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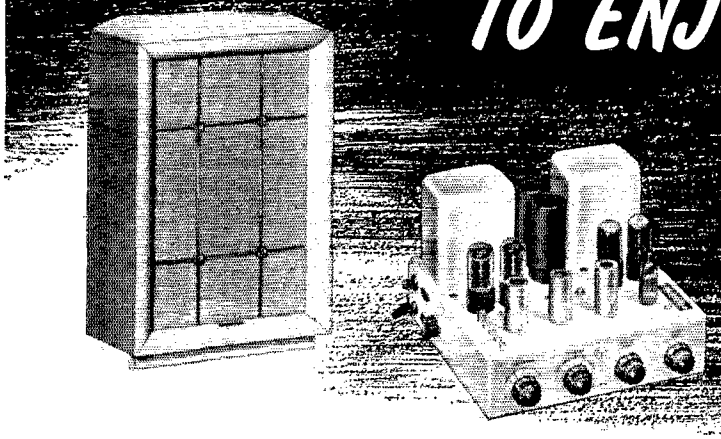

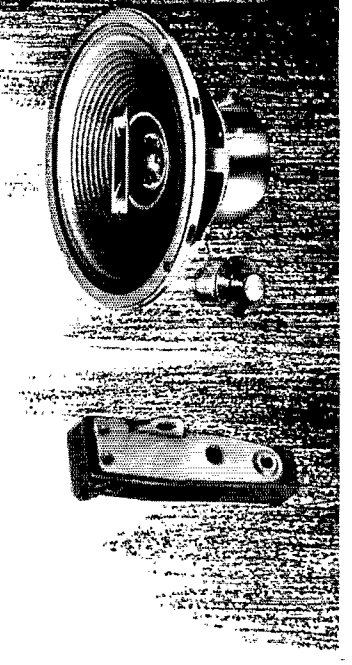

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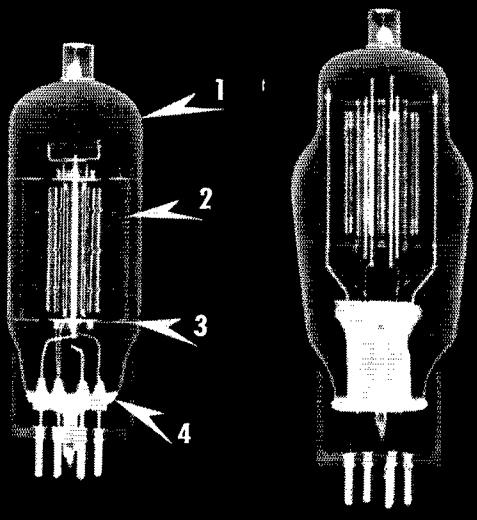

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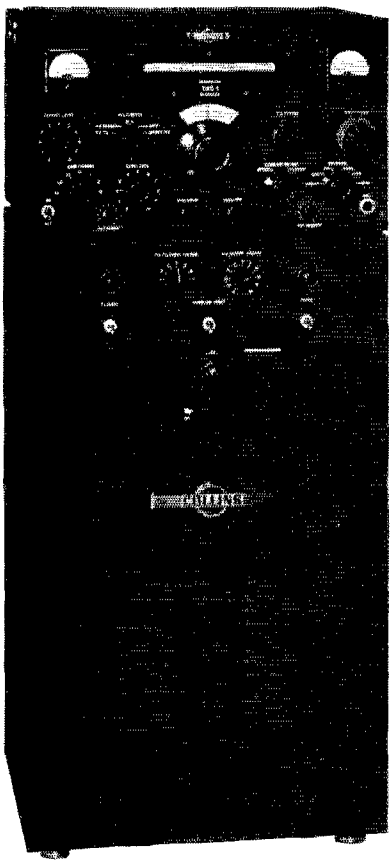

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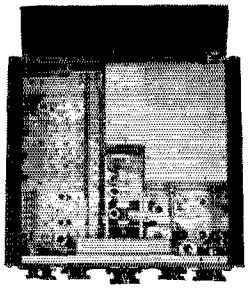

KWS-1K

32W-1

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QST

MAY 1955

VOLUME XXXIX • NUMBER 5

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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West Hartford 7, Connecticut
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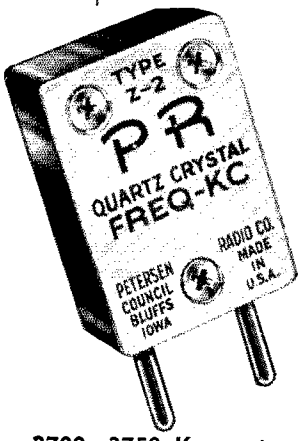

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Reports Invited. All amateurs, especially League members, are invited to report station activities on the first of each month (for preceding month) direct to the SCM, the administrative ARRL official elected by members in each Section. Radio club reports 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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is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

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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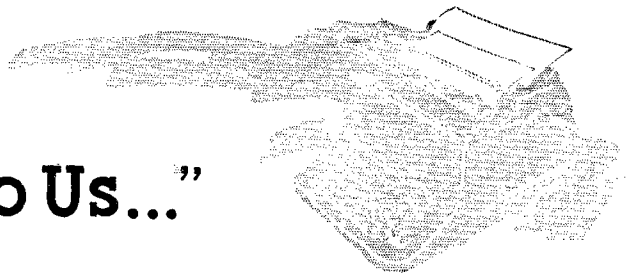


"It Seems to Us..."

FIELD DAY

One Saturday in mid-June of last year, from their homes in Canada, the U. S. and possessions, eight thousand three hundred and eighty persons,[1] who otherwise appeared perfectly normal, disappeared into woodlands, mountains and open fields carrying a little food and clothing and a lot of radio apparatus. There they set up two thousand and twenty-six[1] separate transmitter-receiver combinations operating independently of commercial power mains and for a solid twenty-four hours of the ARRL Field Day had themselves a time etching the Kennelly-Heaviside layer indelibly with "CQ FD."

The simple process of subtraction indicates that there were 114,907 holders of amateur licenses who did not take part in Field Day fun. We think they made a great mistake as any participant in the 1954 event will confirm. But it is a mistake which can easily be corrected — the opportunity will come again this June, on the 25th-26th. And with balmy days here again for most of us, now is the time. . . .

. . . Time to find out if Old Man Smith's apple orchard will again be available for an operating site. We've got to try out the generator, to make sure the needle valve isn't gummed up again, and that the gas line isn't about to expire from old age. The tent will have more leaks than last year, but we'll try the paraffin again and keep our fingers crossed. We take our local public relations seriously, but that new reporter on the *Daily Blast* may not think a night on a canvas cot contributes anything to the public knowledge. Shall we use an antenna changeover relay this year, or just toss a wire out the window for receiving? We've got to decide whether we'll have a multi-station set-up so everyone can operate Sunday afternoon, or stick to one station and keep it busy all night. Bill Jones' XYL will say she doesn't think she wants to provide the grub this year, and then change her mind, as she always does, and put on a magnificent spread. . . .

So we'd better devote the next meeting to Field Day. And you'd better, too. First thing you know it will be time to put up the antennas, and then you'll suddenly remember that one of the masts got broken when somebody let go of a guy wire last year. And that table leg needs fixing again. So, you see, if you don't get busy you're liable to miss all the fun — and have only yourself to blame.

We think FD is the top event of the amateur year. Where else, in one week end, can you combine the good-fellowship of a hamfest, the underlying motive of preparation for public service, the fresh air and fun of a picnic, the teamwork of coöperative effort, and the excitement of an operating contest? If you haven't tried it before, make it *this* year. BCNU/1!

[1] And probably many more not reported to Hq.

MOBILE SAFETY

For some time now we've been on the verge of reminding amateurs of the importance of careful driving during mobile operations, a responsibility accented by the growing number of states which issue call-letter license plates. "Lighthouse Larry" in *G-E Ham News* last summer stated the case so nicely, however, that we can't do better than commend to your serious attention the following excerpts from his editorial:

> . . . The license plate program has met with considerable success throughout the nation — and has given us a great boost in publicity. In many cases we are thus put on a level with doctors and other public servants.
>
> However, as we attain this stature we also have to remember that it behooves us to live up to our new standing — by added care and courtesy on the road. Need more be said than to comment that every traffic ticket a ham with call-letter license plates gets is a black eye for ham radio? And suppose through our carelessness it should be something worse than just a "ticket"? Suppose it's a broken, twisted body of a child on the highway? We see such pictures in the newspaper once in a while. And I fervently hope I never see one which includes a "murder car" bearing ham call-letter license plates.

You think this is a painful and unpleasant subject? Sure is, but not half as painful and unpleasant as the real thing. We bring it up in the hopes that a few thoughts now, beforehand, may prevent the real thing from ever happening.

A.R.R.L. PACIFIC DIVISION CONVENTION

Fresno, Calif. — May 21-22, 1955

The 1955 ARRL Pacific Division Convention will be held in Fresno, Calif., on Saturday, May 21st, and Sunday, May 22nd, and will be sponsored by the Fresno Amateur Radio Club, Inc. There will be two days of excellent entertainment consisting of a variety comedy program, many outside activities, electronic exhibits, technical discussions, and mobile hunts, mobile judging, and ladies' luncheon and activities, topped off with a barbecued steak banquet. The price for each ticket is $6.75. For further details address inquiries to: 1955 ARRL Pacific Division Convention, % Grant Storey, W6NTK, 908 West Pico St., Fresno 5, Calif. Preregistration ends May 16th, 12:01 A.M. If you desire to register early, make out your checks to the Fresno Amateur Radio Club, Inc.

COMING A.R.R.L. CONVENTIONS

May 7th–8th — Oregon State, Portland, Ore.

May 21st–22nd — Pacific Division, Fresno, Calif.

June 10th–12th — West Gulf Division, Fort Worth, Texas

June 11th–12th — North Dakota State, Bismarck, N. D.

June 11th–12th — Southeastern Division, St. Petersburg, Fla.

July 30th–31st — Canadian Division, St. John, New Brunswick

August 12th–14th — Roanoke Division, Old Point, Va.

October 15th–16th — Central Division, South Bend, Ind.

October 22nd–23rd — Midwest Division, Omaha, Neb.

May 1930

. . . New records set . . . all continents active . . . excellent reception . . . foreign stations craving more U. S. activity! These are the highlights of "International Communications on 28 Mc.," by Clark C. Rodimon, W1SZ.

. . . *QST* announces the appointment of George Grammer, W1DF, as Assistant Technical Editor. Mr. Grammer, formerly W3AIH of Audubon, N. J., joined the Headquarters staff last fall to take charge of the ARRL Technical Information Service.

. . . Pioneering in the field of air-to-ground communications is still continuing with recent 'phone experiments. A summary of the latest is presented by C. H. Vincent, W8XB-W8RD, in "Airplane Radiophone Communications Experiments."

. . . In keeping with Mother's Day, the "Old Man" pays a fine tribute to moms (especially those of hams!).

. . . W4GV is described as a station featuring effectiveness, convenience, and low cost. Operator Cornelius W. Zimmerman pounds the ether with two transmitters putting out healthy signals on 7 and 14 Mc. The receiver is a simple, but nevertheless effective, two-stage "blooper."

. . . In "Our Regulations Are Revised," K. B. Warner tells of latest FCC changes in amateur regulations. Among them are the solidification of the amateur's position, better plate supplies required, the 10-meter band made exclusively amateur, and compulsory logkeeping.

. . . A light, compact, and completely shielded "inhaler" that covers a wide frequency range as well as being self-contained is described by Howard A. Chinn in "An All-Service Portable Receiver."

. . . "ARRL Coöperates with the 'Arctic Patrol' in Mid-winter Maneuvers," by F. E. Handy, gives a vivid description of the role played by amateur radio in assisting the Army Air Force.

. . . "The All-Section Sweepstakes Contest," by E. L. Battey, recounts the results of this highly successful "rat-race." Top honors go to W1ADW who tallied 13,158!

. . . A new system of uniform tube designation is being adopted by *QST*. Under the new plan, a UX-210 becomes Type '10, a DeForest 422 becomes Type '22, etc.

Strays

"2 Meter Men Held in Thefts" was a headline recently appearing in *The Evening Bulletin*, a Philadelphia newspaper. Further reading revealed that they were not v.h.f. men, but parking-meter collectors! — *W3YKT*

— • • • —

During his first few weeks on the air, KN2SSP worked Huntington Woods, Mich., Huntington, L. I., N. Y., and Huntington Station, N. Y.

— • • • —

When the Hartford County Amateur Radio Association scheduled WØEDX as guest speaker at one of their get-togethers, the meeting notices to members read "Al Pichitino, WEDX, Chief Engineer of the E. F. Johnson Company. . . ." Calling the mailing service to complain about the error, HCARA prexy, W1ULY, got the following indignant reply: "You had a zero in there, but it was crossed out!"

— • • • —

In Portland, Ore., Sharon La Baugh, a youngster stricken with leukemia, asked if she might have a watermelon. None being available in that city, her wish was brought to the attention of Portland amateurs who originated an emergency request for a melon. After much relaying, in which many hams participated, the plea was received at Miami, Fla. From there, two melons were sent by air to the afflicted child.

— • • • —

W8NSX heard W9NSX in contact with W9PCY. Breaking in, W8NSX was followed by none other than W8PCY. This shrinking world!

OUR COVER

Sweepstaker Dick Baldwin, W1IKE, is shown tuning the transmitter he describes in "Easy Shielding for Ninety Watts." The article begins on page 25 of this issue. (*Photo by W1UPX*)

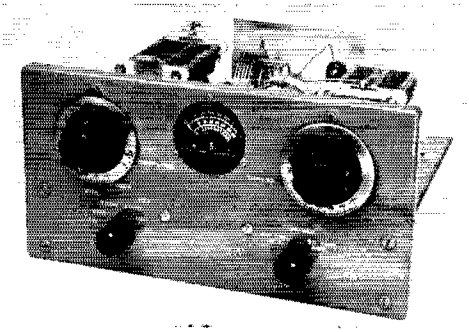
The "Z-Match" Antenna Coupler

Impedance Matching the Easy Way

BY ALLEN W. KING,* W1CJL

• This comes close to being the ultimate in multiband antenna couplers, from the standpoint of convenience and ease of operation. Using a multiband tank in an ingenious circuit arrangement, it offers switchless 3.5–30-Mc. operation plus quick and certain adjustment to optimum coupling by means of a built-in bridge.

