	X
	Joliet	Joliet Amateur Radio Society	G. S. Bones, 2320 N. Raynor Ave.	X	X
	Moline	Quad City Amateur Radio Club	Janet Stoebe, 1711-6 Ave., Rock Island	X	
	Monmouth	Knox Warren Amateur Radio Assn.	G. E. Salter, Box 1012, Galesburg	X	X
	Springfield	Sangamon Valley Radio Club, Inc.	E. A. Metzger, Box 572	X	X
Indiana	Richmond	Richmond Amateur Radio Club	C. M. Huth, 2012 National Road, West	X	
	Terre Haute	Wabash Valley Amateur Radio Assn.	D. L. Mier, 2446 Cleveland Ave.	X	X
Iowa	Decorah	Luther College Amateur Radio Club	Reuben Ruen, c/o W9BQC, Box 139, Luther College	X	X
Kansas	Dodge City	Boot Hill Amateur Radio Club	K. D. Pugh, 507 Avenue F.	X	X
	Kansas City	Jayhawk Amateur Radio Society	C. E. Smith, 3131 Delavan Ave.	X	X
	Topeka	Kaw Valley Radio Club	J. M. Oberg, 432 Wedgewood	X	X
Kentucky	Lexington	Blue Grass Amateur Radio Club	L. H. Echols, 2000 S. Lime	X	X
	Louisville	Amateur Radio Transmitting Society	A. E. Gilbert, 427 Fairlawn Rd.	X	X
Maryland	Anne Arundel County	Anne Arundel Radio Club	N. A. Ball, RFD 1, Box 63, Annapolis	X	X
Mass.	Fall River	Fall River Amateur Radio Club	Ruthe Flagg, 120 Third St.	X	X
	Framingham	Framingham Radio Club	G. M. Dewey, 34 Lockland Ave.	X	X
	North Adams	Hoosac Valley Radio Club	W. E. Estes, State Teachers College, Church St.	X	X
	Southbridge	Quinebaug Valley Radio Club	Paul Meunier, Box 210	X	X
	Wakefield	Quannapowitt Radio Assn.	Mrs. E. Daly, 20 Willow St., Wilmington	X	X
	Waltham	Waltham Amateur Radio Assn.	P. F. Day, 24 Riverside St., Auburndale	X	
	Waltham	Middlesex Amateur Radio Club	E. L. Tougas, 111 Cedarwood Ave.	X	X
Mich.	Battle Creek	Calhoun Area Radio Club	D. E. Blashfield, RFD 3, Box 561-A	X	X
	Detroit	Detroit Amateur Radio Assn.	L. M. Nathanson, 3780 Kendall	X	X
	Detroit	Detroit Mike & Key Club	C. T. Walker, Jr., 3903 Evaline St., Hamtramck	X	
	Iron Mountain	Iron Mountain Amateur Radio Club	Dr. C. G. Steinke, 517 Stephenson Ave.	X	X
Minn.	Minneapolis	Minneapolis Radio Club, Inc.	Eunice Nordenfoss, 2924 Alabama Ave.	X	X
	Stillwater	Stillwater High Radio Club	R. A. Gille, Stillwater Senior High School	X	X
Montana	Harlowton	Harlo Radio Club	Vernon Phillips, Box 971	X	X
Nebraska	Crete	Crete Amateur Radio Club	J. P. Jacobs, Box 68	X	X
N. H.	Berlin	Coos Radio Club	N. A. Charest, 319 Grafton St.	X	X
N. J.	Avenel	Avenel Radio Club	William Tyrrell, Box 631, Port Reading	X	X
	Cedar Grove	Kearfott Amateur Radio Club Inc.	R. J. Pelletier, 29 Fair Hill Rd., Clifton	X	X
N. Y.	Auburn	Auburn Amateur Radio Assn.	G. W. Hippisley, Jr., 58 Throop Ave.	X	X
	Clayton	Clayton Radio Club	John Basinet, 409 Franklin	X	X
	Dunkirk	Northern Chautauqua Amateur Radio Club	H. A. Barris, 36 Adams St., Silver Creek	X	X
	New York	Knickerbocker Amateur Radio Club	Clay Cool, 163 W 13 St.	X	X
	New York	Fordham Radio Club	Maurice Grossman, 1665 Monroe Ave., Bronx	X	X
	Sidney	Sidney Amateur Radio Club	L. M. Finch, 14 Myrtle Ave., Oneonta	X	X
	Staten Island	Staten Island Amateur Radio Assn.	Robert Link, 190 Oakdale St.	X	X
	Tonawanda	Amateur Radio Assn. of the Tonawandas	Barton Salefske, 103 Kiel St.	X	X
N. C.	Greensboro	Greensboro Radio Club	J. W. Markham, 1421 Garland Drive	X	X
Ohio	Cincinnati	Greater Cincinnati Amateur Radio Assn.	P. R. Wolf, 2005 Dana Ave.	X	X
	Cleveland	Westpark Radiops	J. B. Bamberg, 680 Moore Rd., Avon Lake	X	X
	Painesville	Lake Geauga Amateur Radio Club	H. G. Warren, 145 Linden Dr.	X	X
	Tiffin	Seneca Radio Club	R. E. Ekleberry, 306 Ohio Ave.	X	X
Oklahoma	Bartlesville	Bartlesville Amateur Radio Club	W. Featheringill, 2074 Johnstone	X	X
	Enid	Enid Amateur Radio Club, Inc.	R. S. Webb, Box 261	X	X
Oregon	Astoria	Astoria Amateur Radio Club	Robert Scott, 1068-11th St.	X	X
	Pendleton	Pendleton Amateur Radio Club, Inc.	A. L. Hummell, 304 S.W. 16th St.	X	X
Penn.	Bradford	McKean Radio Club	J. F. Petterto, 4 Maplewood Ave.	X	
	Lancaster	Lancaster Radio Transmitting Society	A. C. Jacoby, 136 Springhouse Rd.	X	X
	Montgomery	North Pennsylvania Amateur Radio Club	W. O. Kulp, Ridge Rd., RD #1, Perkasie	X	X
	Pittsburgh	Steel City Amateur Radio Club	Nathan Firestone, 673 Loretta St.	X	X
	Washington	Washington County Amateur Radio Club	Merwin Beall, RD #1,	X	X
	Waynesburg	Waynesburg College Radio Club	Miller Hall, Waynesburg College	X	X
	Wilkes-Barre	Wyoming Valley Amateur Radio Club	J. E. Pugh, 23 East Hoyt St., Kingston	X	X
R. I.	Cranston	Cranston Radio Assn., Inc.	Nicholas Abbenante, 66 Victory St.	X	X
	Newport	Newport County Radio Club	C. Van Kirby, 576 E. Main Rd., Middletown	X	X
Texas	Houston	Houston Amateur Radio Club, Inc.	L. D. Wright, 4918 Marietta Lane	X	X
	San Angelo	San Angelo Amateur Radio Club	M. D. Rivers, 2338 Rio Grande	X	X
Vermont	Burlington	Burlington Amateur Radio Club	H. H. Dean, Box 81	X	X
Virginia	Petersburg	Petersburg Amateur Radio Club	S. D. Eltelman, 174 Monticello St.	X	X
	Richmond	Richmond Amateur Radio Club	W. W. Bell, Box 1985		X
	Winchester	Shenandoah Valley Amateur Radio Club	R. E. Rush, Box 139	X	X
	Roanoke	Blue Ridge Amateur Radio Society	C. P. Sisler, Box 2002	X	X
Wash.	Seattle	West Seattle Radio Club	Toddy Nye, 6031 38th Ave., S.W.	X	
Wisc.	Manitowoc	Mancorad Radio Club	B. E. Porter, 1712 23rd St., Two Rivers	X	X
	Milwaukee	Milwaukee Radio Amateur Club	W. H. Wing, 3475 N. 58th St.	X	X
	Stevens Point	Point Radio Amateurs	F. L. Guth, 428 Ellis St.	X	X
Alberta	Edmonton	Northern Alberta Radio Club	Alex Wylie, 12611-124 St.	X	
Ontario	Hamilton	Hamilton Amateur Radio Club	R. J. Parry, 65 Sunning Hill Ave.	X	X
	St. Catharines	Niagara Peninsula Amateur Radio Club	Ken Priestman, 54 Linden St.	X	X
	Timmins	Porcupine Amateur Radio Club	G. Spooner, Box 253	X	X

accessories for *Every* amateur station!

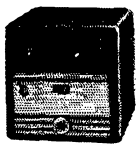
BIG in value!
BIG in performance!



KILOWATT "MATCHBOX"



275 WATT "MATCHBOX"



"SIGNAL SENTRY"

Monitors CW or phone signals without regard to operating frequency. Energized by transmitter RF. Mutes receiver audio for break-in. Serves as code practice oscillator with simple modification. Power obtained from receiver or other available supply. Wired, tested, with tubes.

Cat. No. 250-25 Amateur Net $18.95

SWR BRIDGE

Measures standing wave ratios for effective use of a low pass filter and antenna coupler. 52 ohms impedance can be changed to 70 ohms or other value. SO-239 connectors and polarized meter jacks.

Cat. No. 250-24 Amateur Net $9.75

LOW PASS FILTER

Four individually shielded sections—handles more than 1000 watts RF, provides 75 db or more attenuation above 54 mc. Insertion loss less than .25 db. Replaceable Teflon insulated fixed capacitors. SO-239 coaxial connectors. Wired and pre-tuned.

Cat. No. 250-20 Amateur Net $13.50

Bandswitching... self-contained... no plug-in coils!

VIKING KILOWATT "MATCHBOX"—Bandswitching 80, 40, 20, 15, and 10-11 meters—self-contained. Use with transmitters up to and including 1000 watts input—handles unbalanced line impedances from 50 to 1200 ohms and balanced line impedances from 50 to 2000 ohms. No coils to change, no "tapping down" on the inductor. Transmit/receive relay grounds receiver antenna terminals in "transmit" position. Adjustment for matching antenna to receiver input. Fully shielded. Provision for RF probe.

Cat. No. 250-30 Kilowatt "Matchbox", assembled, wired and tested..... **Amateur Net $124.50**

VIKING 275 WATT "MATCHBOX"—Performs all antenna loading and switching functions required in medium power amateur stations. Bandswitching 80, 40, 20, 15, and 10-11 meters. Matches balanced antennas from 25 to 1250 ohms and unbalanced or single wire antennas from 25 to 3000 ohms. Input impedance, 52 ohms, rated, 275 watts. Built-in transmit/receive relay grounds receiver antenna terminals in "transmit" position. Independent adjustment for matching antenna to receiver input. Fully shielded. Provision for RF probe.

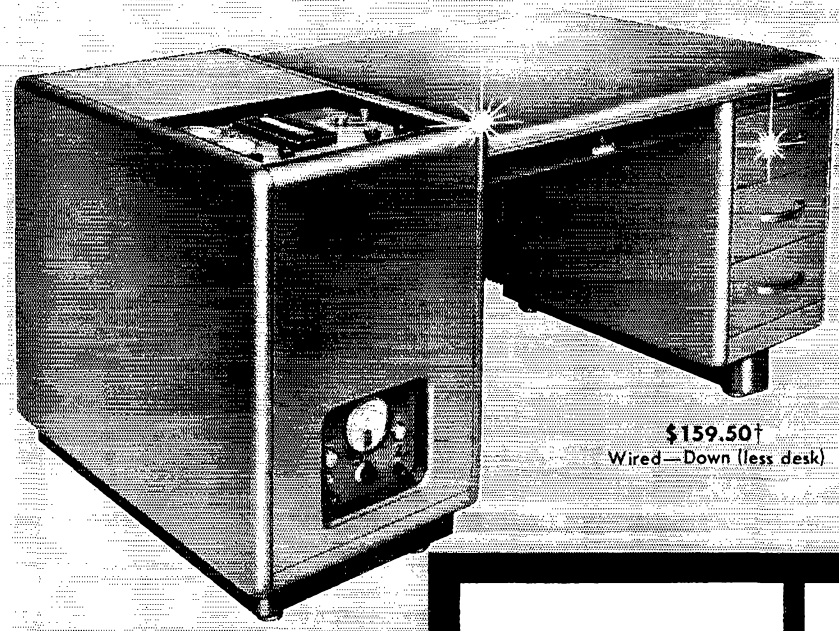
Cat. No. 250-23 275 watt "Matchbox", assembled, wired and tested..... **Amateur Net $49.85**

IMPORTANT NOTE: A suitable RF measuring device such as the Johnson 250-24 SWR Bridge is essential for proper tuning and adjustment of any antenna coupler.

E. F. Johnson Company

2840 SECOND AVE. S.W., WASECA, MINNESOTA

full communication



$159.50†
Wired—Down (less desk)

1000 watts AM, CW and SSB!

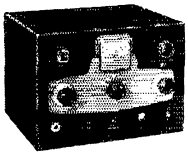
VIKING "KILOWATT" AMPLIFIER

Boldly styled — contains every conceivable feature for safety, operating convenience and full kilowatt performance. Low power or maximum legal input with the flip of a switch. Continuous tuning 3.5 to 30 mc—no coil change necessary. Compact pedestal contains complete kilowatt—rolls out for adjustment and maintenance.

Excitation requirements: 30 watts RF and 15 watts audio for AM; 2-3 watts peak for SSB. Wired and tested, complete with tubes.

Cat. No.		Amateur Net
240-1000	Wired	$1,595.00
251-101-1	Matching accessory desk top and three drawer pedestal.	

Amateur Net
F.O.B. Cory, Pa. $123.50

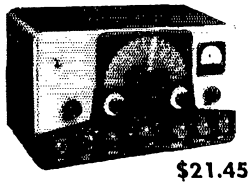


$5.50†
Kit—Down

VIKING "ADVENTURER"

Ideal 50 watt CW transmitter for the novice or experienced amateur. Single-knob bandswitching 80 through 10 meters. Effectively TVI suppressed . . . built-in power supply. Full output of supply available through rear power receptacle to power auxiliary equipment when transmitter is not operating. Easy to build . . . safe to operate. Compact, completely self-contained. Wide range pi-network output tuning —no antenna tuner needed. Complete with tubes, less crystal and key.

Cat. No.	Amateur Net
240-181-1 Kit	$54.95



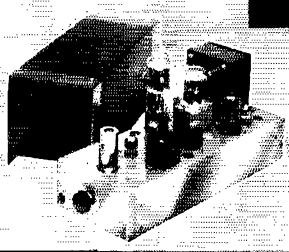
$21.45†
Kit—Down

VIKING "RANGER"

75 watts CW input . . . 65 watts phone. Bandswitching 160 thru 10 meters. Self-contained, serves as a transmitter or RF and audio exciter. Effectively TVI suppressed . . . built-in VFO or crystal control . . . 100% AM modulation . . . high gain audio. Pi-network antenna matching from 50 to 500 ohms. Break-in keying. No internal changes required to switch from transmitter to exciter operation. Complete with tubes, less crystals, key and mike.

Cat. No.	Amateur Net
240-161-1 Kit	$214.50
240-161-2 Wired	$293.00

$7.35†
Wired—Down



JOHNSON AUDIO AMPLIFIER

A self-contained 10 watt speech amplifier complete with power supply. Speech clipping and filtering designed to raise average modulated carrier level . . . improves the performance and effectiveness of your AM transmitter. Inputs provided for mike and phone patch. Complete with tubes.

Cat. No. 250-33-1 Kit	Amateur Net $73.50
Cat. No. 250-33-2 Wired	Amateur Net $99.50

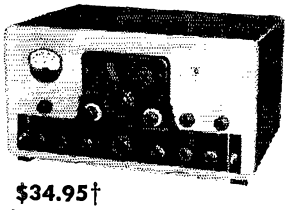
POWER!

Johnson...the *FULL-power* transmitting line

Top performance isn't simply a matter of watts. Only carefully integrated equipment design can be counted on to develop effective power that punches your signal home, every time. That's what we call "communication power" . . . and your Viking transmitter will deliver it in full measure!

Viking amateur transmitters are engineered for outstanding flexibility and performance. Integrated in design from their rugged, highly stable VFO through their high efficiency output circuits, Viking transmitters deliver **full communication power!** Yes, the fortunate amateur who owns Viking equipment enjoys the maximum amount of operating pleasure and performance. Whether you choose the "Adventurer" as your first transmitter, or the fabulous "Kilowatt" as the "last word" in equipment, you'll know that with a Viking, your transmitter dollar has been soundly invested.

It's easy to own even the finest amateur equipment, since most Johnson distributors offer liberal terms. Often as little as 10% down puts you on the air . . . and your used equipment (especially if it's Johnson) is always worth top dollar in trade.



$34.95†
Kit—Down

VIKING "VALIANT"

275 watts CW and SSB (P.E.P. input with auxiliary SSB exciter) . . . 200 watts phone. Bandswitching 160 through 10 meters. Built-in VFO or crystal control. Pi-network antenna matching from 50 to 600 ohms—silver-plated final tank coil. Break-in keying . . . TVI suppressed . . . high gain push-to-talk audio system . . . low level audio clipping . . . built-in low pass audio filter. As an exciter will drive any of the popular kilowatt level tubes. Complete with tubes, less crystals, key and mike.

Cat. No.		Amateur Net
240-104-1	Kit	$349.50
240-104-2	Wired	$439.50

$49.50†
Wired—Down

VIKING "PACEMAKER"

90 watts CW and SSB (P.E.P.) . . . 35 watts AM. Bandswitching 80, 40, 20, 15 and 10 meters. More than a single-sideband exciter—a self-contained transmitter, too. Extremely stable built-in VFO. "Fool-proof" voice controlled operation. TVI suppressed . . . completely self-contained. Pi-network antenna matching from 50 to 600 ohms. Plenty of power to drive conventional or grounded grid kilowatt amplifiers. With tubes and crystals, less key and mike.

Cat. No.		Amateur Net
240-301-2	Wired	$495.00

$64.95†
Kit—Down

VIKING "FIVE HUNDRED"

600 watts CW . . . 500 watts AM and SSB. (P.E.P. input with an auxiliary SSB exciter.) Bandswitching 80 through 10 meters. VFO and exciter stages gang-tuned. Two compact units —RF unit is small enough to place on your operating desk beside your receiver. Built-in VFO or crystal control . . . effectively TVI suppressed . . . high gain push-to-talk audio . . . timed sequence, break-in keying . . . low level audio clipping. With tubes, less crystals, key and mike.

Cat. No.		Amateur Net
240-500-1	Kit	$649.50*
240-500-2	Wired	$799.50*

*Price subject to change at time of delivery

E. F. Johnson Company

2841 SECOND AVENUE S.W. • WASECA, MINNESOTA

CAPACITORS • INDUCTORS • KNOBS • DIALS • SOCKETS • INSULATORS • PLUGS • JACKS • PILOT LIGHTS

†SEE YOUR DISTRIBUTOR

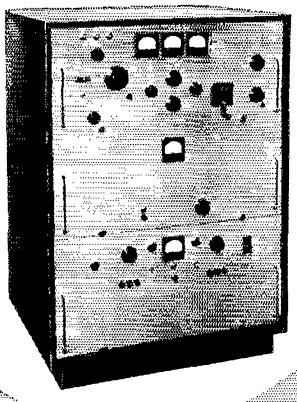
The 10% down payment prices quoted in this advertisement reflect the policy of most authorized Johnson distributors offering time payment plans. See your distributor for a plan tailored to your personal budget requirements.

communications transmitter . . .

This is a DARN GOOD transmitter, but generally accepted to be too expensive for most Hams. It is available for CW, FSK, A-2, AM or SSB with the SBE-1 exciter. Conservatively rated for 1000 watts output CW or FS and 750 watts phone in the 2-32 mc range. Complete details are in . . .

BULLETIN Q174

GPT-750

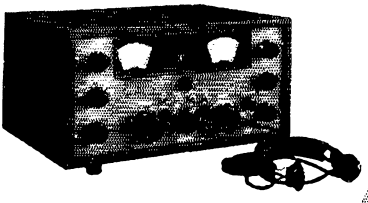


communications receiver . . .

This is the receiver they are talking about all over the industry. It has caused more excitement in a shorter time than anything to come along in quite a time. The specs you all know — they are in . . .

BULLETIN Q179

GPR-90

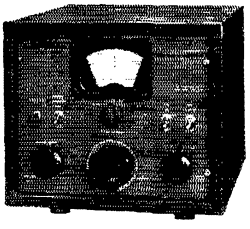


single sideband adapter . . .

You wanted SSB — here it is, an electrically band-spread, filter type slicer for accurate and simple tuning of SSB signals. Details are in . . .

BULLETIN Q194

GSB-1



We're working on RF matching transformers, wide band antennas, new SSB transmitter and a lot of other stuff — want a job?

The TECHNICAL MATERIEL CORPORATION

TMC Canada, Ltd.
OTTAWA, ONTARIO

MAMARONECK
NEW YORK

let's talk calibration

GPR 90

1. The GPR-90 is a general coverage receiver, and a real good one, but is NOT a frequency meter.

2. People who require frequency meters should buy frequency meters — not make them double as communications receivers.

3. Let's lock the GPR-90 bandspread dial at 100 and forget it for the time being. The main tuning dial now covers the following range in frequency:

Band 1	—	.54	to	1.4	Mcs	—	10 Kcs per division
Band 2	—	1.4	to	3.3	Mcs	—	20 Kcs per division
Band 3	—	3.2	to	5.6	Mcs	—	25 Kcs per division
Band 4	—	5.4	to	9.7	Mcs	—	50 Kcs per division
Band 5	—	9.5	to	17.8	Mcs	—	100 Kcs per division
Band 6	—	17.3	to	31.5	Mcs	—	100 Kcs per division

Please note that in order to change frequency 10 Kcs on Band 1, you move the dial marking about 1/32nd of an inch — and to move 100 Kcs on Band 6, you move the dial marking about 1/16th of an inch. Movement at the hub is infinitesimal.

NOW COMES THE DIFFICULTY:

Remember that the GPR-90 is a general coverage receiver. It must maintain its sensitivity and selectivity, i.e., tracking, over almost 1 Mc on Band 1 and 14 Mcs on Band 6. If the GPR-90 was an Amateur Band Receiver only, it would be required to track only from 28 to 29.7 Mcs at its highest frequency, a total of 1.7 Mcs and on "Twenty Meters" only from 14.000 to 14.350 Mcs—an excursion of only 350 Kcs. Obviously, the latter is a darn sight easier to do. WHY?—Because coils and condensers can only be made to certain tolerances. These tolerances do not bother you over a small range but can really hurt over a wide excursion. Notice that on "Twenty", movement of the dial marker 1/16 inch changes your frequency 100 Kcs or one-quarter of the Amateur band.

NOW COMES ANOTHER PROBLEM:

PARALLAX. The GPR-90 dial has a very fine fiduciary—(high class word for indicator line). This line is placed as close to the dial as possible without rubbing. As long as you look at the line "Straight On", everything is okay—but look at it from left or right and you get a different reading—hence PARALLAX.

The coils in the GPR-90 are made to the most exacting standards, and the condensers are calibrated every 10% of rotation. Accuracy of each point is ± (1 mmf + 1.%) of tabulated value. At these prices you "can't hardly get 'em any better". Minute variations of these components in a general coverage receiver over a large excursion can result in a one-half dial division error, 1/32 inch to 1/64 inch in marking movement.

SO LET'S GO BACK TO THE BANDSPREAD DIAL:

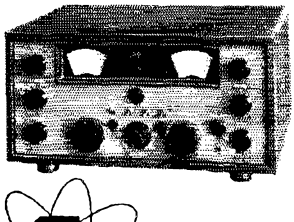
We provide real fine hairlines on the main tuning dial and we have just said they can be off 1/32 to 1/64 inch, add PARALLAX, and your bandspread can very possibly be off when you set the main dial exactly at the hairline. Now, because your bandspread dial does what it's supposed to do, i.e., spread the band, the error is much more noticeable.

SO HOW DO I SET MY BANDSPREAD?

Well—if you lock your bandspread at 100 and set the main tuning dial ot the hairline, you will be pretty close; but if you want frequency-meter accuracy, you had better use a crystal calibrator—calibrated against WWV—or any crystal that has an identifiable signal in the band you are working. Set your bandspread dial first to the crystal frequency and then rotate the main tuning dial until the signal is audible. Then your GPR-90 becomes a frequency-meter over any reasonable excursion of the bandspread dial—BUT LOOK OUT—make sure the 100 Kc calibrator is zero beat with WWV or make sure that the crystal you use has the accuracy you expect, because even crystals have tolerances. .005% is darn good, so is .01% for *amateur* work and .01% at 30 Mcs is 3 Kcs.

Now—having read this opus—we want to tell you that the oscillator in any of the six bands in the GPR-90 may be adjusted at any point in these bands to exceptional accuracy without removing the receiver from the cabinet. The air trimmers can be reached through the six holes underneath the cabinet with an insulated screwdriver—BUT DON'T TURN 'EM FAR—in fact, hardly breathe on them because that's what you're talking about.

Any receiver can go off a hairbreadth in shipment. We're no exception—and we don't provide moveable fiduciaries either! But be careful—because the GPR-90 is calibrated as well or better than any other general coverage receiver on the market.



The TECHNICAL MATERIEL CORPORATION

TMC Canada, LTD.
OTTAWA, ONTARIO

MAMARONECK, NEW YORK.

• 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, Clarence Snyder, W3PYF — RM: AXA. PAM: TEJ. Pennsylvania nets: 3610 and 3850 kc. Our SEC, NNT, announces the appointment of OGD as EC for Dauphin County. Amateurs in that county should contact him for enrollment in the AREC. CMN now is General Class and is working on a radio chess game with DYY. ZLM has returned to California. YLL is president and IAR is vice-president of the Short Skip Radio Club. FQA is back on the air. ZPX has a new p.p. 4-65 rig. BHC made BPL this month, his first. New officers of the West Philadelphia Radio Assn. are RKP, pres.; OWK, vice-pres.; YGJ, secy.; GOV, corr. secy.; and WN3HAS, treas. AHL has a new International Crystal 50-Mc. Converter. FHG now is General Class and has a new DX-100. MDO, MAA, YAZ and K3WCQ are on 2 meters in the Monroe County Area. WQL is active in the Bucks County 2-meter Net. BUR is erecting a 65-foot telephone pole and cat walk for his beams. BGP is monitoring 29.4 Mc. with a fixed frequency receiver. The Harrisburg Radio Amateurs Club held its annual picnic on Aug. 31st at Blue Mountain Park. As a club project the Delaware-Lehigh Amateur Radio Club is building 2-meter converters. Fifteen are in the process of construction under the guidance of NF, technical chairman of the club. NNT is building the pilot model. CNO has been explaining the functions of RACES and AREC in the Montgomery County Area. HQJ and LNQ can now switch between 10 and 6 meters on their intercom rigs. IMW, IVL and MAG have been operating on 420 Mc. IVL's DX record is 90 miles on this band. WWG is back from Texas and is now operating on the staff of YDX, the Philco Tech. Rep. station. Traffic: W3BHC 535, LXQ 253, CSP 174, YDX 109, YVX 105, TEJ 88, WKX 80, ZRQ 73, OK70, YAZ 51, DHJ 46, AMR 35, BNR 35, NF 26, NQB 26, GIY 25, OGD 23, DUI 19, WUE 18, SKU 14, PYF 8, AMC 6, AVN 6, BUR 6, WQL 4, CMN 2.

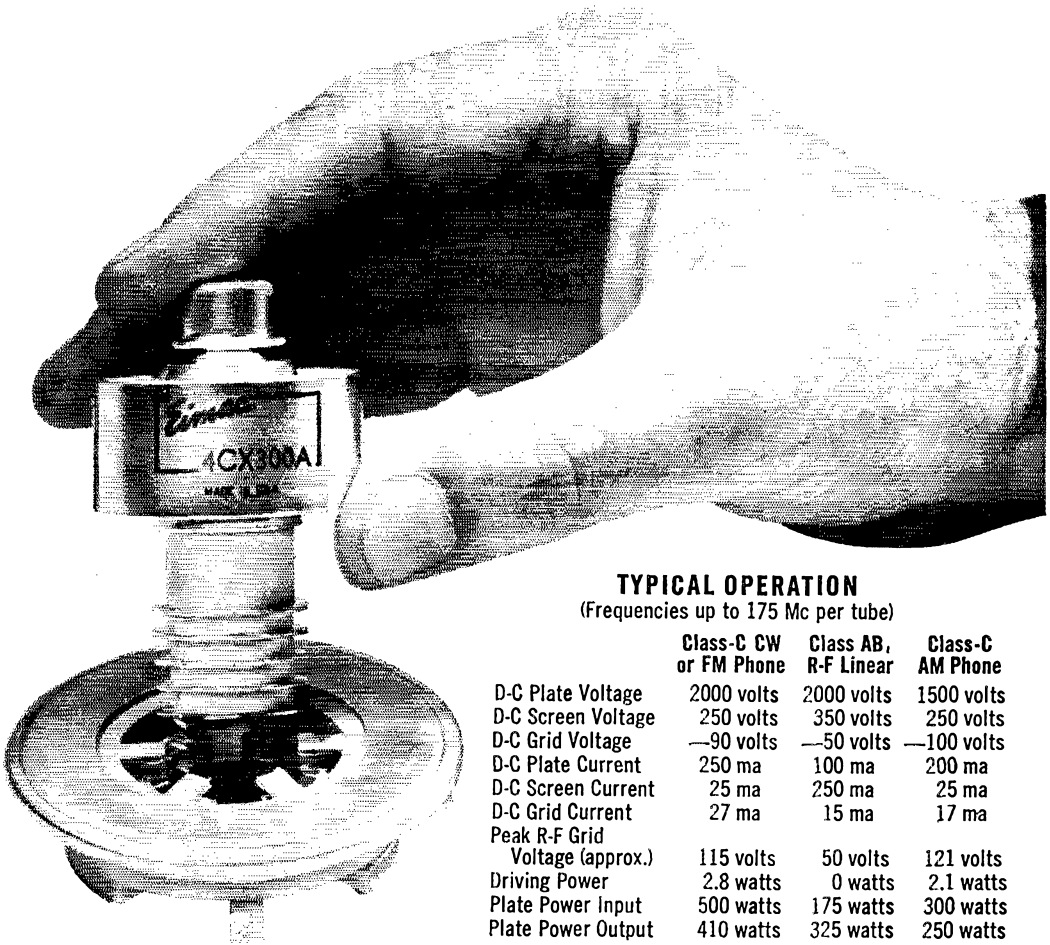
MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, John W. Gore, W3PRL — The ARA held its annual hamfest on Aug. 19th at Cacapon State Park, W. Va. There were approximately 60 in attendance. The ARA again has been selected for the operation of a message center at the Great Hagerstown Fair. The CARC enjoyed a presentation by LMC on "Uranium Hunting in Arizona," which included "Field Testing the W3LMC Geiger Counter." Howard related his experiences during his vacation in Arizona looking for a gold mine in the form of concentrated uranium lodes in the Arizona Area. BXM advises he has just worked his WAC on 20 meters with a Viking Ranger which indicates what can be done with low power. UE advises RN will discontinue its early 1830 sked when Daylight Time expires; thereafter skeds will be maintained on 1945 and 3130 EST. BUD is experimenting with antennas for 160 meters. ECP advises that WN3IMH is a new Novice in the D. C. Area. CVE reported that TCRN went on alert for Hurricane Betsey at 1820Z Aug. 13th and off the alert on Aug. 16th at 0500 GMT with 58 QNIs and a traffic total of 123, consisting of messages, bulletins, weather reports, etc. From our observation all clubs in the area are actively engaged in preparation of programs for the coming year to stimulate greater interest in group activity with a sincere wish to analyze membership desires as to the proper type of presentations to accomplish the greatest good. It has been quite interesting to analyze the wide range of thinking among the members as to desired types of programs, varying from analysis of new equipment, a review of operating procedures, suggestions on how to corner the DX field, procedures to increase the efficiency of transmitters and/or antennas, projects for building equipment and/or gadgets, to the latest development in preventing or curing TVI. A review of some of the proposed programs presents a very ambitious program and if carried through definitely will be a benefit to the membership. OYX reports that the Hagerstown Area now has a total of 19 licensed RACES stations. Traffic: (Aug.) W3PZW 1694, WG 1325, CVE 620, WZL 194, UE 163, K3WBJ 156, W3UCR 63, TN 59, ECP 33, PKC 30, BUD 25, W5RVI/3 7, W3PQ 4, JZY 3, OYX 3, EDA 2. (July) W3WZL 151. (June) W3WZL 218.

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — SEC: YRW. PAM: ZI. Appointments of the month: K2ERC as Official Observer and K2ITP as Official Experimental Station. Again this month our traffic-handlers have done an outstanding job with K2WAO, Fort Dix, heading the list. A RACES-AREC meeting was held at the Mercer County C. D. Headquarters in August. Many applications were received for membership in both of our emergency services. SVV is EC-Radio Officer in Mercer County. He has appointed two Assistant ECs. Your SCM and SEC, also UA, Burlington County EC Radio Officer, attended the meeting. ZI, New Jersey Phone Net Manager, has issued a net roster showing representation in 19 New Jersey counties. Many of the net members have earned their net certificates by their participation. BUI has worked 140 countries. SDB, Camden, hopes to have DXCC soon. The Tri-City Radio Club held its annual picnic at Laurel Lake. The hidden transmitter hunt was one of the many interesting events. K2DSL has received her CP-25 certificate. K2JGU found time to handle traffic before leaving for a 2-week vacation. RG, Merchantville, has a new transmitter. His transistor rig has been put aside until QRN is less. K2CPR worked 92 countries in 90 days on 21 Mc. Jack expects to change his QTH soon. UA, EBW/EVR and ADA have new beams. BNF, Palmyra, has moved to Cincinnati. Please continue to send reports of your activities; they are appreciated. 1YRZ, chief operator at K2WAO, who recently returned from DL-Land, expects to have 3AUL to assist him with the traffic in the near future. K2IJC has enlisted in the USN and is training at Bainbridge. Traffic: K2WAO 960, W2YRW 544, HDW 176, RG 143, K2JGU 99, EWR 73, W2ZT 53, BZJ 29, K2DSL 26, EFA 9, CPR 5, OOK 2.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — SEC: UTH/FRL. RMs: RUF and ZRC. PAMs: TEP and NAI. NYS C.W. meets on 3615 kc. at 6 P.M.; ESS on 3590 kc., at 6 P.M.; NYS Phone on 3925 kc. at 6 P.M.; TAR on 3750 kc. at 5 P.M.; NYS C. D. on 3509.5 kc. and 3993 kc. at 9 A.M. Sun.; TCPN 2nd Call Area on 3970 kc. at 7 P.M.; SRPN on 3980 kc. at 10 A.M., LSN on 3970 kc. at 4 P.M. Note that ISN resumed operation Sept. 4th at 1600 on 3970 kc. EMW has a 30-ft. vertical at the new QTH, working FB DX. K2BUI worked 72 from Wading River during vacation. K2QVC now is on 6 meters with 90 watts, a 6U8-6146 rig and a five-element beam. The ARATS picnic meeting was held at Pine Woods Park. KN2RYP has an NC-300. The RAGS, at its family night held at Electronics Park, viewed "Kraft Hour" in full color and OWM gave a talk on the "How" of color TV with slides. New officers of RAGS are KUD, pres.; TEB, vice-pres.; HIL, treas.; DBN secy. NAL and HIL have new daughters and K2EGV has a new son. The RAGS picnic at Green Lakes State Park was well attended. Commander Snay visited the Syracuse "Deep Freeze" operations. Increased activity can be expected during 1957 from the South Pole. All Western New York was sorry to learn of RUF's accident in Mexico while on vacation. Clara was flown home and confined to the General Hospital in Buffalo but has now left the hospital and returned home. Good luck, Clara, for a speedy recovery and BCNU on the air real soon. Charles T. Hansen, K2HUK, 211 Rosemont Dr., Buffalo 21, N. Y., was nominated as SCM of Western New York and as his was the only valid petition on hand on the closing date he was elected your new SCM. I wish to congratulate Chuck as I know he will do an FB job, and ask all to give him your cooperation. My sincere thanks to all for your cooperation in the past and good luck and success to Western New York in the future. BGO, RO of NYS C.D., wishes to thank all for making Operation Alert 1956 a success. Errors and failings involved will be corrected in future exercises. The SARC meeting was devoted to c.d. with RZP, RO for Delaware Co., in charge. K2PVN has been appointed OES. UTH has an s.s.b. final using 4-1625s in parallel, p.p. 4E27As on 6 and p.p. 4X150s on 2 meters. RPO now is with WBUF TV. I wish to thank all for sending in their monthly reports. Your SEC, UTH, has never missed a report and is batting 1000 per cent. K2KXE has a DX-100. K2ITN has a 723A/B on 10,000 Mc. Traffic: (Aug.) K2IYP 277, W2ZRC 212, OE 136, K2KNV 58, CUQ 50, W2RQF 46, ATA 43, K2KIR 40, DG 17, W2CVU 9. (July) K2KNV 20, BUI/2 6.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — Asst. SCM: 3UHN. SEC: GEG. RMs: NUG and NRE. PAM: AER. The WPA Traffic Net operates on

(*Continued on page 92*)



TYPICAL OPERATION
(Frequencies up to 175 Mc per tube)

	Class-C CW or FM Phone	Class AB, R-F Linear	Class-C AM Phone
D-C Plate Voltage	2000 volts	2000 volts	1500 volts
D-C Screen Voltage	250 volts	350 volts	250 volts
D-C Grid Voltage	—90 volts	—50 volts	—100 volts
D-C Plate Current	250 ma	100 ma	200 ma
D-C Screen Current	25 ma	250 ma	25 ma
D-C Grid Current	27 ma	15 ma	17 ma
Peak R-F Grid Voltage (approx.)	115 volts	50 volts	121 volts
Driving Power	2.8 watts	0 watts	2.1 watts
Plate Power Input	500 watts	175 watts	300 watts
Plate Power Output	410 watts	325 watts	250 watts

Meet Eimac's New Ceramic Power Tetrode

Scheduled for commercial and defense applications, and also designed to power fine amateur rigs, the 4CX300A is in a class by itself. Its ceramic-metal construction, along with Eimac's high temperature processing techniques, means a "harder," cleaner tetrode. It also inhibits deterioration of electrical characteristics even while the tube operates continuously at an envelope temperature of 250°C. It also provides the ruggedness that enables the 4CX300A to withstand 11 millisecond, 50g shocks without internal shorts or mechanical damage.

Featuring extremely low series lead inductance, the 4CX300A functions at full ratings through 500 megacycles, and operates over a wide range of plate voltages — 500 to 2000 volts — with power inputs from 125 to 500 watts.

Shown with the 4CX300A is its new Eimac air system socket. In addition to providing the optimum in cooling arrangements, this air socket employs a screen-to-cathode bypass capacitor for stable high-gain operation, a lock-in socketing action, and extremely low inductance terminals.

For further information contact our Amateur Service Bureau.