"WHEN it takes more time to make frequency changes in an antenna-coupler circuit than it does in a 500-watt rig, it's high time something should be done about it." The quotation is from a 1954 *QST* that appeared at just about the time the "Z-match" was finished and in operation. Having been a user of all-band tank circuits for the past few years, the writer had decided to attempt to use one in reverse, and some interesting results were obtained.



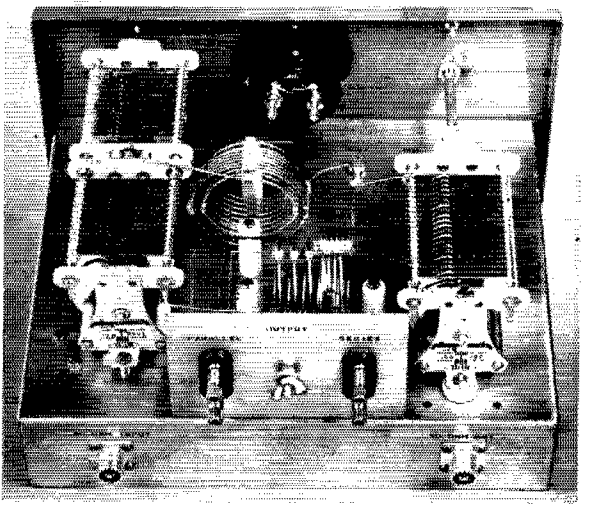
Panel view of the "Z-match" antenna coupler. Incorporating a built-in bridge for forward and reflected power and a dummy antenna, it uses a multiband tank in a new circuit arrangement for matching the usual run of transmission-line loads to a coaxial link.

The "Z-match" antenna coupler is designed for use with transmitters having up to 250 watts input, and will match a 50-ohm coaxial line to both reactive and nonreactive loads ranging from 10 to 2500 ohms. It covers the frequency range of 3.5 to 30 Mc. without switching coils. One of the most important features of the unit is the fact that all matching is done visually, with a Micromatch type s.w.r. bridge.

Additional features incorporated in the "Z-match" besides the all-band tank circuit are a 50-ohm dummy load and a power-indicating device that is left in the line at all times, reading either forward or reflected power as selected by a front-panel switch. Two output links are provided, for either low-frequency (3.5 to 7.3 Mc.) output or high-frequency (14 to 30 Mc.) output. A second front-panel control is provided for the selection of various functions. The noninductive 50-ohm dummy load is connected in circuit in Position 1, while the second position switches the transmitter to the coupler proper. Position 3 switches the transmitter to a 50-ohm output connection which is independent of the coupler but allows the use of the power-measuring device when feeding directly into a matched 50-ohm line.

The complete schematic is shown in Fig. 1. Like most homebuilt projects, other parts can be substituted. However, care should be taken in

* Project Engineer, Harvey-Wells Electronics, Inc., Southbridge, Mass.



The multiband tank circuit consists of the split-stator capacitor at the left and the two inductors, with links, in the center. Coupling is controlled by the tank and the capacitor at the right. The two-terminal assemblies connect to the two link coils.

following the layout of the unit, especially the forward- and reflected-power indicating device.

Construction

The "Z-match" shown in the photographs is built on an 11¾ × 9¼ × 2½-inch chassis, and the panel is 12¼ by 6¾ inches. These were used because they were on hand, but any number of commercially-available chassis and dust-cover combinations could be used with good results.

The chassis itself is used to separate the low-impedance input circuits from the comparatively high-Z output circuits, and no matter what size chassis is used this constructional practice should be followed. The coupling capacitor C_{10} is electrically above ground and is mounted on two feed-through insulators (Johnson type 135–55), one of which is used to bring the electrical connection through the chassis to the rotor of C_{10}. This capacitor is set back from the panel and coupled to the dial by an insulated shaft, thus eliminating body capacity. C_{11} is mounted at the other end of the chassis and the control is brought out through the panel with symmetry in mind. Inductors L_2 and L_4 are mounted near the rear output terminal panel, mainly because this is the high-frequency section (14 to 30 Mc.) and over-all lead length should be kept to a minimum. Coils L_1 and L_3 are mounted at right angles to L_2 and L_4 to reduce mutual coupling.

The output terminal panel on the rear of the chassis has two National type FWH connectors and a wing-nutted ground terminal, allowing the operator to connect either balanced or unbalanced antennas. The two output terminals (high and low frequency) could very well be one, if an antenna changeover relay was used, although separate connectors are convenient when separate antennas are used.

The two rotary switches S_1 and S_2 are placed in a position to maintain panel symmetry, and also to keep lead lengths to a minimum for the connections to S_2. As can be seen from the photographs, the 50-ohm dummy load is mounted on standard fuse clips and the "hot" end is kept as close to the ceramic switch S_2 as possible. The dummy load has been insulated from the chassis at the hot end by a ¼-inch-thick phenolic block; however, the same feed-through that was used on C_{10} could be used instead. The grounded end is raised up from the chassis merely in keeping with good constructional practice. This can be done with a metal spacer having the same height as either the phenolic block or the feed-through type insulator, whichever is used.

The rear-view photograph shows the output terminals marked as "parallel" and "series." These, however, could be called "low-frequency"

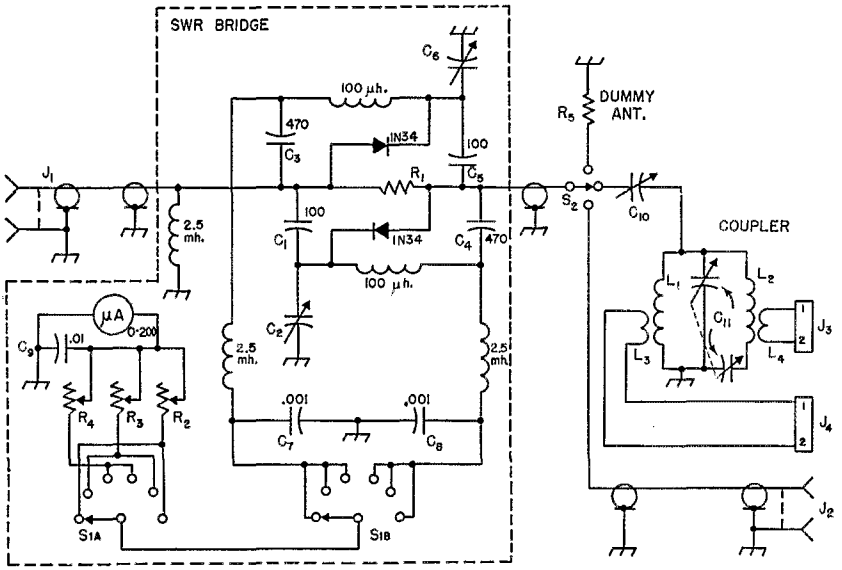
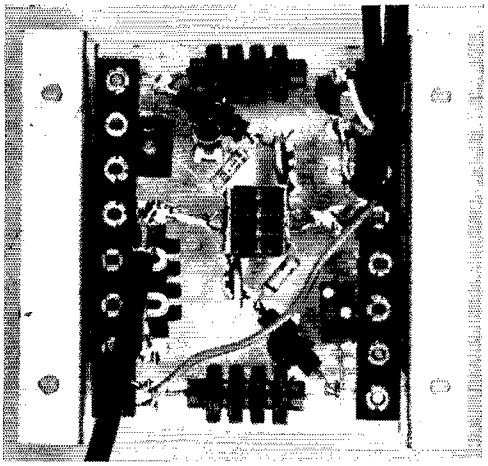


Fig. 1 — Circuit diagram of the "Z-match."

C_1, C_5 — Erie button type or equivalent.
C_2, C_6 — Tubular-type variable, 0.5–5 μμf. (Erie type 532–08).
C_3, C_4 — Mica or ceramic.
C_7, C_8, C_9 — Disk ceramic.
C_{10} — 340-μμf. variable (Bud 1529).
C_{11} — 250-μμf.-per-section variable (Bud 1556).
R_1 — 0.625 ohm, 8 watts (sixteen 10-ohm ½-watt composition resistors in parallel).
R_2 — 2500-ohm carbon potentiometer.
R_3 — 25,000-ohm carbon potentiometer.
R_4 — 50,000-ohm carbon potentiometer.
R_5 — 50 ohms, 50 watts (GE Globar type CX).
L_1 — 3.4 μh.; 7¾ turns No. 14, 2 1/16-inch diam., 1¼ inches long.
L_2 — 1.7 μh.; 5½ turns No. 14, 2 1/16-inch diam., 1⅝ inches long.
L_3 — 2.35 μh.; 6½ turns No. 14, 2⅝-inch diam., ⅝ inch long.
L_4 — 1.8 μh.; 4¾ turns No. 14, 2⅝-inch diam., ½ inch long.
J_1, J_2 — Coaxial connectors.
J_3, J_4 — Binding-post assemblies (National type FWH).
S_1 — Rotary switch, 2 poles, 6 positions (bakelite wafer).
S_2 — Rotary switch, 1 pole, 3 positions, shorting (ceramic wafer).



The bridge assembly. The circuit arrangement is made symmetrical for the purpose of reducing the effects of stray capacitance and inductance. The resistors in the center (R_1) are assembled in the form of a cylinder supported by soldering their leads to circular pieces of wire. This reduces inductance and tends to assure uniform current distribution throughout the assembly.

and "high-frequency" outputs. The thought in marking them "parallel" and "series" was that the low-frequency tank coil is parallel connected, while the high-frequency tank coil is the series circuit.

S.W.R. Bridge

The s.w.r. bridge consists of two bridges connected back to back so that incident and reflected power may be determined. The theory and operation have been ably presented elsewhere and will not be dealt with here.[1]

The incident-power bridge consists of R_1, C_5, C_6 and the transmitter output impedance; the reflected-power bridge consists of R_1, C_1, C_2 and the load. The output of the bridge is rectified by the crystal diodes. A d.c. path is provided by the r.f. choke. The rest of the components are used for r.f. filtering.

R_1 consists of sixteen 10-ohm ½-watt composition resistors in parallel. Since the bridge is designed to operate from 3 to 30 Mc., it is important that noninductive resistors be used. For best results, C_1 and C_5 should be of the button type. They proved to be decidedly better than silver micas. Needless to say, all lead lengths should be kept as short as possible to reduce the effects of lead inductance. The layout shown in the photograph should be followed, and since this shows the placement of parts quite clearly, constructional details will be omitted.

In the initial set-up of the bridge, set S_2 to the dummy load position, apply r.f. power to the input terminal, and adjust C_2 for zero deflection. Next, temporarily reverse the bridge and adjust C_6 for zero deflection. Then return to the original input-output connections and the bridge is ready for calibration. A good calibration will require comparison with an already-calibrated power meter, or by calculation from the r.f. current in the dummy load as measured by an r.f. ammeter connected in series with the load. The full-scale power values (three ranges are provided for) may be set by adjusting R_2, R_3 and R_4. However, an actual power calibration is not at all necessary to the operation of the "Z-match," since the bridge will serve quite well both for adjustment of coupling and for *relative* power indications without calibration.

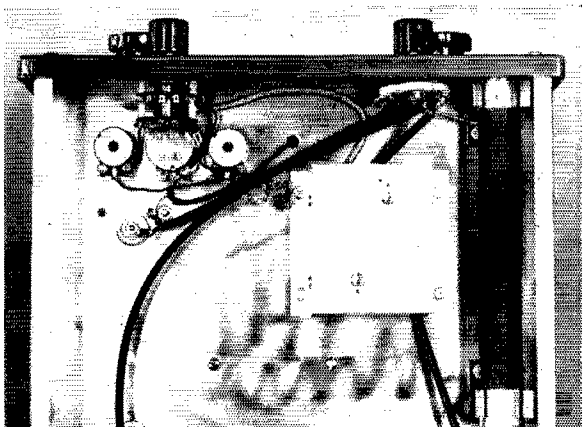
The meter used in the bridge has a basic movement of 0–200 microamperes, and in this case a hand-calibrated scale was made by taking the original meter plate off and reversing it. The three scales were then hand-painted on, as the photograph shows.

Operation

The bridge provides a visual way of adjusting the coupler, while the 50-ohm noninductive load

(*Continued on page 116*)

[1] Jones and Sontheimer, "The Micromatch," *QST*, April, 1947. See, also, "Recent Equipment," p. 43, *QST*, March, 1955.



Switches, input circuit, bridge and dummy antenna are below chassis. The three variable resistors at the upper left in this view are adjusted for proper power calibration of the bridge and thereafter left set. The Globar resistor used as a dummy antenna is along the right-hand edge.

Automatic Mobile Antenna Tuning

A Self-Resonating System for 40 and 75

BY JOHN A. HARGRAVE,* WØIGP

• Most mobile operators, especially those working 40 and 75, understand the inconvenience of having to stop and retune the antenna for every few kilocycles changes in frequency. The system described here does away with all this by automatically reresonating the antenna whenever frequency is shifted. It also compensates automatically for detuning caused by antenna lay-back, or opening the trunk.

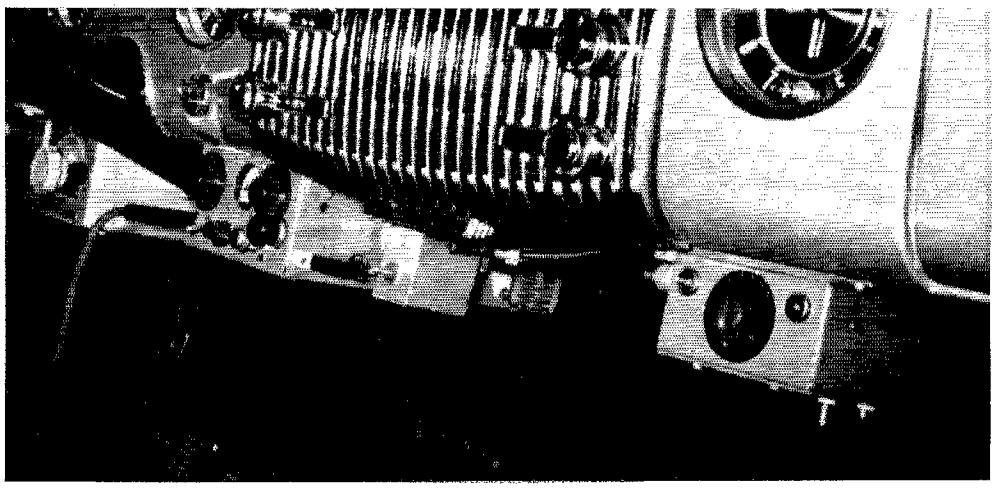
It is obvious that mobile operation of the amateur station has increased many times during the past several years. While the 10-, 15- and 20-meter bands offer a general efficiency and convenience of operation from a mobile station comparable to that of the home station, 40 and 75 meters present a more difficult problem. This may be attributed primarily both to practical power limitations and poor radiation-system efficiencies. It has been generally proven that, except for increased physical length, the greatest single factor contributing to the efficiency of a loaded antenna system is loading-inductor efficiency or *Q*. The greater the r.f. resistance of a given loading inductance, the greater will be the r.f. loss resulting from its operation. It becomes apparent that for a practical figure of efficiency, maximum practical loading-inductor *Q* must be maintained, and general transmitter and coupling efficiency must be kept at a reasonably high figure.

The expression "high *Q*" is a relative quantity and strictly dependent on the peculiar interpretation of the user. High *Q* is generally synonomous with the presence of a sharply resonant circuit with a narrow bandpass characteristic. Generally speaking, a high-*Q* 5- to 8-foot mobile whip antenna, loaded for the 75-meter band, will be sharply resonant, and will begin to appear seriously reactive at a deviation from the carrier frequency of about 5 kc. Any effort to broaden the response by loading-inductor construction will, in the majority of cases, be merely a compromise in efficiency and a most dear one. Much has been written concerning high-efficiency loading inductors, and any basic theories conscientiously applied will in all probability result in an appreciable increase in Q and radiation efficiency.

An increasingly large number of the mobile transmitters being built are for multiband and VFO operation. The majority of these are being mounted beneath the automobile instrument dash, within easy reach of the driver-operator. Mobile VFO seems like a marvelous convenience until it is realized that the carefully designed antenna system is restricted to a bandwidth of a few kilocycles. It is mechanically practical to provide an adjustable whip length or to afford a manually adjustable inductor to enable multi-frequency operation, although their location by necessity must be remote from that of the under-dash-mounted VFO transmitter.

* R.F.D. 1, New Sharon, Iowa.

WØIGP's under-dash mobile installation. The automatic antenna-tuner control box is at the right. The shafts of the two potentiometers extend from the bottom.



Within this article is described a system for use over the 40- and 75-meter bands providing automatic adjustment of antenna resonance in response to the output frequency of the mobile transmitter. It permits maximum use of VFO control and convenient use of maximum-Q antenna systems. This system was installed in the author's 1953 Buick and has proven very successful and a great convenience. The present mobile transmitter runs 40 watts input, but the system has been used successfully with input powers of from 15 to 300 watts. Although the system was designed for mobile operation, it has been used experimentally on a fixed-station vertical and has proven very satisfactory.

Circuits and Theory

This system[1] consists of a device for detecting antenna resonance, and provides control of a reversible motor which is coupled to a variable antenna-tuning inductance located at the base of the antenna. An inductive load, as observed by the detector, will cause the motor to rotate in one direction, while a capacitive load will cause it to operate in the other direction, such rotation reëstablishing antenna resonance.

It is generally understood that an r.f. transmission line terminated in a pure resistance equal to its characteristic impedance will be flat. This means that there will be no reflections from the loaded end of the line, and that at any point along that line the voltage and current will be in phase. A high-Q antenna may be matched to a given type of transmission line but, should the resonant frequency of the load shift to a slightly higher or lower frequency, or should the exciting frequency change to a lower or higher frequency, the antenna system will no longer present a purely resistive load to the transmission line and a complex load will reflect a standing wave back along the transmission line. Under such a condition a shift in voltage/current phase and amplitude relationship will result. These factors produce an increase in load impedance and a significant drop in transmitter loading. The detecting system operates as a result of these variables reëstablishing a resistive termination.

The phase detector used in this system is quite similar to the Foster-Seeley f.m. discriminator. Operation of the conventional discriminator results from the phase relationships existing in a transformer having a tuned primary and secondary, both capacitively and inductively coupled. The phase detector shown here in Fig. 1 operates from a low-Q impedance, both capacitively and inductively coupled to the r.f. antenna transmission line. This impedance, represented by L_2 and its distributed circuit capacitances, provides sufficient impedance for satisfactory circuit operation and avoids the inconvenience of a tuned tank. As was previously stated, providing a proper match exists between the r.f. load and its transmission line, r.f. current and voltage on such a line will be in phase. The voltage on the line is used as a reference, and a small amount of this voltage is coupled into the detector circuit through the distributed capacitance existing between L_1 and L_2. The relative amount of this

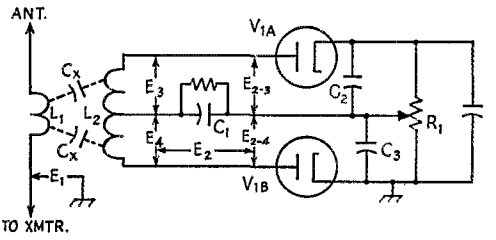


Fig. 1 — Phase-detector circuit used to produce control voltage for the automatic mobile-antenna resonator.
E_1 — Voltage across transmission line.
E_2 — Portion of E_1 determined by the voltage-divider ratio of C_1 and distributed capacitance, C_X.
E_3, E_4 — Voltage induced by L_1-L_2 mutual.
E_{2-3}, E_{2-4} — Vector sums of applied voltages. L_2 is self-resonant at a frequency considerably above normal frequencies of operation. L_1 is a ¾-turn link in series with the antenna and transmission line. C_2 and C_3 provide very low impedance to r.f. currents.

voltage applied to the detector circuit is determined by the capacitive voltage-divider ratio of the distributed capacitance between L_1 and L_2, C_X, and the value of capacitor C_1. A second voltage, necessary to provide a medium of phase comparison, is introduced as a result of line current flowing through L_1. Such a current will create a magnetic field about L_1 and, because of mutual inductance, will produce a current and resultant voltage in the secondary coil L_2. The resulting voltage across L_2 will lag the inducing current through L_1 by 90 degrees.

The two voltages described above appear in series between the plate of each diode and the center tap of R_1. Voltages E_3 and E_4 are separated in phase by 180 degrees, with reference to the center tap of L_2, and are in quadrature with voltage E_2 when a condition of resonance is observed on the transmission line under examination. Under these conditions the effective voltage on the plate of each diode will be of similar amplitude, and will produce a rectified voltage of equal and opposite sign across each half of the load resistor R_1. The resultant sum of zero volts across R_1 indicates a resonant and balanced condition, as indicated in Fig. 2A.

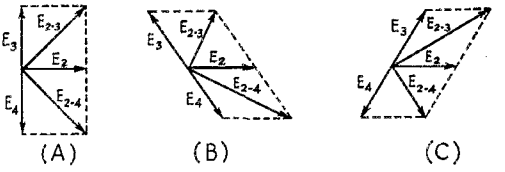


Fig. 2 — Voltage vector relationships for conditions (A) — when the antenna is resonant, (B) — when the antenna is above resonance, and (C) — when the antenna is below resonance. Voltages refer to Fig. 1.

[1] Knoop, "Automatic Tuning of the Antenna Coupler," August, 1952, *QST*; Mezger, "A Phase-Angle Detector for R. F. Transmission Lines," July, 1952, *QST*.

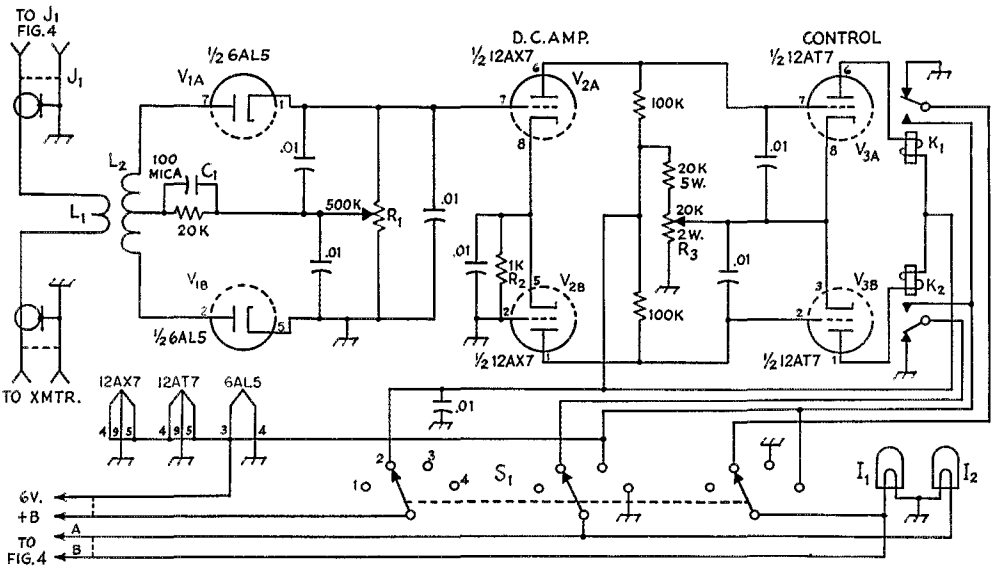


Fig. 3 — Circuit of the automatic mobile antenna tuner.

C_1 — Mica; all other capacitors are disk ceramic.
R_1 — IRC type Q.
R_3 — Ohmite type AB.
R_4 — Wire-wound.

All other resistors 10 per cent carbon, ½ watt, unless otherwise specified.

L_1 — Approx. ¾ turn No. 16 wire, over center of L_2.
L_2 — 20 turns No. 18 enameled wire close-wound, center-tapped on ⅜-inch bakelite rod.
I_1, I_2 — Green and amber ½-inch indicator lamps.
K_1, K_2 — S.p.d.t. plate-circuit relay, 10,000 ohms (Potter-Brumfield LB5).
S_1 — 3-pole 4-position rotary switch (Mallory 3234-J).

In the event of antenna detuning or a change in transmitter frequency, a change in the current and voltage phase relationship along the transmission line will result, and a balanced output from V_{1A} and V_{1B} will no longer exist. It may again be said that the reference voltage introduced by the capacitive coupling is in phase with the voltage along the line, but there is no longer a 90-degree phase relationship between this voltage and that developed across L_2 as a result of line current through L_1 and L_1-L_2 mutual inductance. Under such conditions, phase relationships similar to the vectors indicated in Figs. 2B and 2C will result. From this it may be seen that a phase shift in one direction, as a result of a change in the exciting frequency, or a change in the frequency of antenna resonance, will cause the detector to produce a negative output voltage, while the opposite change in frequency or antenna resonance will cause the detector to produce a positive output voltage. Potentiometer R_1 is a balancing control, the proper adjustment of which will overcome circuit unbalances and will provide balanced output.

The complete control circuit is shown in Fig. 3. The 6AL5 phase detector provides a d.c. output voltage of either positive or negative polarity dependent upon the resonant frequency of the antenna system in reference to the transmitter operating frequency. This output voltage is applied to the grid of a d.c. amplifier, V_{2A}, Fig. 3. V_{2A} is cathode-coupled, by way of cathode resistor R_2, to V_{2B}, and the plate circuits of both sections of V_2 are directly coupled to the grids of the control tube, V_3. In order to provide d.c. voltage amplification, direct interstage coupling is necessary. This arrangement places the entire plate potential of V_{2A} and V_{2B} on the respective control grids of V_3. Under conditions of antenna resonance, the phase detector provides approximately zero volts output, and sensitivity control R_3 is adjusted to the point where the static plate current of V_{3A} and V_{3B} will not hold relays K_1 and K_2 in the energized position. This adjustment places the cathodes of V_3 at a more positive potential than their respective control grids, this bias being of such magnitude as to approach plate-current cut-off.

Following adjustments of balance and sensitivity, any slight change in phase detector output will cause either K_1 or K_2 to operate, causing the tuning motor to rotate in one direction or the other.

Matching Antenna to Line

It is necessary that the transmission line from the transmitter to the loaded antenna be made relatively flat if smooth indication and operation is desired from one band edge to the other. This may sound like a difficult task, but the adjustment may be made with very little equipment or effort. It essentially requires that the loaded antenna at resonance present the same load to the transmission line as a noninductive resistor equal in resistance to the characteristic impedance of the transmission line. Providing no more than 20 watts of power is made available at the base of the loaded whip, ten 500-ohm 2-watt

carbon resistors may be placed in parallel to act as a dummy load for RG-8/U cable. The impedance-matching system utilized with this antenna consists of a plug-in coil, L_2, Fig. 4, mounted on the remote tuning unit, and connected from the input side of the variable loading inductor, L_1, to the automobile body. A satisfactory adjustment may be made by establishing normal transmitter loading with the dummy load, then switching to the antenna system and, while maintaining antenna resonance, adjusting the matching inductance for identical load conditions. It will be found that a difference of as much as one quarter turn will have considerable effect on loading and the proper impedance match. A 6-turn coil 1½ inches in diameter, 2 inches long, was found satisfactory for this particular installation when operating in the 75-meter band. The circuit for the remote tuning unit is shown in Fig. 4 and a photograph of the unit is also included.

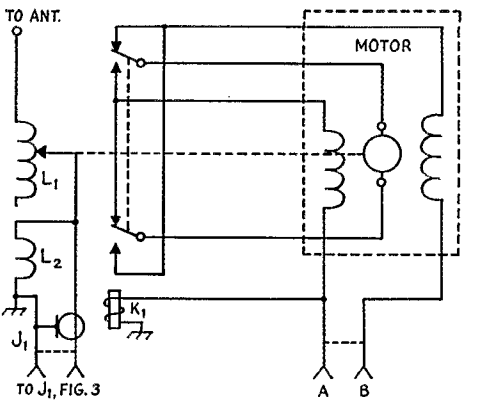


Fig. 4 — Wiring diagram of the motor-driven tuning section. L_1 is the variable portion of the whip loading coil. A variable inductor from a military Command transmitter is used. L_2 is a matching inductor. K_1 is a 6-volt d.c. d.p.d.t. relay (Guardian 200–5). The motor is a 6-volt defroster motor. The antenna terminal should be connected to the base of the whip with the shortest possible lead. L_2 should have a solid connection to the frame of the car. See text for further details.