Eimac

EITEL-McCULLOUGH, INC.
SAN BRUNO CALIFORNIA
The World's Largest Manufacturer of Transmitting Tubes

3585 kc. Mon. through Fri. at 1900 EST. For information on net operations contact either NUG or UHN. Those willing to take over as NCS or alternate and as liaison into the National Traffic Net from the local net please notify them. UHN has been appointed Asst. SCM to assist me in ARRL organization matters in the southern part of the section. His address is: Anthony Mroczka, W3UHN, 475 Fifth St., Donora, Penna. The Washington County ARC holds regular monthly meetings and at present is concerned in aiding the county c.d. WN3HXF now is operating on 80, 40 and 15 meters and has passed the General Class exam. The Horseshoe Radio Club of Altoona is holding a ham outing and sponsoring an interesting on-the-air contest. The Allegheny Kiski ARA held an outdoor meeting followed by a hot dog roast. The club antenna installations recently damaged by severe storms will be rebuilt soon. One-third of the membership has mobile rigs. The Cumberland Valley ARC held its annual picnic at the Scotland Memorial Playground. ACH and QCU displayed ham gear, Gentry Wales and son Morris demonstrated model airplanes and games were played by young and old. ZQU's XYL was awarded a table radio. The club expects to visit the Letterkenny Ordnance Depot, tour the assembly department, and hear a talk and see pictures on guided missiles. The Radio Association of Erie news comes through the courtesy of QN, who sends us Erie newspaper clippings of columns written by QPP and OIH. BOW now is in Chicago and keeps in touch with Erie through BPB. BBO, KNQ, WDK, BVM, ZNY, DJA and STK all attended the recent SHBP&M Hamfest. New ham WN3IAF and Joel Perkins, a good prospect, have been attending meets. TNM will be returning to Penn. State. The Annual RAE Hamquet held at Lake LeBouf was acclaimed the greatest ever with an attendance of over 200. AQY was the MC, YA, Atlantic Division Director, was the speaker, ZNY was in charge of movies, MED was in charge of hiding transmitters and BRB operated the Comtruk which was on display. NXK and his committee are to be congratulated. ALD, CSM, and UCZ have new rigs on 50 Mc. A recent visitor to RAE was Lt. Col. ZGG, U. S. Army, on leave after 6 years in Japan. The new Comtruk soon to be dedicated will have a memorial plaque to GV mounted on the door. QP'P's XYL recently returned from a visit to England and brought some interesting radio periodicals for the OM's perusal. SYZ, of the Mercer County Radio Assn., received a letter from fellow member 8QKV, now located at an Army Air Force MARS station in Iceland. Gene holds the call TF2WBC and is hamming on 15- and 20-meter phone evenings from 1800 to 2400. Traffic: W3WIQ 358, YA 23, UHN 16, LSS 10, SIJ 8, KUN 4.

CENTRAL DIVISION

ILLINOIS — SCM, George T. Schreiber, W9YIX — Section Nets: ILN, c.w., 3515 Mon. through Fri.; IEN, phone, 3940. SEC: HOA. Cook County EC: HPG. RM: BUK. Asst. RM: AA. PAM: UQT. AA has been appointed Asst. RM in place of CTZ, who resigned. He now is running 450 watts with a potent signal. PZO, the son of SZW, had a narrow escape from death this summer in a mountain-climbing accident in the Pacific Area. BUK also had a narrow escape when a cruiser on which he was a radio operator dashed against the rocks during a power failure. Another yacht came to the rescue. IDA spent his vacation visiting his son, W9CXT, in W6-Land. FKC was pleased with the receipt of a QSL card direct from Russia. After 40 years of hamming, AA finally made WAC by working a Russian. KQL does most of the engineering and ZMJ the operating at DUA, the Red Cross station, which has moved from Evanston to Springfield. K9CFJ has received back his ØSIR call and checks into the ILN to chat with the boys. A new call on ILN is K9AXT, at Nashville, running 50 watts. MRQ, formerly of Berwyn, now is K4KDN. The Warren County Emergency Corps got a nice write-up in the local paper not only for its Field Day activity but also for the communications furnished for a local festival. The North Central Phone Net held a picnic at Springfield early in September which still is being talked about. OCB enjoyed his Michigan vacation but regretted leaving the rig for two weeks. VSX is proud of the blue ribbons won by his daughter for the steer she raises and adds: "Not bad for a city-born gal!" BHL, the mother of BTF, got her General Class ticket recently. Another new call in the section is KN9DUN, a member of the Greenville College Radio Club. QKE, general manager of the Central Division Convention, scheduled for Labor Day week end in 1957, certainly has been busy speaking at various clubs boosting the meeting. BAE gave an excellent talk on s.s.b. at the St. Clair County Amateur Radio Club. EU has been seriously ill but we hope by the time this appears Alex will be back on the DX bands. DTQ, RSZ and BIY are dedicated to make 6 meters more active. BRZ is a new 40-meter phone in Belleville. UWP is sporting a new car with a Gonset 66 and Elmac. RQR and EWU have been busy giving Novice examinations. BA reports his XYL is about to relent and let him put antenna holes in the new family car. NN, the persistent DX man, received the North American award, the first one issued to a W9. The Skokie C.D. group had a set-back recently when their trailer tipped over, but they obtained a retired school bus and reinstalled the radio gear. Transmitter hunts still are being held around the Chicago Area. The West Suburban group holds its every other Tue. night at 8 P.M.; Hamfesters every 3rd Tue. same time. The Chicago YLRL has three radio activity counters and three handie-talkies for club training in connection with the medical branch of Chicago C.D. The 4th Annual Midwest S.S.B. Dinner was a great success. PRN reports that EL is a Silent Key. The Joliet Amateur Radio club reports great progress in the construction of its club house. The drive to work all Illinois counties between OKI and OIJ has come to a standstill because OIJ had to return to college. Fellows, when writing please print your call letters. We don't want to make any mistakes. Traffic: W9DO 930, MAK 271, QQG 218, AA 190, YYG 166, OKI 134, DUA 64, PCQ 60, CTZ 54, BUK 52, OYL 47, VEY 45, VSX 41, FAW 31, YIX 28, EDH 27, OCB 26, STZ 24, UBI 24, CEE 17, PHE 17, K9AMD 15, AXT 11, W9BA 9.

INDIANA — SCM, Seth Lew Baker, W9NTA — Asst. SCM: George H. Graue, 9BKJ. SEC: QYQ. RMs: DGA, TQC and UQP. PAMs: CMT, KOY, SWD and UXK. EQO resigned Sept. 1st as PAM for the IFN after a year's fine service. SWD has been appointed to fill this position. Other appointments: JWI as EC for Culver and BUQ as OPS. BKJ made WAS after 32 years. NSY is moving to West Lafayette. New in Noblesville is K9BOK. HSG is working on a 100-watt rig. YSB is going on 200 Mc. The FCRC will have code classes again this fall. K9AML is Gen. Class with a DX-35. Those making BPL were NZZ, ZYK and PQZ. DGA made BPL in June. The Mobile ARC of South Bend is scheduling many activities for this fall and we note most of them end up with something to eat. FB. A fine hamfest was held at Evansville. DPI, Director of Engineering Research at Delco-Remy, gave an interesting talk on Mobile Ignition Interference. New in the Evansville district are K9EFV, K9EBY, ex-4HRU, KN9s EEL, EKV, DRI and DRQ. K9ACH has a DX-35. ZIB has a new Elmac receiver in his new station wagon. The IRCC and the Indianapolis clubs again operated at the Indiana State Fair under the call JP/9 and a large amount of traffic was handled. FZW worked Texas on 6 meters. SWR has an HT-31 and an SX-100. KN9ELE, Winslow, is on with an AT-1 and an SW-54. If you have an official appointment, please check the date. These must be renewed yearly. If you are interested in an appointment, get in touch with your SEC for EC appointment or your SCM for others. The SCM's address is on page 6. News items regarding clubs, new hams, equipment, etc., are welcome by your SCM. KOY reported for the s.s.b. portion of the IFN as follows: 5 sessions, 38 stations, traffic 30. EQO reports IFN evening traffic as 367, morning 173, total 540. UQP gives QIN as 237. RFN had 55, as reported by TQC. EHZ gives 38 for CAEN. NTA has a slicer. Traffic: (Aug.) W9NZZ 909, ZYK 518, TQC 348, JYO 325, JOZ 314, UQP 276, EHZ 267, SVL 224, EQO 222, SWD 203, TT 179, PQZ 128, WBA 102, DHJ 92, KTX 76, AB 71, WRO 69, NTA 67, CMT 57, QYQ 47, VNV 47, SWH 38, EJW 36, DKR 27, SVZ 25, HSG 24, HUF 20, QR 17, WHL 16, EGV 15, BUQ 14, WTY 13, DGA 11, LGD 11, FHA 10, BDP 9, DOK 9, RZS 9, HST 8, PFO 8, CDW 7, UXK 7, DZC 5, FGX 4, ZSW 4, IGZ 3, YVS 2. (July) W9SUV 13, DDT 10, UXK 10, PFO 8, CYZ 5, AZF 2, (June) W9DGA 133.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAMs: AJU and NRP. RMs: KQB and BVG. Nets: WIN meets on 3535 kc. at 7:15 P.M. daily; BEN on 3950 kc. at 6 P.M. daily; WPN at 1215 Mon.-Sat., 0930 Sun. Wisconsin mobile and c.d. frequency: 29,620 kc. Congrats to CXY, who received an ARRL Public Service Award for his work in the 1955 Hurricane Emergency. The total attendance for WIN went over the 400 mark in August. K9ENQ is the call of the St. Francis Minor Seminary Radio Club, of which MCK is the trustee. Congrats to YZA and his XYL on the new arrival, a YL operator. RQK has a new 20-meter beam up on a 90-ft. tower. SQM has been working DX on 21 Mc. KQB upped his DX total to 75 countries worked and 62 confirmed. Have you seen a copy of the *WIN News*? It's a bulletin for WIN members by KQB, the RM, and it's a honey! SZR is back in business again after 2 months of rebuilding. QIQ, DUB and K9CUS are interested in ham TV. JEY and HEG built 50-Mc. mobile converters. IFJ has a new 20-meter beam. KN9DID has a DX-35 and an NC-125. GFL has a new ten-element Yagi (90 feet up) for 144 Mc. IMQ is NCS of the 2-meter Net on 144.908 Mc. in the Green Bay Area. It meets Thurs. at 7 P.M. with VGL, YNX, LON, SOG, OQA and GJK active on this band. Keep Dec. 9th open for the Annual Wisconsin QSO Party, sponsored by the MRAC. Details in next month's column. New officers of the MRAC are LJU, pres.; ZPV and DOS vice-pres.; HDH, secy.; CUW, treas.; with RH, MDG, YFW, MOT, FDX, RXS and ONY as directors. 4VXD/9 is now in Sturgeon Bay with the USN and is busy getting his kw. on the air. FDX, GIL, RKP, LNM, RBI and KXK attended the W9 DXCC meeting. A couple of UA9s brought KXK's total to 179 countries and 39 zones. AQT has been representing Wausau on WIN. Traffic: W9CXY 658, KQB 123, KJJ 72, MCK 54, LGR 34, SAA 34, FFC 26, K9AQT 18, W9AZN 17, RQK 15, SQM 15, YZA 15, LPU 7, RTP 4, OVO 2.

(Continued on page 94)

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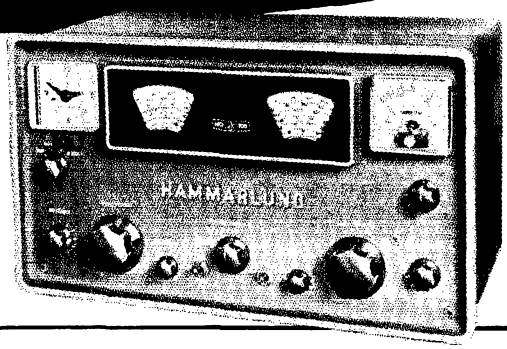

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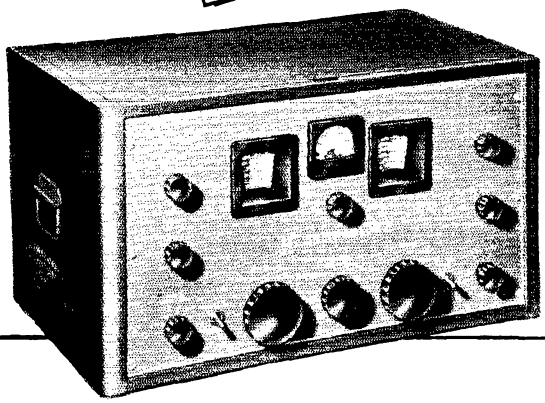

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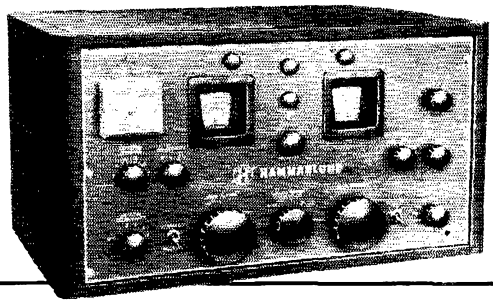

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HAMMARLUND SETS THE PACE

DAKOTA DIVISION

NORTH DAKOTA — SCM, Elmer J. Gabel, WØKTZ — SEC: CAQ. PAM: HVA. RM: FVG. The Phone Net meets on 3845 kc. Mon. through Sat. at 1800; the C.W. Net on 3670 kc. Mon., Wed. and Fri. at 1830. HVA reports the 75-meter Phone Net held 24 sessions with 379 check-ins and 41 formal messages handled. The Central Dakota Radio Association of Bismarck elected the following officers: IKW, pres.; PHC, vice-pres.; KNØESO, secy.; KNØHDA, treas.; and GJJ, act. mgr. FVG had a little bout with his tractor and came out second best but managed to top the traffic list by pounding brass with his left hand. WYG has a new DX-100, KTZ a new Valiant and KØATK an NC-300. KØATK reports some activity on 15 meters and hearing DX stations working JPW and VCQ. Traffic: WØFVG 24, BFM 12, HVA 12, NPR 8, KØCCA 7, WØMQA 6, KLP 4, KØCNC 3, WØGJJ 3, KØAIP 2, ATK 2.

SOUTH DAKOTA — SCM, Les Price, WØFLP — Asst. SCM: Gerald F. Lee, ØYKY. SCM Assistants: APL, HOH, GQH, FKE, RMK, MZJ and GDE. PAM: UVL. RM: SMV. The South Dakota 75-meter Emergency Net, RMK as NCS, had 30 sessions with QNI 673, high 39, low 5, average 22.4; QTC 75, high 8, low 0, average 2.5; informals 72, high 7, low 0, average 2.4. The 75-meter WX Net started Sept. 17th with ZWL as NCS. The NJQ 75-meter Noon Net started Sept. 1st with NEO as NCS. The hams of the Redfield ARC are taking turns operating Police Dept. radio Saturday night. They are SDG, YVF, KNØEIB, KØASQ, FSQ and BNA. DTB now is in California attending IBM School. CTZ swapped his receiver. IYN has a new 75A-4. The PDARC held a picnic in Yankton Aug. 26th with 13 operators out of 43 present. KØCRD is using a Hallicrafters transmitter borrowed from IYN. KNØUTX dropped the "N." OII is back from NEO's where he worked all summer. Traffic: WØSCT 161, ZWL 52, BQS 34, FLP 11, DVB 4, GWS 4, OII 4.

MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM: Vince Smythe, ØGGQ. SEC: GTX. PAMs: JIE, LUX and UCV. RMs: RLQ, KLG and DQL. This is one of those months when we received very little news. To those who don't know, your SCM depends on members of the ARRL who hold ARRL appointments for a big source of the news that is printed in this column. This month I received only 4 "station activities" report forms and only 2 of them had any news. If you have a new receiver or a new beam or have just passed your Extra Class license exam it is news and your friends want to know about it, so send it to me for use in this column. Well, this is it: The date has been officially set for the coming Dakota Division Convention as June 7, 8 and 9, 1957. The place will be the St. Paul Hotel in St. Paul. PDN now has a six-element beam on 20 meters. HKF is organizing a chapter of the "Quarter Century Wireless Association." Any ham who has been licensed for a period of 25 years and who is living in St. Paul or Minneapolis or their suburbs is eligible. If interested, contact Bob Kuehn, HKF, 641 S. Saratoga, St. Paul, Minn. It requires ten members to form a chapter. If you know anyone who is eligible, let Bob know. KLG and RLQ attended the Mankato Radio Club Picnic and then visited KJZ in St. Paul. ZLV is now on phone and made his first phone contact with DQL and KLG. FHH finally has gone mobile. HDO, formerly 7HAL and 9HON, is now located in St. Paul. VKP, of Fargo, also is now located in St. Paul. GVX has just received his new license. Traffic: WØKJZ 336, DQL 178, WVO 150, KLG 126, RLQ 103, TUS 93, WMA 63, DNM 62, ZLV 60, VTZ 51, ALW 44, ADI 34, UMJ 32, PBI 30, NNG 28, UMX 27, IMJ 24, RVO 23, LST 22, RQJ 22, QVR 21, AZF 20, ZEL 19, VEP 16, LUX 13, VJS 13, BUO 9, EMZ 9, KNR 9, GTX 7, IRJ 7, LIG 7, KXW 6, NTV 6, UBD 5, CVD 3, GGQ 3, IIW 2, MXC 2.

DELTA DIVISION

ARKANSAS — SCM, Owen G. Mahaffey, W5FMF — Asst. SCM: D. C. Watts, jr., 5NIR. It seems the Arkansas gang took a vacation during the hot weather as news is scarce. By the time this is in print we may have a new SCM and I hope he can find some news to keep Arkansas on the map. I think by the time this appears in print KN5DLY and KN5DNG will have the "N" taken out of their calls. NIR and yours truly visited ANR and KN5CZL. The weather will soon be cool so we can get the State nets going. Everyone interested, write the SCM for times and frequencies. There have been several cancellations of appointments this time because of failure to send the certificates in for endorsement. Please check the dates and send them in if you wish to keep your appointments.

LOUISIANA — SCM, Thomas J. Morgavi, W5FMO — K5AGJ worked SM5XPT to complete WAC. He also is net control for the Jefferson Emergency Net, which meets on 3950 kc. Sun. at 8:30 A.M. MXQ is net control for the Novice C.W. Net, on 7178 kc. each Sun. The latest to pass the General Class exam are WZP, K5ELV, K5GUU and K5GGT. KN5HAN is the latest grad of Jefferson ARC school. WQX finished the new rig and will be back on shortly. K5BGG is a proud papa. HNS now is on 80, 40 and 20 meters with a DX-100 and is building a two-element 20-meter beam. MXQ now works six nets. He is trustee of

(*Continued on page 96*)

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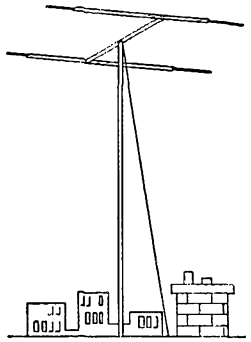

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☐ Std. 4-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 4-El Gamma match	27.95	☐ T match	30.95
15 METER BEAMS			
☐ Std. 2-El Gamma match	19.95	☐ T match	22.95
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☐ Std. 3-El Gamma match	26.95	☐ T match	29.95
☐ Deluxe 3-El Gamma match	36.95	☐ T match	39.95
20 METER BEAMS			
☐ Std. 2-El Gamma match	21.95	☐ T match	24.95
☐ Deluxe 2-El Gamma match	31.95	☐ T match	34.95
☐ Std. 3-El Gamma match	34.95	☐ T match	37.95
☐ Deluxe 3-El Gamma match	46.95	☐ T match	49.95

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the New Orleans ARC. KRX is active on RN5 and CAN. The Caravan Radio Club of Shreveport held a meeting recently with the SCM attending. CEW was appointed PAM in place of MAV, who resigned recently. En route to Shreveport your SCM had an eyeball QSO with IHI, SRM, MIU and HRC who, incidentally, will move to Baton Rouge shortly. YCO and his family have moved to Washington, D. C., where Ralph received a promotion from RCA. SPZ, who has been chief radio man at USN, is being transferred to Ft. Worth. Past-president of the Greater New Orleans ARC and a sparkplug in all activities around these parts, he surely will be missed. SKW, Lake Charles EC, is getting the AREC Net working for the coming hurricane season. SQB is active on s.s.b. with a KWS-1. A 6-meter net operating around New Orleans includes K5CHC, HZA, GFZ, WCJ and JGV. K5BES recently was reendorsed as EC for New Orleans. Other endorsements: BMD and NDV as ORSs; USN as OBS. ARRL Official Bulletins are transmitted several times a week on 7150 and 3750 kc. by USN. HEJ is planning a code instruction course on 75 meters. Check the expiration date on your CD appointments and forward certificates to the SCM for endorsement. Traffic: (Aug.) K5AGJ 173, W5KRX 150, MXQ 99, EA 25, NDV 20. (June) W5KRX 55. (May) W5KRX 32.

MISSISSIPPI — SCM, Julian G. Blakely, W5WZY — PFD is State-side with his XYL and a harmonic that made a grandpa and grandma out of PFC and VQE. DLA is sporting a new 600L on s.s.b. BSE is raising a sixteen-element 2-meter array. IGW has a new center-fed and is doing better locally than with vertical. GUU is putting up a 20-meter beam. YTZ has moved to Jackson. FPI is a new Official Observer and is located in Hattiesburg. We would welcome applications for this position from the northern part of the State, the northeast, the Jackson Area and the Gulf Coast. We also have openings for Official Bulletin Stations in Northern and Southern Mississippi. These are both top appointments and you will be doing your fellow hams a service if you can qualify. Traffic: W5JHS 41, IGW 38, WZY 3.

TENNESSEE — SCM, Harry C. Simpson, W4SCF — SEC: RRV. PAM: PFP. RM: IV. UVU is building a phasing type s.s.b. exciter and has a new 40-ft. steel tower. SEC RRV visited Memphis, saw BAQ, TIG and others, and missed SCF, who was in Oak Ridge missing RRV! The SEC, RM, and Division Director attended the c.w. meeting in Gatlinburg. Fine net reports were received from PFP, K4DIZ, UIO and IV. FLW has a new NC-183D. K4HJA is using a new DX-100. PVD introduces Cookeville's newest ham, KN4KTD, who made RCC with Hall 10 minutes after receipt of his ticket!. WQT is unloading his multi-year collection of gear to make room for an s.s.b. kw. A nice letter was received from ZJY, now with the Air Force at Lackland AFB, San Antonio. His mailing address is P.O. Box 1502. Congratulations to UWA's XYL, KN4JNI, on her fine publicity for ham radio. RFR has a new 100-ft. tower with 2- and 6-meter beams, and has been working Louisville, Knoxville and Birmingham with 50-Mc. ground-wave. He reminds us that the 6-meter net meets Mon. and Fri. at 1930 CST on 50.6 Mc. A big Tennessee welcome for well-travelled W4IFN, ex-D4AFA, DL4FA, F7AT, 3A2AG, PX1AR, WØHZA and W6RDL. Warren came from Minnesota originally and is now Signal Officer at Milan Arsenal. K4CLT, from Chattanooga, was a Memphis guest for five weeks and has been sent to Chattanooga for a like period. He installed a roof-top antenna at the Claridge, operating nightly on 20 meters. HSX had a short Memphis visit en route to Aberdeen, Md. TIG is on an extended vacation at Atlantic Beach, N. Y., and will be looking for his many Memphis friends on 20 and 40 meters. Traffic: K4DIZ 414, W4HIH 132, OGG 109, PQP 80, VJ 70, WQT 60, PFP 53, IV 43, UVL 36, WQW 34, SCF 31, PAH 30, TIE 29, K4HJA 28, W4TZD 28, EWC 24, WGJ 16, YMB 16, CLM 13, TIZ 11, K4GFL 8, W4UIO 8, BAQ 7, FLW 4, UVU 3, BAO 2, K4AOW 1, W4IFN 1, KN4JHI 1, JJN 1, W4PVD 1, RFR 1, RRV 1, ZJY 1.

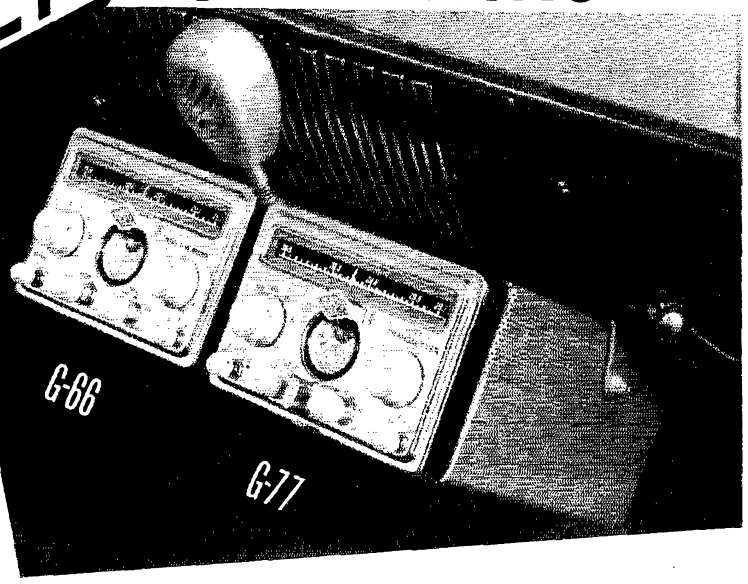
GREAT LAKES DIVISION

KENTUCKY — SCM, Albert M. Barnes, W4KKW — SEC: JSH. PAM: VYV. Asst. PAM: SUD. RMs: ZDB and ZDA. WNH and HJQ tried DX on 2 meters during the Perseids Meteor Shower. WNH has 17 states; HJQ has 22. HOJ sends a fine photo QSL card. RPF is very active on KPN and MARS Nets. CDA rebuilt his antenna coupler for 40, 20 and 10 meters. As retiring SEC Al asks that all ECs give full support to JSH. QCD is active on KYN, UTL and Tennessee Nets. BZY is working up a good local emergency program. KYN is doing fine now on winter schedule, 1700 and 1900 CST Mon. through Sat. on 3600 kc. KPN also is going strong on 3960 kc. at 1800 CST Mon. through Fri. and 1300 CST Sat. and Sun. ZDB has a new horizontal quad antenna on 80 and 40 meters. Traffic: W4KKW 93, RPF 85, ZDB 69, CDA 43, QCD 32, SUD 30, ZDA 30, HSI 8, BZY 4.

MICHIGAN — SCM, Thomas G. Mitchell, W8RAE — Asst. SCM: (c.w.) Joe Beljan, 8SCW; Asst. SCM (phone) Bob Cooper, 8AQA. SEC: GJH. There are no new appointments to announce this month so the season isn't quite upon us. I have a nice stock of certificates on hand and I'm ready

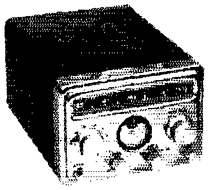
(*Continued on page 98*)

GONSET MOBILE TWINS



Gonset's new Mobile Twins, G-66 Receiver and G-77 transmitter, represent the perfect mobile combination. Outstanding multi-band performance—beauty of appearance—finger-tip control—6 and 12 volt operation—compactness without compromise! Typical Gonset dollar-for-dollar value—real "owner satisfaction".

G-66 RECEIVER



New prices

6 BANDS: 540-2000 kcs. 3500-4000 kcs. 7000-7300 kcs. 14,000,14,350 kcs. 21,000-21,450 kcs. 28,000-29,700 kcs.

AM, CW, SSB RECEPTION. Highly stabilized HF and BF oscillators and xtl controlled 2nd conversion oscillator.

STEEP SKIRT SELECTIVITY: 265 kc 2nd I.F. 8 high Q tuned circuits. 3.5 kc I.F. bandwidth at 6 db down.

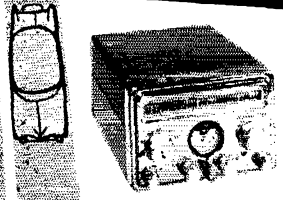
DOUBLE CONVERSION ALL BANDS: 2050 kc ist I.F. Double input tuning (3 tuned circuits) on high bands for high image rejection.

AVC—Noise limiter—Panel S meter—antenna trimmer—BFO pitch—Audio-RF gain control—slide rule dial—3 watts audio.

G66 RECEIVER...(less power supply).....(#3046).....net 189.50

"3 way" (6V-12V-115V AC) Universal power supply/speaker..net 44.50

G-77 TRANSMITTER



FREQUENCY RANGE: 80-40-20-15-10 meters. VFO or xtal, switchable. Highly stable VFO, each band spread over most of slide rule dial.

FULL BANDSWITCHING: Exciter ganged with VFO, pi network output.

POWER INPUT: 50-60 watts, modulated. CW provisions, 6146 tube in output. New modulator has integral speech clipping. High gain speech for PA-type dynamic, reluctance or xtal mikes.

POWER SUPPLY: Heavy-duty, vibrator, 6 and 12V DC. Output voltage 500-600V full load, Selenium rectifier, low drain both on standby and transmit. Power supply is a separate compact unit.

NOT YET RELEASED, G77 WILL BE AVAILABLE SOON AT YOUR DISTRIBUTOR.

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to do business. Apply for any that you qualify for. You will find descriptions and necessary qualifications listed in the *Handbook*. ELW still is up to his trick of turning in a BPL-awarding traffic total. This is getting to be a habit with Seth, but there is no mystery connected with it. Just listen almost any time any evening where traffic is moving and you'll probably find him in there. SRK received his WAC certificate. UER, in Benton Harbor, was 3AAW in 1916. Anybody remember him from "way back when"? Word reaches me that RJC and DAQ are both hospitalized. We all hope both are back "on the air" by the time this is in print. Thanks to all of the organizations who invited me to their picnics. Sorry that I couldn't attend all of them. The West Michigan V.H.F. and QMN picnics were both well attended and successful. NUL reports that the Chain-O-Lakes Amateur Radio Club meets on the last Sun. of every month with KEO. They have elected MUO, pres.; and KEO, secy.-treas. Aside from the usual correspondents in the U.P., LIM came through with some news this month. There is activity galore up there. The Ironwood gang has joined forces with the Ashland, Wisc., gang to form a club with 9HHJ (ex-8YLB) as pres.; and ZNO, vice-pres. The club alternates meeting locations, and 145.2 Mc. is the frequency of its newly-formed net. KSB is expecting a new Globe King transmitter. HBD assisted SEH in rigging stacked beams for 10 and 20 meters atop a windmill tower. KN8s BTO and BTQ are new in the U.P. Thanks for the news. Keep it coming. It shouldn't take the new bridge to keep us, together, as IUJ will attest. Traffic: (Aug.) W8ELW 518, ILP 136, NUL 97, DAP 90, RVZ 82, QQO 58, FX 57, ZLK 52, QIX 48, AUD 46, NOH 41, RTN 35, TIN 31, IV 30, WXO 22, GKT 19, IUJ 19, FWQ 14, RAE 12, DSE 8, FGB 8, TBP 8, SCW 6, HKT 4, UCN 2. (July) W8ILP 33, GKT 19, FWQ 15, SCW 2.

OHIO — SCM, Wilson E. Weckel, W8AL — Asst. SCMs: J. C. Erickson, 8DAE, and E. F. Bonnet, 8OVG. SEC: UPB. RMs: DAE and FYO. PAMs: HPP and HUX. EEQ bought a new parsonage. UPB, our SEC and Radio Consultant on the State Civil Defense Communication Committee, will meet with amateurs in Steubenville Oct. 29th, Warren Oct. 30th, Ashtabula Oct. 31st and Canton Nov. 1st. JDN won a Mosley 10-meter beam at the Pittsburgh Hamfest. DXB has a new 10-meter beam. FGV has a new NC-300 and B&W 5100. QXJ has a new 32V-3, HPE a new 75A-4 and KBY a new SP-600X receiver. Your SCM attended the Buckeye Shortwave Radio Association's picnic at which 257 amateurs registered with their families, making a total of about 700 present. More than 250 prizes were won, with AUA winning the Viking Ranger kit. PYZ demonstrated the 442-Mc. TV transmitter he built. OAC has a new Ranger. HPP won a trophy donated by AJW for taking third place in the recent Ohio QSO Party. LGR is working some DX on 10 meters and the mobile is working FB. KNM has a new CE20A with a pair of 811As behind it. CQT and TFV have their General Class licenses. QVT and WN8FPH bought new homes. CAW was on vacation. OQR is Toledo's ham of the month. OFG and RZV are working 40 meters mobiles. Toledo mobile frequencies are 29.1 and 29.2 kc. SMB and TIL are recuperating from a recent appendectomy. The Early Bird Net held its annual get-together in Toledo with Ws 2, 3, 8 and 9 in attendance. STF and family vacationed in the Smokies. VXJ is home after serving a hitch for Uncle Sam. IUC took a trip through the West. EAZ passed on. ARO has retired from his school work. LMB vacationed and operated in Michigan. DAE and RO visited your SCM, and a most enjoyable four hours discussing stamps, eating ice cream and talking over old times was had. FSC moved to Mansfield. WKY has a new Adventurer and 20-meter ground-plane antenna. VAD is on 2 meters. TUY's XYL presented him with a jr. operator. UYL is on 2 and 6 meters and 220 Mc. TND vacationed in W9-Land. 7IRU visited Canton. INR has his General Class license. WTO worked HB1, 4X4, ZS, PY, FG8, FP8, FO8, TI and ZL on 40 meters with 25 watts. AQ vacationed in Maine. DSX took unto himself a wife and a jr. operator. WFJ has a new DX-35 and NC-230. GIZ is on the air with JKQ's old rig. NVQ had a very sick daughter and we are glad she is better. How about one of you Youngstown and Warren hams getting into the Buckeye Net or the Ohio Phone Net or both? PLEASE. Traffic: W8UPH 482, VTP 262, WTO 208, SMK 200, DAE 156, HXB 110, AL 39, ZAU 36, QLJ 24, BEW 22, JHH 16, CVZ 13, HZJ 12, RN 8, RO 8, EEQ 6, LMB 6, WE 6, AQ 5, ARO 5, QIE 5, IIR 4, MGC 4.

HUDSON DIVISION

EASTERN NEW YORK — SCM, George W. Tracy, W2EFU — SEC: KGC. RM: BXP. PAMs: GDD, IJG and NOC. Section Nets: NYS on 3615 kc. at 1900 hours, NYSPTEN on 3925 kc. at 1800 hours, SRPN on 3980 kc. at 1100 hours, IPN on 3970 kc. at 1600 hours. ENY is sorry to lose K2BBJ, who has moved from Hyde Park to Rochester. The Schenectady Club also lost its vice-president, NZE, now living in San Jose, Calif. Amateur radio had a prominent booth at the Orange County Fair with a staff headed by K2ASD. GDD spent his vacation in Florida, stopping to visit his W4 friends en route. RMA spoke to the Schenectady Club Sept. 10th on scatter propagation and v.h.f.

(Continued on page 100)

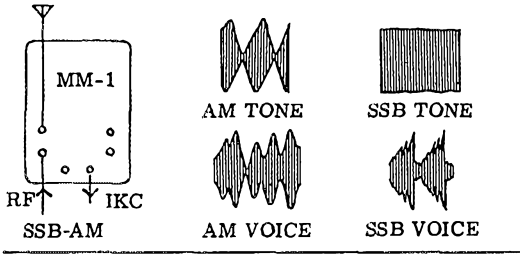
NEW MULTIPHASE MODEL MM-1
RF ANALYZER

Amateur Net - Kit . . . $99.50
Wired . . . 129.50

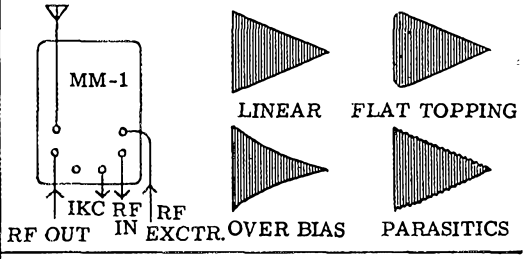
- NO TUNING required. Broadband response flat 1 MC to 55 MC at power levels of 5 watts to 5 kilowatts. Useful indications to 200 MC.
- Built-in 1 KC audio oscillator has less than 0.5% distortion.
- Automatic blanking protects CRT during standby.
- RF attenuator controls height of pattern, calibrated in 3 db steps.
- For use in "Series" with 50-72 ohm co-ax lines. A short pickup antenna is recommended for other systems.
- The MM-1 provides: SPEECH ENVELOPE patterns without annoying 60 cycle double trace.
- TONE ENVELOPE patterns automatically synchronized with self-contained 1 kc audio generator.
- AF TRAPEZOID patterns for HIGH LEVEL AM systems.
- DOUBLE TRAPEZOID OR BOW TIE patterns for analysis of LOW LEVEL LINEAR AM systems.
- RF TRAPEZOID for determining linear amplifier "LINEARITY" by sampling input and output signals. CONTINUOUS AUTOMATIC MONITORING OF SSB-AM-CW.

One compact unit provides oscillator and 3" scope for alignment of SSB exciters and general modulation analysis.

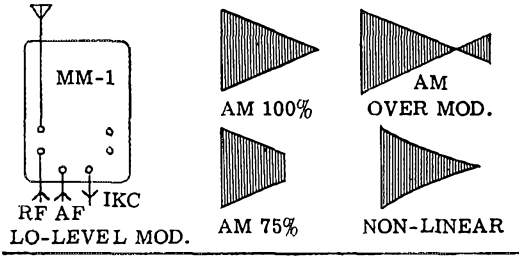
ENVELOPE



R F TRAPEZOID



A F TRAPEZOID



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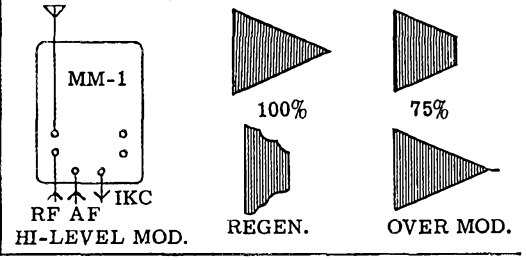

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Model B Slicer and Q Multiplier	$99.50	Kit . . . $69.50
Model A Slicer, less Q Multiplier	$74.50	Kit . . . $49.50
Model AQ Q Multiplier for Slicer	$29.50	Kit . . . $22.50
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Model 458 VFO Conversion Kits and Cabinet . .	$25.00	

WRITE FOR LITERATURE

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phenomena. DC's many friends will be sorry to hear of the death of his XYL in Scotia Sept. 3rd. SZ, the club station at R.P.I., has new facilities and plans are being made to expand operations this winter. A new appointee is K2EHI as OO. Endorsements: HF and GTC as ORSs, ZBS and K2AXY as OPSs. AFI as OO and DGW and SQW as OBS and EC, respectively. GYV is heard on 2 meters with 500 watts to a new beam. AWF was heard on phone and c.w. operating battery from an island near Lake Placid. All traffic net members were very sorry to learn of the car accident involving NYS Manager RUF while on vacation in Mexico. K2EIU left the nets to resume his studies at R.P.I. in Troy. KGC, our SEC, burned out his h.v. power transformer and was off the air for several weeks during the rewinding process. K2 calls are running high, with KN2UNN recently being heard in the Novice bands. Traffic: (Aug.) W2BXP 186, PHX 139, EFU 76, K2PPB 69, HPQ 44, JEQ 26, LKI 24, EHI 16, EIU 8, W2TYC 4, ZBS 4, K2HJX 2. (July) K2JEQ 11, BBJ 10, W2DEL 7.