General Design

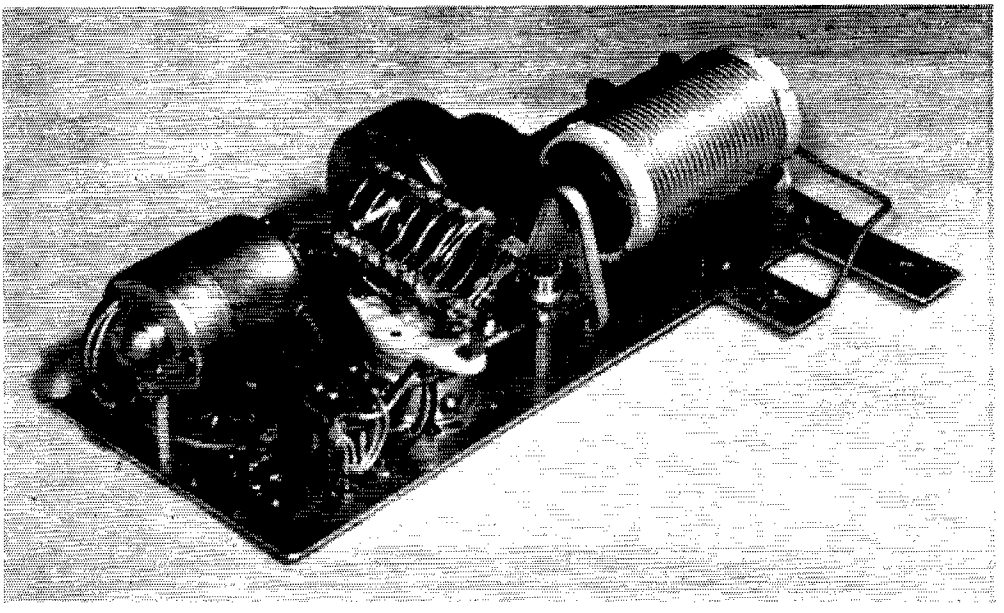
This system contains two basic units:

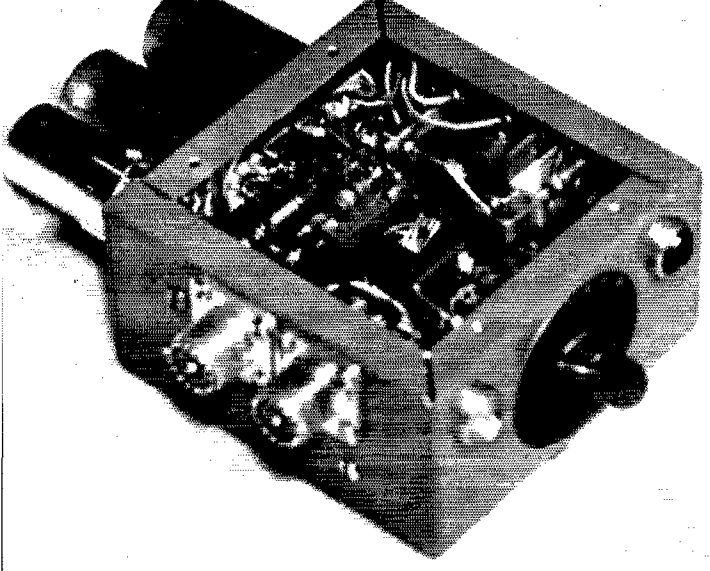
1) The control unit consisting of a 4 × 4 × 2-inch box mounted beneath the instrument dash, and containing all detecting and control circuits and components other than the motor, the motor-reversing relay and the impedance-matching and variable inductors. All components associated with the control unit are mounted within the box with the exception of the three vacuum tubes. These are mounted on the rear lip of the unit to afford adequate circulation of air.

2) The remote tuning unit is located in the automobile trunk, adjacent to the base of the loaded whip. It contains the variable series inductor, impedance-matching inductor, tuning motor and motor-reversing relay.

The front panel of the control unit contains a three-pole four-position rotary switch, S_1, Fig. 3, and two pilot-light assemblies, I_1 and I_2. The switch selects the mode of operation, and the two pilot lights indicate the resonant condition of the antenna. When the right-hand lamp, I_2, is lighted, it indicates an inductive antenna, and when the left-hand lamp, I_1, is lighted, a capacitive antenna is indicated. Providing the system is properly adjusted, a resistive antenna will be

Motor-driven antenna-tuning unit. The plug-in inductor is the matching inductor shown in Fig. 4. This unit is placed in the trunk of the car, as close to the base of the antenna as possible.





The control unit is assembled in a 4 × 4 × 2-inch box. The tubes are mounted at the rear, the antenna and transmitter coax connectors on the side, and the switch and indicator lamps on the front.

indicated by both lamps being extinguished.

The three-pole four-position switch utilizes the four positions as follows: (1) off, (2) automatic tuning, (3) manual increase inductance, and (4) manual decrease inductance. During normal operation, the switch will be left in Position 2 except on 10, 15, and 20 meters, where the antenna bandwidth is sufficiently broad that automatic tuning is not necessary. In this case, the switch may be left in the off position. When QSYing from one end of a band to the other, it is not necessary to keep the transmitter on the air while waiting for the antenna to be tuned to resonance. While on automatic position the VFO may be adjusted to the desired frequency, the transmitter output tank adjusted to resonance and note made whether the antenna is inductive or capacitive as indicated by the two pilot lights. The transmitter may then be taken off the air and the control switch placed in one of the two manual positions for an approximate adjustment of the series inductance. The switch may then be returned to the automatic position for an exact antenna adjustment.

Construction

Inductor L_2, Fig. 3, consists of 20 turns of No. 18 enameled wire close-wound and center-tapped on a ⅜-inch bakelite rod. L_1 is formed of No. 16 wire and consists of a ¾-turn loop about L_2. This provides an optimum value of coupling for 25–50-watt transmitters. Although the coupling between L_1 and L_2 is not critical, it should be reduced as higher transmitter power is employed. A slight change of coupling may be found necessary with different installations.

To facilitate construction procedures, the control unit was assembled and wired with both 4 × 4-inch covers removed. This simplifies the task of assembling and wiring considerably. As an aid to simplification it is recommended that wires be cabled together where practical, even though it may require greater lead length. Where no critical circuits are involved, cabling will greatly limit the congestion which is unavoidable with a unit of this size. Of course, the leads to L_1 and L_2 should be kept short and direct.

The tuning motor was originally an automobile defroster motor purchased at a used auto-supply store for $1.00. It was disassembled and leads brought out for connection to the d.p.d.t. reversing relay. Six- and 12-volt d.c. motors may be wired in a number of ways. Frequently, the armature is connected between the two fields, and the combination placed in series across the automobile battery. In this case the most simple way to provide a reversal of rotation is by reversing the armature connections in respect to the field windings. In other cases a field reversal may be more simply accomplished.

The gear reduction unit was taken from a PE-101 dynamotor where it was originally used to operate an automatic keyer. The variable inductor, L_1, Fig. 4, was taken from a military Command transmitter. All other components are of standard manufacture and readily available at most radio supply houses. A simple replacement for the entire antenna tuning unit would be a motor-driven variable inductor which is available commercially.

Power for the automatic mobile tuner is taken directly from the mobile transmitter. The filaments are not switched on or off within the unit itself, but are taken directly from the transmitter filament switch. The unit requires 0.9 amp. at 6 volts and 200–400 volts at approximately 15 ma. Satisfactory sensitivity may be realized with voltages as low as 200, although an increase in L_1-L_2 coupling may be found necessary. Voltages over 400 should be avoided because of possible cathode-to-heater break-down in V_3.

Adjustment

Provided the antenna system has been properly matched to the transmission line in use, the

(*Continued on page 118*)

Vertical Multiband Antennas

Two Practical Systems with Coax Feed

BY L. L. TAYLOR,* W8LVK

• The radiation angle from a vertical antenna will be satisfactory for long-distance work over about a 3-to-1 frequency range if the proper antenna length is used. This article offers a solution to the more difficult problem of feeding such an antenna with coax, without excessive loss in the feeder.

ALTHOUGH there is no simple multiband antenna that provides optimum performance with respect to matching a transmission line, systems can be devised which are compromises and can be made to perform fairly well on several bands. This article describes two such vertical antennas, one of which performs quite well on the 10-, 11-, 15-, and 20-meter bands, the other on the 15-, 20-, and 40-meter bands.

It is pointed out in *The ARRL Antenna Book*[1] that vertical antennas do not make satisfactory multiband antennas because their angle of radiation increases with frequency. This is true except for the region where the vertical antenna is less than 0.64 wavelength long. Between 0.2 and 0.64 wavelength long the radiation angle decreases as frequency increases. This is shown in Fig. 1, which is a field-intensity plot in the vertical plane of a vertical antenna for three different frequencies. These curves assume zero loss resistance in the antenna and a perfectly conducting ground plane. The actual value of resistive loss in the antenna will merely shrink the curves slightly but not distort them. A lossy ground plane such as earth will affect the curves at extremely low elevation angles, which will shorten distances for ground-wave propagation,

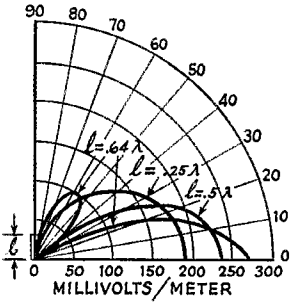


Fig. 1 — Vertical-plane field patterns of vertical antennas for several values of antenna height. The field intensity is expressed in millivolts per meter at a distance of one mile for one kilowatt input. Perfectly conducting ground and zero loss resistance are assumed. From Kraus.[2]

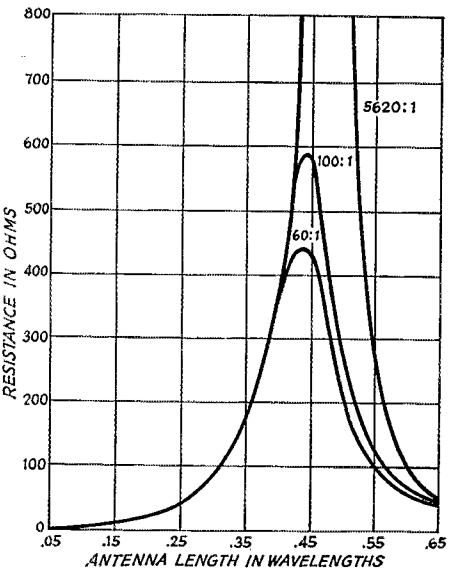


Fig. 2 — Input resistance *vs.* length in wavelengths for vertical antennas of three different length-to-diameter ratios. From Jordan.[3]

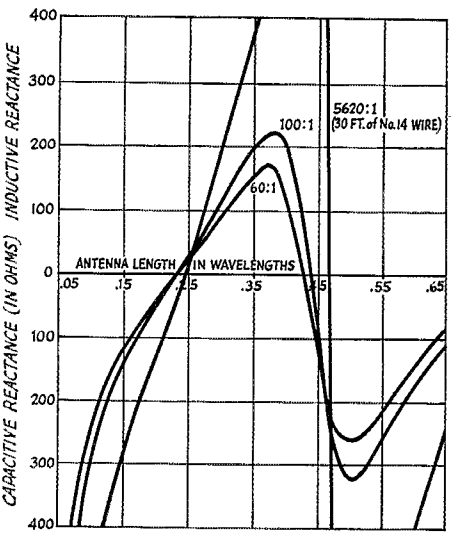


Fig. 3 — Input reactance *vs.* length in wavelengths for vertical antennas of three different diameter-to-length ratios. From Jordan.[3]

* 319 Summit St., Granville, Ohio.

[1] *The ARRL Antenna Book*, page 186, 5th edition.

[2] J. D. Kraus, *Antennas*, page 317; McGraw Hill Book Co.

[3] Edward C. Jordan, *Electromagnetic Waves and Radiating Systems*, pages 482 and 483; Prentice-Hall, Inc.

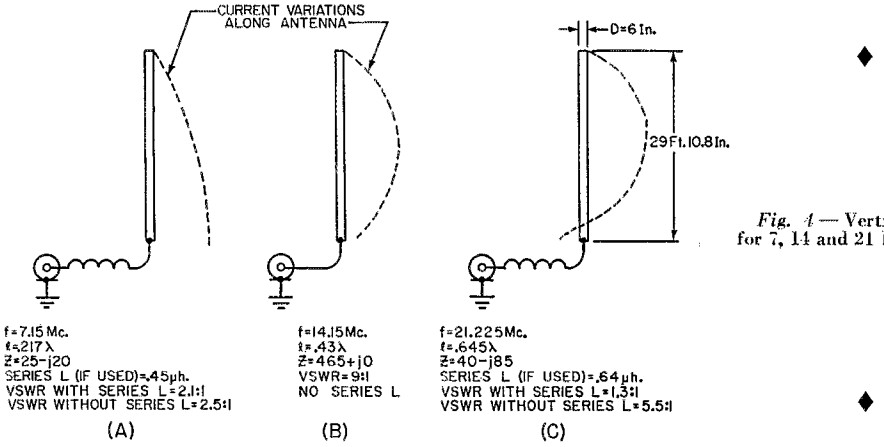


Fig. 4 — Vertical antenna for 7, 14 and 21 Mc.

but will not affect the shape of the curves at angles used by amateurs for sky-wave propagation.

The main objection to an antenna which is operated at different points in this 0.64- to 0.20-wavelength region is the radical change in input impedances between the bands where the antenna is current fed and the band where the antenna is voltage fed. By using a simple construction technique the amateur can approximate a cylindrical antenna of low enough length-to-diameter ratio to reduce materially these variations in impedance. Figs. 2 and 3 show the manner in which input resistance and reactance of a vertical cylindrical antenna vary with frequency in the region where the antenna is less than 0.65 wavelength long, and for antenna length-to-diameter ratios of 60:1, 100:1, and 5620:1. A length-to-diameter ratio of 5620:1 is equivalent to 30 feet of No. 14 wire.

Practical Antennas

If the vertical antenna can be erected close enough to the rig to minimize transmission-line losses, the two antennas described here can be made to operate very satisfactorily. Fig. 4 shows a 29.9-foot antenna with a 60:1 effective length-to-diameter ratio that operates very well on 40, 20, and 15 meters. The current distribution along the antenna at the center of each band is represented by the dotted lines. The values of input impedance, optional series inductance which may be used to cancel out the capacitive component of the input impedance, and the voltage standing-wave ratio with and without the series inductance, are all given for the center of each band. The v.s.w.r. values are for the case where the antenna is fed with 52-ohm coaxial cable. With this antenna the series inductance makes very little difference in cable loss; for example, at 7.15 Mc. the loss in 100 feet of RG-8/U cable without the inductance would be 0.62 db. and with the inductance it would be 0.55 db. At 21.225 Mc. the loss without the inductance is 1.9 db. and with the inductance it is 0.83 db. If this antenna is to be used extensively on 20 meters, the length of the feed line is of special importance. With the 9-to-1 v.s.w.r. which exists on 20 meters, the loss in 100 feet of cable will be 2.3 db. This will have the same effect as reducing a 100-watt rig to about 60 watts. With 50 feet of cable the loss will be

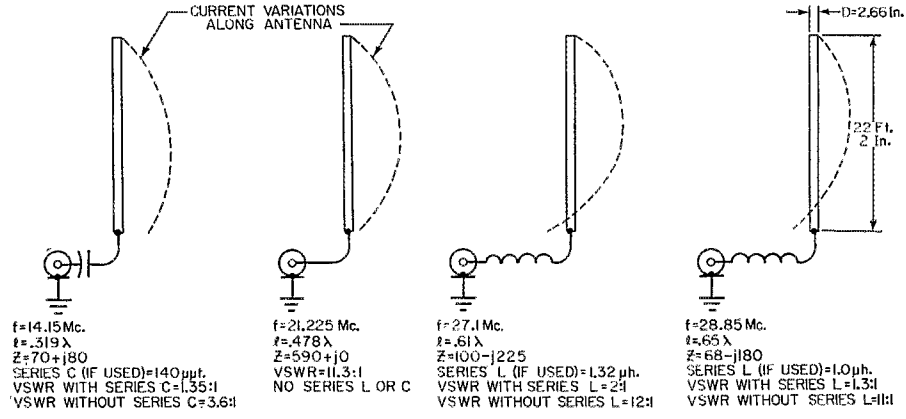


Fig. 5 — Vertical antenna for 14, 21, 27 and 28 Mc.

1.3 db., and with 25 feet of cable it is 0.7 db.

A vertical antenna for the 20-, 15-, 11-, and 10-meter bands is shown in Fig. 5. This antenna is 22.16 feet long with a 100:1 effective length-to-diameter ratio. The series condenser for use on 20 meters is relatively unimportant and may be omitted as it only reduces the loss in 100 feet of RG-8/U from 1.2 db. to 0.75 db.; however, on 11 and 10 meters the series inductance should be used unless a very short run of cable is used between the rig and the antenna. The loss on 11 and 10 meters is 3.7 and 3.6 db., respectively, for 100 feet of cable without inductance, and that loss is reduced to 1.2 and 1.0 db., respectively, when the series inductance is used.

Construction Notes

The construction of the antenna is fairly simple, as shown in Fig. 6. The box construction with length *D* on a side approximates a cylindrical antenna of diameter *D*. The diameter of the four vertical wires is not critical, but should be

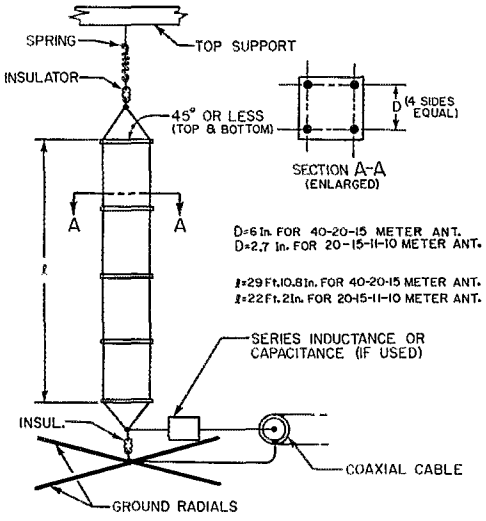


Fig. 6 — **Physical construction of antennas.**

as large as possible to reduce resistive loss. No. 14 wire is satisfactory and was used by the author, but a larger size would probably be an improvement. Either solid or stranded may be used.

The separators are not critical and may be plastic or treated wood. The spacing of the separators is dependent upon the tension used on the antenna; the more tension used the fewer separators needed. The author used ten separators for each antenna. The spring used at the top to provide the tension was an over-sized screen door spring obtained at the local hardware store.

The series inductances can be wound on any convenient low-loss form, and the size of wire, number of turns, spacing, and coil diameter may be picked to fit the specific installation. The ARRL Lightning Calculator or any available coil table such as the one in *The Radio Amateur's Handbook*[4] may be used to wind the inductance required. The author found that No. 12 wire on a ½-inch synthane tube will work satisfactorily. The coils, if used, must be placed in a waterproof box and a stepping relay used to select the correct coil for each band, or to short out the coil(s) where none are required. The author strongly suggests keeping the coaxial cable short, connecting it directly to the antenna and not using any series reactance.

The use of ground radials is important, as with any vertical antenna. It is recommended that 4 or more buried radials be used and that they be more than ¼ wavelength long at the lowest frequency to be used. The author has found that four 50-foot sections of aluminum clothesline running at right angles from the base of the antenna work very satisfactorily. One of these radials runs in one window of the basement of the house, along the basement ceiling and out the opposite window. In addition to the radials, a long (6 feet or longer) ground rod should be driven into the ground at the base of the antenna and connected to the junction of the radials and the outer conductor of the coax.

The antenna may be held up by any suitable means, but the most convenient, in most cases, will probably be a clothesline running between two suitable supports such as two trees, a tree and the house, etc.

It must be remembered that, as shown in Fig. 1, the vertical antenna has a low radiation angle; therefore, don't expect it to perform well at short ranges where a high angle of radiation is needed. The author has a horizontal dipole 35 feet above the ground for use on 40 meters. This antenna outperforms the 40-20-15 vertical when working nearby stations (30 to 200 miles) but when the band is open the vertical puts the dipole to shame.

[4] *The Radio Amateur's Handbook*, page 545, 30th edition; page 543, 31st edition.

Silent Keys

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

W1AHY, ex-1FX, Stephan A. Griffin, Livermore Falls, Me.
W2JBN, Andrew H. Kuhn, Orange, N. J.
W4AQN, Harry C. Jones, sr., Harriman, Tenn.
W4CZZ, Hubert Seeds, St. Petersburg, Fla.
W5HGP, Raoul S. Dossman, San Antonio, Texas
W5KOP, Annie L. Porter, Kenedy, Texas
W5TCI, Joseph E. Watson, Vicksburg, Miss.
K6EQD, Paul Farmer, Gardena, Calif.
W6KOV, Louis C. Lamberson, Antioch, Calif.
W6KTY, Roy Wheadon, South Gate, Calif.
W6VJQ, John L. Fredenburgh, Alpine, Calif.
W6YIL, Walter E. Brown, jr., Venice, Calif.
W6YXI, Josephine N. Fredenburgh, Alpine, Calif.
W7VKE, Marcus M. Durham, Rigby, Idaho
W8LWG, Ross E. Dixon, Alliance, Ohio
W8ROX, George Sangrik, jr., Cleveland, Ohio
VE1EA, Clarence E. Roach, Halifax
DL1ND, Georg Kohlgruber, Gummersbach
DL3PO, Anton Plabst, Einfang
SM5WL, Hans F. Eliaeson, Stockholm
VP9F, Richard Fox, Saint Davids Island, Bermuda

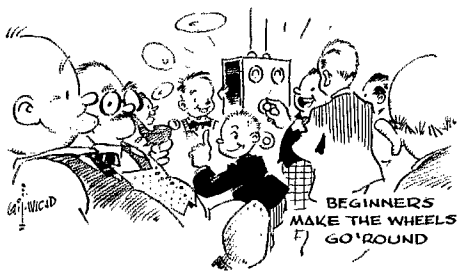
Six Meters for the Beginner

Part I — The Nature of the Band

BY EDWARD P. TILTON, W1HDQ

EXPERIENCE on the 2-meter band since Novices appeared on the scene has shown us what makes the wheels go around in amateur radio. Today we find Novices and former Novices almost everywhere, enjoying what the band has to offer. Hundreds started on 2 as WNs or KNs and, liking what they found, have stayed there after graduating to General Class status. This has been fine for 2-meter activity, but in attracting the lion's share of all v.h.f.-minded beginners, the 2-meter band has left its next-lower neighbor, the 50-Mc. band, with very little new blood.

The drive of the newcomer is vital to the growth of our hobby. Wherever he congregates, things *happen;* there is no substitute for his



boundless enthusiasm. It was with this thought in mind that the ARRL Board of Directors endorsed the proposal to open the 50-Mc. band to Technician licensees. Let's look over the characteristics of this recently somewhat-neglected band, and see what it has to offer the fellow who is just breaking into the game, at either the Technician or General Class level.

Why Start on 6?

In v.h.f. circles, activity begets activity. Nothing discourages a potential v.h.f. operator more than to listen in and hear no signals. "There's nobody here," he concludes, "why should I go on?" But if he tunes across the band and hears people talking together he concludes that something interesting is going on, and he feels the urge to join in.

What the casual tuner-inner may misunderstand about the 50-Mc. band, if he finds it unoccupied at the moment, is that it is not *always* quiet. There are 6-meter men scattered all across the country who wouldn't give up the band for anything else in ham radio. They watch the band constantly. Perhaps you don't hear them for weeks at a time, but they're around. Just let a sign of DX show up and they'll be in there soon enough. Others crawl out from under their rocks for every v.h.f. contest, and disappear promptly again when the party is over.

These are the old-time v.h.f. men, mostly. They have a wonderful time on 6, but their kind of operating is by no means enough to make things interesting for the beginner, or even the casual old-timer. Most hams want merely to talk with someone — and 6 is fine for that too, or it could be if more stations used it for that purpose. In fact, there is probably no better band in all the spectrum for friendly rag-chewing over distances up to 50 miles or more. It may not provide the strongest signals, or the best DX, but it certainly does afford the most consistent communication, within its reliable range, of any band we have.

The 50-Mc. band is in-between territory. It has the reliable coverage of higher v.h.f. bands and, like them, it is almost entirely free of serious interference problems. Yet it is low enough in frequency so that the ionosphere gets into the act now and then, opening the band up for DX that may be international or even world-wide in scope. Essentially, though, it is a local or extended-local band, for the DX is available only a small percentage of the total time each year. DX on 6, then, should be regarded as a spice, added occasionally to a satisfying daily fare, and not as an end in itself.

Even if we ignore DX entirely, the 50-Mc. band has much to interest the beginner. You don't need high power, or a tremendous antenna. You'll never have to peel the signals off in layers to get at the fellow you're trying to work. Equipment is simple to build, and easy to get going. Plenty of operators have enjoyed working on 6 with as little as 5 watts input, and the national average is probably well under 100 watts. Transmitters running more than 300 watts are a distinct rarity on 50 Mc. You may want to build a converter, to get the best possible reception, but a first-class job can be made with as few as two tubes. Circuitry and adjustment procedure are of elementary simplicity, as future articles of this series will show.

Propagation at 50 Mc.

You'll have more fun and work more stuff on 6 if you acquire at least a nodding acquaintance with the ionospheric and atmospheric factors that affect your coverage. Knowing something of what to expect, and when, is at least half the battle.

One thing you'll notice right away is that signal strength from stations other than locals varies with the weather, and with the time of day. Stronger-than-normal signals, at 50 to

200 miles, and occasional reception up to 300 miles or more, result from bending of the transmitted wave as it passes through a boundary between air masses of differing temperature and humidity characteristics. If warm moist air overruns cold dry air we have the right condition for this kind of bending. It happens fairly often; daily, in fact, in warm weather, especially in areas adjacent to large bodies of water. Air-mass movement on a continental scale (the sort of thing you see recorded on the weather maps) can produce this sort of "inversion" over very large areas.

Good v.h.f. conditions lying along large-scale air-mass boundaries can develop at any season. This helps keep life interesting for the v.h.f. man during the winter months. A likely sign that favorable factors are present is the increasing high cloudiness that follows a period of fair calm weather. The barometer will be fairly high and steady preceding the good period, and it is probable that there will be a slow-moving "low" somewhere a few hundred miles to the west. Signals are usually strongest in the early daylight hours, and around sundown, though varying weather conditions may upset this schedule. Watch the weather maps presented daily on many television stations, or check those appearing in the newspapers, and you'll soon develop the knack of telling when things are going to be better than average on the v.h.f. bands.

Ionospheric DX is less predictable, at the present state of the art, but we know in a general way when it is most likely to show up. The most frequent form results from the reflection of the wave by scattered areas in the *E* region of the ionosphere, some 50 miles above the earth. It can happen any time, but it is most frequent in the early summer months. There is a less-pronounced period in late December and early January.

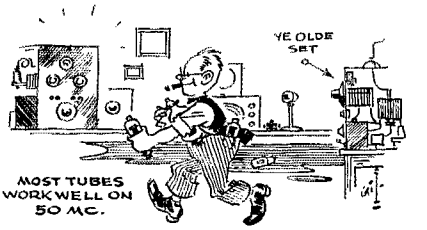
Sporadic-*E* skip, as it is most commonly known, is one of the 6-meter operator's real thrills. Signals appear suddenly, out of nowhere, and frequently rise to amazing strength. They may stay in for only a few minutes at a time, or the band may remain open for hours. Occasionally in June or July there may be DX signals around the clock. Signals are commonly heard over distances of 500 to 1200 miles, though dense ionization may bring the minimum skip distance down to 300 miles, or even less. Multiple reflections also extend the range to as much as 2500 miles, on occasion. It is thus possible for an alert 50-Mc. operator to work all states, and at least ten have qualified for the special certificate award that ARRL issues in recognition of this accomplishment.

Reflections from the auroral region offer another means of working beyond the normal range on 50 Mc. If you see "Northern Lights" on a clear night, aim your 6-meter array in that direction and you're likely to hear the weirdest-sounding signals you ever imagined. Voice or any other form of modulation is sure to be badly distorted, and may be completely unreadable, making c.w. the only usable means of communication. Auroral conditions develop most often in the early evening, but they may show before sundown, so you have to watch radio conditions to catch all the opportunities. The distances over which auroral effects are noted extend from a few miles to as much as 800.