NEW YORK CITY AND LONG ISLAND — SCM, Harry J. Dannals, W2TUK — SEC: ADO. PAM: OBW. RM: WFL. Section Nets: NLI, 3630 kc. nightly at 1930 EST and Sat. at 1915 EST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST. Despite very poor conditions, NLI topped its last month's traffic total with 169 messages handled. The net needs outlets in Brooklyn and Suffolk. BPL certificates were earned by KEB, KFV and K2s DEM and DVT, the latter two an originations plus deliveries. A v.f.o. at K2DVT helped him earn his BPL. Congratulations to BFN and CXI/M and K2s EAF/M and ECY on their excellent job of tracking down the illegal radio hoaxers on 28.72 Mc. K2DEM has a new eight-element beam for 2 meters. BO is building a TR switch. A new HQ-150X is owned by OME. GXC found that 0.16 watts on 80 meters wasn't quite good enough in the summer QRN. K2IDB welcomed a new harmonic — it's a girl. K2DOQ is off to R.P.I. and K2IYK to St. Lawrence U. I regret reporting that EIE and LXL have joined Silent Keys. JFU and OBW were the first to win WAM (Worked All Suffolk RC members — 25 required). K2ADL's station was hit by lightning but fortunately Charlie was back on the air in a few days. KL7BBX/2 lives in Syosset and has his Elmac mobile on 15 meters. The Navy transferred LBT to Japan. K2OPJ/2 has added a Q Multiplier and worked 50 countries in one month from his new Syosset QTH. Too much work at camp kept K2GHS/1 from his traffic skeds. PF has a new 75A-4. BQM added three new countries to raise his phone total to 142. A new antenna coupler at ELK helps raise his answers-per-calls percentage. IN is on the air from his new Staten Island location and finds his signal reports from 2 to 80 meters better than ever. K2UJI has a DX-100. Our ex-SCM, YBT, and K2TMP have 40-watt mobiles on 75 meters. A new Elmac mobile receiver is enjoyed by IOI. The newly-formed BONAC ARC in East Hampton has officers as follows: IOI, pres.; WH, vice-pres.; WN1HWT/2, secy.-treas.; AJR and YBT, trustees. New members of the club are K2s TMH, I and J! K2AED has 300 watts on 75 and 40 meters from his new Massapequa Park QTH. K2JZR added a Q Multiplier to his receiver. K2KXZ delivered his WAS card directly to ARRL. K2AMP finished his new shack. JOA is looking for a tape keyer for the N.Y.U. station, DSC, for possible bulletin work. New stations joining the Nassau 6-meter Net are IPB, K2s EQO, MDD, MUA, SJY and 1YYO/2. K2AZT reports that the Tue. and Thurs. 50.25-Mc. Net meetings now run to 2030 EST because of the increased roster. K2JTS, on his way to DXCC with 91 worked, is looking for those missing QSL cards. K2QXF is soon to be heard on the air from Hicksville. K2DGT is off on active duty with the Navy. K2CF has a new DX-100 and 21-Mc. quad. PRN added a three-element beam for 14 Mc. atop his 50-foot tower. MUM has a new NC-300. Six hundred watts and a 14-Mc. beam have earned DXCC-220 for HMJ. GNP is moving to Texas. K2MFN's new rig is a Viking II, and not a Ranger as reported last month. K2LHH runs 150 watts to a three-element multi-beam for 10, 15 and 20 meters. K2LTC is making plans for a 4-H club radio network. Any amateurs who are interested in this project should contact him. JCI, 2-meter EC for Brooklyn, and his XYL, KQL, work all bands with a Ranger and have a 522 for 144 Mc. K2BSM has a 75A-4 and kw. with three-element beams for 10, 15 and 20 meters. Amateur activity at the Mincola Fair hit an all-time high with three stations in action: CTR/2 and K2s DHC and LTC. CTR was assisted by his son, KN2RPU. All amateurs are urged to contact their local EC and join the AREC. See you in the '56 Sweepstakes! Traffic: (Aug.) W2KEB 1408, KFV 1063, K2DEM 438, DVT 263, W2JGV 143, BO 109, OME 80, GXC 68, K2AMP 55, W2DSC 53, TUK 53, K2CRK 22, W2PDU 22, K2RJO 21, KSP 19, W2LGK 14, K2ADL 12, W2FTV 12, MUM 12, ZUM 12, K2CMV 10, W2HAC 10, DUS 7, K2MQV 6, W2YBT 5, K2OPJ/2 4, W2VNJ 4, K2GHS/1 3, W2PF 2, JCA 1. (July) W2GXC 23, PDU 22.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: HN. PAM: CCS. RMs: MLW, CGG and NKD. K2ENU is a new arrival in the Elberon Area. The Irvington Radio Club held its first meeting of the new season at the club headquarters, 1143 Clinton Ave., Irvington. President WFK has a terrific program planned

(*Continued on page 102*)

FIRST TIME EVER! BUY DIRECT & SAVE!

3 BANDER 20-15-10 Meters

1 Transmission Line

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- 28 ft. elements
- 38 lbs.
- 52 ohm match
- 61 ST 6 aluminum elements

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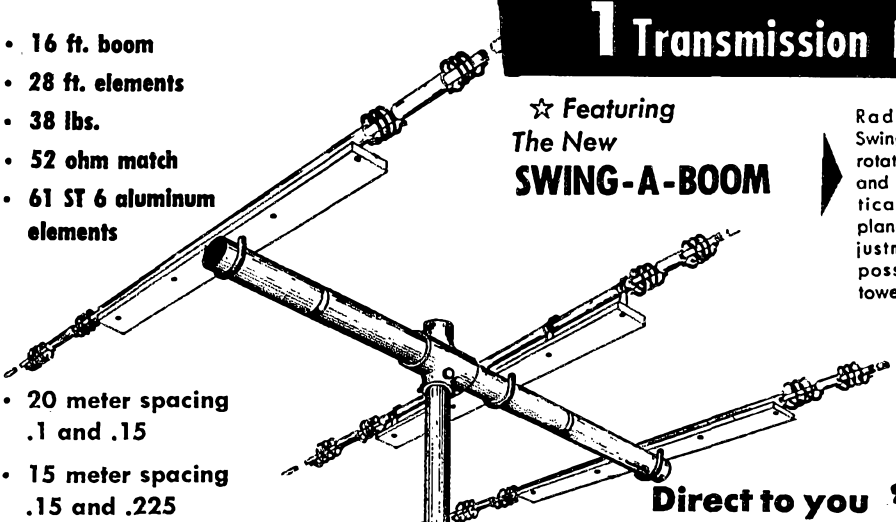

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(a) 14200 — 1.3:1 (b) 21300 — 1.4:1 (c) 28750 — 1.3:1
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STREET _____

CITY _____ STATE _____

for the coming year. 6YVJ, formerly SCM of Los Angeles, now is a resident of Nutley. He has a low-powered rig ready to go but has no receiver. VMX was all set for the recent F.M.T. with a new frequency standard, a sure bet for Class I OO. K2EQD has just received his DXCC certificate. BRC has a good traffic total this month even though a vacation period was included. KN2SVH and KN2UAI are new hams in the Freehold Area. Both are operators at Monmouth County Police Radio KEA-317. K2DDW is the new RACES RO in Bloomfield. His XYL, KN2QYH, has just presented the OM with a new jr. operator, Glen. K2CAW is back from a visit to Cape Cod. K2JGS is back from a trip to Florida. KN2RRS has arrived home after a visit in Texas. N. E. Kaye is the new editor-in-chief of the Bloomfield *Signal*, the official organ of the Bloomfield RACES organization. K2QNI has passed the General Class exam. K2IBF would like to see more activity on 15 meters during future CD Parties. Our thanks to all of the short-wave listeners for their reports on the recent Conelrad Test. The Penn-Jersey Amateur Radio Club Net meets on 3910 kc., at 1900 daily. The club recently was incorporated and meets the 1st and 3rd Wed. at the Warren County Court House Bldg. New members are solicited. W2LRO and his XYL are back from a vacation in New Hampshire. CFB is much interested in getting in touch with someone who is interested in microwave work in the region of 3300-3500 Mc. Drop him a line if you are interested. VYB has a new antenna array going up at his QTH. GVU has sent in a set of cards for DXCC. NIE has returned from a week's cruise by boat up the New England Coast. There were too many floating logs to dodge so there was not much mobile work on the trip. Net result was one hit and many misses. K2IPR is attending navigation classes in preparation for a summer on the seas next year. A new boat is on the horizon. K2BX has the 144-Mc. beam up on the new tower. K2ICE is back on the air after a summer of hard work at his business QTH. Net profits resulted in a new 220-Mc. station to supplement his FB 144-Mc. layout. OUS is on 160 meters with good results. K2DHE is hard at work building up the new Monmouth County RACES Control. His Assistant RO, K2IPR, is doing a fine job helping out in this project. A state-wide County RACES RO meeting is scheduled for Asbury Park on Oct. 28th. The city has given us the use of the Solarium, on the board walk, for our meeting place. Traffic: K2EQP 158, W2MLW 111, K2EB 95, BWQ 85, W2BRC 55, K2BHQ 50, W2KFR 14, VMX 12, CFB 11, OXL 10, DRV 6, K2EMJ 6, W2CVW 2.

MIDWEST DIVISION

IOWA — SCM, Russell B. Marquis, WØBDR — The Des Moines Radio Club set up its new club station, KØHEA, at the State fair grounds and made BPL on originations. Several Des Moines operators assisted in the operation. Also the Oskaloosa Club had a station at its fair. A civil defense demonstration was held with YDN as net control and KØAPL, FMX, VHK/M and QGI/M assisting. BWL, of Waukon, now is in California. PKT has a new position in Rock Island. VXO also is in Illinois. KØHAH is a new ham in Independence. The Marshalltown Club was hot at the Iowa 75-Meter Phone Net Picnic, at which 144 hams and their families were in attendance. Out-of-state guests were ZXT and 9JCX. After getting a new Valiant on the air, UJC went West on a three-week vacation. KØCLS is working DX on 40-meter c.w. The Cedar Rapids Radio Club held its annual picnic at Backbone State Park. Picnics also were held by the Council Bluffs Radio Club and the Charles City Radio Club. GJT is going s.s.b. with a 20-A exciter. Appointment: KØCER as OO. SRQ renewed his EC appointment. BDR vacationed in Colorado visiting KQD, MYX, EKQ and OKW. Traffic: WØSCA 1910, PZO 1440, LGG 854, LCX 774, BDR 728, BJP 556, CZ 260, KØHEA 164, WØBLH 113, QVA 106, LJW 103, UTD 33, GXQ 30, NGS 27, WDC 26, ZPM 26, PKT 25, RQW 19, VWF 16, YDN 12, KØBEC 10, WØFDM 6, FMZ 6, HNE 5, NYX 4, KØCLS 3.

KANSAS — SCM, Earl N. Johnston, WØIGV — SEC: PAH. RM: QGG. PAM: FNS. The Se-Kan annual picnic and hamfest will be held at Independence Oct. 21st. The Wheat Belt Radio Club has received its charter of ARRL affiliation. Congratulations. The Hi-Plains Amateur Radio club held its annual outing at Meade Lake July 12th to 15th. It was a 3-day Field Day with XYLs and harmonics along for the fun and I'm sure they all had lots of it. The KVRC, of Topeka, held an impromptu picnic Sept. 9th. KØGOL, formerly I2IMF and W2HEX, now at Olathe Naval Air Base, is active on 10 and 80 meters with 200 watts. OAQ, of Leavenworth is back in the harness again, sending in a nice traffic report and handling National Guard traffic. CHJ, of Junction City, has overhauled his HQ-129X and is getting ready for s.s.b. KØDIP, ex-9DPA of Gem, Kans., is on the air with a new DX-100 and SX-100. HAW, of Hamlin is leaving for Greenville, Ill., where he is president of the radio club at Greenville College. The Wichita Amateur Radio Club is issuing "Worked all Kansas" certificates to those working at least 50 counties. For full information write or contact IUB, president of WARC. Traffic: (Aug.) WØBLI 728, OAQ 380, NIY 201, QGG 190, MXG 96, FNS 90, YVM 71, SAF 69, TOL 55,

(Continued on page 104)

Just imagine the extra fun this outfit offers you ... and the saving in equipment investment! The "Armchair Ham Shack" is an idea made possible by the new Morrow MAH ... a complete outfit occupying less than a cubic foot of space ... so compact it comes mounted in an end table, or you can mount it in your car, carry it anywhere. Transmitter is extremely stable, 90-watts CW, 60-watts phone, covers 80, 40, 20, 15 and 10 meters. Features simplified tune-up procedure and push-to-talk convenience. Receiver has exclusive Morrow "squelch circuit" to eliminate interstation noise, is sensitive to ½ microvolt, SSB, CW, AM reception on all bands. Matching AC Power Supply has built-in 8-inch speaker. All units beautifully finished in grey hammertone. The MAH "Armchair Ham Shack" includes MBR-5, MB-560A, RTS-600S, mike, cables, end table with fiberglassed mahogany top and blending zolotone finish. Amateur net $595.00

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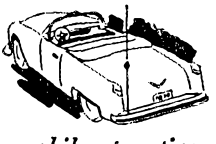

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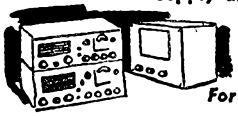

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ABJ 38, KØBIX 33, EWS 30, WØFCE 23, VZM 23, FDJ 17, ICV 16, ONF 16, KØAHW 15, WØTNA 11, IHN 10, THX 9, QGB 8, WWR 8, DEL 7, ECD 7, KKS 7, LQX 6, VGE 6, LOW 4. (July) WØLOW 4.

MISSOURI — SCM, James W. Hoover, WØGEP — Section Nets: Missouri Emergency Net, 3900 kc., Mon., Wed. and Fri., 1800 CST; Missouri Net, 3580 kc., Mon. through Sat., 0700 and 1900 CST. PME listens to the QRN on the state police radio as well as the traffic nets. WFF has returned to Rolla after spending the summer in Ferguson. ECE reports the arrival of a new jr. operator, John, Aug. 19th. KØAWC has increased power from 10 to 65 watts. OIV is attending school in Rochester, N. Y., through October. BVL was off the air while out of town during September. ETW has returned from a vacation in Wisconsin. SOZ has entered the Air Force. PWN is entering M.I.T. as a scholarship student in electrical engineering. HMS has reported on behalf of the Marshall gang. Active in Marshall are WØs FXA, ZSL, MMZ, KNF, KØBVB, KNØs BWQ and EET. RXT is looking for someone active on 6 meters in the Marshall Area. IIR has received a Traffikers 1000 Certificate. KØCOD had a two-week vacation in Virginia. KØCHZ is attending the Missouri School of Mines, and KØCHE is attending Washington University. CKQ is putting 100 watts on 6 and 2 meters. Traffic: (Aug.) WØCPI 937, GAR 512, GBJ 307, IIR 120, OMM 118, PME 88, KIK 83, OUD 76, HUI 65, WFF 55, RTW 31, KA 24, KØCHE 17, WØYKC 13, VZB 12, MHS 11, ECE 10, EBE 8, KØAWC 5, ACK 4, WØGEP 4, OIV 4, KØDEX 2. WØWAP 1. (July) WØKA 12, MFB 10.

NEBRASKA — SCM, Floyd B. Campbell, WØCBH — KØGVE has his General Class license and is using a 134-ft. dipole 40 feet in the air. CSW, VHN and FLA were in on the antenna raising. Charlie has 9 confirmed out of 12 states with OH7NN. The Western Nebraska Net had 27 sessions with 19 QTCs and 322 QNIs, averaging 11.5. KØDFO and W7NMW were constant "check-iners." KØAKW has an HQ-140X and is on 40-meter phone, 20-meter c.w. and 75-meter phone. DDT is back on the air partially after lightning clobbered things up a bit. Amateurs of Seward County had a very nice booth at the fair. They demonstrated c.d., handled traffic and showed that amateur radio doesn't bother TV. Those taking part were VEY, ZOU, ZWF, VGH, ZWG, DDP and YOD. MAO is having some very bad line noise. The Noon Net of the 75-meter Emergency Phone Net had 683 QNIs and 41 QTCs, time in minutes 79; averaging 22 QNIs and 1.3 QTCs, time in minutes 25.8. The Morning Net had 475 QNIs and 93 QTCs, time in minutes 911; averaging 15.8 QNIs and 3.1 QTCs, time in minutes 29.4. KØGVE and WØUJK are on the net only week ends because of school. KFY made some changes in his transmitter. NSS opened in October. KØFBD and AFAIR are handling Omaha traffic. Traffic: WØZJF 279, DDT 117, UJK 80, EGQ 48, SPK 44, BEA 42, KØCDG 42, WØMAO 36, VGH 31, ORW 29, ZOU 27, KØGVE 26, WØNIK 25, ZWG 22, ERM 18, PDG 18, AQQ 16, KØFBD 13, WØNGZ 12, KØDFO 8, WØQKR 7, KØBYK 6, ELQ 6, BDF 5, WØZWF 3, BSB 2, SWG 1.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Milton E. Chaffee, W1EFW — SEC: EOR. RM: KYQ. PAM: YBH. Traffic Nets: MCN, Mon.-Fri. at 0645 on 3640 kc.; CN, Mon.-Sat. at 1845 on 3640 kc.; CPN, Mon.-Sat. at 1800 on 3880 kc. and Sun. at 1000 on 3880 kc. Last month an appeal was made to former ORS/OPS to rejoin our traffic activities. This month newcomers are welcomed on either the c.w. or phone nets. Coverage is needed in several places. Come in for the fun, training and good fellowship. CN met 27 times, handling 185 for 6.8 per session with RFJ (22), LV, AW and KYQ (19) the leading reporters. CPN met 31 times and passed 322 for a real busy month, averaging 10.4 per session with QNI honors to VIY (30), DHP (29), EKJ (29) and YBH (28). After long and faithful service to the section, LKF has retired as SEC to continue as State RO in RACES. His successor is EOR who, with your cooperation, will try his hand. All EC appointees should direct monthly reports to the SCM who will forward to the SEC. UIZ is busy under 3FEY at Lancaster, Pa. BDI is holding a post in TCC, and has the new 2-meter beam up higher. VKZ is on the DX trail. YBH hit BPL again. GIX has added 7220 kc. to his OBS schedule. VIY is looking for 2-meter RTTY stations for the NYC-Boston RTTY Net. DHP is adding power to improve his already-good 75-meter signal. WHO has gone s.s.b. VLE is off 2 but is on 75 meters. HTK is new at Rockville. ZVL (ex-9DRR) is active on 10 meters. RAN reports operation of DL4ZQ but will sign DL4II in the November contest. Ned watches 14,040 kc. at 2100 GMT Sat. for Connecticut and other friends. Is it time to renew your appointment? Recent renewals: ULY as EC; CUH and AW as ORSs; AW and YBH as OPSs; AW as OBS. New OBS: YBH and DHP. New EC: AKG. WW has a new 7-Mc. antenna up on 70-ft. towers. YUP recently married the niece of CJD. FYF now is General Class and active on 40–75-meter phone with a DX-100. The Hamden Club put mobiles into use to help in the kidnapping case there. HXD is organizing a "50 Mc. and up" group, all to be

(Continued on page 106)

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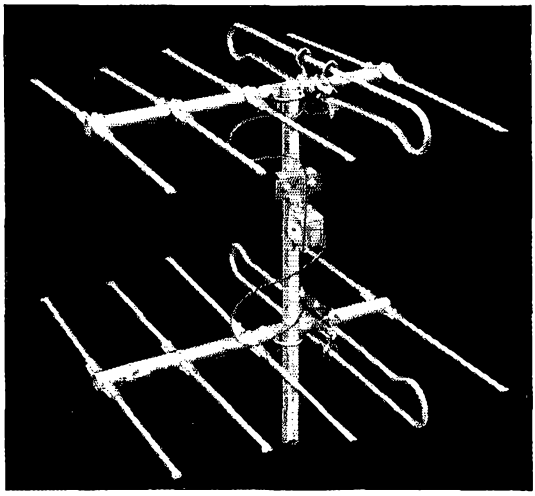

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Model HM2-3AK	**3-element**	**Net, $ 4.95**
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Model HM2-10AK	**5-over-5**	**13.95**
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Model HCR2-1AK	Corner Reflector	**Net, $27.95**
Model HCR2-4AK	Corner Ref-Yagi	**37.95**

6-Meters—Cut to 52 mc. Covers 50-54 mc. 52 ohm Z.
(Exclusive Tri-Boom and Quad-Boom Construction)

Model HM6-3AK	**3-element**	**Net, $12.95**
Model HM6-5AK	**5-element**	**21.95**
Model HM6-10AK	**5-over-5**	**35.25**

10-Meters—Cut to 29 mc. Covers 28.5-29.7 mc.
(Exclusive Reinforced Quad-Boom Construction.) **(52 ohm Z.)**

Model HM10-3AK	**3-element**	**Net, $24.95**
Model HM10-4AK	**4-element**	**29.95**

Also available with Baluns at slight extra cost.

NEW	**(52 ohm Z.)**	
Model HM10-6AK	**3-over-3**	**Net, $45.90**
Model HM10-8AK	**4-over-4**	**55.80**

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San Diego; Western Radio & TV Sup., 1415 India St.
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Massachusetts, New Bedford; E. A. Ross & Co., 1663 Purchase St.
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Michigan, Ann Arbor; Purchase Radio Supply, 605 Church St.
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New Jersey, Newark; Variety Elect. Co., 468 Broad St.
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OES, and will welcome others interested in v.h.f. Traffic: (Aug.) W1YBH 406, EFW 169, KYQ 159, ULY 119, DHP 118, AW 112, BDI 64, RGB 57, YNC 55, LV 46, VIY 42, NJM 39, RFJ 24, BVB 18, CUH 17, FTM 9, AVS 5, GIX 5, HYF 4, VKZ 3, CJD 1. (July) W1GVK 4.

MAINE — SCM, Allan D. Duntley, W1BPI/VYA — SEC: TVB, PAM: FNT. RM: EFR. OOs: WRZ and CBU. After the nice things I said last month about my new PAM, and feeling pretty well satisfied with the appointment, FCS slipped away under the "cover of darkness" to W2-Land so again we were high and dry without a PAM. Congrats, Harry, on the new job. I have now appointed the very capable and considerate FNT to the position. Anita now says VXU can go mobile in the new car. TWR now is on his second five-year ticket, and is putting out a good signal on 2 meters. TVB is going s.s.b. Congrats to SCM on the new wife — heard him on his honeymoon in New Hampshire. WBM has a new mobile. Did he get that put in in Massachusetts? HZE has high power on s.s.b. and is looking for a 20A to drive it. WTG still is leading in the 15-meter contest with TWR. We hope QUA is much improved. Keep your chin up, Percy. GQ really is putting out with the DX-35. Why don't some of you guys and gals give UDD a little help on the Barn Yard Net? Two 2¢ stamps will get you the latest *Horse Traders Bulletin* from BDP, a 4¢ stamp won't do it. HUL had a good time at Dexter; he didn't have to get Chummy out of the ditch this time. FPO now is working for the telephone company. SIN is back from his sojourn in the frozen North. Better get those 10-meter beams out of storage — it looks like a good winter for DX. Do the traps improve WRZ's signal? GFP has a new Viking. ISJ is moving to Casco at Sebago Lake. Traffic: W1ZME 292, LKP 99, FZK 87, EFR 44, CEV 41, UDD 30, BX 11, K2KVP/1 5.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — New ORSs: EAE and EEB. Appointments endorsed: MEG and CTW as OESs; DWO, WU, BY, WSN and HWE as ORSs; PXH, W8N and USA as OOs; USA as OPS and OBS; MBQ Vineyard Haven, EGZ Harwich, OLP Walpole, TQP as Radio Officer for Sector 1-A and ZWQ as Alternate Radio Officer for Sector 1-B, as ECs. Heard on 2 meters: NML, BMM, LIU and MNU. CSP and AGE are on 75 meters. ALP and NOD are on 40-meter phone. CRO has Tech. Class license. KWV, Danvers, has a Gonset 6. MII has an HT-17. NKA, Concord, is on 80, 40 and 15 meters with a DX-35. Area 1 Radio Comm. held a meeting with KTG, LLY, ZYX, QQL, ALP, BL, TQP and VYI present. CTR is working in Boston now. IHC is building. FDN is on 20-meter c.w. SRG is having receiver trouble. IHC now is a member of MARS. CUW has a new QTH, so is off the air. VE3EGG is visiting GRX. RM and PIW vacationed in New Hampshire. LVN is painting. NEM has a mobile antenna. MJA is back from New York. LMU has a new car. SXD is working on rigs. AKN is busy fishing. BPW has been DXing and has WAC and built a new rig. GNX is on vacation. NF has a 12-volt 2-meter Gonset for his new Plymouth. AUQ is busy with traffic and some OO work. WU is now retired. ALP has a new 2-meter beam and rotator and it's horizontal. PNT, Bedford, is on 2 meters. IHC is building a new antenna for 2 meters. WN1IUU, Lawrence, is on 15-40 meters with a DX-35 and is working DX, and reports that a radio club is being formed at the Western Electric plant. KHV has a pair of 813s final for his 20A s.s.b. rig. DIR made a 10-meter ground-plane. ZR is active in MARS. RHZ is doing quite a nice job in making antenna installations. SSS is active on c.w. and phone. MOM is back on the air again. MHN sticks on 3870 kc. daily. AHE is active on 2 meters and will have a 48-element beam portable. Winthrop's last drill had DEL, BDU, CMW, DJ, OIR, HFJ, IRV, JJI, ORV, VIS, SAN, QA, NMX, TTH, LOO, BB, MQB and their XYLs on. BOX is out in Guam. Look for him at KG6AAY. ACB is working DX. Traffic: W1EMG 78, AUQ 70, AVY 60, GNX 50, EAE 27, WU 12, AKN 6, NF 3, UKO 3, EEB 2. (July) W1CUW 27, AKN 9, NUP 2. (June) W1NUP 6.

WESTERN MASSACHUSETTS — SCM, Osborne R. McKeraghan, W1HRV — SEC: RRX. RM: BVR. PAM: QWJ. The WMCW Net meets on 3560 kc. Mon. through Sat. at 1900 EST. The following appointments have been endorsed: JAH, LIB, NAX, NLE, RLV, TAY and UPF as EC; JAH as ORS and OPS; PHU as OES. Novices KGJ, GNJ and WEL are now General Class. New Novices are MXS in Easthampton, LPG in Springfield, KGG in Leominster and LXL in Fitchburg. TZA is in the service and stationed in Germany. WCC is at Navy boot camp. MNG has erected a new antenna for 2 and 6 meters and is holding down regular skeds on WMN, EAN and the 75-meter Phone Net. AZW has a new 20-meter beam. OBU is building for 10-meter mobile. UXK has built a 10-meter beam and a mobile rig. LIB has a Johnson mobile working fine. WEF has his new exciter going. DGL has a new v.f.o. KFO has a 2-meter Yagi with a 30 foot boom. TXS has erected a 40-foot tower and beam for 10, 15 and 20 meters. Wilbraham has received RACES approval and has 13 2-meter Communicators. Southwick also is RACES-approved. New officers of the BCARA are AZW, pres.; UDT, vice-pres.; HJL, secy.; and COI, treas. HDQ was speaker at its September meeting. FZJ and RUD gave a very interesting

(Continued on page 108)

SSB TROPHY AWARDS

1. Every licensed Amateur anywhere in the world is eligible to participate for the SSB Trophy Awards for confirmed **Two-Way** Single Side Band QSO.

2. Four Rand McNally 12″ eight-color desktop globes, and one 16″ floor-stand globe, with suitable engraved citation, will be awarded as trophies to the following:

A. One 12″ globe to the Amateur within Continental U. S. or Canada, who is awarded the first W.A.C. Single Side Band Certificate and submits the necessary six QSL cards confirming Two-Way SSB QSO to the contest committee to qualify for such award;

B. One 12″ globe to the Amateur outside Continental U. S. or Canada, who is awarded the first W.A.C. Single Side Band Certificate and submits the necessary six QSL cards confirming Two-Way SSB QSO to the contest committee to qualify for such award;

C. One 12″ globe to the Amateur within Continental U. S. or Canada, who is awarded the first W.A.S. Single Side Band Certificate and submits the necessary 48 QSL cards confirming Two-Way SSB QSO to the contest committee to qualify for such award;

D. One 12″ globe to the Amateur outside Continental U. S. or Canada, who is awarded the first W.A.S. Single Side Band Certificate and submits the necessary 48 QSL cards confirming Two-Way SSB QSO to the contest committee to quality for such award;

E. One 16″ floor-stand globe to the Amateur anywhere in the world who first submits the necessary 100 QSL confirmations of Two-Way Single Side Band QSO with 100 different countries.

3. All QSL confirmations must clearly show that the QSO was between two licensed amateur stations, both using Single Side Band phone communication.

4. For the W.A.C. Trophy Awards, W.A.C. Award rules shall govern. For the W.A.S. Trophy Awards, W.A.S. Award rules shall govern. For DXCC Trophy Award, DXCC Award rules shall govern.

5. Decisions of the Trophy Award Committee regarding interpretation of the rules as here printed or later amended shall be final. Address all applications and confirmations to Eldico Corp., Award Committee, 72 East Second Street, Mineola, L. I., N. Y.

talk and demonstration of v.h.f. wave propagation at the HCRA September meeting. The annual picnic of the HCRA at Look Park was well attended. ENX and ZJ are Assistant ECs for Worcester. The Greater Worcester Phone Net averages 12 members at each session. The WMCW Net has picked up and is going great with very good attendance and several new members who are taking to traffic work very well. UXK has been elected president of the Nashoba Valley Radio Club. TAY reports many fine mobile contacts while on a vacation trip to the New York and Philadelphia Areas. Traffic: W1ZUU 111, BVR 86, UKR 76, DZV 25, TAY 24, DYO 21, DVW 18, KGJ 18, MNG 14, WEF 13, DGL 8, HRV 4, JAH 2, EKO 1.

NEW HAMPSHIRE — SCM, Harold J. Preble, W1HS — SEC: BXU. RMs: CRW and COC. PAM: CDX. The New Hampshire Emergency Net meets Sun. at 1300 on 3850 kc. BXU is net control. Tune in for information on AREC and RACES. The New Hampshire C.W. Net meets Mon. through Fri. at 1900 on 3685 kc. This net needs stations in Manchester, Keene and Nashua. The Granite State Phone Net meets Mon. through Fri. at 1750 on 3842 kc. The RACES plan for Manchester has been approved. The Radio Officer is WUU and the alternate RO is YHI. DYE has a new NC-183. The Concord High School RC has been assigned the call NBD, with CVB as trustee. WN1MTX has a new Q multiplier. VAU has returned from two years' duty with the Signal Corps and says it's good to be back in civvies. KGV and WN1JWU (mother and son) are enjoying DX with a new Viking Ranger. ARR is working on a new Heathkit VFO. FUA has returned from a month's portable operation at Wells Beach, Me. IP has been reappointed ORS. KOC is making FB contacts with CT1s on 10-meter mobile. SW5WI, QSL award manager for "Worked All Vasteras" (WAV), wants contacts with New Hampshire stations for WNH. Look for him on 20-meter c.w. at 2000 GMT. Welcome to Novices LAJ, LHH and LOO. Traffic: (Aug.) W1SAL 84, QGU 35, FUA 28, CRW 25, YHI 25, ARR 23, HS 4.

VERMONT — Acting SCM, Mrs. Ann L. Chandler, W1OAK — SEC: SIO. RM: BNV. PAM: SEO. The annual Vermont Phone/C.W. Family Net Picnic was held at Ellis State Park in Brookfield on Aug. 19th. Operating with generated power there were PWB and his XYL with a nicely-equipped transmitter in the trailer, and VSA and his XYL, DAP, who pitched tent and operated their fine set-up also from the mountain top. Our newly-appointed PAM, SEO, announced that VTPN will operate at 9 A.M. Sun. on 3860 kc. instead of at 9:30. With this new time set-up stations will have ample time to report into both VTPN and also the c.d. net, which operates an hour later. BNV, the new RM for VTN (6:30 P.M. on 3520 kc.) has mailed out roster letters with NCS Mon. through Sat., respectively, for this season as follows: IT, DAQ, KRV, ZNM, ELJ and GQJ. VMC, net mgr. of GMN (12 noon on 3860 kc.), reports the following NCS Mon. through Sat., respectively: ZHO, AVP, RPR, TJ, EOY and ZYZ. The asst. net mgr. is WOA. Ninety-two different stations reported in during August with 28 messages handled. The Vt. C.D. RACES Net operates at 10 A.M. each Sun. alternating phone on 3993 kc. and c.w. on 3501.5 kc. every other week. Installation of a new Conelrad outfit has been completed at the Rutland City Hall, and drills in RACES are being operated from the District Control Station there each week. Those wishing enrollment in the C.D. Net, contact your Asst. SCM. AZN has returned to Luther College in Decorah, Iowa. While there Ron will operate from KØASR and look for Vermont stations. EIB spent a week in Burlington attending 4-H meetings. UGW was home on furlough and enjoyed using the new electronic keyer. QMM has 146 stations worked with 133 confirmed. VZE's activities have been 10 per cent operating and 90 per cent troubles with the transmitter. YYU is back from California operating her Viking on 75 meters. VVO has resumed studies at Worcester Tech. after working in Montpelier during the summer. ZPB has a new call in Arlington and is operating 80- and 40-meter c.w. with a new DX-100. New Novices in Vermont are JEV, JGA, JGT, JXO, KAP, KCI, KVD, LAF, LJA, LJB, LMI, LMQ, LPP and LPT. Other new calls are EPT, FFX, JBN, JBX, JTM, JUG and KKK. Traffic: W1OAK 99, AVP 40, VZE 27, ZNM 9, IT 6.

NORTHWESTERN DIVISION

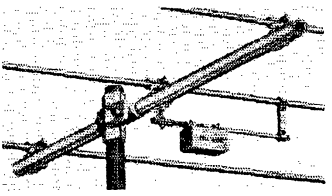
MONTANA — SCM, Vernon Phillips, W7NPV/WXI — SEC: KUH. Section Nets: MPN, Mon.-Wed.-Fri. at 1800 on 3910 kc.; MSN., Sun.-Tue.-Thurs. at 1900 on 3520 kc. Sixty-six Montana hams attended the WIMU Hamfest at Big Springs, Idaho. JPD was elected Montana vice-president for next year's hamfest. The Electric City Radio Club of Great Falls sponsored a ham picnic on King's Hill. OTJ, TGW and CK were hosts to the Yellowstone Radio Club at a picnic at Fishtail. Director CPY presented the Old Faithful Radio Club of Livingston with its ARRL Charter. The group celebrated with a combination fish fry and picnic. Great Falls amateurs again supplied communications for the annual Fish Derby on the Missouri River. Everyone is urged to support the call letter license plate bill. With a concerted effort on the part of all Montana hams, we should

(Continued on page 110)

PLYTUBULAR Beams FOR THE Beams OF Hamdom

THOSE WHO KNOW THE DIFFERENCE!

PLYTUBULAR CONSTRUCTION is a shop process developed by TENNALAB whereby close tolerance 61ST aluminum tubing of telescoping sizes are fabricated together into booms and elements having multi-ply walls for greater strength and less vibration.



Full size Beams for Full size Signals

- FACTORY TUNED
- GREATER STRENGTH
- LESS WEIGHT
- LESS VIBRATION
- LESS ICE LOADING
- LESS WIND DRAG
- UNITY MATCH
- HIGH GAIN
- HIGH F/B
- SHARP PATTERN

PRICES, WEIGHTS, BOOM LENGTHS

(Other lengths Custom Built)	Boom Length	Actual Weight Lbs.	Shipping Weight Lbs.	AMATEUR NET
SINGLE BAND— With One No. 20G Reactance Tuned Coax Gamma				
No. 2L-20RG—2 Element 14 megacycle beam	12'-0"	27	38	$ 67.50
No. 3L-6RG —3 Element 50 megacycle beam	4'-10½"	12	17	27.50
No. 3L-10RG—3 Element 28 megacycle beam	8'-6½"	18	22	55.00
No. 3L-15RG—3 Element 21 megacycle beam	11'-5½"	24	35	65.00
No. 3L-20RG—3 Element 14 megacycle beam	17'-½"	43	55	107.50
No. 5L-6RG —5 Element 50 megacycle beam	8'-6½"	17	23	65.00
No. 5L-10RG—5 Element 28 megacycle beam	15'-1"	29	40	107.50
No. 5L-15RG—5 Element 21 megacycle beam	20'-4¾"	39	58	157.50
No. 5L-20RG—5 Element 14 megacycle beam	28'-0"	82	100	225.00
TWO BAND—Interlaced On One Beam With Two No. 20G Reactance Tuned Coax Gammas				
No. 6L-1015RG—6 Element Beam—3/28 mc - 3/21 mc	11'-5½"	34	50	105.00
No. 6L-1020RG—6 Element Beam—3/28 mc - 3/14 mc	17'-½"	54	72	157.50
No. 6L-1520RG—6 Element Beam—3/21 mc - 3/14 mc	17'-½"	57	75	165.00
THREE BAND—Interlaced On One Boom With Three No. 20G Reactance Tuned Coax Gammas				
No. 9L-101520RG—9 Element Beam 3/28 mc - 3/21 mc - 3/14 mc	17'-½"	67	86	217.50
No. 20G—Reactance Tuned Coax Gamma With Insulator and Element Clamp (Specify Band as No. 20G-14, No. 20G-21, No. 20G-28 or No. 20G-50)		2	4	14.95

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STRENGTH—With PLYTUBULAR CONSTRUCTION, greatest strength is placed where strength is most needed and weight is reduced at all other points, resulting in a weight to strength ratio possible only in this new revolutionary method of construction. To illustrate the extent to which this new process is applied in TENNALAB PLYTUBULAR CONSTRUCTION the 28 ft. boom of No. 5L-20RG is 1⅜" OD at the center with a wall thickness of approximately ½" decreasing to 1¼" OD at the boom ends with a wall thickness of approximately 3/16". The elements for 14 mc beams are only ⅞" OD at center with a wall thickness of approximately 3/16", decreasing to ½" OD at the tips with a wall thickness of approximately 1/16". On the smaller beams the same method of construction is applied but only to the extent necessary for the smaller units.

ICE STORMS—Plytubular booms and elements, because of the smaller OD sizes, collect from 50-75% less ice during ice storms.

WINDSTORMS—Effect of windstorms is in the same proportion as from ice storms due to the smaller OD of the tubing.

VIBRATION—More beams are weakened by vibration than from any other cause. The dampening effect of PLYTUBULAR CONSTRUCTION reduces vibration and the resultant crystallization to a minimum.