Around the peak of the sunspot cycle there is a chance of 50-Mc. DX of world-wide proportions. Between 1946 and 1950 many transatlantic and transpacific contacts were made, and North American stations worked several South American countries on 6. It may seem hard to believe, in these days when 28 Mc. is dead most of the time, and 21 Mc. only partially open, but working international DX was quite a sport on 50 Mc. in the spring and fall months of those years. Distances of 2500 to 5000 miles were common, and contacts were made with as little as 3 watts input! An almost unbeatable record of 10,500 miles was set in 1947.

So you see that just about all the factors that affect lower frequencies influence 50-Mc. communication at times, and in addition, it responds to weather variations. As propagation seldom remains stable for more than a few hours at a time, it is hard to say just what "normal" conditions really are. Perhaps it is better to talk in terms of minimum distances, rather than average, if we want to establish what the potential 6-meter operator may be able to work. Suppose you're going to run 50 to 100 watts input. You don't have room for a big tower, so you're planning to put up a 2- or 3-element rotary that won't stand out among the TV antennas. It will be no more than 50 feet above ground — perhaps less. What can you expect to do on 6?

Unless you're completely surrounded by nearby hills much higher than your antenna, you should be able to work at least 50 miles consistently, with stations similarly equipped. If you have a reasonably open location (not necessarily a high one), so that your antenna "sees" a horizon several miles away, your reliable operating radius should be at least 100 miles, and you should get in some contacts up to perhaps 200 miles when weather is favorable. If you have a hilltop site, and plenty of hams seem to manage it, you will find it possible to keep reliable schedules with well-equipped stations out to 200 miles or more, and 300-mile stuff will not be uncommon.



These very rough figures apply to tropospheric conditions only. Results in aurora or sporadic-*E* work are affected far less by the characteristics

of your location. In either department, the sharp operator in a "poor" v.h.f. location may do just about as well as his more fortunately-situated fellows.

Equipment

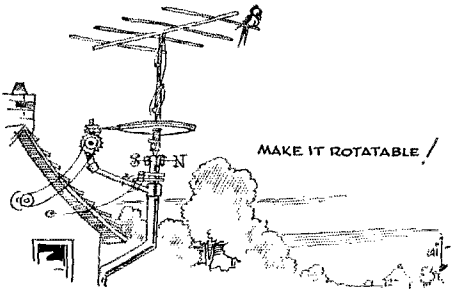
The 50-Mc. transmitter need not be greatly different from gear used on lower bands. Most currently-used tubes work well on 50 Mc., and only a little attention to layout is needed to make an efficient r.f. section for 6. Any recent edition of *The Radio Amateur's Handbook* will give you practical ideas, or there are units you can duplicate, part for part, if you like.

Receiving may be more of a problem. As most hams buy, rather than build, when it comes to receivers, the lack of suitable ready-made gear has kept quite a few hams from enjoying 6 in recent years. Several commercial receivers have a "50-Mc. band" but few of them do a passable job. There are present indications of a change for the better, but you may have to build your own "front end" if you want to receive as far as you can transmit. If your receiver is the single-conversion variety, and nearly all more than two years old are, it probably won't "have it" for 50-Mc. work, without a converter. A few double-conversion jobs on the market show fair 50-Mc. performance, but all are in the higher-priced brackets. If your receiver is low- or medium-priced you're sure to need a converter, even though the receiver dial does indicate 50-Mc. coverage.

Fortunately, construction and adjustment of a 50-Mc. converter need frighten nobody. And if your receiver is in good working condition it doesn't make too much difference if it happens to be 15 years old, or one of the low-budget jobs. The *Handbook* can be your guide as to converter designs, and we have some new units in the works here in the ARRL lab. They will be tailored to the beginner's needs, and you'll be seeing them soon in *QST*.

The antenna is probably the most important part of the 50-Mc. station. Investment in the antenna system will yield greater returns than time and money spent elsewhere in the 6-meter station. You can work a radius of 25 miles or so with an indoor folded dipole, but you'll never know how much fun the band can be until you put up something better. In these days of inexpensive TV rotators and arrays on every roof, a 6-meter beam is within the reach of almost everyone. Whatever you put up for an antenna, make it rotatable. There is nothing more unsatisfactory, in most locations, than a fixed antenna. It will always be aimed in the wrong direction when your friends on 6 are working something good!

Even if you plan only a single element, arrange to be able to turn it. A dipole works surprisingly well if it can be kept broadside to the desired incoming signal. But if you can put up a good dipole, with provision for rotation, you can add



at least one parasitic element. That first one really pays off, too, and even a 2-element beam will do a real job for you, if it is fed properly. Additional elements are worth the effort, too, if you can manage them. Make the antenna as big and as high as you can. Your *Handbook* gives you all the necessary design details.

Problems — If Any

With our band at 50 to 54 Mc., and TV Channel 2 at 54 to 60 Mc., it is rough on the 6-meter man when his community gets a Channel 2 TV station. It may be rougher in a Channel 2 fringe area. TV receivers are just not capable of slicing it that thin. But there are many areas that do not have Channel 2 service, and for these the 50-Mc. band is relatively free of TVI problems. If moderate power is used and the rig is designed so as to prevent harmonic radiation[1] there is a very good chance of avoiding TVI entirely.

If some is encountered it is easy to cure. The writer has operated on 50 Mc. consistently since long before television, much of the time with high power, without running into any TVI problems that could not be solved readily. If you live in a 40-family apartment house you may not want to try it, but if you can manage 100 feet clearance from your neighbors' TV antennas, operating on 6 should pose no threat to neighborhood peace. You may have to put a 300-ohm stub on here and there, but unless you're blessed with Channel 2 you'll need nothing more pretentious in the way of TVI-preventive measures than a few scraps of Twin-Lead. Even in Channel 2 areas, the problem is by no means hopeless, as W2IDZ showed recently in *QST*.[2]

Here, then, is the 50-Mc. picture, presented in the frankest possible terms. As one of the band's long-time regulars, the writer feels — with several hundred other die-hards — that anyone who has not given 6 a real try has missed one of the great experiences that ham radio has to offer. We hope that in years to come many newcomers will share this opinion. To help them along the way, we've been working for some time on several transmitters and receivers designed especially for the beginner. You'll be seeing them in forthcoming issues of *QST*.

[1] Tilton, "TVI Hints for the V.H.F. Man," April, 1953, *QST*. Also 1954 and 1955 editions of *The Radio Amateur's Handbook*, Chapter 23.

[2] Ladd, "50-Mc. TVI — Its Causes and Cures," June and July, 1954, *QST*.

The transmitter covers 160 through 10 meters, and uses standard chassis and bottom plates to provide complete shielding for TVI. The panel is 7 by 19 inches.

Easy Shielding for Ninety Watts

The "Bandbox" and a 6146 Pi-Network Amplifier

BY RICHARD L. BALDWIN,* W1IKE

• This is a neat little package combining Don Mix's "Bandbox" frequency-multiplying unit with a 6146 amplifier using a continuously-variable inductor in a pi-network tank. The construction is such that the unit is self-shielding for TVI — with only one very simple metal piece requiring fabrication.

THIS RIG has two virtues which should recommend it to those who like to build their own gear. First, it is completely and rapidly bandswitched from 160 through 10 meters, without plug-in coils; and second, it is of a mechanical design that allows a maximum of TVI reduction with a minimum of sheet-metal work.

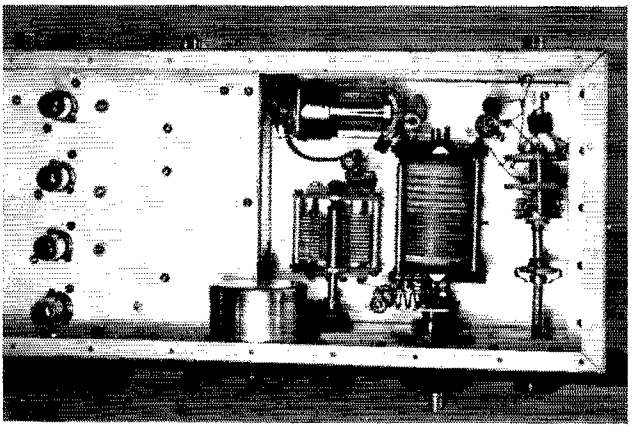
* R.F.D. 1, Cumberland Center, Maine.

[1] Mix, "The 'Bandbox' — A Single-Control Frequency Multiplier," *QST*, April, 1952. See also p. 52, *QST*, September, 1952.

Circuit

An inspection of the circuit diagram, Fig. 1, will show you that there is nothing new and tricky here. The front end of the transmitter consists of Don Mix's "Bandbox,"[1] slightly modified electrically by the addition of another switch section so that if a VFO with 160-meter output is available, that VFO output can be applied to the grid of the final tube. It was also modified mechanically to fit this particular layout. The final tube is the popular 6146, with a variable inductor and pi network so that no coils have to be changed when shifting bands.

TVI has been reduced to a minimum by complete shielding, by the use of shielded wire for all d.c. leads, and by appropriate by-passing of all leads leaving the chassis. A coil shield covers the meter, and the only possible "hole" is the socket on the rear panel for the power plug. But all leads there are by-passed and no r.f. can be detected leaking out.



The amplifier is set in a "dish" (see Fig. 3) in a cut-out section of the two back-to-back chassis. This view is looking down into the transmitter with the top plate off. The tubes in the "Bandbox" exciter section are at the left.

Layout

Looking at the transmitter from the front, the exciter portion occupies the left half of the chassis, while the final occupies the right half. The panel controls, reading from left to right, are the bandswitch controlling the exciter, exciter tuning, the meter switch, plate capacitor for the 6146, variable inductor for the 6146, and the switch for the loading capacitors. The meter is in the upper center, while a chart in the upper left attempts to balance the extra counter dial on the variable inductor.

Along the rear of the chassis are the coax connector for VFO input, the power socket, and the coax connector for r.f. output.

Looking at the top of the transmitter, we see the tubes for the exciter standing at attention at the left, with the shield can for the meter front and center. The final is set in a "dish," with the variable inductor right in the center, the tube left rear, variable capacitor left front, and loading capacitor switch at the right. In order to obtain better operation at 10 meters and in order to cover 160 meters at all, inductance L_6 is broken up into three sections. L_{6A}

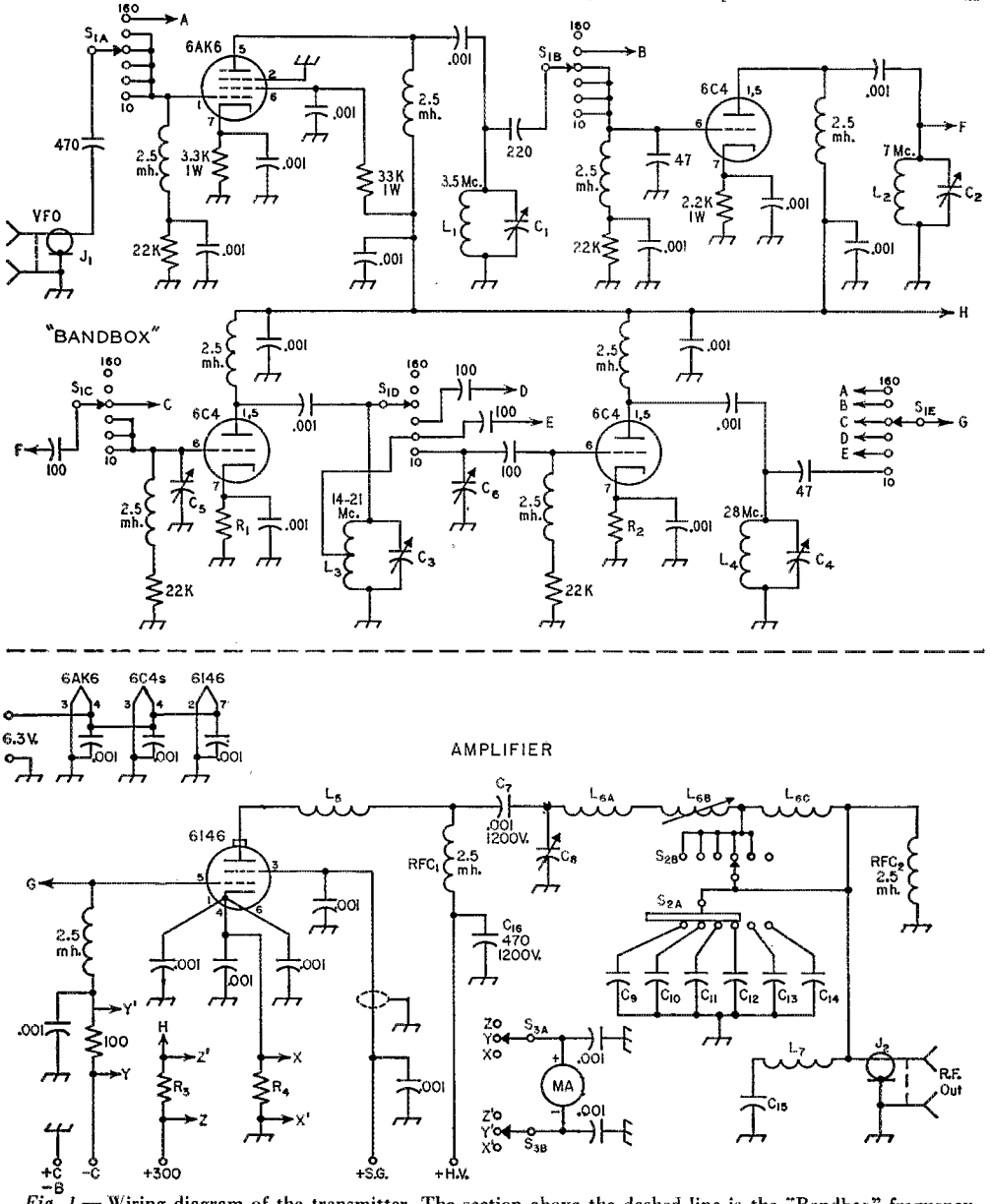


Fig. 1 — Wiring diagram of the transmitter. The section above the dashed line is the "Bandbox" frequency-multiplier unit. All resistors ½ watt unless otherwise specified. Capacitor values below 0.001 μf. are in μμf. All 0.001-μf. capacitors except C_7 are 500-volt disk ceramic; others are mica.