FASTENINGS—Smaller booms and smaller elements with heavier walls permit more secure fastening at all junctions without any fear of collapsing the tubing. No large holes are drilled in the booms. MAST CLAMPS ARE UNIVERSAL FOR A WIDE SELECTION OF MAST SIZES.

GAIN—F/B—PATTERN—When properly installed results as shown below may be expected at the average installation varying slightly with height above ground, surrounding objects, etc.:

ELEMENTS	GAIN	F/B	PATTERN
2	5 db	15 db	48°
3*	8 db	24 db	30°
5	11 db	28 db	24°

*Interlaced models for 2-band and 3-band operation will differ slightly from these figures but interaction will be less than if separate beams were installed on separate towers on an average city lot.

SWR—*ALL TYPE RG TENNALAB PLYTUBULAR BEAMS are equipped with the No. 20G Reactance Tuned Gamma for unity matching of coax lines to powers up to 1 kw phone. — See above if No. 20G is desired separately for your present beam. Tuner is sealed in cast aluminum weatherproof case, complete with insulator and universal gamma to element clamp. Either 52 ohm or 72 ohm coax may be used but 72 ohm line is recommended.*

TUNING—No element tuning is required. The half wave elements are factory tuned for operation over the entire band. PLYTUBULAR BEAMS are finished products. Just set the match, adjust the reactance tuner and QSO!

PRICES—Prices shown above are domestic packed. For export packing add 10%. All prices are less mast, tower, rotator, etc., and subject to change without notice, F. O. B. Factory in Quincy, Illinois.

EVERY TYPE RG PLYTUBULAR BEAM, EVEN THE INTERLACED MODELS, WILL MATCH COAX AT UNITY, THUS ASSURING A LOW SWR AT BAND EDGE!

TENNALAB - QUINCY, ILL.

be able to get the bill passed by the forthcoming Legislature. ARRL appointees are reminded to watch their certificates and send them in for endorsement when required. Traffic: W7NCS 9, WRK 3.

OREGON — SCM, Edward F. Conyngham, W7ESJ — Leading in traffic-handling this month are the YLs, QKU and ENU. VIL reports activity is picking up with lots of new Novice and General Class calls being heard. TSH is NCSing OEN Fridays. BVH is QRL MARS and OSN. JCJ reports he is not able to get sick on company time but waits until the vacation starts. He had pneumonia while in Canada! PRA reports a new c.w. RC net, the Oregon Chatter Net, 3585 kc., 1830 PST Sat., Sun. and holidays. RCL reports many were standing by for forest-fire work. NGW, RCL and ZQQ operated VS, the Portland c.d. station, with others for a simulated emergency test. WFO reports the Mountain Rescue and Safety Council was assisted during a disaster on Mount Hood July 29th by the following: At Timberline Lodge — PRC, JDX, QOD, QMZ and WFP. At Portland — JMW, BTF, QWE, NGW, NQB, QKU and DWQ. Those assisting were RHX, ENU, FDJ, BXU, HRV, IYR, TMI, AGH and YKY. The Oregon State C.W. Net, 3585 kc., 1830 PST week days, reports QNI 108, QTC 56. BRATS: OMO 41, PRA 40 and ZBO 36. PQJ is moving to a new house and has the ham gear boxed up except for the receiver and frequency-measuring equipment. The Lebanon gang is thinking about starting a ham club this fall. UZU, TCT, EUG and UHC are busy with MARS in the southern end of the State. Traffic: (Aug.) W7ENU 120, QKU 103, PRA 49, HDN 47, HJU 44, VIL 28, TSH 14, QYS 7, KLE 4, KTG 2. (July) W7RCL 4.

WASHINGTON — SCM, Victor S. Gish, W7FIX — ATTENTION ALL WASHINGTON SECTION RADIO CLUBS: Please submit to the SCM a list of current club officers. If there is no EC in your area, please select a club member to post and advise the SCM so an appointment can be issued. QYN and QYO now are at Gig Harbor. WLK returned from a summer vacation. YGT has 27 confirmed out of 37 worked; he has WAC and WAS with a two element 20-meter beam. WN7DKH is running 50 watts to a 15-meter rotary doublet. BXH has an Adventurer on WSN. HDT has an RME VHF-152. YBV is a new call in Clarkston. UNI reports five amateurs assisted the police at the Westport Salmon Derby. UNI, SFN, WPQ, ZOW and ZPS, with VHA and ZA at the base station. YJA reports the Royal Order of Hoot Owls now has a membership of 42 and is looking for QSOs on 50 Mc. Sat. midnight (PST) for those "Hoots" who "don't give a hoot" and would like to join this Royal Order. King County C.D. reorganized and will be transmitting c.d. information on Thurs. on 6, 10 and 2 meters. The Evergreen 50 and Up Society meets the 1st and 3rd Thurs. at the North Seattle Amateur Radio Club's club house, 94th and Roosevelt Way, Seattle. JNC vacationed in W6-Land. BA schedules W6 0800, KH6 0830, KL7 1715, KH6 1730, AL7 1800, OEN 1830, UTL 1930, ØBLI 2000, 3WG 2130 and reports 20 meters is crowded with s.s.b. The McChord AFB Radio Club has been organized. PGY finally is getting settled in the new shack. JPH home on a trip, gave him a hand. WAH is piling up traffic and wants more QNI RN7 2130 session. OE is "on the road" again. AIB expects to change his QTH to Port Angeles. KKH would like an s.s.b. coastwise net for traffic. USO is QRL painting the house. UQY reports WN7EQK and WN7EQL are new Richland Novices. YFO is working DX with a new beam. PXA is back on the air after a rash of antenna, receiver and transmitter troubles. AVM reports AREC-RACES drills on 29.6 Mc. in Aberdeen. Traffic: (Aug.) W7BA 1851, K7FAE 1032, W7PGY 653, FRU 261, WAH 227, APS 58, OE 55, KKH 32, JEY 27, AIB 19, USO 12, WQD 8, EVW 4, YGT 4, LVB 3, UQY 2, K6BDF/7 1. (July) W7FRU 377, BXH 18, EYF 10, YFJ 5 UQY 2. (June) W7FRU 335.

PACIFIC DIVISION

HAWAII — SCM, Samuel H. Lewbel, KH6AED — IJ spent the summer hamming in the States and is now back and getting ready for a full year of contests as well as adding a few more countries to his list. BJF moved to a new QTH and is shopping around for a tower for the new beam. Kona Coast RACES has received its 100-watt station. ZD has moved, which explains his absence from 2 meters and RTTY. EZ is putting up a double Yagi and is bound and determined to get out of the valley on 2 meters. RU has a new KWS-1. AGH put up an Adaray beam. It looks like Abe is breaking away from the inter-island gossip band. NS and UK are going at it hammer and tongs to be the first to work the States on 2 meters. This race is one to watch. Traffic: (Aug.) KH6QU 1398, KP6AK 139. (July) KG6FAE 686.

SANTA CLARA VALLEY — SCM, R. Paul Tibbs, W6WGO — SEC: NVO. It is with deep regret that this column records the passing of GD, of Palo Alto. Many of the clubs in this area have had Oliver appear before meetings to give talks on v.h.f. antennas. K6DYX is very QRL with NCS and TCC work on the NTS Nets. Smitty now is getting gear in shape to get on 144 Mc. YHM has been reinstated in MARS and assigned to the A6YCF/A Net.

(Continued on page 112)

NOW!

world's first and only TRANSISTORIZED Amateur Band Converter

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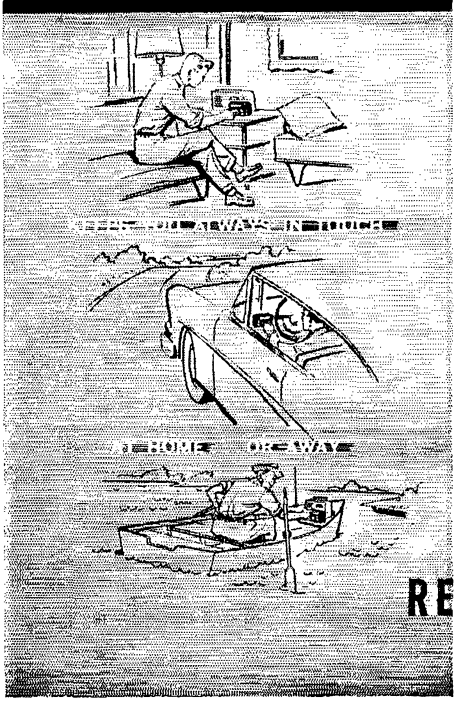
ATC-1

4¼"x 3¼"x 4 1/16"—weighs only 30 ounces

a tiny self-powered converter that connects INSTANTLY to any receiver



● No other converter like it! REGENCY's new ATC-1 is truly portable. Hooks up in seconds to *any receiver* (including car radios)—only connections are to an antenna and to receiver's antenna input.

The ATC-1 takes no power from the receiver. It is self-powered by three tiny Penlight cells which have a current drain of only 450 to 600 micro-amperes.

World's Smallest Converter. Use of transistors instead of bulky vacuum tubes makes this remarkable unit as easy to carry as a candid camera—it's actually less than half the size of this page!

The ATC-1 provides AM, CW and SSB reception on the 80, 40, 20, 15 and 10 meter amateur bands. Sensitivity is 5 to 10 mv for 6 db signal-noise ratio. A modified "Q" multiplier circuit improves sensitivity and selectivity for phone operation. Smartly styled aluminum cabinet is covered in dark grey tweed with satin finished aluminum front.

With features that can't be duplicated at any price, the transistorized REGENCY ATC-1 is available now at just....**$79.50**
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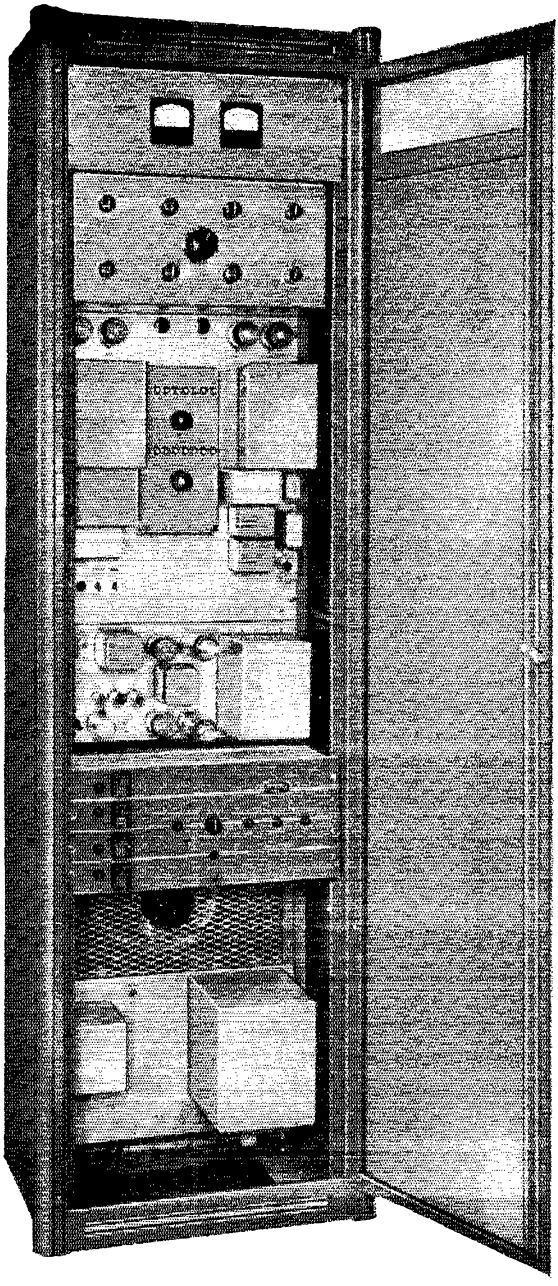
Don also keeps skeds with OFJ for liaison between NTS and ALN. ZRJ visited the shack of K6DYX recently. K6GID has returned from vacation and again is busy on NCN. KN6QCI asks any Novice to check into the net operating on 3711 kc. at 2300 PDT. This is a very good chance for the Novice to learn the proper net procedure. LDO reports he won no prizes at the National Convention but did learn how the other half of the amateur lives. Hi. MMG reports that K6JHL is building another rig for 50 Mc. and all the 144-Mc. gang is moving to 6 meters. K6BBD sent out six OO notices during the month of August and at present is wiring a Viking II kit and will return to the air shortly. FBW reports that his XYL, DHV, is now a member of the Quarter Century Wireless Association, an association of operators holding licenses twenty-five years or more. Mae still is a c.w. operator only. K6HGV has been working around Arnold, Calif. for the past couple of months and says communications seem to be dead around that area. Traffic: K6DYX 433, W6YHM 302, BPT 258, YBV 171, ZRJ 142, HC 90, K6GID 83, KN6QCI 21, W6LDO 3, MMG 2.

EAST BAY — SCM, Roger L. Wixson, W6FDJ — Asst. SCMs: Harry T. Cameron, 6RVC; and Oliver A. Nelson, jr., 6MXQ. PAM: LL. RMs: EFD, JOH and IPW. Your SEC is Wayne Clark, W6CAN, 70 Hoffman Ave., Napa. Please send all AREC forms to him. Please forgive me for not getting the column in last month, but with the convention and company business I was swamped. I will try to do better in the future. Please send in bits of news of your clubs and any personal items of interest by the 7th of each month. I want to thank those who have sent in items of interest and club minutes. Around the clubs in the East Bay: The 3rd Annual Acacia Club Picnic was held at the Marin Town and Country Club, San Anselmo, Marin County. The Parkinson family has really gone all out for amateur radio. Starting off with the OM (Parkie), K6IMZ, here's the crew: XYL (Lee) KN6OBB, Bill (14) KN6OSO, Bert (12) KN6TPO and Ken (11) KN6OSO. Their QTH is 1601 Onley Drive, Concord. K6SXP, the Oak Knoll Radio Club at the U. S. Naval Hospital, Oakland, is on the air. The club is under the direction of Navy doctors and is to provide training and recreation for convalescent Naval personnel. Good work, Capt. K6LZI and Lt. QDW. A picnic was held by the Mt. Diablo Club July 27th at the Mitchell Canyon Recreational Area. The Oakland Radio Club was entertained by the PG&E company. A short talk and two films, "At Your Command" and "Sierra Fish and Game" were featured. The Oakland Club sponsored a High Sierra trip with FDJ in charge and HFX, UES and HFB taking part. The trip took 7 days and we traveled over 1400 miles. The East Bay Club had a talk by K6GYA, who spoke and gave a demonstration on the Minifone, a vest-pocket wire recorder. CAN reports that the Napa Valley gang is in the process of forming a 6-meter club. Each member has to build his own equipment. SXK is receiving 2-meter signals from the *Hawaiian Rancher* on his trips between here and Honolulu. K6GWE has heard very strong 32.21 N lat.-127.17.30 W long. which would be about 475.6 miles from the East Bay. Cliff reports his latest count of KH6s on 2 meters is 31. A last minute note from CAN states that the barrier between Napa and Calistoga has been overridden on 6 meters. SJA and LSC, with CAN, have had good two-way communications. The CCRC still is in there doing an FB job coordinating the ideas and efforts of club activities here in the San Francisco-Oakland Bay Area. The East Bay Club will be entertained by two films, "The Atom Goes to Sea" and "The Jet Story." A traffic breakfast was held on Aug. 19th at the Red Coach Inn, Los Gatos. Plans for future operation were discussed. Traffic: (Aug.) K6GK 384, W6VPC 69, QDW 28. (July) K6GK 305, W6VPC 75, HBF 52.

SAN FRANCISCO — SCM, Walter A. Buckley, W6GGC — The annual picnic held Aug. 26th by the San Francisco Club was a huge success. The Band Spanners Net meets on 28.7 Mc. the 1st and 3rd Wed. of the month on 2000. The Six-Meter Net of the Bay Area meets each Wed. and Sat. at 2000 on 53.5 Mc. All fellows and girls are invited to check in. K6HIW and K6OHG are on 6 meters with a five-element beam, a Gonset Communicator and a Harvey-Wells. K6GHU and K6JRZ also are active on 6 meters. Harry Witzke was the winner of the "ham clock" at the last San Francisco meeting. K6SNU is a new member of the Humboldt Radio Club but EQQ and QCS have both moved out of that vicinity. The boys in the Humboldt Club are trying to get a local net started on 160 meters. The San Francisco Shipyard Club held a "Beerbust" at Hamm's Brewery and also had a good turnout at its annual picnic. As usual the HAMS (Red Cross club) joined in the fun. The Cathay Radio Club participated in the CQ V.H.F. Contest August 18-19. Each meeting night finds new join-ups in the club. The club has started code and theory classes for those interested in obtaining a license. Sympathy is extended to the family of JQC, Edward Hintz, who joined "Silent Keys" on Aug. 11th. K6GLN is a new member of the Marin Amateur Radio Club. K6BTH was appointed chairman of a committee to establish a club station at the San Rafael Red Cross Chapter. This SCM attended the August meeting of the Tamalpais Radio Club and had an enjoyable evening chatting with club members.

(*Continued on page 114*)



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The Westrex 7-Series offers a choice of carrier power of either 100 or 350 watts. The frequency range is between 1.6 and 27.5 megacycles and features a stability of better than ±.001%.

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It is simple to operate.

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The local Ladies' Radio Club has resumed meetings. Any ladies intending to join the club, please contact Myrtle Browne, the XYL of AHH, 355 Howth St., San Francisco, and she will gladly forward data on request. CBE says DX still is going good on 20-meter c.w. and he is working on a Heterodyne exciter. WJF and FEA report they had a very enjoyable vacation visiting different amateurs en route. GGC has been inactive because of moving to a new QTH, but hopes to be back on shortly. Traffic: W6FEA 126, WJF 46, PHT 12, GHI 6, GQA 4.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — K6EHT is now the manager of CVN so, fellows, give Neil a big hand and a lot of help. Sorry to hear that there wasn't an amateur rig on at the California State Fair. It looks like OYO will be the new EC for the Tehama County Amateur Radio Club. This is wonderful as we have had no EC for that area. See "With the AREC" for details on how amateur radio rounded up some blood of a rare type for an emergency need in Vallejo. Well done, fellows and gals. This shows that amateur radio is on the spot when any emergency arises. The rest of the reports will follow next month and, fellows and gals, keep up the very, very wonderful work in the future as you have in the past. Traffic: K6EHT 99.

SAN JOAQUIN VALLEY — SCM, Ralph Saroyan, W6JPU — K6HII is active on several phone bands and is checking in on the California Civil Defense Net at 0900 every morning and with the Fresno Civil Defense Net at 2000 every Monday. Make it a point to check in on these important nets. The California Civil Defense Net is on 3990 kc. and the Fresno Civil Defense Net is on 3995 kc. The Fresno Amateur Radio Club is holding weekly hidden transmitter hunts on Thurs. at 7:30 P.M. Come on out and see how good you are. UBK has ordered a 20-A exciter. OWL is on 20 meters with a fine signal knocking over DX. K6GTI took time out to put in a swimming pool in his back yard, but also hooked his ground radials to the iron in the pool. BAN is heard around mobiling with a plate-modulated rig. New mobiles heard around town are K6KYW and K6KQM. K6GTI is on 20 meters but not without TVI. ENQ, ZFN, OWL, UBK, DUD and K6KYW all helped out with 2-meter gear in supplying communication for the Hot Rod Club. They report they had very good coverage. K6QOK is on the sick list. PPO is heard nightly on the Buzzard's Net. SUV has ten months to go on his new final. JPS is on 20 meters with a 304TL. JUK has a 60-foot pole in his yard for his sky hook. Keep your monthly reports coming in. See you at the next Fresno Radio Club meeting, the 2nd Fri. in the Power Building, Fresno. Traffic: W6ADB 98.

ROANOKE DIVISION

NORTH CAROLINA — SCM, B. Riley Fowler, W4RRH — SEC: ZG. PAM: DRC. All except three ECs reported this month. We have at this time 375 AREC members in the State. Fellows, this is an excellent report considering most of you have been working only since April. Keep up the good work. The Asheville Club received a nice note for its work in the recent c.d. drill. TLA and others gave a talk before a civic group. We need more of this, fellows. Don't miss a chance to give amateur radio a boost. The SEC urges that each of you get your emergency gear ready for the storm season. My thanks to each of you who sent well wishes to the XYL during her stay in the hospital. The generator drill of Aug. 28th was a success in many ways. We had over 60 per cent of the known generators in operation. The next drill will be held Dec. 11, 1956. Please, everyone, have the old gear in operation on that date. The Morganton Radio Club, Inc. had an exhibit and ham shack at the Burke County Fair. President ZWF is to be commended, along with the active members, for this fine exhibit. Do anything you can, fellows, to keep the public aware of the potential of amateur radio. Radio clubs should write for the booklet, *Publicity*, from the ARRL. This has many excellent ideas. K4AJR has a new DX-100 on the air. Traffic: W4GXR 78, RRH 71, DSO 67, DRC 45, BCE 34, ZWF 25, K4AJR 11, W4VBO 10, FUS 8, FDP7, BAW 6.

SOUTH CAROLINA — SCM, Bryson L. McGraw, W4HMG — Thanks to VJI and his untiring efforts the Columbia gang now has a new club house de luxe and it appears that MN now has a permanent home. Orchids to K4BXH, our only girl member of the South Carolina C.W. Net. Her stints at NCS are very good. Congrats to HTR and BXH on securing Section Net certificates. Because of the resignation of ZRH, our new SEC is SOF. Proud owners of new gas-emergency generators are ANK, FFH, BNN, SOY, DXW and EMV. K4CKB is the papa of a new 9-lb. YL. 3NIR is sporting a new B&W rig. YOH is proud of his new DX-100 and its FB keying. GLT dropped the "N." The c.w. gang is showing a great deal of interest in ORS appointments, thanks to AKC, our RM. HDR is doing a great job as secretary of the Palmetto Club which has a new club roster of 65 members. Thanks to AIB for a very complete report from the Aiken Club on Operation Alert. JIY set up in the c.d. headquarters and ZVY was mobile. Others in the club assisting were AYD, HDR, ABF, PED and KYN. ZQS and CAL are the proud new owners of an

(Continued on page 116)

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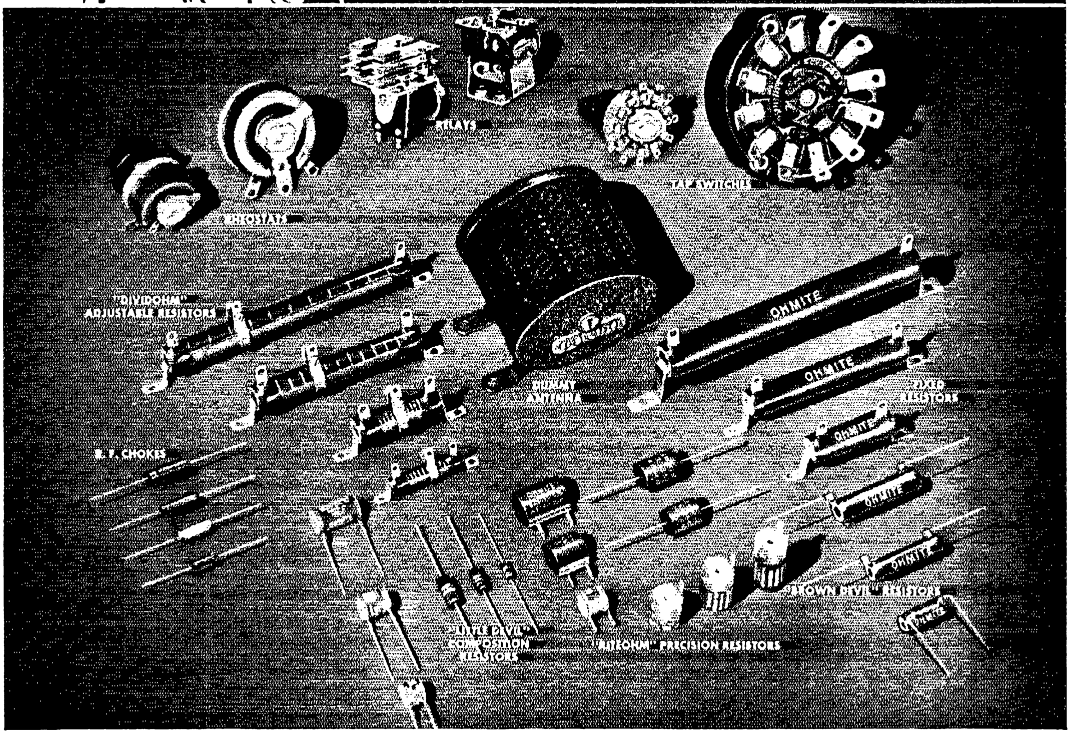

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Elmac mobile rig customized by CAL. HAP has come a long way in a short time and is now one of our very FB c.w. operators. ANK advises that MARS needs a station in the Georgetown Area. Thanks to the Virginia Phone Net for its fine monthly bulletin. EDQ sure packs a big signal with his Ranger. TYS reports good DX via s.s.b. The Columbia gang's hidden transmitter hunt had more than 30 contestants and much interest was shown in DF gear. FFH, our PAM, reports Phone NCS as follows: Mon. COA, Tue. SOF, Wed. JCP, Thurs. FFH, Fri. MPR, Sun. (A.M.) DX, Sun. (P.M.) BZX, Sun. mobiles DXW (1400). Traffic: W4ZIZ 167, ANK 11.

VIRGINIA — SCM, John Carl Morgan, W4KX — K4AET reports the VFN boys seem to approve the new procedure. K4DKA reports the Roanoke Club operated CA/4 at the Roanoke Fair. Our newest club is the Seawells Point ARC (K4NDC), at Norfolk Naval Base. TLR has a permanent radio room with much fine gear at the new C.D. Control Center. LW is back on the air from his new Arlington QTH. KFC, now at his new Clifton QTH, says a couple of years will see everything back in order. Vic reports the PVRC was visited by KH6IJ, KP4KD and OD5BS. IAYC traded in that call for a new one, K4KNP. CXQ, K4BUG and K4BUI spent a week with AAD, who's sporting a new kw final. K4DWP and K4EAQ both made BPL for the second time. K4IYE made General Class, as did YL K4EUU. New Petersburg hams are KN4JUL, KN4JUR and KN4JYQ, the XYL of QF. BIJ racked up country No. 100 in 8 months with 140 watts and NO beam. JUJ has 122 confirmed. CWB finally eked an Asia QSL for WAC. IA has 109 confirmed. CPN has a new 75A-4, but we understand he had to hock the Viking to pay for it and is now known as General Class SWL! CXQ, VPI-bound, turns the editorship of *PARC-Bench News* over to K4EUU. G2AH, in the U. S. for the next two years at the Navy Building, Washington, wants to meet area hams. Please, gang, put your CALL and full mail address on all correspondence with the SCM. I receive numerous cards signed with only the first name, which is very ambiguous, and many of the newer calls are not in the call book. Traffic: W4TLR 235, K4DWP 219, EAQ 212, AET 138, W4IA 115, K4BUI 73, KNP 65, W4BZE 58, ZM 52, FKP 39, AAD 27, RHC 27, K4DKA 18, W4QDY 15, KX 14, BYZ 13, SZT 12, K4ASU 10, W4WYC 10, WC 9, K4BYS 8, W4TFX 8, KFC 7, CWB 4, K4EAS 4, W4PVA 4, K4CZB 1.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — SEC: GEP. PAMs: FGL and GCZ RMs: GBF, DFC and HZA. Congratulations to the Weston Club on the very successful picnic at Jackson Mills. PY7AEU visited FMU and FMU visited PQQ. We are very sorry to lose JWX as an EC and RM in Fairmont. George is transferring to Ohio State University to teach and work on his PhD. The c.w. and phone nets have started operation. Let s all get behind these two nets and put them on the traffic map. MLX visited the Hannibal (Mo.) Radio Club and operated Field Day with them. The Morgantown Club prepared a letter explaining the problems of TVI to be sent to set-owners experiencing difficulty. KCL is in school at the University of Cincinnati and operates YX occasionally. WIW has a new DX 100. Congrats to LSH on passing the General Class exam. The Morgantown Club also had a very successful picnic recently. We are all very sorry to learn that SYJ and his XYL and son passed away in an Airplane crash in Toledo. UMR still is doing a fine DX job. NYH attended the Kingsport, Tenn. hamfest. 4URF/8 is experimenting with antennas. 3DHU/8 is a rifle instructor at Camp Alleghany. N8BOP and N8BUM (brother and sister) are two new Novices at Sinks Grove. VII has a new control panel in operation for his rigs. TQB and N8BLH were to have taken their Amateur Extra and General Class exams in Washington and to have visited League Headquarters. VMM worked at station WRON for the summer. YL 3CZT visited VOI recently and attended the Weston Club picnic. Ex-EZR got a two-letter call and is now 8VA. Traffic: W8PBO 61, HZA 58, BWK 36, NYH 20, PZT 5.

ROCKY MOUNTAIN DIVISION

COLORADO — SCM, James B. Simpson, WØHEM — NIT handled traffic from the Colorado State Fair in Pueblo and visited KQD and her OM for two days and eliminated the bugs from her transmitter. KJJ will be VP7VN after his transfer. BDR, the SCM of Iowa, and his XYL visited KQD and her OM and MYX. OXQ and family spent the summer at C.U. where he is studying for his doctor's degree in education. The Hi Noon Net meets Mon. through Sat. on 3945 at 1200. NCS: DGP and KQD. How about joining them, fellows? They will appreciate your help and you will enjoy it, too. KØBIL received his appointment as EC. SGG has completed his design for an all-band, horizontal, non-directional antenna and should be ready for the W-VE Contest. Let's hear the results on the antenna, Otto. NUU now has a 40-ft. tower with a three-element beam for 20, 15, and 10 meters now in operation. The new editor of the Denver Radio Club publication, *The Round Table*, is KØEVQ. He will appreciate receiving any interesting news. Your SCM, HEM, would appreciate news, comments, and other interesting items from all clubs. HEM is laid up with an illness but we hope he will be up and around

(Continued on page 118)

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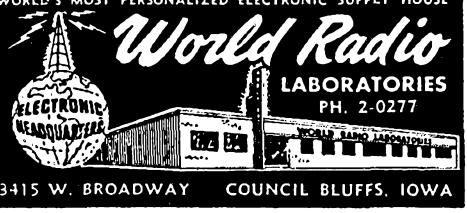

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soon. In the meantime the writer of this month's column, KØCEN, will do the best he can. Traffic: WØKQD 592, IA 417, KNØGSW 248, WØEKQ 185, NVU 120, NIT 101, KØDXF 84, WØJHI 83, DGP 30, HOP 30, KØBIL 10, WØCDX 8, KØCEN 5, WØNUU 4.

UTAH — SCM, James L. Dixon, W7LQE — YPC is receiving FB reports with his new antenna. YNW moved to California. QDS is on 20-meter phone with 250 watts and has regular KL7 skeds, using a new short-beam. QDJ has a new 50-Mc. 350-watt rig, with TVI. K6HXL/7 is on with TBS-50 and NC-300 from Clearfield. SAZ is having r.f. feed-back and converter troubles. LQE, working 20-meter c.w., is troubled with bad line noise, as is QNV. LQE, VTJ, NAY, ABI, DBR, NHL, DTB, YDW, YDZ, VHS, VRY, VSZ, VTA, YPC and WN7s DLW and DUG attended the WIMU Hamfest at Idaho, with LQE being elected president of WIMU for the next year. Novice Roundup: WN7EHY added a Navy RBL-5 receiver as double conversion. Don cleaned up TVI, and is a member of WCEN with CWD and EIF on the Novice band. EID will sked anyone needing Utah for WAS. EHY, ERK, ETC and ETF joined MARS. EMJ is on 15 meters with a 6L6, dipole and S40-B. DLW is using a 6L6 and a new NC-88.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Joe A. Shannon, W4MI — SEC: TKL. RM: KIX. PAM: K4AOZ. New in the section: KN4s KAK and KJZ, Alex City; KN4KJD, Athens; KN4s IPI and KBR, Mobile. Welcome, fellows! The Anniston Club reports the following new officers: SVM, pres.; UHA, vice-pres.; and OAO, reelected secy.-treas. The Tuscaloosa Club's new officers are K4GRA, pres.; KN4IPQ, vice-pres.; and RLG, reelected secy.-treas. NIQ finished the 20-watt portable/mobile 2-meter job. WHW reports from Mobile that the local emergency net had a successful drill and plans more. K4HNL and his XYL YZT have a new harmonic. NZM is displaying a DXCC certificate. GUA has joined the DX competition with a new 300-watter and quad. URW snapped out of the doldrums and fixed the mobile but forgot about the ignition noise! HYC has revamped and now sports a full gallon, and K4BVG finally got on phone. Transmitter hunts are perking up the mobile fans in Mobile. K4ANB is meeting the Hit and Bounce Net. TXO has a new 7.5-kw. power plant. YRO has a DX-35 with v.f.o. for sale; he wants a bigger job! DS is back on in York after 14 years of inactivity and HHG tells us that a new Novice in Demopolis is KN4KEL. WOG has been laid up with a back ailment but is getting back to normal. EWB has a modified BC-457 on 75 and 80 meters. GUV has a new DXCC certificate with plans for another hundred with the new 304THs grounded grid job. Traffic: W4RLG 168, K4ANB 118, BRS 89, AOZ 84, W4HON 81, KIX 54, DXB 36, TXO 31, TOI 29, K4BFF 27, W4CRY 25, YRO 25, TKL 21, BFX 20, EJZ 20, DGH 15, HHG 13, WAZ 11, WHW 10, WOG 10, RTQ 8, K4DRQ 6, W4EWB 4, GUV 4, NIQ 2, KN4KJD 1. (July) W4YRO 32, K4DRQ 14, W4OAO 13, K4AAQ 12, GRA 7, W4RYY 3, WOG 2.

EASTERN FLORIDA — SCM, Arthur H. Benzee, W4FE — Asst. SCM: John F. Porter, 4KGJ. SEC: IYT. ZJZ has an NC-300 and a 10-meter beam. WEM is now located at Augusta, Ga. The Gainesville Amateur Society has 31 members. K4s BUQ, BYI, EHF and JLI have dropped the "N." K4KMQ has his call after a four-month wait. SJZ has a new 40-foot tower with a 10-meter groundplane. DVR has completed the 1-kw. c.w. rig. LMT has a daily sked with DSN on 145.6 Mc. Dade County: WSJ and HIC have KWS-1s. The Dade Radio Club has a new home and meets the 1st and 3rd Tue. Labor Day patrol of all highways with many mobiles and portables kept speeders on guard. K4AG, GHA, W4IYT and DUH set portable to coordinate between mobiles of the Florida Highway Patrol hq. and the Sheriff's temporary hq. YJE reports 200 AREC members; this is the top county for the Southeastern Division. HGD has a Viking mobile. ENN recorded DEN to show up errors. BYG has a new mobile. CEJ and ZXL are on 2 meters. K9AVI is now K4KMS. K4IWT (ARCACS) has a direct wire to the weather bureau to relay hurricane advisories. K4IXG has the 6- and 2-meter rigs ready to go. K4BLM won the 1956 "Work All Flamingoes" trophy. ESJ has an RME-4300. The South Miami Radio Club call is K4JVA. IIL has a 75A-4. Now that we are all back from vacation, let's get those station activity and traffic reports in promptly on the first of each month. Traffic: W4WS 117, LMT 85, EHW 76, ZIR 69, IYT 64, DVR 47, AZJ 40, PJU 34, K4AHW 32, W4SJZ 20, BWR 6, ZJZ 2.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — SEC: HIZ. EC: MFY. RMs: XP and BVE. We regret to record the passing of George O. Foxworth, HJA. George was a fine radio amateur and gentleman. His passing leaves a great gap in our ranks. PLE has left our area and HIZ has been appointed SEC. BVE is RM for Okaloosa County and meets the 4th Regional Net on 3547 kc. K4APE is busy with OO work. The World's Long Distance Water Skiing run of 285 miles was well covered by ham radio. K4DKG acted as Net Control, with K4EGD/M, YES/M, K4BZN/M and PQW/M doing on-the-spot reporting.

(*Continued on page 120*)

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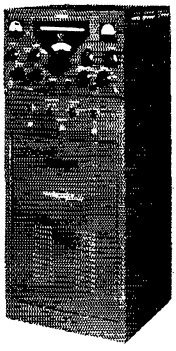

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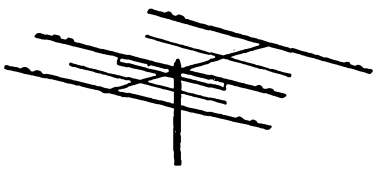

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UCY is enjoying 10 and looking at 6 meters. IJK comes up with an FB traffic report. JLW, NRX, PAA and GMS compare signal reports with DX each night on 15 meters. We welcome new hams K4KOS and K4KOT. BGG is now a college man. K4AGM has 15 states on 6 meters. QK reports on the Hurricane Net. JV is wondering if the big rig will still perk. JPD is operating 10 meters. K4DDD is working on mobile gear. IGF is another welcome newcomer. MS has completed the new 70-ft. tower and is planning beams for this winter. K4EHI still is after General Class. K4DKG now sports 350 watts to the 811s. NRX and PAA have new all-band beams perking FB. GMS is scouting a new tower. ACB is changing beams again. Hi. VR stays with 7 Mc. AXP keeps visiting the area hams. KN4ECP is awaiting his Tech. Class license. ZFL has a new NC-125. HBK will let the DX rest now that school has started. ZPN helps Novices with their code. KN4IVE and KN4IVD are hard at it. K4AH is in the new QTH. IFY and TJQ, from Panama City, are joining the AREC. KN4IYQ is after Technician Class. YUU is keeping the ham spark going in Tallahassee. NN is offering some FB gear for sale. YNA is president of the Tally Club. CHZ is at F.S.U. in pre-engineering. WN4ZHO is after General Class. EKW and BPJ are newcomers over Tally way. K4APE is the veep of the Tally Club. I appreciate the newsy report sent in by YUU. Keep it up, OM. I'd appreciate hearing from other parts of the section. Traffic: W4BVE 204, IJK 177, K4DKG 49.

GEORGIA — SCM, William F. Kennedy, W4CFJ — SEC: K4AUM. PAMs: LXE and ACH. RM: PIM. The GCEN meets on 3995 kc. at 1830 EST on Tue. and Thurs. and at 0800 EST on Sun.; the ATLCW meets on 7150 kc. at 2100 EST Sun.; the GSN meets Mon. through Fri. at 1900 EST on 3590 kc. PIM is NCS. The 75-meter Phone Mobile Net meets each Sun. at 1330 on 3995 kc. UUH is NCS. The Ten-meter Mobile Net meets each Sun. at 2200 on 29.6 Mc. VHW is NCS. The Georgia Cracker Net lost a very dear friend and active member on Aug. 16, 1956, when K4DOD, of Montezuma, died from the results of an automobile accident. The Georgia Cracker Radio Club held its annual picnic and meeting in Macon on Aug. 19th. New officers were elected as follows: CFJ, pres.; PMJ, Sun. NCS; K4AUM, Tue. NCS; BKK, Thurs. NCS; MZO, secy.; LXE historian. Best of luck, fellows. The Warner Robins Radio Club held its election on Aug. 6th and elected AQZ, pres.; K4HTL, vice-pres.; PGM secy. The club also gave 1ZPD a going-away party. The Teen-Age Radio Club is having a contest to see who can work the most DX. New Generals are K4JGS, ITJ, HBI, GXP, ILI and JTB. The new frequency effective Sept. 1st for GSN is 3595 kc. K4CFN and CFO have added another General Class licensee; she is K4GIA. BXV is wiring a new 20-A. K4CFN has a new Viking Valiant, the first in the U. S. DOC has just put up a new three-element all-band beam. K4DNL should be able to work some good DX on it now along with her OM, DOC. OVS is at Battey State Hospital getting built up for surgery, and would appreciate hearing from some of you fellows. We are looking forward to more station activity reports from all of you and hope all ECs will continue to report each and every month to their SEC. Traffic: W4PIM 177, BQF 82, DDY 47, BXV 39, PBK 28, ZD 19, CFJ 15, K4CFN 12, CFO 12, CZR 10, AFP 2.

WEST INDIES — SCM, William Werner, KP4DJ. SEC: HZ. KP4FAC and KP4ABA are Acting NCS of the Antilles Amateur Weather Net during UH's vacation in the States. A third NCS, VP2DJ, collects weather from stations at the southern end of the Net who are unheard in Puerto Rico because many VPs use battery-powered field sets. KP4ABD's steel tower and Telrex beam were blown down during the hurricane in Rio Piedras. KP4QA's 50-foot aluminum tower and 20M Hylite beam were broken into pieces by the storm. QA continues with a Windom antenna using a Viking II on 15 meters. MV built a one-element 15-meter rotary beam and now is building a Panda 3-bander beam. MS has a new three-element 15-meter beam. YT is converting his 20M Hylite to a Panda 3-bander. RD's Telrex 20-meter beam elements were broken in two by Hurricane Betsy. ZC runs 800 watts to p.p. 813s. W2JXF is visiting ZC at Canovanas. AZ put up a 2-element 20-meter beam and is operating s.s.b. with 20A alone. AAA is now General Class and has a short-doublet for 75 meters, and installed a 10-watt mobile for 75. DP is back from the States. KD brought back a Viking II and a Viking VFO when he returned from a Stateside vacation. BU installed sequential keying in his Viking II, and WD is doing the same. The radio club sent WT a corsage of orchids for her appearance before the Lions Club. AEF received his General Class license and is heard on 3925 kc. KP4FF returned from Germany and visited the PRARC but later left for Maine. W3URO/KP4 is waiting for KP4 call. VP2VA, of Tortola Island, a pioneer of the Antilles Amateur Weather Net, died of a heart attack Aug. 13th. WT has three transmitters and receivers and can monitor 3925 while operating on any other band. W5HXP has retired to KP4-Land. He uses Collins 32V-3, 75A-3 and a kw. final. HXP has been asked to reactivate MARS station KP4USA at Ft. Buchanan and is looking for help. AZ, ABA and DV are MARS members in the San Juan Area. DV is Captain in the CAP and Communications Officer. WP4AGT sends

(Continued on page 122)

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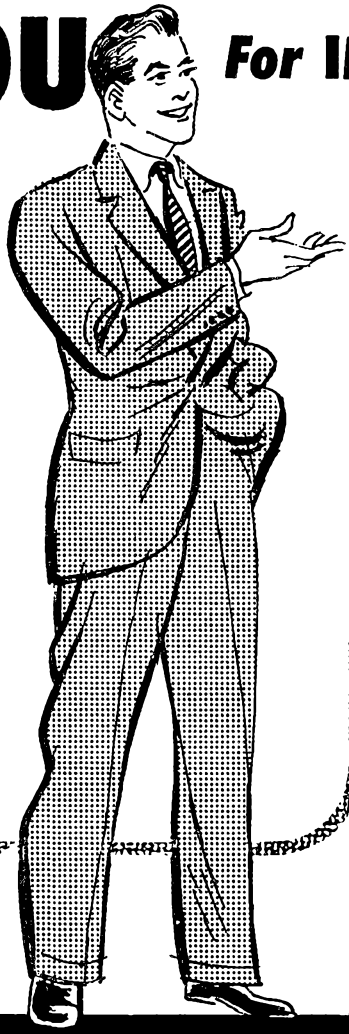

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greetings from Malmstrom AFB, Mont. He is radio operator on a B29 and has been heard from Thule, Greenland, to Albrook Field, Panama. The Guantanamo Amateur Radio Club is now on ARRL affiliated club. QM/mobile, near Mayaguez, summoned a telco repair crew when a truck knocked down a telephone pole and put WPRA off the air. His call was received by WT, who advised the telco of the difficulty. This communication provided action in minutes that would have taken hours. PW, IS and YD operated National Guard amateur station KP4WAC from the National Guard camp at Salinas, P. R. WP4AFL operated portable from Maricao on 3725 kc. and sent traffic to his family in Mayaguez via WT. KP4YX, ex-NCS of the Antilles Weather Net, writes from New York to say she now has a baby girl weighing six pounds. DO built his own boat called *Terror of the Seas* and will be operating maritime mobile shortly. ZW lost his beam in the storm and water got into the Viking. WP4AEO is now KP4. AFW runs phone patches at Ramey AFB. ABA's father gave him a Triplett VOM for his birthday, and the telco gave him a professional phone patch using hybrid coils in recognition of his help in getting emergency traffic through to the Governor from Yabucao. PZ took his beam down before the storm but found winds did not exceed 45-50 m.p.h. at Ensenada. CU was on during the storm with an emergency rig operating c.w. only. YF, at Ponce, came on with an emergency rig the day after the storm and handled traffic for the power company, to get permission for the Central of the South P/R Sugar Company to feed power to the town of Guanica. Traffic (Aug.) KP4WT 354, ZW 13. (July) KP4WT 199.

CANAL ZONE — SCM, Roger M. Howe, KZ5RM — The CZARA had a visit from HP1JF at its last club meeting to announce that Panama has signed the third-party traffic agreement and that the handling of third-party traffic between Panama and U. S. or C. Z. amateurs is now legal. This came about largely as the results of Chico's untiring efforts. He also told us that he had had the honor of handling traffic for several of the presidents during their recent visit here. Speaking of presidents, Juan is president of the Panama Radio League. KG reports that he and W7ACD teamed up to patch Sailor Vernon Gamble, a recent polio victim, to his folks in Shelley, Idaho. The contact started on c.w. from KG's home rig, which is not equipped with phone patch or modulator for that matter, but was completed after KG had QSYed to the CZARA station, JW. AE appeared on a TV quiz show and won the price of a new DX-100. Traffic: KZ5WA 160, LB 39, DG 38, RM 37, CF 33, AE 8

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, William J. Schuch, W6CMN — Asst. SCM: Albert F. Hill, jr., 6JQB. SEC: LIP. PAMs: LIP and K6BWD. RMs: BHG, TDO and GJP. DDE, GYH and LYG make BPL as usual. KN6OZJ has new equipment for 56 Mc. BHG still needs help on the SCN Net. USY is QRL night work. K6GUZ is QRL many nets. USY is busy with the KN Net. K6LVL has a nice traffic count. K6PLW is back from vacation and much portable activity. INH is back in the traffic fold. MEP is QRL the 2X4X6 Net. K6CHR still is winning hidden transmitter hunts. VSH is doing swell as NCS of the 2X4X6 Net. SOD is getting good action on 229 Mc. K6SSM is doing an FB job on SCN. CK is in the hospital. Get well, Pappy. TDO is the new RM of SCN. LIP needs reports from ECs. AM, HE and CMN worked at the Wescon Show with a historic display. K6LMW is dividing time between the hospital and home. UED has a new 21-Mc. beam. K6EIA is active in the YLRL nets. LYG is back in business in traffic. BUK has gone s.s.b. With the fall season the gang is getting back into the swing and sending in reports. Remember, "no news no write it." Traffic: W6DDE 1044, GYH 733, KN6OZJ 364, W6LYG 322, BHG 144, USY 112, K6GUZ 106, W6HJY 96, K6LVL 95, PLW 76, W6INH 68, MEP 63, VSH 47, K6SSM 38, W6CK 26, TDO 20, LIP 17, GJP 10, HOV 4, AM 3, CMN 3, BUK 1.

ARIZONA — SCM, Cameron A. Allen, W7OIF — Asst. SCM: Fred W. Wilgus, 7LJN. SEC: JYH: PAM of AEN: ASI: The AEN meets for drill Tue. and Thurs. at 7 P.M. MST on 3865 kc. First-class traffic will be taken at most any time of the day. The Grand Canyon Net meets Sun. at 9 A.M. MST on 7210 kc. The yearly hamfest at Ft. Huachuca was the best ever, with 177 turning out with all call areas represented. There were prizes galore and entertainment for everyone. The Collins Trailer was present and gave a demonstration of single sideband operation. The camp site in Garden Canyon was perfect with a clear cold mountain stream running through it. The Ft. Huachuca Radio Club did a bang-up job of putting on the hamfest. OQF is on the air from Tucson now. YHX will be on soon from Tucson, also. RUX is on 75-meter mobile from Texas and New Mexico and will be in Northern Arizona soon.

SAN DIEGO — SCM, Don Stansifer, W6LRU — JVA now has worked 60 countries. New operators at IAB are K6HZF and K6SLB. RET, in Chula Vista, scheduled the Scripps ship *Horizon* when it was in the Pacific. BOY was the operator on the *Horizon*. New officers of the Con-

(*Continued on page 124*)

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vair Club are K6DBJ, pres.; HME, vice-pres.; K6ITA, secy.; and K6CZF, treas. A family picnic was held by the Convair Club and was a huge success. The 10-meter EC, WYA, and his wife, K6BPK, are the proud parents of a baby girl born Aug. 24th. The Helix Club held a Sunday picnic for members, friends and their families in September at Holliday Ranch, east of El Cajon. CAE vacationed to Reno and Central California. NIF again is active in the area after a number of years as 6NIF/4 in Florida. KN6ONV is the proud father of a boy. GBG, who is now in DU-Land, sends his regards to the gang. He has now received DXCC and WAVK for operating he did while in San Diego. K6IPV has a 75A-1 receiver. K6BHM, a new DX-er, now has 48 countries. The 10-meter County hidden transmitter hunt was won by FOU, with an SWL second, WYA third, K6ESX fourth and K6BHM fifth. KUU acted as Net Control for the 75-meter AREC Net during the summer while VFT, the SEC, was on active duty in the Army at Fort Sill, Okla. K6RWM is active on 10- and 15-meter phone with a DX-100. UZL continues to lead the local gang in DX worked on 15-meter phone. The SCM hopes to receive more news for this column now that the summer is over. News from Orange and Imperial Counties is especially welcome and will be used. My deadline is the 7th of the month. Traffic: (Aug.) W6IAB 2425, K6LXL 96, W6LYF 12, JVA 4. (July) W6IAB 2319.

SANTA BARBARA — SCM, William B. Farwell, W6QIW — Asst. SCM: Betty Wilson, 6REF. OXJ took an air trip to Washington, D. C., for an extended stay. MSG has a continuous monitor on 145.3 Mc. AGO, BRY, THA and FYW participated in the first test of San Luis Obispo's new c.d. station on 29.5 Mc. BRY was mobile and also contacted YCF from Cuesta Grade. DTY has a new DX-35 for his all-band exciter and will concentrate on 15-meter DX with an 8JK beam. New hams in Oxnard are KN6TFU, K6OFO, KN6OFD, 7AOG, 7SXF, 7RFJ and ØKYU. K6LXW just moved into the Ojai Area from San Leandro. REF is back to 150 watts with a Viking I and has a new crank-up tower for the 20-meter beam. DTY will resume OBS skeds on the 80-40-meter Novice bands soon. The Port Hueneme CBC Base ARC is active with a BC-610F on 20 meters and worked KC4USA. K6CMV has the only General Class, or better, license in the club at present but hopes to have at least four operators to man the station soon. K6CKU and REF are frequent visiting operators. Traffic: W6QIW 62, K6KPU 25, KCI 16, NBI 8, W6REF 3, DTY 2.

WEST GULF DIVISION

NORTHERN TEXAS — SCM, Ray A. Thacker, W5TFP — SEC: PYI. PAM: IWQ and YKT. RMs: KBB and PCN. Amarillo ARC's new officers are KFQ, pres.; YYR, vice-pres.; COQ, secy.; PCN, treas. UBW made DXCC as well as WAS and WAC on 15 meters. DTA/5 vacationed in Arkansas. AHC and ZTG are beginning their college work this year. RHP reports 87 per cent attendance on NETEN. The newly-elected NCS and ANCS are GZU and ETD. KN5COD did an FB job of publicity for the recent hamfest held by the Central Texas ARC in Waco. All of us regretted to receive CF's letter advising he would be unable to accept nomination as director again. We hope the XYL has a speedy recovery. GPO and GNE are new OO and OBS. KN5GVN went the DX-35 route. The Wichita Falls ARC's new club house is finished and in use. The club has 38 in its Novice class now in session. That brand-new BC-610F sure looks like a dream, too. Officers are ZKT, pres.; TTY, vice-pres.; GPO, secy.; TLW, treas. LGY reports the Texas YL Round-Up Net is sponsoring a YL-OM certificate for those working 25 members. VYX is now at Texas U. CTM vacationed in Missouri with his parents. Are you all set for Conelrad monitoring January 2nd? Let's get going! I have been advised by Headquarters that I was duly elected as SCM for the coming two years. I'll do my very best while in office. Please let me know how I can help YOU!! Traffic: W5BTH 497, DTA/5 483, UBW 395, AHC 136, BKH 84, K5EMR 83, W5KPB 70, TFP 29, CF 26, YKT 11.

OKLAHOMA — SCM, Ewing Canaday, W5GIQ — Asst. SCM: James R. Booker, 5ADC. SEC: KY. PAM: MFX. I know all Oklahoma hams and traffic men all over the nation are going to miss GVS, who died of a heart attack on Aug. 28th. Bill's steady fist and friendly voice brought encouragement to many young hams handling traffic for the first time and he trained more Novices than perhaps any other ham in the State. As RM he did much to build the Oklahoma C.W. Traffic Net. YPI has moved to Oklahoma from Texas. ØSLL and 5BUX are new employees at the CAA center in Oklahoma City. KL7ADQ has become K5GWJ. TKC is back from a Naval Reserve cruise in the Gulf of Mexico. KN5HFS is a new Novice in Oklahoma City. ZKJ and K5EXU have new DX-100s and JCW a Johnson Valiant. WTC has a new 300-watt rig. JXM has a new 500-watt rig. BSV operated mobile while on his vacation in Canada but found that the VEs do little hamming in the summer. EKA and MRK found themselves vacationing in the same town in Colorado, to their mutual surprise. With cooler weather and better conditions activity in general is picking up after the summer slump. Prospects

(Continued on page 126)

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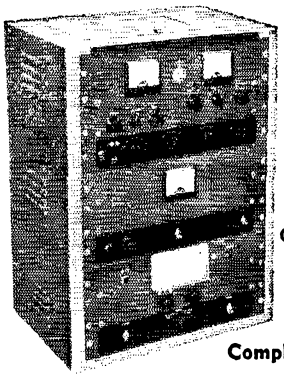

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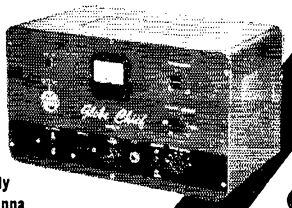

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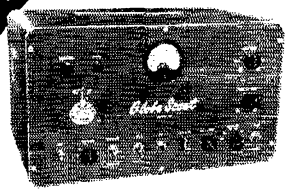

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look good for our new daily schedule of the Oklahoma Phone Emergency Net. Your participation can make this a dandy traffic outlet. Traffic: (Aug.) W5ADC 45, FEC 41, K5CAY 36, W5MFX 36, QAC 24, EHC 20, K5AOV 19, W5CCK 16, RST 14, K5CBA 13, DUJ 13, W5GIQ 8, JXM 5, UCT 3. (July) W5FEC 30, VAX 4.

SOUTHERN TEXAS — SCM Morley Bartholomew, W5QDX — SEC: QEM. MVL reports there is considerable s.s.b. activity in the El Paso Area. QEM visited the El Paso ARC while on a vacation trip through Colorado, Arizona and New Mexico. GHE and AQN are on 2 meters with an ARC-5. THU, WXT and DKK and his XYL were among those attending the Zone 3 picnic in Eagle Pass. DKF is the new editor of *Gutter Dope*. HEX is attending school in Colorado. RPH is now a member of Uncle Sam's Air Force. The El Paso Club station, ES, operated from a mountain top south of Cloudcroft, N. M., during the September V.H.F. Party. Results of the clubs 2- and 6-meter activity from this 9000-ft. elevation are not yet in, but they should be interesting. Because of the nature of my work, I feel the duties of the SCM can be fulfilled much better by someone actively engaged in ham radio. My work does not permit me to spend enough time in pursuit of this hobby to keep abreast of events. Many thanks to those of you who have assisted me the past year and a half. I hope you will continue to assist QEM, who will be your Acting SCM until the election is held. Traffic: K5AJP 35.

NEW MEXICO — SCM, Einar H. Morterud, W5FPB — SEC: FHP. RM: RKS. PAM: DVA. The NMEPN meets on 3838 kc. Tue. and Thurs. at 1800 MST, Sun. at 0730; the NM Breakfast Club meets on 3838 kc. daily except Sun. at 0700. RKS transmits Official Bulletins at 1930 MST on 7100 kc. Mon., Wed. and Fri. and will stand by after the Bulletins for any traffic. K5BLY is leaving Gallup. The Santa Fe Radio Club is reorganizing. NSV and NTN assisted the Civil Air Patrol during a search for an aircraft. PBV spent several days at Tucumcari on Civil Aeronautics Administration duties. FED has moved to Farmington from Texas. QNT has a DX-100. NBZ worked VR3B on 20 meters. SGC has started a wholesale radio store and servicing department. GVB has been working on an industrial microwave installation. Betsy, KN5GYA, is the daughter of K5DAA and DAB. Fifty-four amateurs attended the picnic sponsored by the Cavern City ARC Aug. 26th. Traffic: (Aug.) W5BIII 2. (July) K5DAA 10, W5DVA 9, ROH 1.

CANADIAN DIVISION

MARITIME — SCM, D. E. Weeks, VE1WB — Asst. SCM: Aaron Solomon, 1OC. Congratulations to the North Shore Club on the excellent job of staging the ARRL Convention at Bathurst in September. Happenings at the Hamfest: The officers of the newly-formed Nova Scotia Assn. are FH, pres.; QM vice-pres.; VN, secy.-treas. The NBARA's new officers are EE, pres.; ABZ and UL, vice-pres.; UT, secy.-treas. These associations need your support, fellows. How about it? The Brown-Holder DX Cup was won by FH while FQ was awarded the GR Memorial Trophy. PF was first in locating the hidden transmitter. UT now holds an OBS appointment. BN has a cubical quad antenna. DG (ex-4AIH and 7AHA) now is located on Cape Breton and reports good DX conditions from the East Coast. The CBEN meets Sun. & Wed. on 3750 and 3740 kc. The NBARA (Sun. 1000 hours) and NBAREC (Wed. 1830 hours) Nets have moved to 3790 kc. VO News: The Newfoundland Club has a new secretary, K4GSG/VO1 replacing VO1AG. Millie and her husband, VO1Q, have moved to VE3-Land. W1JSH has returned to the U. S. A. and WØCZK replaces him as C.D. Radio Officer. VO1T and his XYL, Mary, were honored by the Newfoundland Club for their nine years of service to the Newfoundland Net. Traffic: VE1FQ 144, UT 52, FH 50, ME 16, OC 14, BN 13, DB 6.

ONTARIO — SCM, Richard W. Roberts, VE3NG — Our sympathy to KM on the loss of his father. We met with PH and Sid Prior, an SWL, at the CNE in Toronto. Many W hams also were visitors to this famous exhibition. The FB effort on the Air Show by Toronto mobileers, under EC DSM, was very much appreciated by the Toronto Flying Club. Those active were RU, NG, BUT, DLS, YD, DXD and DSM. The Muskeg Net reports on FB effort under the guidance of NCS DSX. The frequency is 3750 kc. BUR reports for the ECN and EAN and has a nice traffic total. DN is busy as OBS on 7060 kc. APL, in Minden, will accept traffic for that area. We regret that BPF is a Silent Key. HK is back on the Ontario Phone Nets. DTO is back from VE6-Land. ARF and his XYL sked nightly from Toronto to Lake Mazinaw. Dot is DVM. TA is mobile while commuting from Toronto to Unionville daily. Early morning mobileers are DSM, YD, DTO, NG, ARF, BFK, CO, KM, ADD and AMB. DLS has a new QTH. DQX is busy as OBS on 75 meters. HE reports a quiet summer as OO. Most clubs have now renewed meetings. New officers will be elected and we would like to have your listings for this column. Club papers are very welcome, also. GJ QSOs regularly with W2OY with solid copy on both ends. Congrats to AEJ and AAW on their appointments as OPS. Storm conditions in the Metro Toronto Area found the

(Continued on page 128)

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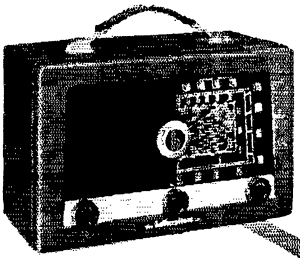

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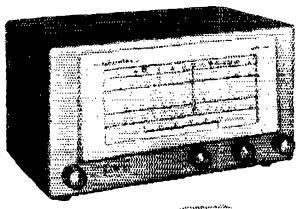

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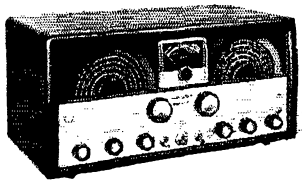

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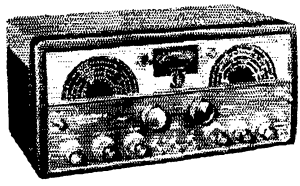

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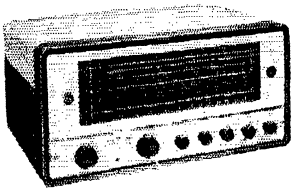

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AREC on stand-by during the small twister in August. I still advocate that 3765 kc., our emergency frequency, be kept free of QSOs, etc. Please QSY, men. Mobiles, please note. BBH is active again after rig trouble. AJA vacationed via mobile at Meaford and Lake Mazinaw. VKs and ZLs were worked on 14 Mc. Traffic: VE3BUR 122, AML 82, NO 74, NG 49, DQX 32, DSM 30, DPO 19, AJR 15, APL 5, SG 4.

QUEBEC — SCM, Gordon A. Lynn, VE2GL — TX has gone mobile and has an all-band 6146 with a base-loaded whip. UM has rebuilt with an 813 final all-band switching rig. BV is rebuilding to have the 813 in final and has the VFO completed. DR continues with PQN tri-weekly on 3670 kc. OR has returned from VE1-Land, where he did considerable portable work. HV maintains daily early morning skeds with the W1 gang, which have continued for ten years. ATL works 80 and 20 meters and worked his first SM on 20 and is readying for 10-meter phone. The Northland Net has combined with the Gold Belt Net of VE3-Land on 3750 kc. with the probable name of the Muskeg Net. EC skeds AEM and KJ daily and APP on Sun. on 3695-kc. c.w. AUH is proud of his first VK on 20-meter phone. AOL, AJD, AGI and AAE are active on 3.7-Mc. phone from the St. Maurice Valley Area. AEK is back on 80 meters. EG continues active on 10 meters and handles quite a bit of traffic. He is getting organized for mobile, has a Gonset G-66 receiver and plans a companion transmitter. Traffic: (Aug.) VE2DR 64, EG 43, ATL 42, EC 28, FL 8, (July) VE2EG 73, DR 54, FL 9.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — PAM: OD. RM: XG. It is with sincere regret that I announce the passing of one of Alberta's oldest and most respected amateurs, C.W.D. "Jake" Allen passed away peacefully in his sleep in the early hours of Sept. 7th at Winnipeg. Jake was for many years Radio Inspector in Edmonton for the Department of Transport. He was promoted to District Superintendent and left Edmonton some two years ago for Winnipeg to assume a similar post. While in Alberta he held the amateur call VE6OK. Always an ardent c.w. operator he will long be remembered by all who know him. OD and his XYL spent four days vacationing in Edmonton. WL reports the Calgary gang is going for beams in anticipation of DX this winter. MJ is planning mobile operation. DZ, WS and AS now have 144-Mc. mobile gear working. The Northern Alberta Club of Edmonton, which meets the 3rd Fri. of each month at the St. John Ambulance Building, resumed meetings Sept. 21st. Traffic: VE6MJ 6, TT 4.

BRITISH COLUMBIA — SCM, Peter M. McIntyre, VE7JT — Everybody has been conspicuous by his absence of late because of summer vacations, rebuilding, antenna fixing and the usual summer lack of interest in amateur radio. RS reports that the Chilliwack Radio Club is going full blast in organizing its instruction classes for fall. AFA1M and RS operated mobile and portable, respectively, from the Kelowna Area during vacation. Owners of NC-300s should inquire of FS of his unique method of tuning said receiver for best results. Hi. AIO still is plagued by line noise. If it is as bad as at this QTH I feel sorry for him. From Nanaimo we hear DH on s.s.b. and also mobile. SH, Edna, is on again. AOG is working RTTY on 2 meters. ALL is back on phone. AIK started to build a rig and ended up with a car. This information was gleaned from three correspondents. We hope the remainder of you are resting in peace and not pieces. Traffic: VE7DH 14, AIO 9, FS 5.

Strays

The following is quoted from a letter recently received at Hq. Sorry, the operator has to operate under cover, and we can't disclose his identity, but we assure you that it's not fiction.

"Believe I have a new one in the way of DX handicaps. This is one Moslem country where the women are in complete purdah, and each local family has high walls around its compounds to prevent any males from seeing the women. The other day I was on my roof trying to tune up the matching section of my W8JK antenna when a very irate local citizen appeared and wanted to haul me off to jail. It seems that from my roof-top vantage point I might have seen his women folk, and he was really sore. Frankly, I was so preoccupied with the antenna (which still isn't tuned up) that I couldn't have cared less about feminine pulchritude. I finally talked him out of taking me to jail, but I haven't been on the roof since! The neighbor, however, has softened and says that if I notify him in advance, thus giving him a chance to hide his women, he will not object to further roof-top work on the antenna."

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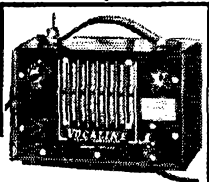

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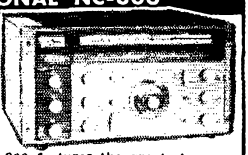

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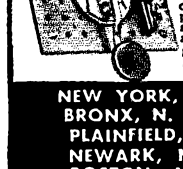

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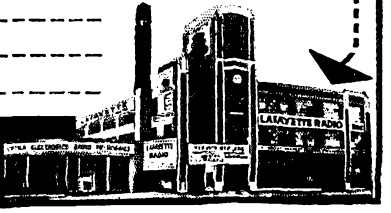

108/144-Mc. Converter

(Continued from page 15)

Some fellows go so far as to install a relay right at the tube grid which shorts it to ground when the transmitter comes on. Whatever system you prefer, it's worth thinking about if you have high power.

In closing, a few references are given below for those who are interested in reading up a bit on this business of noise figure — what it means and some of the things connected with it. These references are not constructional articles, but instead, present some of the theory involved.

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Houlding, "Noise Factor of Conventional V.H.F. Amplifiers," *Wireless Engineer*, Nov., 1953, p. 281. Part II Dec., 1953, p. 299.

Pierce, "Physical Sources of Noise," *Proc. IRE*, May, 1956, p. 601.

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Wallman, Macnee and Gadsen, "A Low-Noise Amplifier," *Proc. IRE*, July, 1953, p. 890.

"Standards on Election Devices: Methods of Measuring Noise," *Proc. IRE*, July, 1953, p. 890.

Nichols and Harris, "Limitation of Radio Receiver Sensitivity Caused by Radio Noise in the Frequency Range, 50 to 1,000 Megacycles per Second," Research Report EE 268, School of Electrical Engineering, Cornell University, Sept. 10, 1955.

Phasing-Type S.S.B. Exciters

(Continued from page 20)

the Central Electronics PS-1 or the B & W 2Q4 networks, the lower of the two voltages should appear on the lead strapped to terminals 3 and 7.[4]

Assuming the audio system looks OK, any remaining difficulty is probably in the r.f. phase-shift network or in the balanced modulators. First, check the action of the "carrier" controls. The point of minimum carrier output should occur when each of the two controls is within about the center third of its rotation range. If one of them has to be set 'way off to one side in order to achieve carrier balance, you can suspect that one of the modulator tubes or crystals is defective.

If the balance points look OK, try unbalancing each of the two "carrier" controls one at a time by the same amount, say, 10 degrees of shaft rotation. The r.f. output produced by unbalancing each control should be about the same. If the action of one of them seems to be sluggish, a further check may be made by temporarily interchanging the leads carrying r.f. drive to the two balanced-modulator pairs. Now, if the inconsistent action of the "carrier" controls seems to

(Continued on page 132)

[4] The similarity of terminal numbers is purely a coincidence; the two manufacturers' designs are different and the rest of the terminal numbers are different.

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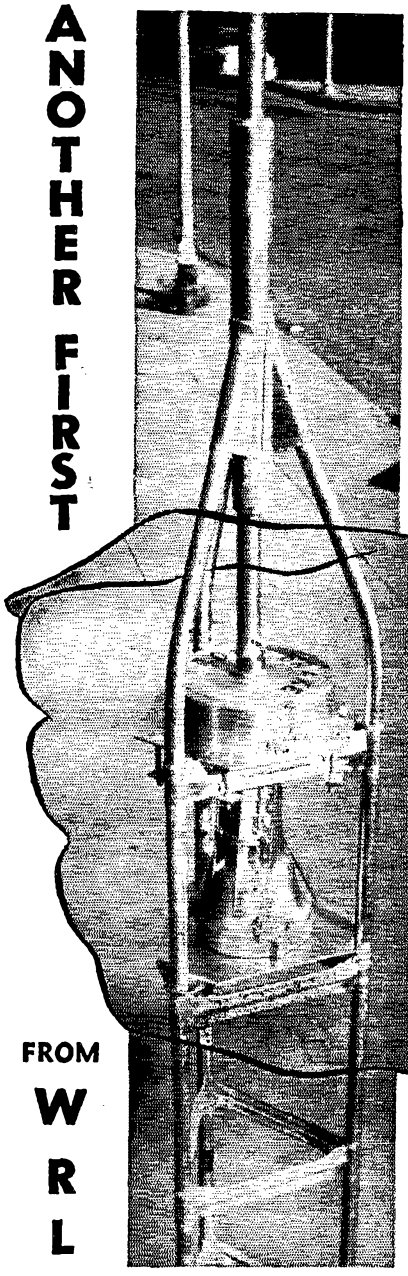

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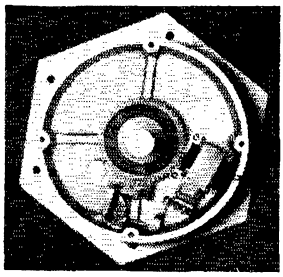

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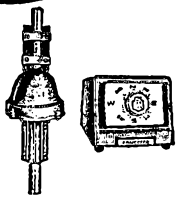

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follow this change, it is an indication that something is wrong with the r.f. phase-shift network, whereas if the same control continues to perform poorly, the trouble probably lies in that balanced modulator.

Even when there is no actual component trouble anywhere in the exciter, it is possible for the r.f. phase-shift network to be so far off that the desired side-band adjustments just can't seem to be made. This is especially true of networks that have two variable elements, such as Fig. 2B. If you are suspicious of the r.f. phase-shift network, the scheme outlined below can be used to set this network independently of everything else in the exciter.

It is based on the principle that phase modulation (p.m.) requires the two modulators to be supplied with carriers that are 90 degrees apart, and also that pure p.m. is characterized by the absence of residual a.m. at the fundamental frequency. It should be possible, therefore, to set up the required 90-degree phase relationship by watching the p.m. signal on a scope.

The test setup is as shown in Fig. 3, with the oscilloscope. Set up the exciter for phase modulation (p.m.) according to its instructions, and introduce a moderate amount of carrier. Now apply audio drive until 20–30 per cent modulation appears on the scope. Referring to Fig. 6, adjust the r.f. phase-shift network until the ripple peaks are even with each other as in Fig. 6B. The "r.f. phasing" adjustment made this way should be very close to the final setting required for best side-band suppression.

Conelrad Alarm

(*Continued from page 83*)

slip a 1-inch metal pillar over the screw and then insert the screw through the mounting hole in the metal band which surrounds the capacitor. Then mount the rectifier and the foot for the tie-point strip, in that order. A nut at the top of the pile locks the components in place. The tie-point should have four terminals in addition to the mounting foot.

Wiring between the parts mounted on the face of the case and those located on the flat plate is facilitated by a pair of tie-point strips mounted along the front edge (as seen in the interior view) of the plate. A total of 11 terminals can be used to advantage.

The cable shown in the interior view includes some extra leads used while experimenting with the unit; only four leads to the receiver are actually required. Two of these are for the control voltage for V_{2A} (a.v.c. line and common bus), and the other two pick up 115 volts a.c. for T_2. The cable may be terminated in a plug as illustrated or the wires may be directly connected at appropriate points inside the receiver.

A pair of leads to relay contacts K_{1B} must also be provided. At the transmitter end, this 2-wire cable may be connected in series with one side of the a.c. line to the power supply. If the

(*Continued on page 134*)

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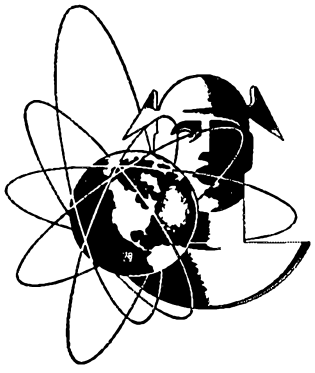

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leads are made plug-in at the transmitter end, a male plug should be used on the leads and a female receptacle on the transmitter chassis. This will avoid having any hot exposed terminals when the line from K_{1B} is unplugged.

Testing and Operating

The chances are pretty good that right after the receiver and the monitor have been turned on the red lamp will light and — if you haven't had the foresight to open S_2 to prevent the noise — the buzzer will sound. Tune the receiver to a broadcast station and see if the red light goes out and the green light comes on. If this happens, close S_3 and you're all set for Conelrad compliance. If the "safe" light does not come on, tune around for a signal strong enough to actuate the alarm. Should the signal of greatest apparent strength fail to trigger the monitor, leave the receiver tuned to this signal and then momentarily press S_2. The alarm should now lock on "safe," provided the a.v.c. circuit delivers 0.7 volt or more to V_{2A}.

The only d.c. measurements of any consequence that need be made in checking through the alarm circuit are the output voltage of the power supply and the voltage at the cathode of V_{2B}. The proper voltages at these two points are given on the circuit diagram. In the event that the alarm fails to respond properly, it may be advisable to check the a.v.c. voltage with a v.t.v.m.

Operation Earthworm

(Continued from page 24)

circuit rising vertically on the car, thereby making the car a non-directional vertical radiator.

Of all mobile installations, railway service is unquestionably the toughest. For example, vibration reached such a point that we were forced to tie down the lid of the 1000A to prevent it bouncing open and shut to the extent that the microswitch interlock would operate, thus removing the high voltage in rhythm with the bounce. Despite the rough treatment the equipment received, the entire operation from 1200 hours, 1 October until 0840, 2 October, was accomplished without a single incident of equipment failure.

Contacts were made with amateurs in 45 states and 14 foreign countries, which included France, Germany, England, Scotland, Azores, Virgin Islands, Puerto Rico, Canal Zone, Australia, New Zealand, Hawaii, Japan, plus Little America, aeronautical, marine and vehicular mobiles.

Such an accomplishment could not have been achieved without the untiring effort of the amateur fraternity. To all who patiently waited and to those who were forced to leave the air prior to contact, we of W3WTE wish to convey our sincere appreciation and thanks for a job well done and a job which only you as individual amateurs could make possible. We hope this is not the last — nor the least.

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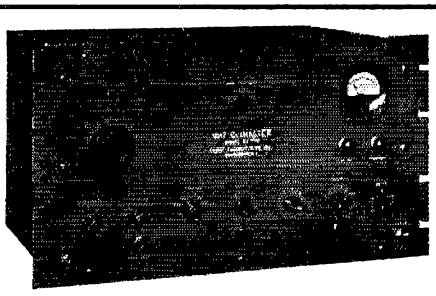

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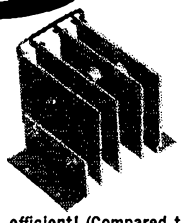

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CENTER TAP: 40 AMP DC Output. Fan Cooled—80 AMP.
1 sec. surge load—600 AMP. 6" x 5" x 3". 1 lb.

AC Input, up to	18-0-18	36-0-36	54-0-54	72-0-72	90-0-90	105-0-105
DC Output, up to	16V	32V	48V	64V	80V	94V
Net Price	**$30 00**	**$42.00**	**$50.00**	**$60.00**	**$70.00**	**$80.00**

BRIDGE: 40 AMP DC Output. Fan Cooled—80 AMP.
6" x 5" x 6" long. 1¼ lbs.

AC Input, up to	36V	72V	105V	140V	175V	210V
DC Output, up to	32V	64V	95V	125V	155V	190V
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4X250B Linear

(*Continued from page 31*)

much less distortion than with a triode. This is because the grid-bias characteristic of the tetrode is almost entirely dependent on the screen voltage, rather than the plate voltage, and it's far easier to regulate a screen supply than a plate supply!

Circuit diagrams for the regulated screen and bias supply as well as the plate supply are shown in Figs. 2 and 3.

For s.s.b. operation and a.m., the amplifier is driven by a Central Electronics exciter. The "linear" can, however, quickly be made into a Class C amplifier for c.w. operation by increasing grid bias to about 100 volts and the drive to about 30 ma. of grid current. The change in bias is accomplished by means of S_2, Fig. 1. To facilitate multiband operation, a chart should be made during initial tune-up, listing the dial settings for grid and pi-network tuning to the low and high ends of each band.

A word about the special 3-deck bandswitch. There just was no such switch available. The matter was discussed with K2JIJ of Communication Products Co., Marlboro, New Jersey and they modified their model 86 switch for this job. They will supply similar ones to anyone desiring them, and it is known as the "W6HHN Model 86" unit (fame at last!).

The "linear" has been in operation on 10 to 80, both on s.s.b. and a.m. as well as on c.w., with good efficiency and stability.