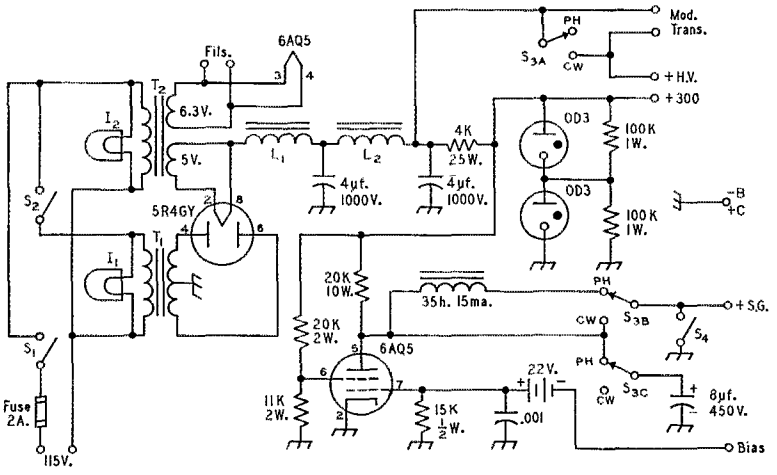


Fig. 2 — Power-supply and clamp-tube circuit.

L_1 — Swinging choke, 5–25 henrys, 20–200 ma. (Triad C-31A).
L_2 — Smoothing choke, 10 henrys, 200 ma. (Triad C-16A).
S_3 — 3-pole 2-position ceramic switch, nonshorting (Centralab 2507).
I_1, I_2 — 115-volt pilot lamp.
T_1 — Plate transformer; for 750 v. d.c., 225 ma. (Merit P-3159).
T_2 — Filament transformer; 5 v., 3 amp. and 6.3 v., 6 amp. (Stancor P-5009).

consists of four turns of B & W Miniductor No. 3009, and resonates in the 10-meter band when L_{6B} is shorted out by running the contactor all the way down to the end. Operation on 15 meters through 80 meters is accomplished with L_{6A} working in series with L_{6B}, with L_{6B} being adjusted for more and more inductance as we progress from 15 to 80 meters. L_{6C} consists of 1¾ inches of B & W No. 3907, which, in conjunction with L_{6A} and L_{6B}, will resonate on 160 meters. It was removed for the photographs because it hid too many of the other components. It is customarily supported between the rear terminal on L_{6B} and the pillar insulator (National GS-3) located at the right rear of L_{6B}. On bands other than 160 meters it is shorted out by an extra wafer section (S_{2B}) of the loading-capacitor switch.

[2] "Improved Break-In Keying," *QST*, March 1948.

The circuit of the power supply used in conjunction with the transmitter is shown in Fig. 2. A pair of 816s was used originally, but they generated a hash on 80 meters which would not clear up with any of the combinations of filter tried, and so they were replaced with the single 5R4GY. The clamp circuit is one that has been described several times in recent issues of *QST*.

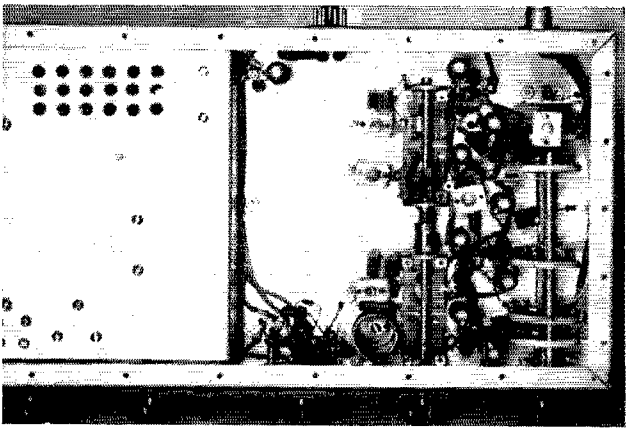
The VFO that has been used with this rig has a couple of 6AG7s in a Clapp oscillator and buffer, and is keyed with a Millisec relay according to Goodman.[2]

Construction

In order to obtain complete shielding, two 3 × 8 × 17-inch chassis were bolted together back to back, or top to top, depending upon how you look at it. The Bandbox exciter is then built in the left-hand portion of the resulting

C_1 — 65-$\mu\mu$f. variable in parallel with 100 $\mu\mu$f. silver mica.
C_2 — 35-$\mu\mu$f. variable in parallel with 3–30-$\mu\mu$f. mica trimmer and 47-$\mu\mu$f. silver mica.
C_3, C_4 — 25-$\mu\mu$f. variable in parallel with 3–30-$\mu\mu$f. mica trimmer.
C_5, C_6 — 3–30-$\mu\mu$f. mica trimmer.
C_7 — Mica.
C_8 — 300-$\mu\mu$f. variable, 0.026" spacing (National TMS-300).
C_9, C_{10} — 100-$\mu\mu$f. mica
C_{11}, C_{12}, C_{13} — 200-$\mu\mu$f. mica
C_{14} — 500-$\mu\mu$f. mica
C_{15} — 100-$\mu\mu$f. mica (see text).
C_{16} — Mica.
R_1 — Two 4700-ohm 1-watt resistors in parallel.
R_2 — 4700-ohm 1-watt in parallel with 3300-ohm 1-watt.
R_3, R_4 — Meter shunts; see text.
L_1 — 12 μh.; 24 turns No. 22 d.c.c., 1-inch diam., close-wound.
L_2 — 4.2 μh.; 17 turns, ¾-inch diam., 17/32 inch long (B & W Miniductor No. 3012).
L_3 — 1.8 μh.; 12 turns, ¾-inch diam., ¾ inch long tapped 6½ turns from ground end (B & W Miniductor No. 3011).
L_4 — 0.4 μh.; 7 turns, ½-inch diam., 7/16 inch long (B & W Miniductor No. 3003).
L_5 — 8 turns No. 18, ¼-inch diam., 5/8 inch long.
L_{6A} — 0.3 μh.; 4 turns, ¾-inch diam., 1 inch long (B & W Miniductor No. 3009).
L_{6B} — 10-μh. variable (Johnson 229-201).
L_{6C} — 11 μh.; 18 turns No. 16, 2-inch diam., 1¾ inches long (B & W No. 3907).
L_7 — See text (forms TV harmonic trap with C_{15}).
J_1, J_2 — Coax connectors
S_1 — Ceramic switch; 5 sections, 6 positions.
S_2 — Ceramic switch; 2 sections, 6 positions; Centralab P1S section (for C_9-C_{14}, inc.) and type X section (for L_{6C}).
S_3 — Bakelite wafer switch; 2 poles, 3 positions.

Note: C_1, C_2, C_3, and C_4 are ganged. See Reference 1 or *The Radio Amateur's Handbook*, 1953 or 1954 edition, for method of adjusting tuned circuits for proper tracking.



The exciter section extends along one end of the chassis, as shown in this bottom view. The bottom of the amplifier dish is at the left. The switch at lower center is the meter switch.

enclosure, exactly as previously described by Mix, except for the extra switch section and except for a mechanical rearrangement so that the dials would line up symmetrically along the panel. The cut-out for the final is 7 inches wide and 8 inches long, and a shelf to support the components for the final hangs down 2¾ inches below the cut-out. Fig. 3 shows the

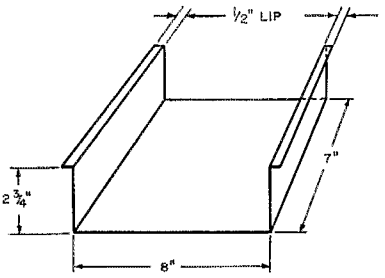


Fig. 3 — The "dish" for the final amplifier. It is bent from aluminum sheet.

dimensions of this shelf, as its configuration is not clearly shown in the photos.

The 6146 is mounted on a small bracket at the left rear of the shelf. Capacitor C_8 is in front of the tube, mounted on a couple of small aluminum spacers so that its dial will be in line with the others. Between C_8 and the tube are RFC_1 and C_7. Parasitic choke L_5 is supported between the junction of C_7-RFC_1 and the tube plate cap. C_{16} is connected to the high-voltage lead at the power plug where the lead leaves the chassis. Coil L_{6A} shows up poorly in the photos, but is supported by a National GS-3 pillar insulator (mounted to the left and in front of the variable inductor) and the terminal of the variable inductor. It is at right angles to L_{5B}, the roller coil.

At the right rear edge of the variable inductor is the GS-3 insulator which normally supports L_{6C}, and directly behind that is the safety choke RFC_2. Switch S_2 is at the far right; one section switches the loading capacitors which are clustered to the rear of the switch and the other section shorts out L_{6C} on all bands other than 160 meters, as mentioned earlier. Just barely visible in the photograph is the coil portion of the harmonic trap L_7C_{14}.

Top and bottom plates are 8 by 17 inches, and are secured by ¼-inch 6–32 screws spaced every 2 inches around the edges of the chassis. The chassis material is rather light, but if care is used it may be drilled and tapped with good results. Just don't tighten up on the 6–32s *too* strenuously. The 7-inch panel is held to the chassis by the various tuning controls and panel bearings, and by the bolts which hold the meter and meter shield in place. The meter shield is an ICA No. 1540 coil shield, cut down so that it is only 2 inches high.

The only other piece of mechanical work that is at all unusual is the counter for the variable inductor. At the time this transmitter was conceived the only counters obtainable took up more room on the panel and behind it than was available, and so a homemade counter was contrived using Boston gears Nos. G142 and G148, some G29 pinion wire, two panel bearings, a couple of aluminum brackets, and a surplus dial. Fig. 4 shows the method of assembly. The

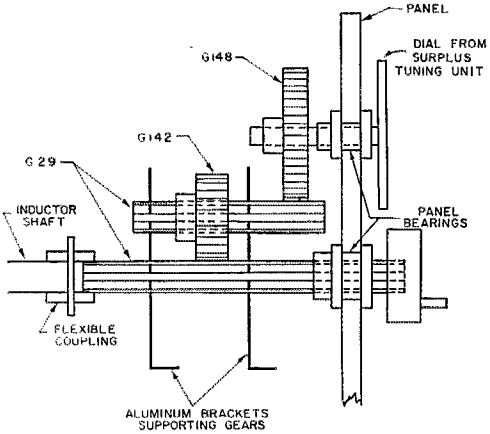
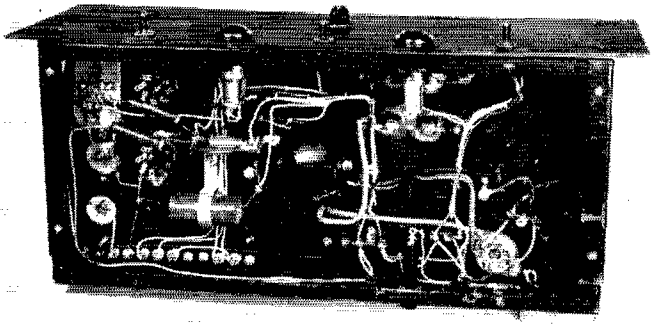


Fig. 4 — Sketch of drive and indicator for the final-tank variable inductor. The gears are standard items.



Miscellaneous small parts in the power supply are mounted below chassis, as shown in this photograph.

counter dial on the panel was taken from a surplus tuning unit, and was mounted by drilling and tapping the shaft on which the G148 spur gear was mounted. Incidentally, the spur gears come with hubs which have to be drilled and tapped in order to allow fastening to the shafts.

Now for a few miscellaneous notes on the construction and wiring. You should do all necessary by-passing and other wiring at the 6146 tube socket before mounting it and its bracket in position. There is not enough room to get down between it and the edge of the shelf with any ordinary soldering iron. A series of ¼-inch holes is drilled below the tube in the shelf, in line again in the bottom plate and in the top plate, to provide ventilation for the 6146. The now-standard practice of using shielded wiring on the d.c. leads is followed in this rig, with plenty of bonds to the chassis at convenient points. The meter shunts were wound by trial and error, using a rheostat, battery, and full-range milliammeters to determine the shunts needed. The shunt for measuring exciter current extends the 10-ma. range of the meter to 100 ma., while the shunt for the 6146 plate current extends the range to 200 ma. No shunt is needed for the 6146 grid current. The panel markings are Tekni-Cals.

Operation

Adjustment of the exciter has been fully covered by Mix, and so need not be detailed further. It might be mentioned, however, that the exciter worked right from the moment plate voltage was first applied, and the process of aligning it was very simple. Thus, if the specifications in the original article are followed you will have no difficulty with that part of the circuit.

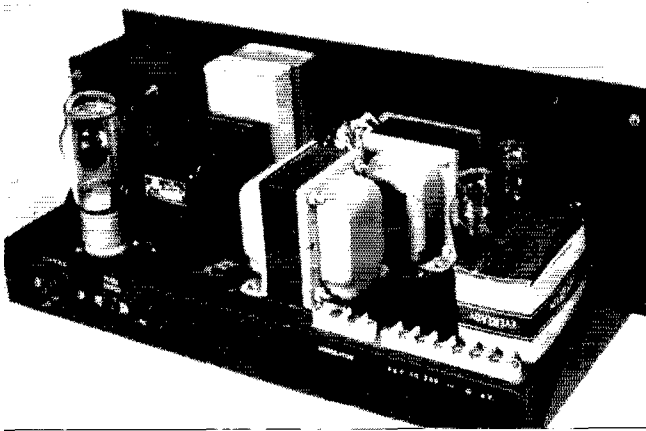
In the final the harmonic trap is adjusted by resonating the L_7-C_{15} combination to your local TV channel. Do this by shorting the coax-connector terminals and coupling L_7 to a grid-dip meter. In my case L_7 consists of three turns of No. 18 wire wound to a ¼-inch diameter, while C_{15} is 100 $\mu\mu$f. L_7 was then adjusted until the circuit hit Channel 6.

The values of the loading condensers were picked by going back to the early articles on the pi network. I had to make no further adjustment, and so in this case blind luck triumphed over science.

The 80-meter band is tuned with all of L_{6B} in the circuit, 40 is tuned with about 12 turns of L_{6B} in the circuit, 20 meters with about 7 turns, and 15 meters with about 5 turns. For 10 meters, L_{6B} is shorted out altogether by running the contactor all the way to the end of the coil. These adjustments could vary depending upon what kind of load your transmitter has to feed.

A word of caution about the 6146 is in order. It appears that this tube is particularly susceptible to overloads, and so you should exercise care not to allow it to operate off-resonance; otherwise, you will soon end up with a tube exhibiting grid emission.

This rig has been used by itself, with an antenna coupler, as a very nifty low-power transmitter. It was used with success during the 1953 and 1954 SS contests, and the TV receiver in the next room never knew it was on the air. It has also been used to drive a pair of triodes running a kilowatt input.