Strays

W4SM announces an airborne globe-girdling ham radio operation. The news is a bit late for adequate *QST* coverage, but a W1AW bulletin will have passed the word. The 7 U. S. is supporting the IGY through navy TF 43 in the Antarctic, and KC4USA and KC4USV have already been active. The Eighteenth Air Force, the airlift arm of the Tactical Air Command, has been assigned the task of paradropping some 800 tons of heavy equipment on the ice cap. Globemasters are being used for these missions, and the ham operation will take place from one of these aircraft departing Donaldson Air Force Base, S. C., on 20 October. Operation will be on 14, 21, and 28 Mc., using c.w., a.m., and s.s.b. The route will be from S. C. to state of Washington, Anchorage and Adak, Alaska, Kwajalein, Australia, New Zealand, and the Antarctic. Operators will be W4SM, W4PFH, and K4ELF, using the call W4SM/am.

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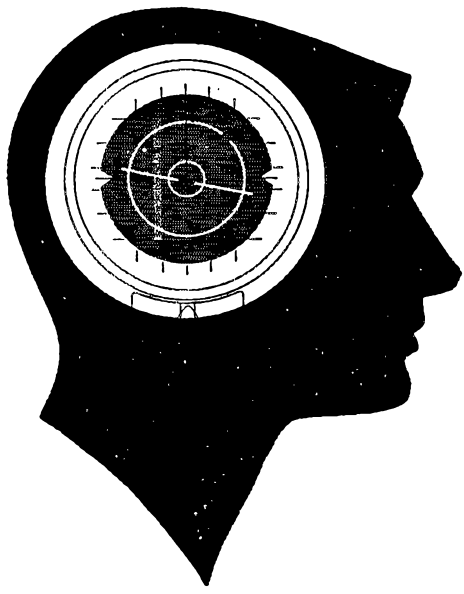

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"Wonder Bar" Antenna

(Continued from page 33)

this new elevation. However, results were most satisfying. On this first afternoon, the following DX stations were worked: CO8GM, VE7HV, and LU6FBJ. All stations gave good reports in spite of the poor band conditions! Since then, many good reports have been received. In many instances reports were on a par with those of some nearby neighbor using a two- or three-element beam. It might be added that the antenna functions equally as well in receiving as in transmitting.[1]

In conclusion it can be stated that this type of antenna resembles a TV antenna, since it was originally just that. Consequently, what neighbor can complain about the appearance of this antenna on your roof? The antenna is small enough to be used with a portable or mobile rig; it weighs only a few pounds; it is very inexpensive; it is easily constructed from simple parts; it fulfills the necessity of a small antenna for the apartment dweller, or the house trailer. And finally, its signal reports really "bring home the bacon" to the "ham"! Try it and I do believe you'll agree with me!

Voice-Control Circuit

(Continued from page 34)

across its plate resistor disappears, unblocking the transmitter and, at the same time, the voltage on the grid of V_{3B} falls below cut-off because of the reduced current in the common cathode resistor. In this condition, V_{3B} draws current developing about minus 20 volts to ground across its plate resistor, which can effectively squelch the receiver. The positive action of V_3 will be recognized as an adaptation of the familiar flip-flop circuit.

Provided the gain of amplifier V_{1A} is great enough to give decisive cut-off on V_{3A} on voice pulses, a condition easily met, the hold-in on transmit is determined by the time constant of R_1C_1.

The anti-trip part of the circuit is equally simple. Receiver audio voltage, in our case taken from across the voice coil of the receiver, is supplied to the grid of amplifier V_{1B} via transformer T_2. Amplified, and then rectified by V_{2B}, this develops a negative bias which is applied to the grid return of the speech amplifier V_{1A} in the same manner as an a.v.c. voltage. Thus, in effect, the gain of V_{1A} is automatically regulated by the speaker audio volume, giving a surprisingly non-critical and reliable anti-trip action which is completely isolated from the transmit-receive time delay circuit.

Because the blocking voltages change fast but not instantaneously, the circuit flips from one condition to the other smoothly without the thumps or clicks often troublesome in relay systems.

Antenna Changeover

Although we have hopes at KT1LS of some day eliminating the mechanical antenna change-over

(Continued on page 140)

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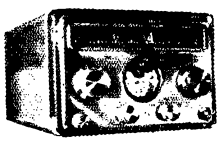

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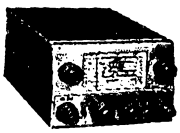

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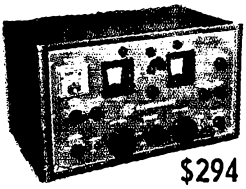

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1 S53 Hallicrafter (fine for novice or 6 mtrs.)	50.00
1 SX25 Hallicrafter (with pm23 spkr – perfect shape)	125.00
1 SX43 Hallicrafter (Fair)	75.00
1 NC-46 National (Nice)	50.00
1 240-D National (w/spkr–a real hot rcvr)	175.00
1 HRO50 National w/6 coils (excellent)....	295.00
1 NC-173 National (fine business)	125.00
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5 PMR6A receiver Elmac	85.00 to 115.00
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relay, for the time being, as in many stations, it is still a necessary part of the system which must be voice-control operated.

This is accomplished by placing an auxiliary relay (K_1) in series with the plate of V_{3B}. Here the current goes from complete zero (on receive) to about 2½ ma. (transmit), which is enough to close a 15-mw. sensitive relay having a coil resistance of about 2000 ohms. The contacts of the sensitive relay operate the 110-volt a.c. antenna change-over relay. This combination has worked out to be completely satisfactory and considerably faster than it sounds. Another possibility, although not tried, would be to connect a relay having normally-closed contacts in series with V_{3A} to operate the antenna relay. This would give 6½-ma. relay-coil current. One point of caution: We had trouble originally with sparks across the contacts of the auxiliary relay K_1 causing false action of the voice amplifier and tripping the circuit. It was easily fixed by shunting the auxiliary contacts with a 0.1-μf. capacitor.

General

There are a few other details about the circuit which may be helpful to the prospective user. The 4.7-megohm resistor from the cathode of V_{2A} to ground provides a slight threshold voltage to overcome random noise from the preceding amplifier and external sources. In our case R_1 is a variable resistor, but a satisfactory time constant is also afforded by the use of a 3-megohm fixed resistor. For satisfactory operation of V_{1A}, the peak-to-peak voltage (by scope measurement) across its plate resistor should be a minimum of 100 volts on voice crests. This test point was chosen because one side is grounded and the requirement is not affected by differences in the turns ratio of T_1. Likewise, the peak-to-peak voltage across the plate resistor of the anti-trip amplifier V_{1B} will be approximately 150 volts minimum value for reliable anti-trip action.

Transformers T_1 and T_2 have been found to be essential for the isolation of the grids of amplifiers V_{1A} and V_{1B} and the successful operation of the circuit. The transformers themselves are not critical; almost anything will do. For T_1 we are using the small output transformer of a surplus BC-453 unit. T_2 is an ordinary plate-to-speaker transformer. Because of the inverted power-supply operation of the voice-control circuit, resistor-capacitor coupling of the grids of V_{1A} and V_{1B} to external circuits results in excessive noise and hum pickup.

Toggle switches S_1 and S_2 are added to provide the possibility of manual operation of the control circuit when desired. To operate, S_1 is closed to disable the voice circuit, and S_2 is closed for receive and opened for transmit.

The power supply used here came from the junk box and is actually much larger than required. The circuit is entirely conventional except, of course, the plus side is grounded. At 200 volts, the maximum drain of the voice control unit is only 12 ma.

Putting the circuit in operation is very simple.

(Continued on page 148)

The voice level-set control is turned up so that reliable voice operation results, the time-delay control R_1 is set for the desired hold-in and the anti-trip level-set control is adjusted to allow uninterrupted listening. From there on, it is mostly automatic. If the speaker is turned up very high or the microphone is very close, you may have trouble shouting down the receiver's audio but, once you do, the receiver goes dead and normal voice levels are in control. There are no false trips by the receiver's output.

The Band Checker

(Continued from page 85)

The tap point on the coil is made as follows: counting from the top of the coil, bend the 2nd and 4th turns in toward the center of the coil. This will allow access to the 3rd turn, the tap point. A short piece of bare wire or a solder lug is soldered to the 3rd turn. When the unit is to be used on 15 or 10, the clip lead is attached to the tap point. For the lower-frequency bands, the clip is moved to the bottom of the coil.

Calibrating the Band Checker

Probably the easiest and quickest method of calibrating the wave meter is to use your communications receiver. The regular antenna is disconnected from the receiver and a short length of wire, six inches to one foot long, is connected to the antenna terminal. The other end of the wire is connected to the junction of L_1 and the stator of C_1. Tune in a signal that is near the center of the 80-meter band and leave the receiver tuned to that point. Incidentally, the a.v.c. of the receiver should be turned off for these adjustments. Slowly tune C_1 through its range. At one point in the tuning range you'll find that the 80-meter sign will get noticeably weaker, or disappear. This is the 80-meter calibration point. Repeat the procedure for 40 and 20 meters. Next, clip the shorting lead on the coil-tap point and use a similar procedure to calibrate the unit on 15 and 10 meters.

Using the Wave Meter

To use the wave meter, simply hold the top end of L_1 near the circuit to be checked. (Watch out for high voltage!) Tune C_1 to the point where the lamp lights, read off the calibration and there you have it. You may find that one of the reasons you haven't been getting out is that instead of your amplifier stage being tuned to 80, it is hitting 40. (And you'll be lucky if you haven't received an FCC advisory notice by this time, because you will have been transmitting outside the high end of the 40-meter band!)

Here's another possibility:

Let's assume that you have a two-stage transmitter and want to operate on 15 meters. The usual setup is an oscillator tripling to 21 Mc. from a 7-Mc. crystal and driving a straight-through amplifier. Even though the oscillator is supposed to triple, it is quite possible it is only doubling to 14 Mc. The 14-Mc. signal is fed into

(Continued on page 144)

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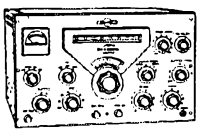
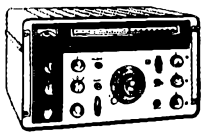
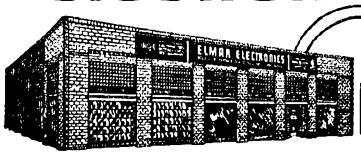


NC-300



KWS-1

ELMAR electronics



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the amplifier, the output of which is tuned to 14 Mc. The result is that you listen on 21 Mc. but you're transmitting on 14 Mc. One thing is sure — you won't work many stations that way.

However, with the Band Checker, you can quickly determine if the oscillator is tripling and if the amplifier is tuned correctly. Just hold the end of L_1 near the oscillator tank coil or the amplifier coil and tune C_1 until the lamp lights. Then read the calibration point; that's all there is to it.

If you are using an antenna feedline other than coax, the wave meter will also serve as an output indicator. If the line is 300-ohm Twin-Lead, or any other insulated type of open-wire line, make a single loop in the line just large enough to fit over the end of L_1. The loop should be a couple of feet away from the transmitter, to avoid coupling to the tuned circuits in the rig. Turn on the rig and tune C_1 to the point where the dial lamp lights. In addition to its function as a wave meter, the unit will show you when power is in the feedline.

The Band Checker took about two hours to build and the parts cost approximately $2.00. This is a very small investment in time and money considering how useful the device is.

Recent Equipment

(Continued from page 41)

The instruction book gives complete dope on mobile antenna installations, and points out that v.f.o. on 75 with a center or base-loaded whip presents some problems, since the antenna is sharply resonant and will present a sizable reactive load off frequency by as little as 10 kc. To overcome this, the MLV-50 motor-driven antenna tuner can be added, to permit remote tuning of the whip on 75, 40 and 20 meters. We were impressed by a statement in the instruction book which we never expected to see in any manufacturer's literature: "The only correct way to set any modulation control is to use an oscilloscope and observe the pattern." (It then goes on to tell how to do it and what to look for.) This will undoubtedly come as quite a surprise to the many amateurs who know all about tuning up a phone rig and never used an oscilloscope in their lives.

If you have been wondering about the significance of the "A" in the type number, it is to signify a later model. The original 560 included a bandpass filter in the speech amplifier to restrict the transmitted voice-frequency range to a maximum of around 3000 cycles. Experience showed that practically all operators used their rigs with the filter switched out, so the manufacturer deleted the filter and changed the type number of the transmitter.

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Opal 1956

(Continued from page 61)

mained open until 1830. Seven stations reported into the county net on 3860 kc. A tie-in was effected with Lehigh County via 144 Mc. with W3ZRQ and W3PTM relaying over the mountains.

Rhode Island

W1UEF, EC for Coventry, reports that twelve stations took part on July 20th on the net frequency of 145.68 Mc.

South Dakota

Western South Dakota was active under SEC WØYOB. At Rapid City the c.d. headquarters was located at the local auditorium. Six mobiles were sent into distress areas. This network reported into WØBLK and messages went to county and city civil defense headquarters. Other stations reported in to represent Butte, Perkins, Zieback, Bennet, Todd, Tripp, Washabaugh, Mellette, Gregory and Meade counties. Other mobiles reported in for various cities in the area. General Arndt, C.D. Director for South Dakota, sent a message to all RACES operators saying: "Sincerely appreciate wonderful job you have all done during Operation Alert 1956."

Tennessee

W4EM was set up at c.d. headquarters in Memphis. Ten and two-meter rigs maintained contact from 0900 until 1400 CST July 20th. During that afternoon six meters was used to relay traffic from W4EM to Hernando, Miss. The state net on 80 and 75 meters handled 55 messages. Eight mobiles participated, seven fixed stations and ten operators at the control station.

The Cookeville amateurs participated in Operation Alert under EC W4PVD. First contact was made with ½-watt portable, then using emergency power. Six states were contacted within a half hour.

Texas

Thirty minutes after the first alert, c.d. control station W5SNW in Fort Worth was on the air. By 1200, 33 mobiles had checked into the two nets. The base station was manned by RACES operators in shifts of three men per three-hour shift. Forty messages were handled, some of them from surrounding towns. On July 21st the base station was again activated. Ten operators in addition to the base station operators reported and checked out pack sets on 147.7 Mc. which were used for damage survey teams. The problem ended at 1130 with a critique held by civil defense officials.

Virginia

Ten amateurs turned out to activate the control station at Hampton. Liaison was conducted with Norfolk on ten meters. Operation on 75 meters was very sporadic due to thunderstorms. EC W4AJA judged the alert an improvement

(Continued on page 148)

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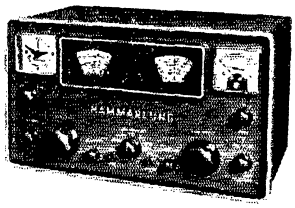
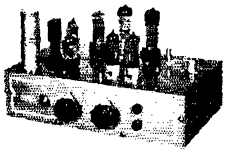


Hammarlund
HQ-100 Receiver

Dollar-for-dollar the most amazing communications receiver ever produced. Continuously tunable from 540 kcs to 30 mcs with sensitivity and selectivity surpassing anything in its class. Electrical bandspread tuning with unequalled direct dial calibration. Q-multiplier. Voltage-regulated and temperature-compensated high-frequency oscillator for extra stability. 10-tube superheterodyne circuit. Warm-up Timer automatically turns on receiver any pre-determined time*.
* Optional feature.
HQ-100 (less clock) **$169.00**
HQ-100 (with clock-timer).... **$179.00**

Matching 6" x 9" Speaker. Extended range. 8-watt capacity. Housed in attractive metal cabinet. Dimensions: 9⅜" W. x 9⅜" H. x 7" D.
Amateur Net **$14.95**



Tecraft Transmitters
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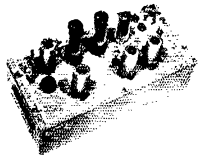
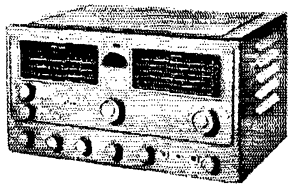
Hi-Level Plate Modulation. Hi-Impedance Mike. Provisions for Metering All Stages. Tuned Antenna Output System to 52/72 Ohm Line. RF Output Indicator. Power Requirement 6.3 V. AC at 250 ma. Tubes: 6AU6 osc.; 5763 Buf/Dblr; 6360 Buf/Mult; 6360 final amp.; 12AX7 speech amp. & driver; 2—6AQ5 modulators. Power Input to Final, 20 Watts. **Complete with tubes, crystal & plugs.....$59.95**
Matching Power Supply.....**$39.95**



Tecraft Converters
For 220, 144 or 50 Mc.

Where Top Quality is a Must. Widely Recognized by Hams, CAP, CD, etc. Specify IF Output Frequency Range—Choice of 14-18, 26-31 or 30-35 Mc. (For new National NC-300 Receiver)
Model CC5-220, CC5-144 or CC5-50
Wired & Tested **$42.50**
Kit **$29.75**



National NC-98

The lowest priced receiver with a crystal filter, the NC-98 has calibrated bandspread for 80, 40, 20, 15, 11 and 10 meter bands. Superhet circuit uses 8 high gain miniature tubes plus rectifier. Covers 540 kcs to 40 mcs in 4 bands. Tuned RF stage. Two IF stages and 2 audio stages with phono input and two position tone control. Also, antenna trimmer, separate high frequency oscillator, sensitivity control, series valve noise limiter, delayed A.V.C., headphone jack, stand-by-receive switch.
Amateur Net (less speaker)...**$159.95**

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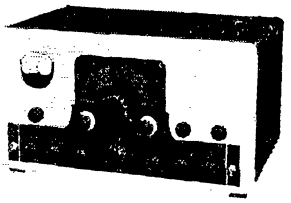


JOHNSON Viking "Valiant"

275 watts CW and SSB* .....
200 watts phone! Band-switching 160 through 10 meters!

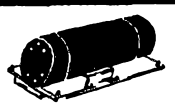
Built-in VFO or crystal control. Pi-network antenna matching from 50 to 600 ohms—final tank coil silver-plated. Timed sequence, break-in keying. TVI suppressed. High gain push-to-talk audio system. Low level audio clipping. Built-in low pass audio filter. As an exciter, will drive any of the popular kilowatt level tubes. Complete with tubes, less key, crystals and mike.
Amateur Net (Kit) **$349.50**
Amateur Net (Wired, Tested)..**$439.50**

* P.E.P. input with auxiliary SSB exciter.

RELAY SPECIAL!

DPDT ceramic insulated relay with extra SPST contact. 12 V. DC coil. Ideal for antenna relay, or parallel all contacts and use as generator relay.
Special Price..... **$1.75**

6 Volt Dynamotor



Rated output: 425 V. DC at 375 ma. High efficiency, compact. 4" diam., 7½" long. Shpg. wt. 13 lbs. Worth 2 to 3 times this low price..... **$12.95**

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over 1955, but there is still much progress possible, especially from the Newport News and Warwick areas.

During the alert, all amateurs in South Boston were notified. Two mobiles patrolled the streets, and notification of the alert was passed along to Richmond through stations located there.

C.D. officials in Clifton Forge passed along a "well done" to their amateurs and called Clifton Forge communications "the best in Virginia." Under the leadership of Communications Officer W4WC, local amateurs maintained constant contact with all units and with state headquarters during the alert.

West Virginia

State Radio Officer W8HZA reports heavy interference prevented effective operation on 3997 and 3993 kc., most long haul traffic being handled on 3501.5 kc. This single frequency operation was not adequate, however, to handle all "priority 1" traffic, and much of it was diverted to other channels. Local area amateurs furnished operators throughout the 36-hour period of operation. Thirty-nine messages were handled, only three of which were sent out of state. In the statewide operation, five amateurs were active on 3997, eight on 3501.5. At W8HZA, state control station, twelve operators cooperated to keep the station on the air the full 36 hours.

Wisconsin

W9BCC reports that W9CFL was on the air all day July 20th and W9BCC took over in the evening and all day July 21st in the Portage County exercise. A letter of commendation was received from the Wisconsin c.d. director.

Epilogue

You will have noted, if you have studied the report summary above, that many stations operated on non-RACES frequencies. This is not as it should be, for a strictly civil defense operation, and we hope that those groups who utilized non-RACES frequencies are planning to get themselves organized, somehow, to do the job on the frequencies assigned to us for RACES. True, these are inadequate in a good many cases, and additional RACES frequencies are needed. But the facts remain: that these are the only frequencies available to us if a real attack should occur; that only RACES-authorized stations will be permitted to operate at such time; and that they are much greater in scope and intent, even in their inadequacy, than any frequency segments we have had to do the work before. "The impossible takes a little longer." Even though we continue to seek additional frequencies, we must plan, somehow, to make what we have do the job in case we don't get them

Strays

There is a cave in Alabama named "Teakettle Cavern" because of an amateur call sign. W4TKL is the call of the ham who explored and mapped it.

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U.S.S.R. Hams

(Continued from page 57)

casian mountain range between v.h.f. fans in Yeryevan and Zaporozhye.

Not content with this achievement, Soviet radio amateurs are increasingly familiarizing themselves with the 144, 220, and 420 Mc. bands. Radio amateurs of Dzyerzhinsk, for example, have conducted experiments with antenna installations. At first they chiefly used the half-wave dipole and the half-wave antenna with a single conductor feeder, but for operation on 144–146 Mc. they employed the multi-element antenna.

With the new stride forward in the task of mastering v.h.f., there took place on July 21–22, 1956, the first nation-wide competitions of ultra-shortwavers ("Field Day") sponsored by the journal, *Radio*. Hundreds of radio amateurs of many towns of the country left with their stations for the woods, mountains, and fields, and there in hardy unaccustomed conditions, established long-distance radio contacts on v.h.f. Ultrashortwavers operated not only on the seven meter band, but also on two and the 70 cm. bands.

Soviet radio amateurs, just as all the people of our country, are fighting in every way for peace all over the world, for strengthening and spreading cultural and economical contacts among the nations of the whole terrestrial globe. For this very reason, our radio amateurs strive to establish friendly contacts with shortwavers of all the countries of the world. They constantly get together on the air with radio amateurs in America, Czechoslovakia, France, Austria, India, Poland, Roumania, England, Hungary, Japan, Belgium, Bulgaria, Germany, Tunisia, Algeria, and other countries.

Shortwaver V. Zhyelnov, UA4FE, well-known in the USSR, who lately has established hundreds of two-way radio contacts, including radio stations, W7GUV (USA), 3V8BB (Tunis), JA3BG (Japan), FA8SB (Algiers), TI2PZ (Costa Rica), and many shortwavers in Argentina, Chile, Brazil, and other countries of South America, replies with delight to these exciting get-togethers on the air.

"Every time after such a contact," he says, "you think with emotion that you too contribute your small talents in the work of strengthening friendship and mutual understanding among the nations of all the countries."

All radio amateurs of the Soviet Union feel the same way. Far beyond the limits of their country they have fine and good-natured friends with whom they hold contacts not only with the aid of radio stations and QSL cards but also by conducting regular friendly correspondence. With aims of strengthening international contacts, the representatives of the Soviet radio amateurs' organization this year visited as guests radio amateurs in Poland, Czechoslovakia, and Yugoslavia. For their part, radio amateurs in other countries often visit the Soviet Union,

(Continued on page 152)

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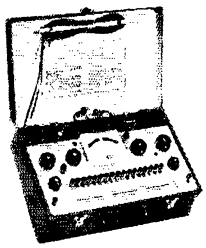
TUBE TESTER



New, portable tube tester tests all common receiving tubes, transmitting and industrial tubes, regardless of basing — also "600 ma" series string television tubes. Inline controls speed efficiency. Reads shorts and leakage directly in ohms — easy-to-read roll chart — gas test — easy switching for all tube bases. Best dollar buy. ***Regular Price: $149.50.***

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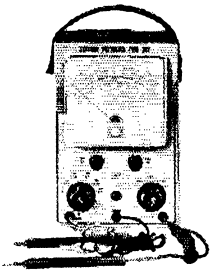
Type 303 SYLVANIA
VTVM POLYMETER



The ultimate in its price range — multi-purpose meter combining high accuracy with functional, smart styling to give "quick readings" under all conditions of ambient lighting. Measures AC and DC volts, and ohms over 6 ranges. ***Regular Price: $54.50.***

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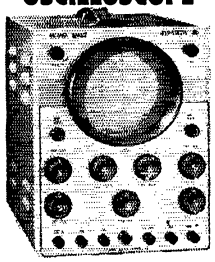
Type 405 SYLVANIA
5" SERVICE OSCILLOSCOPE



The smallest 5" 'scope on the market . . . and the *biggest* value. Identical horizontal and vertical amplifiers with frequency response within 3 db from 2-700KC, 300 Millivolt sensitivity and 2.2 meg. input impedance. Linear sweeps from 16 to 50 KC. Extremely stable sync. ***Regular Price: $129.50.***

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Type 506 SYLVANIA
COLOR-TV DOT GENERATOR

Extreme sync stability, useful for linearity adjustments, positive gating circuit, wide range of dot spacing, practical dot size. Hard tube sync circuit and special Sylvania output adapter. Extremely compact unit. ***Regular Price: $129.50.*** **NOW ONLY $69.50**

Type 501 SYLVANIA MARKER GENERATOR

Provides 2 separate signals for marking an oscilloscope trace of response curves. Accurate trap adjustment, freq. spotting, band width measurement and adjustment of popular 4.5 mc. intercarrier sound circuits. VFO covers 15 to 240 mc. range. ***Regular Price: $129.50.***
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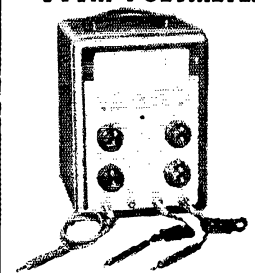
LABORATORY TUBE TESTER

Mutual conductance and emission test. Conversion transconductance test. Leakage test directly in megohms, gas test, and voltage regulator-thyratron tube test. Factory correlated readings, illuminated meter, roller chart. ***Regular Price: $469.50.*** **NOW ONLY $369.50**

Type 301 SYLVANIA
VTVM POLYMETER



Features an inherently stable circuit from use of 2 Type 7N7 tubes in Sylvania-patented circuit. 1 Ma. meter movement, 6 AC and DC ranges read up to 1,000 volts and up to 30,000 volts DC with Sylvania Type 225 Voltage Multiplier Probe. Resistance measurements to 10,000 meg. True peak-to-peak readings up to 2,800 volts. 17 meg. input impedance. Illuminated meter and screw-on connectors. Shielded AC lead provides AC measurements from 20 cps. to 20,000 cps. with 2.7 meg. impedance. Measures DC current up to 10 amps. ***Regular Price: $109.50.***

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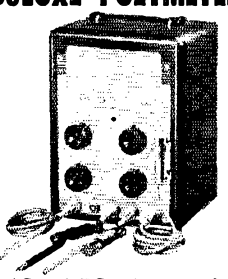
VTVM DeLUXE POLYMETER



6 AC and DC volt ranges 0-3, 10, 30, 100, 300, 1000. 6 peak-to-peak volt ranges. 5 RF volt ranges from 0 to 300. Ma in 6 ranges from 0 to 1000. 0-10 amp. DC. Ohms in 6 ranges to 1000 meg and db measurements in 6 ranges from −20 db to +61.4 db. Features new 7" Sylvania meter movement, patented linearity circuit, rf probe, high input impedance, shielded leads. ***Regular Price: $129.50.***

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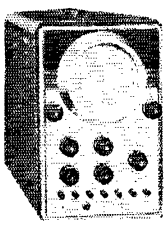
Type 403 SYLVANIA
7" TV SERVICE OSCILLOSCOPE



High quality 7" instrument with identical high-gain dc amplifiers on horizontal and vertical axes, plus advanced features of higher priced models of special value for TV service. Type 403 permits dc signal level measurements and phase relationship study. 2 preset TV sweeps. Vertical sensitivity 10 millivolts per inch rms. Freq. response flat to 500 kc within 2 db. ***Regular Price: $249.50.***

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Continuously variable sweep speed 0.2 us/in. to 800 us/in. Internal trigger generator with rep. rate of 500, 1000, 2000, 4000 p.p.s. Positive pulse trigger output rising to 200 volts peak in 0.3 u sec. at amplitude of 100 volts for 3 u sec. Adjustable output trigger delay from 75 before to 25 u sec. after sweep start. Fixed sweep trigger delay at 90 u sec. ***Regular Price: $708.75.***
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Identical with model 402 but with an r-f detector and wide-band amplifier ***Regular Price: $783.74.***
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SYLVANIA C.R.T. TESTING ADAPTER

Use with any Sylvania tube tester to check 85% of picture tube troubles without removing tube. Checks electromagnetically deflected types for emission, shorts, leakage, and open filaments. ***Regular Price: $7.60.*** **NOW ONLY $5.95**

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In conjunction with Sylvania types 301 and 302 polymeters this probe permits measurement of DC voltages up to 30 KV. ***Regular Price: $12.50.***
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where they get a most hearty and sincere welcome.

There is no doubt that the spreading of friendly contacts by Soviet radio amateurs with radio amateurs of all countries, the close contact with them, and the exchange of experiments, help us to know each other better. These things will promote the development of amateur radio and the improvement of the skill of radists-sportsmen. They will greatly promote further cultural accord between nations of the terrestrial globe and strengthen the work of peace with the whole world.

Novice Accent

(Continued from page 61)

and have so indicated by "R" when you go back to him, he can be expected to have sense enough to know that you got what he sent. Therefore it is needless wear and tear on your key and a waste of your time and his to go through this rigamarole of "OK ON THIS, OK ON THAT, OK ON YOUR RIG, OK ON YOUR WX, OK ON YOUR DOG HAVING JAUNDICE, ETC., ETC." Just up and proceed with your remarks and comments. If he asked a question, answer it. If he made a statement that requires no answer, make no answer. It's really very simple.

Another rogue's gallery character is the guy with long, deathly silences. He sends your call, signs his, says, "R ES TNX FER DPE OM $\overline{\text{BT}}$ . . .," then apparently lapses into a coma. When you finally decide that the oaf has suffered a heart attack and departed this vale of tears he suddenly comes to life and burps out a couple of $\overline{\text{BT}}$'s and staggers along with "RIG HR 807 WID 50 WATTS $\overline{\text{BT}}$ . . .," and shoves off for dreamland again. This makes the receiving operator nervous. If your mind goes temporarily blank when you are on the key, *send something* . . . a series of $\overline{\text{BT}}$ or V, or most anything. Just don't sit there leaving the other operator to wonder if you are still alive. There is nothing worse than a lot of clatter on the air except complete silence.

Sloppy Sending

Practically topping the list of the Ten Most Wanted Men in ham radio is the bird with the sloppy fist. He makes life a horror for those who try to copy him. He has no idea how many dots he's sending — he just throws in plenty so that you can take your pick. He runs letters and words together or, just the reverse, he separates parts of letters and chunks of words. He sounds as though he's using a loose toggle switch for a key and sending in Japanese kana code. On top of all this he fouls up his spelling and procedure continually and fills the air with strings of dots to indicate errors. Some operators (?) go on for years blithely unaware that their fists are bad.

(Continued on page 154)

In fact they may even fancy themselves as artists on the key. They get huffy if anyone suggests that they are not 100% readable. They suggest that the receiving operators need a little practice. If you are one of these boys, you are probably a hopeless case. However, if you know that your sending leaves something to be desired and you are sincerely interested in developing a good, readable fist you can cease worrying — it's simple. Just practice sending. But not on the air.

Rig yourself a code practice oscillator and send to yourself. The ideal manual fist is one that sounds like a tape transmitter. Don't laugh! It's a skill that's easy to acquire. Of course, to begin with, you must know how good code sounds. The simplest way is to turn on your receiver and tune in a commercial tape circuit and *listen*. Tune around, find a station sending press or other traffic and just sit and listen. You don't have to be able to copy it solid. Maybe you can copy only seven words a minute and the commercial is sending at 20 or 25. No matter. Don't worry about what he's sending, just pay attention to *how* it's sent. Listen to the individual letters; get the feel of his rhythm and spacing. Then adjust your key, get comfortable, and send to yourself. Try to make your hand-keyed letters sound like the tape-sent letters. Send from a newspaper or book and pay attention to spacing between words and letters as well as to the shape of each individual letter. At first it may seem an impossible task but you'll be surprised how rapidly your sending improves. Sure it's a lot of work, but you weren't born with a telegraph key in your hand and you have to learn. You don't write a letter in such an illegible scrawl that it can't be read (or do you?), so why transmit a botched-up mess of dots and dashes to some poor wretch on 40 meters who is trying to read it.

It's Fun!

C.w. operating can be pleasant and easy. It is not, as often averred, a lost art. You are welcome to dive right in and flail away at the old brass pump handle. But, *please*, use genuine International Morse and standard procedure! It will make life a pleasure for both you and your adversaries.

—...—

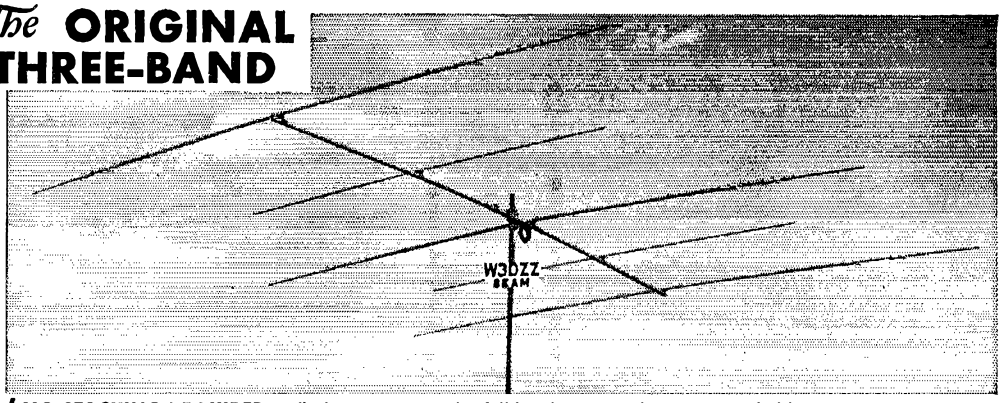
Pictured below is a less-than-life-sized copy of ARRL Operating Aid No. 2. If you'd like a copy for your operating desk, send a card or radiogram to ARRL Hq.

ARRL ENDING SIGNALS

Signal	*Meaning*	*ARRL - Recommended Use*
AR	End of Transmission	After call to a specific station before contact has been established. Example: W6ABC W6ABC W6ABC DE W9LMN W9LMN AR
		At the end of transmission of a radiogram, immediately following the signature, preceding identification.
K	Go ahead (any station)	After CQ and at the end of each transmission during QSO when there is no objection to others breaking in. Example: CQ CQ CQ DE W1ABC W1ABC K or W9XYZ DE W1ABC K
KN	Go ahead (specific station), all others keep out	At the end of each transmission during a QSO, or after a call, when calls from other stations are not desired and will not be answered. Example: W4PGH DE XU6GRL KN
SK	End of QSO	Before signing last transmission at end of a QSO. Example: . . . SK W8LMN DE W5BCD
CL	I am closing station	When a station is going off the air, to indicate that it will not listen for any further calls. Example: . . . SK W2HIJ DE W1JKL CL

ARRL Communications Department
Operating Aid No. 2

The ORIGINAL THREE-BAND



✓ **NO STACKING REQUIRED**—all elements are at the full height yet wind resistance is held to a minimum.
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✓ **RUGGED DESIGN**—Boom consists of two 12-foot lengths of 2¼" dia. tubing with .065" wall. Three-band elements are made of 1½" tubing with .058" wall. All tubing is of 6061-T6 heat-treated aluminum alloy for maximum weather resistance and strength.

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MODEL FT-200 TRAPS for 5-band antenna operation on 10/15/20/40 and 80 meters. (75 ohm feed line). Pair, postpaid.....**$12.50**

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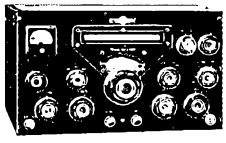

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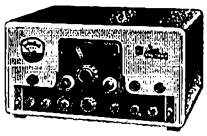
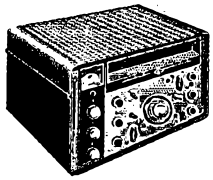
B&W 5100S Transmitter	324.50
CENTRAL ELECTRONICS 10A Exciter	69.50
CENTRAL ELECTRONICS "A" Slicer	39.50
GONSET Standard 2-Meter Communicator	129.50
GONSET Deluxe 2-Meter Communicator	149.50
HALLICRAFTERS HT-18 VFO	42.50
JOHNSON VIKING I Transmitter	149.50
JOHNSON VIKING II Transmitter	229.50
JOHNSON VIKING VFO	29.50
MILLEN 90711 VFO	74.50
STANCOR ST-202 Transmitter	59.50



JOHNSON VIKING "VALIANT"

275 watts input CW, SSB (P.E.P. with SSB exciter), 200 AM. Built-in VFO. 160 thru 10 meters. Complete kit with tubes.

Net.....$349.50
Wired and tested.....439.50



NATIONAL NC-300 RECEIVER
Less speaker. Net.....$399.00

WRITE FOR FULL INFORMATION ABOUT OUR TIME PAYMENT PLAN

WALTER ASHE RADIO CO.

1125 PINE STREET, ST. LOUIS 1, MO. • CHESTNUT 1-1125

YL News & Views

(Continued from page 63)

The president of the Chicago YLRL, Inc., Helen Kennedy, W9MXI, has compiled a club brochure which, in our estimation, is such a worthwhile piece of work that again other clubs may wish to consider the idea. The brochure consists of twenty-two carbon copy thin half pages stapled together, covered by a piece of drawing paper. A copy is given to each member so that she has complete information about her club for immediate reference. This, the first such brochure, is for the period July 1, 1956, to June 30, 1957. It contains such information as the name, call, QTH, and telephone number of each member; present and past officers of the club and term; By-laws; club history and explanation of its affiliation with the YLRL; a short biography of each member; an article "How to Get Publicity for Our Club"; information relative to operating the club station, W9DEQ; and a program outline for the entire year.

—•••—

Do you consider your QSL rather novel or a bit out of the ordinary? We'd like to see it if you do.

Keeping Up With the Girls

Clubs:

Young Ladies Radio League — W4HLF, Arlie, has been appointed club foreign correspondent. Her primary duty will be to endeavor to increase interest in the YLRL among the non W YLs. The custodians of the YL/WAS and YL/WAC certificates, K4HEF and W6PCA, have resigned. President W9LOY will announce new appointees. A new slate of officers, including district chairmen, will rule commencing January 1, 1957. Election results will be announced next month.

Los Angeles Young Ladies Radio Club — At the September meeting new chairmen appointed for the coming term were K6BUS, Press; W6JZA, Recording Secretary and Auditor; W6CEE, Hospitality; W6LBO, Amendments; K6EXQ, Raffles. The club celebrated its tenth anniversary in October with a growth in membership of 10 to 75.

Get-Togethers:

The Texas YL Round-Up net will celebrate its second anniversary with a party on November 17th, 1956, at Pier 21, 7001 Old Main Street Road, Houston, Texas. Please contact Mae Lake, W5TSD, 2126 Ojemann, Houston 24, for registration ($2.00).

Operating:

Field Day — From W7NJS, YLRL Seventh District Chairman, comes additional items of YL participation in FD (see October YL column for full report). WN7DAT was the only YL operator with the Central Oregon Radio Amateurs and W7WMS was the only YL among twelve operators with the Rodeo City RC of Ellensburg, Wash. *W7s* FWR RHM SEU ZPS and WN7AYZ were with the Grey's Harbor ARC atop Rockcrusher Hill in Aberdeen, Wash. *W7s* NJS and ZNG and WN7EDH put in the full 24 hours with 21 operators working W7ACY in Wilson River Canyon for the Tillamook RC, Oregon. At Tuscon, Ariz. W7YFQ used her OM's call, W7YLG, and emergency

(Continued on page 158)

power at their home station for 117 contacts on several bands.

Some of the YLs who participated in the July 20–22 Emergency Alert were *W1s* SVN TRE UKR and *W7s* ACY ENU FWR NTN RAX SBR SYF and ZLS. . . . W5EGD, Lillian, QSOs with ZS1RM, Marge, on 20 c.w. frequently. . . . W1WPX, Evie, DXes early evenings on 14,050 kc. . . . W1WED, Ruth, is building a new band-switching rig for eighty thru ten. . . . Twelve-year-old WN7EXH is a new novice in Salt Lake City. Patsy is on 7191 kc. with a "*Handbook* novice transmitter and a National FB7A receiver, a real old-timer" her proud dad, W7POU, writes. . . . W1CEW, Mary, is trying s.s.b. on twenty. . . . W6WRT, Ruby, and W6DXI, Gladys, were pleased with their c.w. contacts on 20 with JA8AA, who is working for his L.A. YLRC certificate. . . . With the help of her new W3DZZ tri-band beam, W6UHA, Maxine, worked SM8KV, Spitzbergen both on phone and c.w. on 20 and heard her first Russian YL, UF6AM, Tata.

Miscellany:

After seven years as the W7 QSL Bureau Manager Mary Ann Tatro, W7FWR, of Olympia, Washington, relinquished her duties in July. With high praise for Mary Ann and the excellent service she rendered throughout her term, YLRL seventh district chairman W7NJS passes along some of W7FWR's vital QSL statistics. Mary Ann devoted an average of 14 hours a week to her job, running often as much as 22 hours. Annually she received an average of 122,500 cards, which she handled seven times. She mailed an average of 110,875 cards in 9959 pieces of mail weighing 675 lbs!

Correspondence

(*Continued from page 64*)

I was working at the old WAR station way back in '25 as a technician. We were doing quite a bit of research in "short waves" by building breadboard transmitters. We had a Captain, whose name I do not remember, who had a slight impediment of speech. Each set that we tried out he would always say, "We will put this up 'tempawy-awy fusst'," to where it became our standard byword. One day during lunch hour, the Captain informed us that he was one of the engineers who put up the NAA towers. He talked for half an hour on all the intricacies involved in erecting them, when another member of the crew piped up with "Well, Captain, did you put them up 'tempawyawy fusst', too?"

— *Walter E. Wilson, K4DBD*

4208 Fairview Drive
Toledo 12, Ohio

Editor, *QST:*

During the year of 1918, I was furthering my electrical education just outside the District of Columbia.

We were studying Tesla coils and this institution possessed a million volt one. Another chap and I were selected to set up the coil and the associated condensers one evening so that the coil would be ready for demonstration the following morning before the class. A circuit breaker and a double pole single throw switch were incorporated in the primary circuit for safety.

By 10 P.M. we had everything set up, and to be sure it was in working order, we decided to try it out.

Kicking in the circuit breaker, we then closed the switch and strangely enough, it worked. Then having a bright thought, I started making NAA using the switch as a key. The fist may have been a bit sloppy with this makeshift, but it apparently was readable. NAA had been alerted for

(*Continued on page 160*)

severe interference the following morning when the coil was to be demonstrated. Long before the demonstration was scheduled that morning, we had several carloads of visitors and they were breathing brimstone. When class convened one of our visitors gave us a severe lecture on creating interference. Fortunately for us, not much probing was done, so it was not pinpointed down to us but they seemed pretty certain where it came from. At a distance of approximately 15 miles, that spark jumping between electrodes six feet apart really fouled up the atmosphere, from what we gathered . . .

— *H. L. Kreh, W8TCH*

305 South 6th Street
Hiawatha, Kansas

Editor, *QST:*

Your editorial brought back many pleasant memories to me. One of my old outfits consisted of a two-slide tuner, silicon detector, and a single Brandes phone. It was necessary for me to add a home made variometer to get up to NAA's wave length. I recall that our usual test of whether or not we had improved our rig, in connection with our various experiments, was how much better or poorer we could hear NAA.

I wish some of us could pass on to the younger boys the thrills and pleasure of searching and searching for a signal, of any kind, instead of the present practice of trying to sort them out.

— *C. F. Engler*

P. O. Box 122
Signal Mountain, Tenn.

Editor, *QST:*

I too remember when NAA went on the air with what I always thought to be a high-frequency spark. I made my first wireless xmtr in 1908 winding my first spark coil from directions in *Modern Electrics*. The first out-of-town station I heard was the old NAR when it was 25-cycle spark and using old Morse code. The op on duty when I first found them on my silicon xtal was salty and for a month or more I was listening to NFI and the talk didn't make sense. I was living at Fort Scott Kansas then. Later, I moved to Lawrence, Kansas to attend the University of Kansas and there with the help of another student set up a 2-kw. spark set which had a short life. In 1910, we contracted with the Kansas City *Star* to report the Kansas-Oklahoma football game and received much publicity. Came the day of the game however, and a blizzard came up. Static was so terrific that sparks could be drawn from the "aerial" (we didn't have antennae then) and we didn't get a word through . . .

— *Volney J. Cissna, W4CQB*

Route 3, Box 195
Georgetown, Texas

Editor, *QST:*

. . . Speaking of NAA, all Naval stations along the Atlantic Coast copied it and recorded an "S-meter" reading daily. Raise no quizzical eyebrow, cast no menacing frown, and thump no desk top. The reading was obtained by calibrated potentiometer across the phone terminals. The resistance was decreased until the signal was just audible; and since no transistorized hearing aids were available cheating was almost an impossibility.

— *William H. B. Cowan, W5BDK*

Strays

W4VCY suggests that anyone contemplating a beam or tower should consult the Bible, Luke 14:28.

How's DX?

(Continued from page 69)

route to WAVE diplomas . . . . . VP1EK dropped in on K2s ENO and PKH while en route Europe for a six-month lark . . . . . DX supercontestant W3DGM/4 is reachable at 720 W. Vanderbilt Dr., Oak Ridge, Tenn., where he has a long-wire QRV for this month's ARRL Sweepstakes shebang . . . . . W7PQE and W6GAL/7 vigorously contend for 7-Mc. European QSOs, the former with a 256-ft.-per-side rhombic and the latter with a 550-ft.-per-leg sloping Vee . . . . . W1AW carried last-minute details of Guatemala's world-wide DX contest held September 15th–16th. This one was a cutie because all QSOs, phone and c.w., were to be maintained in Spanish. TG9AD states that certificates of performance are due those who worked six TGs or worked all Central American republics during the test period. While we're about it, we must say that foreign societies generally were extremely lax and late in their promotion of such DX activities this year. Any world-wide operating activity *must* be publicized with sufficient advance timing to stand a decent chance of success . . . . . W2JBL, who suffered DXhaustion in confirming 106 countries with 35 watts and an 8-foot whip some years ago, got sucked back into the inexorable DX vortex with a new XYL and jr. op. So far George has been rebitten only by the 7-Mc. strain of DX virus . . . . . VE1PQ is another DX repatriate, grabbing off a few after a 3-year hiatus to reach 165 . . . . . VE2ATD runs regular schedules on 15 phone with VP6YB whose daughter inhabits Montreal . . . . . W9KOK, DXing moderately these days with a 32V-3 on 20, writes: "The key I use was given to me by the family of the late AC4YN and is the one Reg used all his days in Lhasa. It doesn't get me as many replies on the air as it did for Reg, though — hi!" . . . . . DX stations thirsting for South Dakota should dig this item from WØRRN: From 0100 GMT December 8th to 0600 December 10th, Sioux Falls Amateur Radio Club members will monitor the vicinities of 28,050, 29,200, 21,050, 21,320 and 14,085 kc. for the call "CQ SD." On December 13th they will watch 14,085 kc. for DX calls from 0100 to 1400 . . . . . W1EKU needs help in running down 10-meter phone QSLs from HAs 1KK 5BC, ZD1s FB and PW worked in 1949; LZ1AB and ZD2KC in '47. Similarly, W4TFB is anxious about 7-Mc. KR6KS hooked in '54 . . . . . Old standby G6ZO gets a bang from signing CE3ZO.

Ten Years Ago in "How's DX?" — Twenty's continuing postwar gold rush redounds with the c.w. signals of ACs 3SS 4YN, C3YW, **CR9s** AG AN, EQ4DC, ET3Y, **FT4AC**, G5KW/Rhodes, G6IA on Man, **GC8MIF**, **I7AA**, Quelpart Island's JC3AR, **LX1AX**, **LZ1XX**, **MX1DF**, **PKs** 1RI 5LK 6HA 6TC, **TA1DB**, **UA9s** CB DP KH, **VP8s** B AD, VQ8AE, **VR5BY**, **VS9AN**, W2IEV/C1, W2OUB/**C7**, W6VKV/**I6**, XABU in Sardinia, XACP of Rhodes, **XUs** 4B 8KR, **XZ2KM**, **YI2BA**, **ZC1AR** and **ZD8B**. On phone there are **C1SU**, **ET1Y**, **FG3FP**, **KA1s** AW CB SC, **LX1SI**, **OX1WB**, **PKs** 1AM 3RS 6AW, PK5AR/**CR1Ø**, **VR2JI**, **VU8GA**, W8CHT/**J7**, W8CJR/**XU**, W6ONT/**KW6** and XU1YY . . . . . W6GRL is off to China to set up a VOA transmitter in Nanking and expects to try the far end as XU6GRL . . . . . VS4JH, back in England, kept the gang guessing from Labuan Island where vacillating authorities had him signing VS3/45JH.

Strays

DX hounds will be interested in the second edition of *DXERAMA*, a copy of which was recently received at Hq. It is published by W3AXT, and details information on some 47 of the top awards issued throughout the world. Plenty of check-off lists are provided so that you can keep track of your progress toward the various awards.

HEATHKIT

DX-100

PHONE AND CW

transmitter

KIT

FEATURES

Design proven through actual signal reports.

★

Only top-quality components used throughout.

★

5-point TVI suppression, and pi network output to match 50 to 600 ohms.

★

Detailed construction manual for simplified assembly.

★

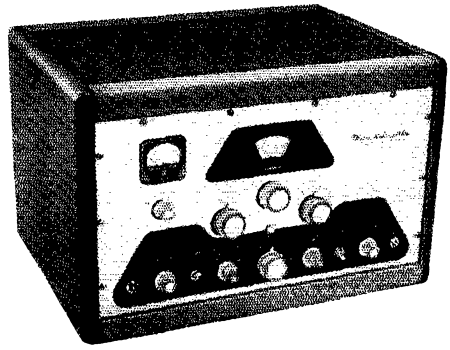
100 watts output on 160, 80, 40, 20, 15, 11, and 10 meters.

★

Attractive and functional physical design.

The Heathkit Model DX-100 Transmitter is rapidly becoming the "standard" ham rig in its power class. The high quality and outstanding performance it offers can be matched only in equipment costing many dollars more. It features a built-in VFO, modulator, and power supplies, and is bandswitching for phone or CW operation on 160, 80, 40, 20, 15, 11, and 10 meters. The kit includes a detailed construction manual, the cabinet, all tubes, prewound coils, and all other parts necessary for construction.

Push-pull 1625 tubes are used to modulate parallel 6164 tubes for RF output in excess of 100 watts on phone, and 120 watts on CW. May be excited from the built-in VFO or from crystals. Features pi network output circuit, illuminated VFO dial and meter face, and 5-point TVI suppression. High grade, well-rated parts supplied. Schematic diagram and technical specifications on request.



MODEL DX-100

$189.50

Shpg. Wt. 107 Lbs.

Shipped Motor Freight unless otherwise specified. $50.00 deposit required on all C.O.D. orders.

HEATHKIT

antenna coupler

KIT

MODEL AC-1

$14.50

Shpg. Wt. 4 Lbs.

In addition to matching a low power transmitter to an end-fed long wire antenna, this antenna coupler incorporates a 3-section low-pass filter, to attenuate output above 36 mc and reduce TVI. Handles up to 75 watts, 10 through 80 meters. 52 ohm coaxial input—tapped inductor and variable capacitor—neon RF indicator. Ideal for use with the Heathkit AT-1 Transmitter.

HEATHKIT

grid dip meter KIT

The Model GD-1B is a time-proven instrument. It will enable you to accomplish literally hundreds of jobs on all types of equipment. Frequency range is from 2 mc to 250 mc. A 500 ua meter is employed for indication, and a sensitivity control and headphone jack are provided. Includes pre-wound coils and rack. Indispensable for the ham, serviceman, and engineer. Extra coils available to extend frequency down to 350 kc.

MODEL GD-1B **$19.50**

Shpg. Wt. 4 Lbs.

HEATHKIT

antenna impedance meter KIT

Used with an RF signal source, the AM-1 will enable you to match your antenna-receiver-transmitter system for optimum operation. Will double as a phone monitor or relative field strength meter. Uses 100 ua meter, and covers 0 to 600 ohms. Frequency to 150 mc.

MODEL AM-1

$14.50

Shpg. Wt. 2 Lbs.

HEATH COMPANY

A Subsidiary of Daystrom, Inc.

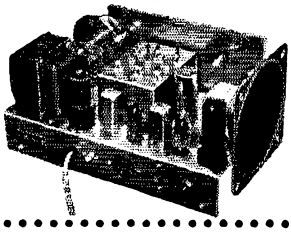
BENTON HARBOR 9, MICHIGAN

HEATHKIT communications-type all band receiver KIT

Slide-rule dial —electrical bandspread—ham bands marked.

Slug-tuned coils and efficient IF transformers for good sensitivity and selectivity.

Transformer-operated power supply for safety and high efficiency.



The Model AR-3 receiver features new high-Q slug-tuned coils, new layout, and new-type IF transformers. The result is high sensitivity and selectivity and better image rejection on all bands.

Transformer-type power supply, electrical bandspread, RF and AF gain controls, antenna trimmer, AGC, BFO, headphone jacks, socket for Q multiplier, 5½" PM speaker and illuminated dial.

SPECIFICATIONS:

Frequency Range—550 kc to 30 mc on four bands.
Tube Complement—1—12BE6 oscillator and mixer • 1—12BA6 IF amplifier • 1—12BA6 second detector, AVC, first audio amplifier and reflex BFO • 1—12A6 beam power output • 1—5Y3 full wave rectifier

$27.95 (Less Cabinet)
• MODEL AR-3
Shpg. Wt. 12 Lbs.

CABINET: Fabric-covered cabinet available. Includes aluminum panel, speaker grille, and protective rubber feet. Measures 12¼" W. x 6¼" H. x 7¼" D. No. 91-15. Shpg. Wt. 5 Lbs. **$4.50.**

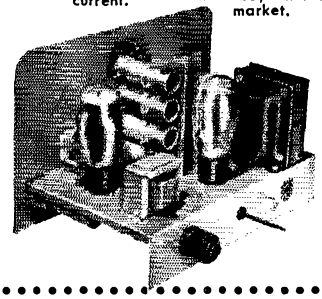
HEATHKIT CW amateur transmitter KIT

Single-knob bandswitching for 80, 40, 20, 15, 11, and 10 meters.

Panel meter monitors final grid or plate current.

Plate power input 25-30 watts.

Best dollar-per-watt buy on the market.



The AT-1 is complete with its own power supply, and covers 80, 40, 20, 15, 11, and 10 meters with single-knob bandswitching. Designed for crystal or external VFO excitation. Incorporates key-click filter, line filter, copper plated chassis, pre-wound coils, 52-ohm coaxial output, panel meter, and high quality components throughout. Easy to build, even for the beginner. Employs 6AG7 oscillator and 6L6 final. Up to 30 watts power input.

$29.50
• MODEL AT-1
Shpg. Wt. 15 Lbs.

SPECIFICATIONS:

RF Amplifier Power Input	25-30 watts
Output Connection	52 ohms
Band Coverage	80, 40, 20, 15, 11, 10 Meters
Tube Complement:	
5U4G	Rectifier
6AG7	Oscillator—Multiplier
6L6	Amplifier—Doubler

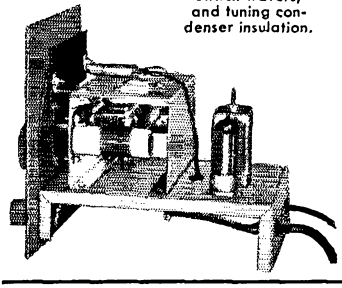
OA2 voltage regulator tube for stability.

Covers 160-80-40-20-15-11-10 meters.

Smooth-acting, illuminated and pre-calibrated dial.

6AU6 electron-coupled Clapp oscillator.

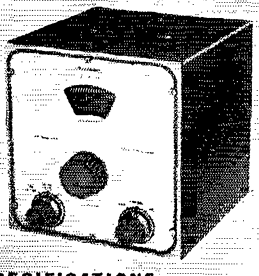
Copper plated chassis—aluminum case—profuse shielding—ceramic coil forms, switch wafers, and tuning condenser insulation.



HEATHKIT vfo KIT

The Model VF-1 features illuminated and pre-calibrated dial scale. Cable and plug provided to fit the crystal socket of any modern transmitter. Covers 160-80-40-20-15-11 and 10 meters with 3 basic oscillator frequencies. Better than 10 volt average RF output on fundamentals. Derives operating power from transmitter power supply. Has VR tube for stability. Go VFO for more operating enjoyment.

MODEL VF-1



$19.50

Shpg. Wt. 7 Lbs.

SPECIFICATIONS:

Output Frequencies—1750-2000 kc, 7000-7425 kc, 6740-6808 kc. **Calibrated Bands**—160-80-40-20-15-11-10 meters. **Tube Compliment**—6AU6 Oscillator OA2 Voltage Regulator. **Power Requirements**—250-350 VDC @ 15-20 ma. and 6.3 VAC @ .45 A.

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HEATH COMPANY
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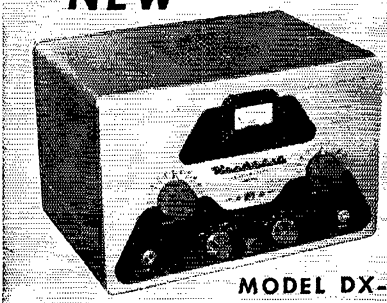
BENTON HARBOR 9, MICHIGAN

HEATHKIT NEW DX-35 phone and cw transmitter KIT



MODEL DX-35

$56.95

Shpg. Wt. 24 Lbs.

- Built-in modulator for phone operation.
- Bandswitching on 80, 40, 20, 15, 11 and 10 meters. Pi network output coupling.
- Switch selection of three crystals—provision for external VFO excitation.
- Attractive and functional physical design.

This brand new transmitter model provides phone and CW operation on 80, 40, 20, 15, 11, and 10 meters. Plate power input to 65 watts on CW and controlled carrier modulation peaks to 50 watts on phone. Completely bandswitching.

Employs two-stage 12AX7 speech amplifier, 12AU7 modulator, 12BY7 oscillator, 12BY7 buffer, and 6146 final. The buffer stage assures plenty of drive to the final on all bands. Pi network output coupling employed for easy antenna loading. Switch selection of crystals. Crystals changed without removing transmitter cabinet. Husky power transformer and choke are potted, and the circuit is well shielded. Meter indicates final grid or plate current.

Truly a remarkable transmitter package for the price. Ideal both for the novice and for the more experienced operator.

Send for free 1956 Heathkit Catalog describing more than 65 interesting "build-it-yourself" projects.

HEATH COMPANY

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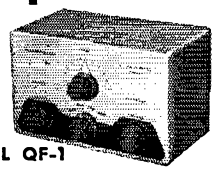
BENTON HARBOR 9, MICHIGAN

HEATHKIT "Q" multiplier KIT

Provides extra selectivity for separating signals, or will reject one signal to eliminate heterodyne. Effective Q of 4,000 for sharp "peak" or "null." Tunes any signal within receiver IF. Operates with 450 to 460 kc IF. Will not function with AC-DC type receivers. Requires 6.3 VAC at 300 ma, and 150-250 VDC at 2 ma.



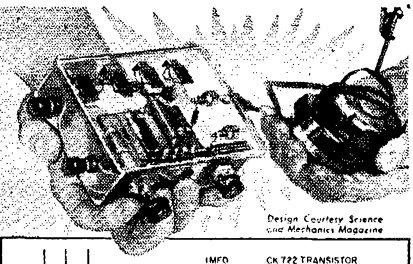
MODEL QF-1

$9.95 Shpg. Wt. 3 Lbs.

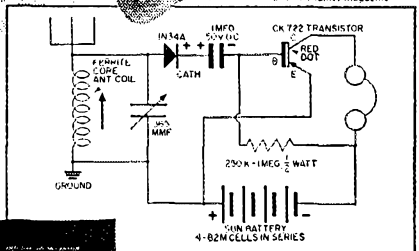
The newest hobby under the sun!

BUILD THIS SOLAR POWERED RADIO!

and many other sun-powered electronic, electrical and photometric devices featuring International Rectifier Corporation SUN BATTERIES!



Design Courtesy Science and Mechanics Magazine

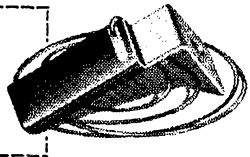


Everyone—from the beginner with a basic understanding of electrical work to the experienced professional engineer—*can build this pocket-size portable radio—powered by the sun! No batteries*—not even an On-Off switch. All you need is sunshine! The basis for this radio is the International B2M Sun Battery. This unit is a scientific, accurate, precision-made photovoltaic instrument that directly converts light into electrical energy. This radio is just one of many devices you can build powered by solar energy. You have read about this new field of science. Be among the first in this newest hobby. Put the sun to work for you!

THIS NEW BOOK TELLS YOU ALL ABOUT SUN BATTERIES—PHOTOCELLS—AND HOW TO USE THEM. Packed with information and applications, this illustrated book shows wiring, diagrams and plans—every detail necessary to build many interesting devices. **$1.50**

FREE Complete plans for building this radio. At your electronic parts distributor.

THIS IS THE FAMOUS B2M SUN BATTERY YOU'VE READ ABOUT. Widely used in experiments, this unit in bright sunlight (10,000 ft. candles) will deliver 2 milliamperes at 250 millivolts under optimum conditions; will last indefinitely with proper care. A $2.50 value for only.....$1.50



GET THE B2M SUN BATTERY AND ALL OTHER COMPONENTS REQUIRED AT LEADING ELECTRONIC PARTS DISTRIBUTORS EVERYWHERE. If your favorite distributor doesn't feature the B2M Sun Battery send check or money order to

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El Segundo, California

SPECIAL OFFER, The book and the B2M Sun Battery for only $2.85 at your distributor

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amateurs or experimenters in their pursuit of the art.

(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 30¢ 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 7¢ per word will apply to advertising which, in our judgment, is obviously noncommercial 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 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising so classified takes the 30¢ 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 signature and address be printed plainly. 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, the publishers of QST are unable to vouch for their integrity or for the grade or character of the products or services advertised.

QUARTZ — Direct importers from Brazil of best quality pure quartz suitable for making piezo-electric crystals. Diamond Drill Carbon Co., 248 Madison Ave., New York City 16.

MOTOROLA used FM communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9VIY, Troy, Ill.

MICHIGAN Hams! Amateur supplies, standard brands. Store hours 0800 to 1730 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 605 Church St., Ann Arbor, Michigan. Tel. NOrmandy 8-8696. NOrmandy 8-8262.

WANTED: Early wireless gear, books, magazines, catalogs before 1922. Send description and prices. W6GH, 1010 Monte Dr., Santa Barbara, Calif.

WANTED: All types aircraft & ground transmitters, receivers ART-13, RT18/ARC1, R5/ARN7, BC610E, ARN6, BC788C, ARC3, BC342. Highest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

RECEIVERS repaired and aligned by competent engineers, using factory standard instruments. Hallicrafters, Hammarlund, National. Collins authorized service station. Our twentieth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

ATTENTION Mobileers! Leece-Neville 6 volt 100 amp. system alternator, regulator & rectifier, $45.00. Also Leece-Neville 12-volt 100 amp. system, alternator, regulator & rectifier, $85.00. Good condition. H. A. Zimmermann Jr., K2PAT, 570 Jamaica Ave., Brooklyn 8, N. Y. Ulster 2-3473.

CASH for your gear. We buy as well as sell. Write for cash offer or trade. We stock Elmac, Gonset, Hallicrafters, Hammarlund, Johnson, Lysco Master Mobile, Morrow, National and other ham gear H & H Electronic Supply, Inc., 506 Kishwaukee St., Rockford, Ill.

MIAMI and vicinity: Communications receivers repaired. Bryant Electronics, 13341 N.W. 7th Ave. Phone 84-4001.

URGENTLY need AN/APR-4 items particularly tuning units for important defense contracts. New high prices. Engineering Associates, 434 Patterson Rd., Dayton 9, Ohio.

HAM Guest Register Books, $2.00 in U. S. A.; $2.25 in Canada postpaid. Gratton George, W4PJU, Clewiston, Fla.

MEDICAL Hams! Swamp Burdick EK-2 for Globe King, 500-A, C. R. Faulkner, M. D., K4AXE, 106 No. Main, Somerset, Ky.

OUTSTANDING ham list revised monthly. Our prices are realistic and attractive. Standout values in used Barker & Williamson, Collins, Central Electronics, Elmac, Gonset, Hallicrafters, Hammarlund, Harvey-Wells, Johnson, Morrow, and National units. We deal easy and offer time payments tailored for you. All leading brands of new equipment always in stock. Write immediately for this month's Bulletin and our new exclusively amateur catalog just out. Stan Burghardt, W9BJV, Burghardt Radio Supply, Inc., Box 746, Watertown, S. Dak.

PLASTIKASE rubber stamp, your call name and address. Economy with pad $1.00. Top quality with handle, $1.50, pad 35¢. El-Kay Stamps, Box 5-WT, Toledo 12, Ohio.

WANTED: Receiver R5/ARN-7, MN-62A transceivers, RT18/ARC-1, AN/ARC-3, BC-788C, 1-152C, Collins, Bendix equipment, test sets, dynamotors, inverters. We pay highest prices. Advise quantity, condition, price in first letter. Aircraft Radio Industries, Inc., 15 East 40th St., New York City. Tel LExington 2-6254.

FOR Sale: 500 watt Hallicrafters HT-4, all band xmitter. Professional version of the U. S. Army BC-610. Complete with BC-610-D speech amplifier, tubes, coils, manuals, doily, interconnecting cables. Cabinet is black wrinkle with chrome strips and power deck is chrome plated. Utilizes six 3-in. meters. In excellent condx and in working order. No reasonable offer refused. W1RMI, John Salsgiv r W1RMI Box 8, Egypt, Mass. Telephone SCituate 1036-W.

QSLS? SWLS? Largest variety and finest samples 25¢ (refunded). Callbooks (latest), $4.50. "Rus" Sakkers, W8DED, P.O. Box 218, Holland, Mich.

WANTED: Two-way FM equipment. Ronald Phillips, Communications, 1312 McGee, Kansas City, Mo.

C. Fritz for better QSLS-SWLS! Samples 10¢. 1213 Briargate, Joliet, Ill.

QSLS-SWLS. Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSL-SWLS. 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS. Nice designs. Samples, Beseparis, W3QCC, 207 S. Balliet St., Frackville, Pa.

DELUXE QSLS — Petty, W2HAZ, Box 27, Trenton, N. J. Samples 10¢.

QSLS-SWLS. Samples free. Bartinoski, W2CVE Press, Williamstown, N. J.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS-SWLS. Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

WOODY's QSLS. Box 164, Asher Sta., Little Rock, Ark.

QSLS. Western states only. Fast delivery. Samples 10¢. Dauphinee, K6JCN, Box 66009, Mar Vista 66, Calif.

QSLS, Taprint, Union, Miss.

QSLS, SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

QSLS, sharp, 200 one color, three bucks. Multi-color samples dime refunded. Edward Green & Sons, 4422 Marquette Drive, Ft. Wayne Ind.

QSLS Samples 10¢. Bob Morris, W2IHM, 230 Rose St., Metuchen, N. J.

QSLS — All kinds and prices, samples 10¢ fast service. DX Card Co., Kulik St., Clifton, N. J. GR 3-4779.

QSLS-SWLS. Reasonable. Catalog, 25¢. Speedy delivery. Dick, K6GJM, 10558 E. Olive, Temple City, Calif.

QSLS. 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.

QSLS. Samples free. Radoprint, Ojai, Calif.

QSL Samples. Dime, refundable. Roy Gale, W1BD, Box 154, Waterford, Conn.

QSLS. Lapel pins, samples dime. Kephart, W2SPV, 4309 Willis, Merchantville, N. J.

NOVICES! Generals! Old Timers! Want reasonably priced "tacked on the wall type" different, unique, comic, sedate, curious, scarce, extraordinary, peculiar, incomparable, rare, singular, remarkable, infrequent, odd, unusual, precious, strange, uncommon QSLS? SWLS? YLS? Doubles? Samples 13 cents. Rogers, KØAAB, 737 Lincoln Ave., Saint Paul 5, Minn.

QSL-SWLS, 100, $2.85 up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS of distinction. Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Box 86, Lynn, Penna.

QSLS-SWLS. Samples free. Backus, 703 Cumberland St., Richmond, Va.

QSLS: Cartoons, colors, something different! Samples 15¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLS. Glossy. Samples 10¢. W1OLU Press, Heckbert, 30 Maghoun, Medford, Mass.

QSLS. No "wild claims", just good QSLS at reasonable prices. You'll like the "Super-Speed Special", too! Dozen samples 10¢. Robinson, W9AYH, 12811, Sacramento, Blue Island, Ill.

QSLS. Samples free. Jones, W3EHA, 840 Terrace, North, Hagerstown, Md.

STUDY at home for commercial radio licenses. Free sample lesson, very reasonable fee. Write Radio License Aids, 275 Dayless, Ft. Worth, Texas.

DX'ERS Notice! Save money? Save Time? Free info. DX QSL Coop, Box 5938, Kansas City 11, Mo.

WANTED: ARC-3, ARC-1, ART-13, BC-312, BC-342, BC-610, BC-788 and other surplus. Advise what you have and price. W4VHG, Box 5878, Bethesda, Md.

PANORMAIC Adapter AN/APA-10 Tech. Manuals $2.75 postpaid in U. S. A. Electronicraft, 27 Milburn St., Bronxville 8, N. Y.

FOR Sale: QST 1932 to 1947, 25¢ ea. Four or more. WØMCX, Art Jablonsky, 1022 N. Rockhill Rd., Rock Hill 19, Mo.

FOR Sale: Collins 310B3 complete with all coils and manual. Unmodified: $180 F.o.b. Crawfordsville, Ind. Marsh H. Jones, Jr., Marshland Farms, RR #5, Crawfordsville, Ind.

WANTED: Coils A,B,C,D. Any one or more for HRO-5 W4WXX, 203 Sycamore Dr., Paducah, Ky.

MULTIBAND Antennas. As designed by W3DZZ. See *QST* March 1955 and Radio and TV News December 1949. Write for details now! Frederick Tool & Engineering Corp., 414 Pine Ave., Frederick, Md.

WANTED: BC-221, BC-348, BC-312, BC-342, BC-610-E, ARN-7, BC-788, ARN-6, APR-4, APN-9, ART-13. All types surplus or amateur transmitters, receivers, test equipment taken in trade for New Johnson Viking Ranger, Pacemaker, Valiant, Hallicrafters, Hammarlund, National, B&W, Gonset, Elmac, Telrex, Fisher Hi-Fi, etc. Write Tom W1AFN, Alltronics, Box 19, Boston 1, Mass. Tel. Richmond 2-0048.

WANTED: ARC-3, ARC-1, BC-610, BC-312, BC-342 and other military or aeronautical surplus. We pay freight and C.o.d. James S. Spivey, Inc., 4908 Hampden Lane, Bethesda, Md.

SELL or Trade: Radio magazines. Bob Farmer, Plainview, Texas.

MULTI-BAND Antenna. 80-40-20-15-10, $19.95. Patented. Send stamp for information. Lattin Radio Laboratories, Owensboro, Ky.

SELL: Several good clean schematic diagrams of ART-13, BC-610, BC-348, ARC-5, 25¢ each. S. Consalvo, 4905 Roanne Dr., Washington 21 D. C.

COMMUNICATIONS receivers repaired and realigned, using factory methods. Associated Electronics, 167 So. Livermore Ave., Livermore, Calif.

FOR Sale: Collins 310-C2 VFO (built-in power supply); perfect condx, $115 or best offer. Julian M. Sobin, W1UWB, 83 Arnold Road, Newton Centre 59, Mass.

MOVING to Florida. Must sell. All equipment perfect. No junk: HQ-129X with spkr, $125; Harvey-Wells Bandmaster deluxe, TVI suppressed with Bandmaster VFO and APS 50 power supply, $125; Webster-Chicago wire recorder, 6 extra spools stainless steel wire and connections to transmitter and rcvr, $35; complete mobile rig, Kreco 80 watts, 815 modulator, 815 final; Motorola receiver with Gonset Triband and clipper, 600V, 200 Ma. dynamotor, controls, relays. Master Mobile Mount stainless steel whip, $110; original Panadaptor PCA 2T-200 with extra kinescope $65; misc. surplus transmitter and receivers; plenty of extras. Must be seen to be appreciated. Russ Miller, W2DIC, Bellerose 26, L. I. N. Y.

SELL or Swap: 10 tube RCA electronically regulated power supply unit, Type 580-C, 495 V. DC unregulated, 250–300 V DC @ 450 Ma. regulated; RCA Aircraft transmitter, Type AVT-111, new, never used; RCA aviation power supply unit, model AVA-126, vibrator type, 300 V DC @ Max 100 Ma., for above transmitter. Best offer. Want: 500 watt rig or part of. Tom Eberhardt, K2OZL, 610 Sterling St., Plainfield, N. J.

ELDICO TR1-TV, like new condx, spare 4E27 tube, $350. Need the money for college. *W1ZMB*, Anthony J. Castellano, Jr., R.F.D. #4, Danbury, Conn.

TRADE $500 worth of new factory made ham radio parts for stamps, camera, binoculars or what have you. Truby L. Hazen, 6601 8th Ave. N., St. Petersburg 2, Fla.

HQ129X with speaker, and HT-17 with crystals, coils, meter: $200 for both or your best offer. Harvey Ardel, 11 Nancy St., Pawtucket, R. I.

FOR Sale: Viking Adventurer with two Novice band crystals, $45; Johnson VFO, new, wired, calibrated and tested, $49. Geo. F. Bronson, RFD 1, Englishtown, N. J.

COLLINS 32V2 xmitter for sale. In excellent condx: $350.00. Will ship a reasonable distance. W2URM, Pete Unchur, RFD #5, Amsterdam, N. Y.

MOVING. *Must sell:* Collins KW-1, $2500; Collins 32V2 (modified to V3), $375; Collins 75A3 (last run), $375; W. E. 110 A limiting amplifier with extra stage for xtal mike, $100; 20A rack mount with Collins ART-13 osc. and anti-trip unit, $200; Johnson rotator, complete, like new, $150; RCA 154 audio osc., $50; Hewlett-Packard 100 D freq. std., $400; 212A pulse gen., $350; 608A signal gen., $600; 803A VHF bridge, $300; 417 detector $100; RCA 69A distortion set, $100. All above guaranteed perfect. S. E. Adcock, W4GL, 444 Northeast 101st, Miami 38, Fla.

SWAP: Two brand-new Eimac 4-400A, never used, for a Gonset 2-meter Communicator and pay cash difference. W2RCN, Samuel S. Strauss, 53–35 203rd St., Bayside, L. I., N. Y.

CANADIAN Hams! For sale: Johnson Viking II, VFO, Matchbox, Eddystone 750 receiver plus additional matching units to transmitter. All inquiries answered. M. Wood, 370 Queen Mary St., Ottawa, Ont. Can.

SPEECH Amp. & modulator, 120 watts audio, as 1954 Handbook p. 255; with HV & LV supplies and AC relay to kill HV on receive. Built on 2 enclosed amplifier chassis. $60 plus shipping. Jaray, 36 Flower Lane, Roslyn Heights, L. I., N. Y. RO 3-5167.

FOR Sale: 150-watt phone/c.w. rig, same tube line-up as Viking II in deluxe Bud cabinet with power supplies, Variac, Heath VFO, many other extras and features. Complete $125 plus shipping. K2DZX, Phil Steinberg, 37 Morgan St., Bergenfield, N. J.

FOR Sale: 20A with QT1, BC458 VFO. Covers 160-15 mtrs, $150; Transitron linear amplifier, Bandswitching 80-10 meters, Continuous grid tuning, pi output, 4-125A, $150 plus shipping. W2ZDQ, 8 Tessen St., Teaneck, N. J.

SELL NC-98 with speaker excellent condx $110. W8SSL, 606 Blaine Ave., Marion, Ohio.

FOR Sale: DX-100 transmitter, $185; debugged and in a like-new condx. Cannot ship. Send self-addressed envelope for list of Heath test equipt. Also for sale. Also misc. components. W8DQN, 1366 Grant St., Akron 1, Ohio.

SALE: 10 or 6 mtr converterettes, $8.50; 10 or 15 mtr. preselectors, 10 mtr. mobile transmitter $12.50; 10 mtr. phone transmitter $18.50; 15 mtr. c.w. xmittr 50 watt, $10; 80/40 mtr. c.w. xmittr 25 watt, $12.50; 40 meter c.w. xmittr, $4.50; PE103 dynamotor, $17.50. W6RET, 862 Elm, Chula Vista, Calif.

MICROPHONES: Electro-Voice Mod. 664, $27.50; Electro-Voice Mod. 636, $22.50, used for 6 hours at jazz concert. W1KYK, 220 W. Shore Rd., Warwick, R. I.

FOR Sale: Viking II, Viking VFO, HQ-129X, Astatic mik, key and antenna relay. W5TFN, 923 North Ash, Waurika, Okla.

SELL: Globe Scout Mod. 65A, $65; Heathkit VFO, $15; both for $75; in perfect condx, both physically and electrically. Will ship anywhere. John E. Slais, K9BNH, RR #5, Quincy, Ill.

SELL: DX-35 and VF-1 purchased in July. Assembled. Perfect condx. Both for $75 F.o.b. Iowa City, Iowa. Jim Tucker, KØCYM 132 Templin Park, Iowa City, Iowa.

SWAP: $75 worth of magic tricks for ham gear. Will sell. In gud condx. KN5ESW, Paul Ferguson, 4012 Richmond, Shreveport, La.

WANTED: Multi-Match modulation transformer for cool K.W. Paul Powell, 801 Matamoros, Laredo, Texas.

SELL: National NC-88 receiver with S-meter. Less than one year old. In new condition. Gary C. Clifton, KØAMV, Orchard, Nebr.

WANTED: Complete mobile rig; twelve volt. Hoyal M. Pittman Rte. 2, Kennesaw, Ga.

FOR Sale: Gothard, Type Sp22 Dynamotor, 6V input, 600 V. 150 Ma. output. Carter #6175VS, 600 V. at 175 Ma. output, also t-17 microphones, BC-454 receiver, BC-455 receiver, phones, Heath AC-1 antenna coupler. W1WAZ, 66 Connecticut Ave., New London, Conn.

SX-100, $260 spkr included; Viking Ranger, $165, coax relay and mike included; rcvr brand new, no scratches; owner W1SSI/MM in the army. Left equipment in my care. If purchased as a complete station for $425 an Eico Model 555 Volt/Ohmmeter as a bonus. Will ship and guarantee. Address all inquiries to Bill Zeisler W2DLP/3, 9645 Oak Summit Ave., Baltimore 34, Md. Phone weekends or after 6 P.M. Northfield 5-7835.

SELL: Novice shack, SW-54 receiver and 35 watt 80-40 meter transmitter, perfect condition. 4 crystals, complete, $60. Allen Eskind, W4ZLW, 726 Vosswood Dr., Nashville, Tenn.

HIGHEST offer takes complete station. DX-100, SX-28, low pass filter, baluns, mike, other extras. Robert W. Watts, R.D. #3, Vestal, N. Y.

SELL: Two meter LW50 xmittr, Tecraft CC5-144 converter, 14-18 Mc. I.F., both complete, ready to go. Xmittr, $25, converter $28, both for $45. W3BUD, John A. Barolet, 32 Salamaua Court, Lexington Park, Md.

FOR Sale: SX-71 receiver with R-46 spkr, $175; Viking Ranger, $175; Johnson Matchbox $25; Johnson Signal Sentry, $10; Johnson low pass filter, $7.50; Johnson SWR bridge, $5; Premax 3 element 10-meter beam, $20; Rotator $15; prices F.o.b. Detroit, all equipment in gud condx. W8GRN, Phil Girard, 14025 Norborne, Detroit 39, Mich.

FLORIDA $250 cash, no trade, complete station, 125 watts phone, high and low level clipping, 150 watts CW, complete break-in, duplex keying, electronic key, VFO 10, 20, 40, TVI suppressed, including receiver with converter. Going off air for present. This is an excellent deal for someone getting back on. W4EN, 433 DeSoto Dr., Miami Springs, Fla. Phone TU 8-8117.

DX-100 converted to grid-blocked break-in keying, new clean condx, $195 F.o.b. E. Campaine, 4010 Renellie Dr., Tampa, Fla. K4GBY.

SELL: 120 watt, 3-band, VFO Bendix transmitter, with a commercial looking home-built plate modulator. Guaranteed to be in gud wkg condx: $130. Jere Courtney, W8GUJ, 222 S. Dale Dr., Lima, Ohio.

SELL: 300 watt phone rig, TVI suppressed, in 17 x 22 x 42 steel cabinet, includes two (2) 450-watt power supplies, speech amplifier, modulator, driver and final: $195. QST's going back to 1940: $9; CQ's back to 1947: $4. McElroy bug, $8. F.o.b. Owensboro, Ky. 2126 Griffith Pl. W., Stan Newhall, W4ISJ.

FOR Sale: SX-100 with R-46B. Excellent condx: $230 cash. Must be picked up. W9QCM, John Katsigenis, O'Fallon, Ill., 704 So. Walnut St.

TRANSMITTER tubes: many never used: 2, 4-250A, $20 each; 1, 250TH, $15; 2, 810, $8 each; 2, 100TH, $5 each; 3, T200, $5 each; 2, 803, $5 each; 1, 813, $8; 4, 807, $1 each; 2, T-55, $2 each; 2, HV40 $2 each; 1, RK 829, $5; 2, 826, $5 each; 2, 6L6G, $1 each; 1, 809, $2. Francis Kramer, WØDET, St. Charles, Minn.

FOR Sale: One Viking II xmitter kit, part of former station of W1QIJ. Partly assembled. Unfinished on account of death. Chris B. Evans, Box 93, Wilton, Conn. % Village Radio Store.

FOR Sale: One kilowatt xmitter, C.W. 80 thru 10. Pushpull 813's, Hunter doubling unit; outboard VFO, Six ft. cabinet, two antenna couplers. Prefer local sale: $600. W2JA.

SELL: Modulator for 813; 6SJ7, 6C5, P.P. 6F6, P.P. 811, 80, panel 8¾" x 19", modulation meter, plate and screen modulation for tetrode, $25; H.V. power supply 1500 V at 400 Ma.; 400 V at 200 Ma., 866 rectifiers; chassis and 10½" x 19" panel, $25; Par-Metal encl. cabinet, with hinged rear door, panel opening 19" x 37', 16½" depth, reg. $47.50, special $22.50; S.S.B. linear amplifier, four 6146, carbon copy of "little firecracker" in enclosed cabinet, all power supplies and meters, parts cost $150; sacrifice $45. Local deal. Will not ship. Arthur Crissey, W2KBD, Sparta, N. J. Phone Lake Mohawk 3923 or 2141.

FOR Sale: Heath AT-1, AC-1 coupler, homebrew modulator, gud condx, $35. *M. G. Long W7YEX*, Box 543, Winnemucca, Nevada.

SELL: BC-348Q, $35; AT-1, 35 mm enlarger $23; TVI suppressed 400 watt fone 1 Kw. CW xmitter; stamp brings complete list. Gary Adams, W9MNM, North Liberty, Ind.

TRADE or sell for Mercury outboard engine 1956 Mod. 55E complete kilowatt xmitter am/cw 20-15-10 meters; final PP. 4-250As, modulator Pr. RK65's; Hunter Bandmaster VFO Exciter (same as Collins 310B), six power supplies in relay rack, TVI suppressed; final power supply 4000 volts at 500 Ma., Variac controlled and metered: $600. F. W. Greene, W1JDE, 4 Ryder Dr., Woburn, Mass.

POWER Supply kit: UTC xfrmr 3000-0-3000 @ 300 12 H/300 Mil. choke; 866 film xfrmr; two 10 μfd/5000 v. condns: $47. E. SL. Shafer, 3039 Becket Rd., Cleveland 20, Ohio.

COLLINS KWS-1, $1,090. No antenna space here. Take it away with you. H. M. Riddle, 3106 Sherbrooke, Toledo 6, Ohio.

WANT Factory wired 20A SSB exciter and HQ-129X class receiver. WØZHJ, 2444 D, Lincoln, Nebraska.

WASHINGTON Area sale: BC-348R 110 VAC with handbook and Q5'er; BC221 with calibration book; 2 heavy duty antenna rotators; Command Q5'er; UTC xfrmrs, 4200 CT 300 Ma., 6000 CT, 300 Ma (new); 3-4 Command xmitter; PE 103; small power and audio transformers, tubes, condensers, meters and miscellaneous surplus and small parts. W9GLP/4, 607 N. Dinwiddie St., Arlington, Va.

SALE Or trade: Two BC-645s, never opened, in orig. boxes, $40 for both; HF 10-20 converter, as new, $50; BC-221AK with modulation and factory-built regulated supply, $100; S-38, $25. All F.o.b. Knoxville, Tenn. Need: 75A1, 800 cycle filter for 75A4, vacuum variable capacitor, and B&W 51SB. W4BBL. R. 15, Ball Camp Pike, Knoxville, Tenn.

LVSCO 600 transmitter without modulator, like new, in original case. Antenna coupler included. $89.50. D. C. milliameters, Triplett 2 in., 0 to 50 Ma., new, unused, $4.95; General Electric 2 in. 0 to 300 Ma. and 0 to 500 Ma., new, unused, $4.85. Write: Dr. Charles H. Schiefley, Mayo Clinic, Rochester, Minn.

FLORIDA: Sell HQ-129X, Model B slicer; B & W TR switch, all $240; Deluxe 458VFO 160-10, 20-A; Lakeshore P-400-GG, all $535. Only one month's use except HQ-129X. G. F. Guler, WØZSD/4, Palmetto Trailer Park, Box 205, Merrit Island, Fla.

SELL: AT-1 converted for high power (Oct. 1955 QST) $26, modulator and mike, $10, both $35. Double conversion rcvr (80, 40 M.), $45; ARC-4 converted for 2, with instr. 1 ss pwr. supply, $21, Donald Uber, 132 Woodbridge St., South Hadley, Mass.

FOR Sale: National NC-57-B, $40; BC-348-Q with 110 AC power supply, speaker and Q5'er with schematic, $60, both in good condition. Contact W8SVV, 1856 Cornelius S.E. Grand Rapids 7, Mich.

SELL: 50 watt CW Knight transmitter for $40, new cost was $45 in kit form; 3 months old; PI output, 807 final, perfect condition. Stephen Spires, KN8BVS, 636 N. *High* Lancaster, Ohio.

WANTED: Subraco MT-15X. Advise condx and price. V. L. Spoley, W2ASF, 786 Palmer Rd., Bronxville, N. Y.

BARGAINS: with new guarantee: S-38C. $32.50; S-40B $75.00; SX-62 $179.00; S-27 VHF $79.00; Lysco 600 $69.00; Lysco 600-S $89.00; Eldico TR75TV $35.00; HT-17 $24.50; Meissner EX VFO $25.00; HQ-120X $99.00; SW-54 $30.00; NC-173 $125.00; NC-183D $265.00; HRO-50T $199.00; HRO-50T-1 $245.00; Johnson 122 VFO $24.95; Viking 11 $229.00; Viking Ranger $189.00; RME-84 $65.00; HT-18 VFO $39.00; Babcock MT-5A $75.00; Sonar SRT-120 $99.00; Globe Trotter 40 $39.00; Scout 40 $49.00; Scout 40A $59.00; Scout 65 $69.00; Globe King 275 $225.00; Globe King 400 $249.00; Elmac PMR-6A $89.00; Elmac A54H $89.00; PSA 500 $19.95; Central Electr. 10A $79.00; Central Electr. 10B $109.00; Collins 32VI $249.00; Heath AT-1 $24.50; Heath AR-2 receiver $22.50; RME VHF 2-11 receiver 2-6-10-11 $89.00; BC-779 w/p.s. (rack) $129.00; and many others. Free trial. Terms financed by Leo, W0GFQ. Write for catalog and best deals to World Radio Laboratories, 3415 West Broadway, Council Bluffs, Iowa.

MANUFACTURER high quality communications antennas including 15 ft. parabolas wishes to associate with selected amateurs as sales representatives. Write: Mark Products, 6412 Lincoln, Morton Grove, Ill.

PA0ZL needs a crystal filter for BC348 with 915 Kc IF. If you have one you don't need, contact W3VZJ.

QRA? Your call distinctively fired in enamel on copper tie bar, $1.50. Matching cuff links, $1.50. Guaranteed. Make exc. Xmas Gifts! E. Berger, Box 22, Mineola, L. I., N. Y.

WANTED: German Luftwaffe or Army receivers and diagrams; types KOLN or E52, shortwave, and C, medium-wave. Bailey: TV and other receiving antennas. W9OBU, Box 122, Beloit, Wis.

BEING Transferred. Sell W7PZ's DX Ranch three bedroom, brick, five acres, two poles. Wired for 220. Near Hughes and Douglas. Follow that urge. Come on out to Tucson. Write Ben for information. P.O. Box 11096, Tucson 2, Ariz. Ben C. Fidler, W7PZ.

NEW Crystals for all commercial services at economical prices; also regrinding or replacement crystals for broadcast, Link, Motorola, G-E and other such types. 21 years of satisfaction and fast service. Send for L-7 catalog. Eidson Electronic Co., Temple, Texas.

FOR Sale or Trade: Band-switching mobile system, power supply, transmitter, receiver, antennas, load coils, etc. Will trade for outboard motor Send for list of other bargains, tubes, transformers, Single SideBand, etc. W9ZKD, 2912 Holmes St., Springfield, Ill.

SWAP 16mm sound projector Ampro Navy model for HQ-129X or equivalent receiver. K2JSQ, George F. Neumann, 171 Madison Rd., Scarsdale, N. Y.

FOR Sale: Sprague Kwick Test KT-1 condenser checker. Like new and in perfect condition. Also new in unopened carton, Heathkit V.F.O. Asking $35 for both or would sell separately. Fred Kloepper, W0FON, Lawrence, Kans.

ANTENNA Engineer wanted. Telrex Labs invites your application for the post of chief antenna design engineer. The problems are varied and interesting, and could be filled by a man aged 30 to 35 with a good grounding in physics and some experience in radio and electronics, particularly with a record of achievement in antenna design. Applications should be addressed to M. D. Ercolino, President, Telrex Labs, Asbury Park, N. J.

PERFORATED aluminum sheet .051, 5/6" OD holes, 1/8" centers, $1.20 sq. ft. cut to size. Send for listing on Beams, Aluminum Tubing, etc. Radcliff's, Fostoria, Ohio.

FL8 audio filters, 2 for $2.00 prepaid in U. S. BC-1031A Panadaptor, gud condx w/instrux book and extra C.R.T., $75; BC-348 shock mts, $1; 110V DC to 110V AC 250 watt converter, $10; 300-600 Mc freq. meter gud condx, $7.50; 100 watt BC669-B transmitter and rcvr with PE110-C, 115 VAC power supply. Homelite 2500 watt AC generato , gud condx. Will sell or trade for gud tape recorder, hi-fi gear or Gonset Super Six or equivalent converter. Will pay cash for 15 meter bandspread coils for HRO 50T1 receiver. M. D. Haines, W5QCB, 1316 S.W. Military Dr., San Antonio 21, Texas.

SELL: Central Electronics 20A with QT1, $175; Collins 75A1 in gud shape, $195; Gonset Triband with limiter, $20. J. Cain, W0ICV, 1122 Douglas, Alexandria, Minn.

SELL *QST*'s 1931 thru 1939, just few missing. 1946 thru 1955, complete and like new condx. M. H. Severson, W0AHX, Hutchinson, Kans.

HIGH Power components: Amertran 2½ KVA, rectifiers and filter, $100; RCA modulation transformer, input, and pair of 810's, $35; pair of 250TH's, $20, others. Southern California only. W6GTE, LOrraine 9-2465. South Gate, Calif. V. Talbott.

SALE: 6 volt dynamotors, like new, 645 volts 155 Ma., $14.95; 600 volts 265 Ma., $16.95; 380 volts 340 Ma., $16.95; ICA Deluxe Signatone code practice oscillators, $7.95. Postage extra. Lectronic Research, 719 Arch Street, Phila. 6, Pa.

WANTED! U. S. and foreign coins or collection. Trade any radio equipment or parts. B. Bernbaum, 1109 Greenwood Ave., Wyncote, Pa.

SELL: 800 watt phone transmitter, 2 complete RF sections with PP 810 finals. Select either of 2 bands (80, 40, 20 or 10) with one switch. Overload and underload protected. 805 modulators. Input Variac controlled. TVI suppressed. $300. Prefer a local sale. Also DX100. Spare tubes for both. Will ship DX100. Dr. Walter Robinson, W9PUY, 500 N. Montgomery, Gary, Ind.

CPR-90: Receiver and speaker, in very new condx for sale: $300. George Pal, 206 E. Jackson. Harlingen, Texas.

FOR Sale: Collins 310B-1 exciter, in perf. condx: $175. W7IV, 16833 19th St. S.W., Seattle 66, Wash.

BARGAINS: Reconditioned with new guarantee. Shipped on approval. Hallicrafters S38 $29.00; S40A $69.00; S40B $79.00; S85 $89.00; SX43 $99.00, SX-99 $119.00 S76 $109.00; SX-96 $189.00; SX-100 $229.00; SX71 $149.00; National NC-57 $59.00; NC88 $79.00; NC98 $119.00, NC173 $129.00; NC183, NC240D, NC183D, HRO5TAJ HRO50T, HRO50T1, HRO60, NC300 Hammarland HQ140X $179.00; HQ129X, HQ-150, Super Pro, SP600JX, Viking Adventurer $39.00; Ranger $179.00; Viking II $199.00; Collins 75A1, 75A2, 75A3, 75A4, 32V2, 32V3, mobile converters, receivers, transmitters, many other items. Easy terms. Write for list. Henry Radio, Butler, Mo.

WANTED: Receiver able to receive 80-10 M. Not over 10 years old, also Viking Ranger. Send description and price to Lowell Ecker, Sedan, Kans.

UR call attractively engraved on 1¼" x 5½" metal plaque. $1.00. Three plaques, $2.50. WAT, Box 128, Brecksville, Ohio.

HIGH Power and sideband users! Vacuum coaxial antenna relay with vacuum unit made by Eimac. Will take all the power and use you can give it. $59.90 including auxiliary contacts for receivers etc. At your dealer or write direct: South Bay Electronics Co., 3125 Barney Ave., Menlo Park, Calif.

SELL: 6 ft. Bud cabinet, used 4-250A, pair 4X150A, 805, 872, 832, 829, variable condensers Johnson 04100, National TMA 150, TMK 100, Bud 1556, 2 amp. Transtat, converted ART-13 UTC S-60, parts of several KW and LV power supplies. W5OER, Knellinger, 1434 Winchester St., Jackson, Miss.

SELL: Viking Adventurer, in perfect electrical condition, $50. KNØDAW, Ralph Gebhard, Box 417, Adrian, Minn.

HAMMARLUND SP-600-JX, rack model, in perf. condx: $675. F.o.b. Chicago. W9DHT, Dick Karl, 2836 Leland Ave.

COLLINS Equipment: 17F9 100 watt Autotune xmitr, 813 final, $75; 51-H-3 receiver, 12 tubes. 1.5/18.5 Mc Autotune or manual, $65; TCS-12 xmtr with S/S marine xtals, $45 (above less dynamotors), marine antenna, new in carton, $35; Hy-Lite 3-el 20-m. full size beam, new, $35 local deal only); Gonset Super-Six converter, $35; compact 10 meter mobile transmitter, $20; Kenyon 300 watt (audio) modulation xfrmr, $15; lots of parts and tubes. What do you need? Want: Old 10A SSB exciter in any condition. W2CFT, Waring, Box 483, Lake Ronkonkoma, L. I., N. Y.

SELL: Harvey-Wells TBS-50C, $55; new Workshop 10 meter beam, $15; new National MB-40L multiband tank, $8; SCR-522 xmitter, $10. M. J. Costa, 41 Green Pl., New Rochelle, N. Y. Tel. NE 2-9414.

FOR Sale: NC-88 in good condition, $70; AT-1, $25; also rare Edison gramaphone (1898) with 50 cylindrical records, horns, etc. $50. Robert Champlin, Jr., 131 Bryant Ave. Springfield, N. J.

290 Copies with 11 binders, *QST* from 1929 to the present. RCA Review, 1946 through 1951; Proceedings of the IRE, Sept. 1943 through Jan. 1950. Without October 1944 issue; 4 binders, 3 yearbooks. 12 Handbooks: $99 complete. Will sell separately. Laurence Geis, 2419 So. 27th St., Arlington, 6, Va.

FOR Sale: KW1 in gud condx. Highest offer over $2000 takes it. Free delivery within 200 mile radius of M.D. Ercolino, W2BDS, RD #1, Asbury Park, N. J.

WANTED: Collins 75A1 or 75A2. VE3BNV, 396 West Gore St., Stratford, Ont., Can.

FOR Sale: Large variety ham parts; tubes, capacitors, transformers, power supplies, what have you? Also dynamotors vibrator supplies, various mobile equipment also TV repair parts, Sams books and test equipment; also 1950 Crosley station wagon needing motor work, trade considered. Need TR4 type rotator. Come on over. Marc Felt, W2GYQ, 50 Prince Lane, Westbury, L. I. N. Y. ED 4-5135.

DELUXE 6 ft. Par-Metal rack on castors, 2350v at 450 Ma. supply. RCA KW modulation transformer and pair 810's, Collins 70-E8A, oscillator, 304TH and some KW components, Hickok RFO4 'scope. Sell or trade for commercial 120 watt rig. Geo. B. Lagaly, W5NTL, 912 N. Hester, Stillwater, Okla.

BUY Heathkit, Johnson Viking, Tecraft and other equipment wired and tested. Heath DX-35 wired and tested, $81.95; power supplies, etc., built to order. Complete plans for 6 meter station. Transmitter, converter, beam, etc. $1.00 (this complete station built on special order only). Transmitters, receivers, commercial equipment aligned, repaired, etc. Free list of new and reconditioned equipment. The J. Lynch Electronic Co., P.O. Box 54, Glen Oaks Branch, Floral Park, N. Y.

FOR Sale: 3D camera, stereo Realist with leather case, projector with case and metallized screen. New condition. Actual cost $300. Trade for equivalent value in ham gear. Frank Shopen W7EBG, 4916 West Indianola, Glendale, Ariz.

SELL: Eldico TR75TV with MD-40 modulator, excellent condx, on air now. With four crystals, coils for 80, 40, 10 meters, operating manuals, $80. Express collect. W9HXR, 236 Vine, Hammond, Ind.

FOR Sale: Viking Ranger, $200; NC-98, $100, or best offer for both. Must sell quickly. Write: John Perry, 2823 Broussard St., Baton Rouge, La.

SX-62 with "S" meter, speaker 2 meter conv. fine condx, Globe Scout, 65-A wity VFO, $80; Eldico 2 mtr. xmitter, $35; 522, new condx, $20; GP-7, tuning unit. W1FBD, Ken Foshay, 23 Thorpe St. Ext., Danbury, Conn.

GONSET Communicator II, perfect, with Astatic mike, $165; RK4D32, new $13; 4E27A, $11; 4-125A, $10, used, perfect; RME VHF152A converter 2 6-10 11 meters, perfect, $40; Heathkit 0-6 'scope, perfect, $23. Powerstat O-135V 15 amp perfect. $17. All items F.o.b. List other equipment for stamped envelope Joe Harms, W1GET, Pleistow, N. H.

FOR Sale: Collins 75A3 rcvr, perf., $310; B Slicer with AP1-3, $65, both for $365; 32V2-3, perf. $395; B&W 51SB Sideband generator, new $200, both for $585; C-E 20A with Deluxe 458 VFO, new, $215; Gonset signal slicer, 455 Kc, new, $15; RCA 'scope, 5 in. Mod. 158, $40; SX-42, $125. Edward D. Flynn, W9IHD, 3118 N. Francisco Ave., Chicago 18, Ill.

SALE: New Gonset 2-meter converter, $25. W4WSF, John C. Kanode, 244 Parkway, Winchester, Va.

FOR Sale: Collins 32V3 transmitter. In perfect condition, also in operation and in appearance. Price: $575 F.o.b. Chicago. A. Martinka, 3723 Magnolia Ave., Chicago 13, Ill.

FOR Sale: Collins KWS-1 with 4X250Bs, in excellent condition, $1625. W8VEL, Hoblack, 829 Elizabeth, Dearborn, Mich.

OMEGA D-II photo enlarger, seven years old, in like-new condition, color head, f/4.5 lens, 4 x 5 negative holder, cost $275 new. Want to trade for radio equipment. J. Windeck, 630 So. Hermitage, Chicago 12, Ill.

COMPLETE C.T. power packs not wired; 900 and 750 volts at 300 mils, 1000, 2500, and 2000 volts at 300 mils, 6000 and 4840 volts at 200 mils, 360 and 270 volts at 250 mils; Stancor A3898 kilowatt modulator transformer. Wired P.P. kilowatt final with 40 meter plug-in coils. All new parts Any reasonable offer acceptable. Herman Okon, 211 East Ninth St., Clifton, N. J.

SELL: Pair Eimac 5-125B pentodes used (but not much) $16; Raytheon new 813, $5.50; Weston milliameters 100 and 500, $3.00 each; Triplett #341 RF meter, $4.00. Six years of *QST* from 1946, $6.00, all postpaid. W3OJW, Frelland, 6913 Churchland St., Pittsburgh 6, Pa.

SELL: SX-99 receiver, new, used only 50 hours: $105. In Navy, must sell. Wayne Clymer, U.S.N.C.F., Navy 214, Box 60, c/o F.P.O., N. Y., N. Y.

SELL: New 6 meter Gonset Communicator (6/115V), $185. Want: Sonar MR-3 receiver, Stancor ST-203A xmittr, 10–20 W. Mod. xfrmr, new 4D32. Roy Sawdey, 5255 Harper, Solon, Ohio.

SELL: DX-100, $180; SX-99, $100. Both in excellent condition. Write to K2PHE, Dan Francomano, 31 Sherman Ave., Yonkers, N. Y.

WANTED: Used laboratory type parts and equipment. For sale: tubes, meters, misc, parts and equipment. Free list. Clarence Bigelow, 105 North Main, Bluffton, Ohio.

FOR Sale: Gonset Communicator II with ground plane antenna, $170. Phil Merikle, K2GJZ, Norman Place, Tenafly, N. J.

CODE Made easy with your tape recorder. Full details on request. Tapecode, Box 31, Langhorne, Pa.

SELL: Used Hallicrafters HT-20 transmitter, spare 4D32, covers all frequencies 1.7 Mc. through 30 Mc. Ideal for MARS. Instruction manual, $250. Write W4DSO, Lowdermilk, Box 444, Morganton, N. C.

FOR Sale: National HRO Sr., complete with speaker, power supply and 4 sets of coils, in perfect condition: $150. K2MPC, Tolk, 20 The Oaks, Roslyn, L. I., N. Y.

SX-71 Hallicrafters in A-1 condition: $100. F.O.B. Farmington, Conn. Harvey Gray.

HARVEY-WELLS T-90; R9-A and APS-90 to best offer. Cost $400. The 8–21–56. Reason: Never worked; no satisfaction. In factory good shape, good for tinkerers. W1LRY, Box 373, 550 West 20th St., NYC.

SELL: DX-100 now operating, $185; HQ-129X in gud condx, $130. M. H. Klapp, 17 Kenosha St., Albany 9, N. Y.

FOR Sale: DX-35 modified for increased drive and Improved keying by Heath engineers: $55; also Hallicrafters S20R in excellent condx, $45; perfect Novice station. G. W. Speck, 1243 Primrose Dr., Orange, Calif.

SELL Or trade: new tubes, 832A's, $4; 810's, $7.50; TZ40, $3; 3C33, $3.50; new 2-meter 100–156 Mc. crystal controlled transmitter, really hot, $18; ideal Novice transmitter, BC-338A, covers 3000–8000 Kc., $15; dynamotor unit PE94C for SCR-522, $10; VHF signal generator, $18; Mod. 2B3 aircraft homing transmitter, $5; BC-322 transmitter-receiver, range 52–65 Mc., $18; new frequency meter, covers 125–20,000 Kcs with original A.C. supply and calibration book; Navy version of BC-221, best offer or trade. New plate transformer 4400 CT, 400 mils, primary 220 V. AC. W4FHY, Bill Slep, Box 178, Ellenton, Fla.

ALL UTC in exc. condx: S33, $4; S34, $4; S47, $15; S22, $15; S-9, $3; S57, $4; S61, $4. F.O.B. Peekskill, N. Y. R. L. Walker, W2MNY, Adams Rush St. R3, Peekskill, N. Y.

FOR Sale: Mobile transmitter, Stancor 203-A, 12V., $25; Hallicrafters SX-24, $25. J. Chooljian, K2KRF, 5301 Palisade Ave., West New York, N. J.

WANTED: PP final amplifier (RF) using 811's or 812's with coils for all bands. Geo. Leininger, W8QZF, 16412 Marquis Ave., Cleveland 11, Ohio.

CENTRAL-Electronics "A"-Slicer $49.95, "B"-Slicer $74.95, 10-B $139.95, 20-A $199.95, 458-VFO $49.95; Collins 32V2 $450.00, 32V3 $550.00, 75A2 $299.95, 75A3 $399.95; Elenco SS-75 $175.00, PA-400 (new) $199.95; Elmac A-54-H $110.00; Gonset Communicator-II $179.95, Super-Six $34.95; Triband $24.95, 2M Linear-amp $129.95; Hallicrafters SX-62A $250.00, S-40A $69.95, S-40B $79.95, HT-17 $34.95, HT-18 $49.95, S-76 $139.95; Harvey-Wells TBS-50D $79.95, TBS-50JR $39.95; Heath AT-1 $24.95, AR-2 $24.95, AR-3 $29.95; Johnson Viking-II $249.95, VFO $39.95, Adventurer $44.95; National NC-183D $275.00, HRO-60 $399.95, HRO-50T1 $325.00, NC-100ASD $69.95, NC-200 & Spkr $129.95, NC-57 $64.95. Many other used items available; write for latest list. Evans Radio, Box 312, Concord, N. H.

FOR Sale: 10-meter beam, 3E10PD Hy-Lite, carton unopened, $15; new 24 hr. clock, unused, $10; used NC-SW54 rcvr, $25. W2PDH, A. Clark, 44 Lewis Lane, Syosset, L. I., N. Y.

REAL Bargains in new and used gear. AM — SSB — CW — RTTY. High trades. Bonus for cash. Easy budget terms. Lowest finance rates anywhere. Get the whole story from the Yellow Flyer. Free. Write to: Marshall Electronics, 855 Burlington, Frankfort, Ind.

NRI Communications course w/binders, 50; 6146 tubes, like new condx, $2; filament, multitap bias xfrmrs, excellent, make offer cash only. 100% QSL. W3UDM, Howard Leyland, 19 Rainbow Lane, Levittown, Pa.

CLEANUP Sale: 50 mfd. Pyranols, 3000 volt, $30; RME-LF 90 converter, 90–600 Kc, $10; Abbott MRT-3 transceiver 2 meter, less power supply, $15; Triplett 1295 modulation monitor, $10; SWR meter similar to Jones MM-1, $15; 1222 A signal generator with BC 1298 interconnector, $50; RG 11/U cable, new, .07 ft., Par-Metal C-215 rack, new, $25; RBV-2 Panadaptor 455 Kc., $125; National 1-10 RCR coils, less power supply, $20. Write for big list, tubes, parts, meters, all F.o.b. Oakdale, L. I., N. Y. Ted Whildin, W2HS.

VIKING Pacemaker for sale, with original packing and guarantee, $445; NC-300, $299; 10-B exciter with BC-458 VFO and ground grid linear final, $170; BC-348Q perfect condition, $75; LM-13 freq. meter (Navy) with modulation and original calibration book, $85; Viking II and Viking VFO, 5 months old, $239; Modulator 120 W with UTC-S-21 trans. 809's, $35; 75W Novice xmitter in Handbook, $35 W8VMG, 826 Lane Blvd. Kalamazoo, Mich. Tel. FI 3-6007. G. L'Esperance.

TUBES: 4D32, $13.95; 715A, $1.75; 725A, $1.75; 706AY $1.75, GL299, $1.75; 803, $3.75; 6–11 Amperite Ballast 100 for $10. all new, in original cartons. Many units of Surplus and Standard Ham Equipment on hand at the lowest prices. Our overhead is down. Our volume is up. That's why your Real Best Deal is at Ladd Electronics, 111 North 41st St., Omaha, Nebr.

MOBILEERS! Johnson Mobile xmittr and Johnson mobile VFO. Gonset Super-Six, Johnson base-load all band coil, PE101C converted to 6 volts, coax, cables, etc., All for $110, or will sell separately. Robert D. Martin, Box 183, Crane, Ind.

ANTIQUE Radio magazines including *QST*s. Special and transmitting tubes. Mrs. Conrad Beardsley, 103 Wythburn Rd., So. Portland, Me.

LINEAR Amplifier, continuous tuning, self-contained, 300 watts input, five watts drive, $98 complete. Photos on request. WØQFZ, Jeppesen, 2318 Second Ave., Council Bluffs, Iowa.

HI-POWER Mobile generator, 12VBC/55A; Delco-Remy 1106458, new, never used, $25. New 829B, $5; Telrex 2 mtr. 8 el. beam, new, never used, $10. W4CHO, Lanett, Alabama.

TRADE: Xtals, battery charger, Emerson Radio and recorder player, etc. Send stamp for complete list. Blum, 396 E. Whittier St., Columbus 6, Ohio.

WANTED: Central Electronics 20A SSB Exciter. State condition and price. Don Jackson, W9BQC/Ø, Luther College, Decorah, Iowa.

FOR Sale: Ideal receiver combination giving continuous tuning from 1.5 Mc. to 150 Mc.; HROST-A, $130 (1.5 to .10 Mc.). Includes speaker and full set of bandspread coils; S-36, $80 (28 to 150 Mc.). Or the pair for $200. Price F.o.b. sellers QTH. Chuck Sprague, KØDQT, Box 11, Hiawatha, Iowa.

FOR Sale: Silver 700, 144–220 transmitter with tubes, spare 832A, $27.50; National 1–10A receiver complete. $30; Heath AR2 receiver, $25; National SW-54 receiver, $32; Four HK23G tubes, $5; Signal Generator, 3 outputs, 455–500–1600 Kc., new, $5; Heath AT-1 transmitter, $25. Powers, 1404 Ohio Ave., Dunbar, W. Va.

FOR Sale: NC-183D w/spkr and s.s.b. slicer; Elmac A-54-H; both in excellent condition. Best offer. Ed Robinson, W5VTN, Box 1113, Emory University, Ga.

FOR Sale: Collins 75A2 with NBFM adaptor, used little, like new in performance and appearance, $299. Will crate. First check buys. W2HLT, S. Tucker, 51–10 Little Neck Pkwy, Little Neck 62, N. Y.

SELL: Complete set of QSTs, January 1916 through October 1954. Some copies bound. June 1931 and November 1939 copies missing. Make offer. Mrs. L. P. Geer, 2111 Southview Ave., Tampa, Fla.

WANTED: BC-224, BC-348 receivers; ARC-3, BC-788, R5/ARN-7. Cash or trade. Immediate action, Harjo Sales Co., Dept. E, 503 N. Victory Blvd., Burbank, Calif.

SELL Your way to wealth! Wanted: Surplus military and commercial aircraft electronics: BC-788, 1–152, ARN-7, BC-221, RTA1B, ART-13, DV-21, APN-9, ARC-1, ARC-3; transmitters . . . receivers, test equipment, etc! Wanted: Electronic tubes: Broadcast, transmitting, receiving, Magnetrons, Klystrons, miniatures, sub-miniatures, ruggedized, etc.! Top prices paid For fattest checks, sell to Rex! Write or phone description for immediate action. Bob E. Sannett, W6REX, 1524 S. Edris Drive, Los Angeles 35, Calif. Phones: REpublic 0215, CRestview 1-3856.

FOR Sale: Hallicrafters SX71, $130; Hammarlund 4–20 xmitter with 4–11 modulator, TVI suppressed, $50. Ideal for Novice. Homemade 6 tube cascode 2-meter converter $25. All in exc. condx. Also BC-342J with hvy duty pwr supply, $30. Les Babcock, W2EGM, 22 Melrose Dr., Toms River, N. J.

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MALLORY HAM BULLETIN

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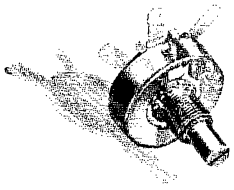
excitation level control
"S" meter circuits
voltage regulators



"C" Type 2-Watt Control

one of the smallest rated at 2 watts dissipation; only 1 1/16" in diameter. Handy for many low voltage spots where size is a factor . . . such as bias control, "S" meters. Grounded rotor arm, screw-driver-slotted shaft, 266° electrical rotation. 6 to 15,000 ohms.

"R" Type 2-Watt Control

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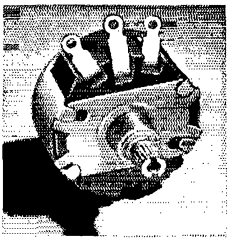

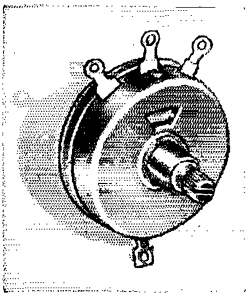

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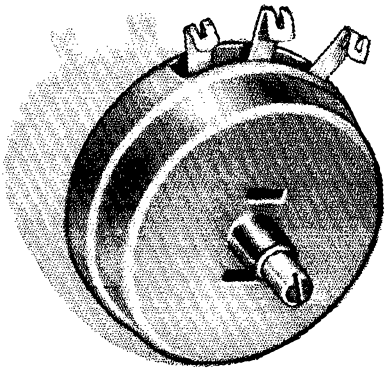
the old stand-by, used by more amateurs than any other. Universally accepted for voltage dividers, bias control, test instrument circuits. Resistance values from 0.5 to 100,000 ohms.



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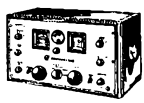

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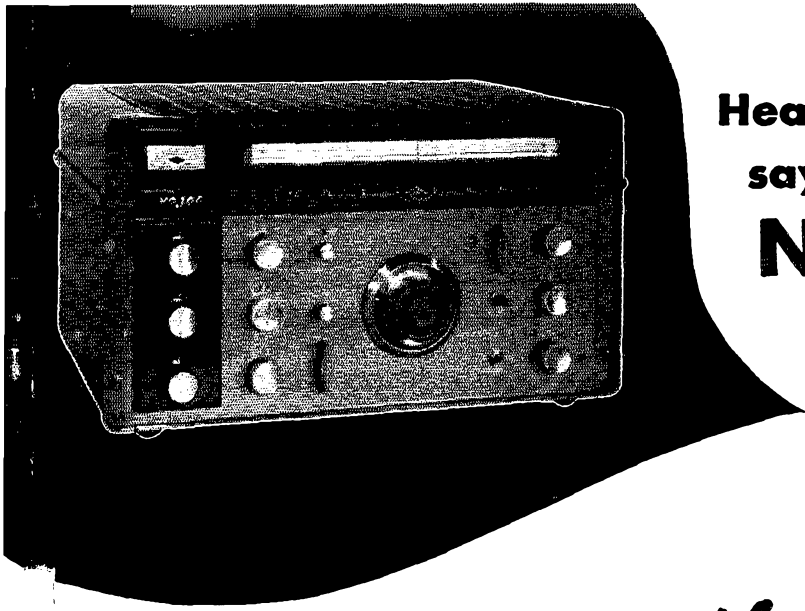

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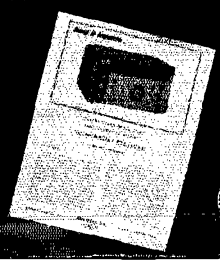

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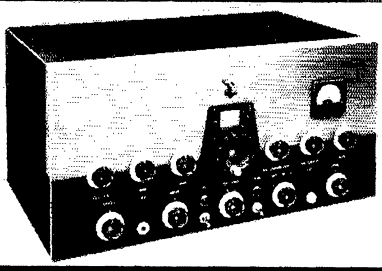

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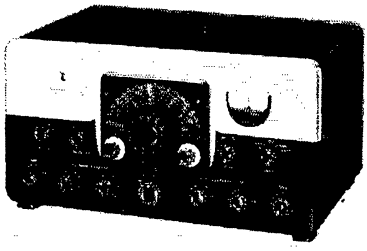

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