Major components of the power supply, which is built on an 8 × 17 × 2-inch chassis. The voltage regulator tubes, clamp tube and bias battery are at the right-hand end in this view. The "plate switch" socket beside the 115-volt connector on the chassis lip is wired in parallel with the front-panel plate switch and is for remote control of the plate voltage.

A One-Tube Receiver for the Beginner

The 6U8 in a Regenerative Receiver

BY LEWIS G. McCOY, W1ICP

• The easiest way to break into the receiver-construction game is to build a regenerative receiver. Here is a "one-tube" regenerative receiver that is easy to put together and has performance equal to any in its class. And, after all these years, it has an honest-to-goodness antenna coupling circuit.

JUDGING from the mail here at Headquarters, it would appear that one of the many questions facing the newcomer is whether to buy or build his first receiver and transmitter. The answer to that depends on whether one is interested in just operating or in learning about radio. If you want to understand radio, the only real way to acquire experience is by building your own equipment. At least at the beginning.

This article describes the construction of a simple one-tube regenerative receiver that will fulfill the basic requirements for communications work. The title of the article states that the receiver is a one-tube job. Actually, it uses two tubes in one envelope — envelope meaning the glass enclosure. The 6U8 is a triode-pentode, and in this receiver the pentode section is used as a regenerative detector and the triode portion as an audio amplifier.

With this receiver it is possible to hear amateur and commercial stations in the 2- to 20-Mc. range. This tuning range will enable the builder to listen to the two low-frequency Novice bands. Also, if one is interested in obtaining code practice, W1AW, the ARRL Hq. station, can be tuned in for its nightly code-practice sessions.

The Circuit

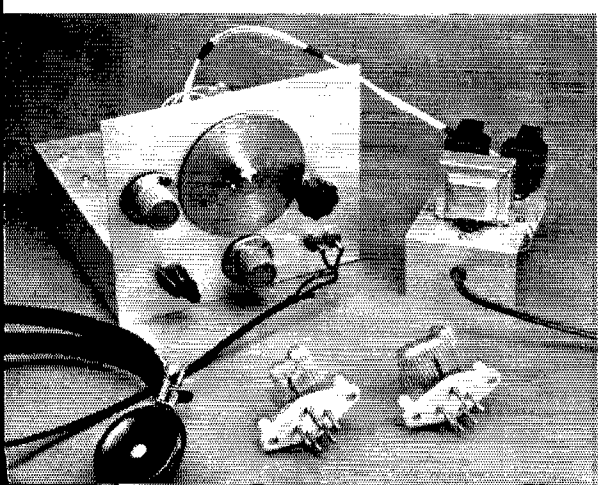
The circuit used in this receiver differs in a few places from the usual regenerative-receiver circuit. For example, instead of the usual small antenna-coupling capacitor or inductor, provision was included here for either a series- or parallel-tuned antenna circuit. This allows a wide range of coupling adjustments to be obtained, as is often necessary with regenerative receivers.

Referring to Fig. 1, the antenna coil, L_1, couples the signal to the detector tuned circuit $L_2C_2C_3$. The capacitor, C_2, is larger than C_3 and is used as the "bandset" capacitor — once C_2 is set for a particular frequency range, C_3 is used as the "bandspread" tuning control. To facilitate using manufactured coils, the coil L_2 is tapped to obtain a feed-back or "tickler" winding. Regeneration in the detector is controlled by changing the screen voltage obtained at the potentiometer R_1. An r.f. filter, using two capacitors and an r.f. choke, is placed in the plate circuit of the pentode detector to reduce r.f. appearing at the grid of the triode audio amplifier. Still further attenuation of r.f. at the grid is obtained through the use of a series resistor and a shunt capacitor right at the grid of the audio stage. To save a little money, the audio coupling choke, L_3, is made from an interstage audio transformer with the two windings connected in series. A high-inductance choke could be used here, but the series-connected transformer does a good job and is less expensive.

The headphones are connected directly in the plate circuit of the audio stage, and consequently the plate voltage appears at the terminals — you can get an electrical shock here if you aren't careful. Some receivers eliminate this hazard by feeding the plate through an audio choke and coupling to the headphones through a capacitor, but again in the interest of saving a few dollars this protective feature was not included. In any event, be sure to use "high-impedance" headphones with this receiver — the low-impedance headphones that have been available in surplus will not work well in this particular circuit.

Construction

The receiver is built on a 7 × 7 × 2-inch aluminum chassis, with the power supply mounted on



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Front view of the receiver and power supply. The control at the upper left is the general-coverage tuning, center is bandspread, lower left the regeneration control, and the bottom center the antenna trimmer.

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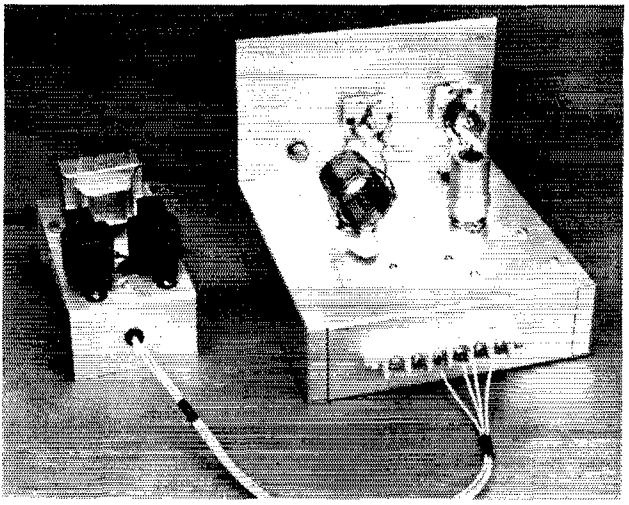


Rear view of receiver and power supply showing the placement of parts. The variable capacitor on the left is for bandspread and the one on the right for general coverage. The leads from the two capacitors are run through rubber grommets to avoid shorting to the chassis top.

a separate chassis. In order to minimize hum pickup and vibration from the power transformer, it is not advisable to mount the power supply on the same chassis as the receiver. It is not necessary to use aluminum chassis for the two units, but it does tend to make a neater job. The aluminum is easy to work — a $\frac{1}{8}$- and $\frac{1}{4}$-inch drill, plus a small rattail file and hack-saw blade being all the tools that are needed for the job, although two socket punches can be used to advantage and will save you some work.

The first step is to mount the coil and tube sockets. They are spaced 2 inches from the sides at the center of the chassis. Ground lugs should be mounted under the nuts that hold the tube socket and also under the rear nut holding the coil socket. Next, the panel holes are drilled.

Looking at the photograph showing the panel front, the knob at the lower left is the regeneration control, lower center is the antenna trimmer, and the headphone tips are at the lower right. The knob at the upper left is for the general-coverage capacitor, and the one at the right the bandspread tuning. The dial shown in the photograph is the National type K. This has a rim drive and gives a desirable slow tuning rate.

After the holes are drilled in the panel, it is held in place against the chassis and the four holes along the bottom are used as a template for the chassis holes. A small right-angle bracket to hold the antenna-trimmer capacitor is made from a piece of aluminum. The hole in the bracket should be large enough to clear the rotor of the capacitor, since both the rotor and stator are insulated from the chassis. The trimmer is mounted to the bracket by screws and the insulated nuts on the capacitor frame. The bracket, tie points, and audio choke L_3 can now be mounted in place.

The two capacitors, C_2 and C_3, should then be

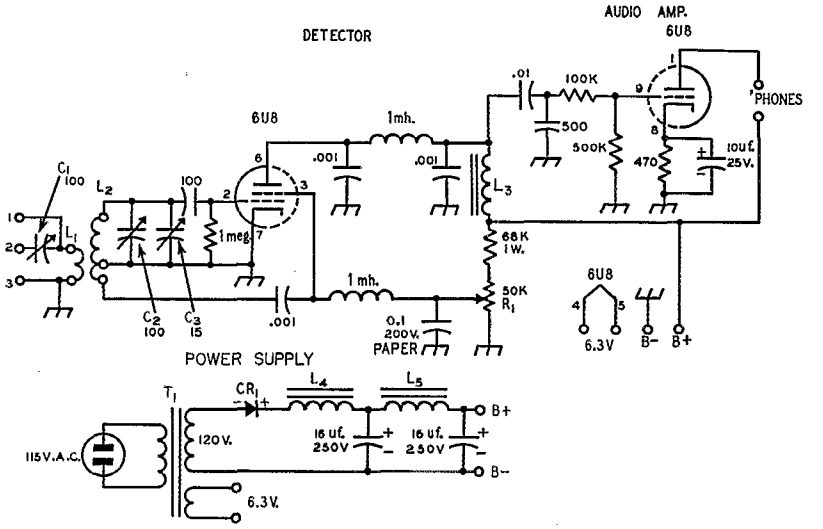
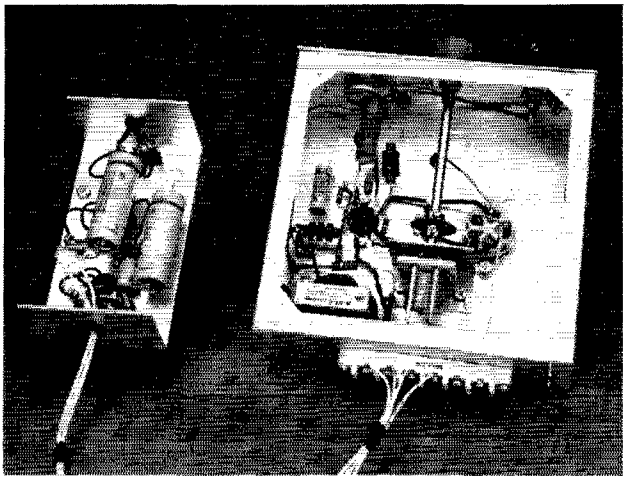


Fig. 1 — Circuit diagram of the one-tube regenerative receiver. See page 138 for parts list.



Bottom view of the two units. At the lower left in the receiver is the interstage transformer L_3. To the right of L_3 is the antenna-trimmer capacitor mounted on a right-angle bracket. Immediately in front of the bracket is the insulated shaft coupler which connects the through-shaft bushing to the antenna trimmer.

The selenium rectifier in the power supply is visible between the two electrolytic capacitors.

installed on the panel. If the Type K dial is used, a template is furnished with the dial assembly to give the correct placement points for the dial and rim drive. When the potentiometer R_1 and the pin jacks are mounted in place, they will hold the panel to the chassis. Be sure to insulate the pin jacks from the panel and chassis with fiber washers. The through-shaft bushing is measured and cut to size, making allowance for the insulated coupler. The receiver is now ready for wiring.

Wiring

If this is your first construction project, there are a few tips about wiring and soldering that will help you do a good job. First, be sure the end of the wire to be soldered is completely clean of insulation or enamel. Solder should not be depended on to hold the connection. Whenever possible, wrap the wire around the connection before applying solder. Hold the tip of the iron against the work until the *work* is hot enough to melt the solder. Where most beginners make a mistake is in holding the solder to the iron tip and not getting the connection hot enough for the solder to melt and hold. Don't use any more solder than necessary to make the connection. After a connection is soldered, dispose of the loose bits of solder and wire to avoid short circuits to other connections.

Although it is not shown in the diagram, it is important that a separate ground lead be connected to the rotors of C_2 and C_3 and the lead brought below the chassis to a common grounding point at the tube socket. This will help make the receiver stable and reduce hand capacity.

There are five leads coming from the interstage transformer: red, blue, black, and two green. The red lead and green lead that are directly opposite each other are connected together. After the leads are soldered and taped, the end of the black lead is also taped. These leads are then rolled up and tucked in the corner of the chassis. The remaining blue and green leads then become those used for wiring the series-connected transformer into the circuit. One is connected to the junction of the 0.01-μf. disk capacitor and the 1-millihenry r.f. choke and the other lead is connected to the B+ voltage terminal.

The Barker & Williamson coils are mounted on five-prong plugs, although only four of the contacts are used. The link mounted at one end of the coil is L_1 and the coil proper is L_2. To make the tickler tap, a short piece of hook-up wire approximately 3 inches long is soldered to the fifth prong on the plug. The piece of wire is then run through the middle turns of the coil and soldered to the tap point. For the 80-meter coil, the tap is connected to the 8th turn in from the link end. To get the tap wire through the middle turns of the coil, it will be necessary to bend two or three turns of the coil in towards the center of the coil. This will provide sufficient clearance for the tap lead. It is also necessary to bend in the 8th turn to make the tap connection. Be sure that none of the bent turns touches adjacent turns.

For maximum bandspread on 40 meters, it is necessary to remove nine turns from the 40-meter coil. The turns are taken from the end opposite the link end of the coil. The tickler tap is made on the 4th turn end from the link end.

To bandspread the 20-meter coil, two turns are removed from the end opposite the link end. The tap is placed on the 4th turn from the link end. In all three coils, the tap lead should be insulated where it passes through the coil turns.

Power Supply

The power-supply components can now be wired. There are two important points that beginners should keep in mind when wiring the supply. The first is that the electrolytic capacitors should be wired with the leads marked with a minus sign, or negative, connected to the chassis. The plus sign, or positive, connects to the choke leads. Likewise, the selenium rectifier is marked with a plus sign, and this lead is connected to the

(*Continued on page 136*)

A Compact Two-Tone Test Generator

Dual A.F. Phase-Shift Oscillators for Modulation Checking

BY ROBERT F. TSCHANNEN,* W9LUO

• This unit provides two audio frequencies of your choice for checking the performance of a linear amplifier. In case you use any of the various two-tone techniques that require only one audio frequency, or want a low-distortion tone for a.m. testing, just use one-half of the circuit diagram.

THE true performance of a single-sideband exciter and linear amplifier is difficult to predict without a few pieces of test equipment. Probably the most important item of test equipment for this purpose is the oscillograph; however, a most useful and helpful companion unit is a low-distortion audio source — better still, a pair of audio sources.

The "Two-Tone Test Generator" described below is designed to provide two independent low-distortion audio test signals. The unit is small and compact and uses only two tubes. No special components are used in the construction of the unit. If the generator is carefully made and adjusted, the total harmonic distortion can be as low as 0.1 per cent.

The Basic Circuit

The basic circuit of a phase-shift oscillator is shown in Fig. 1. Operation depends upon producing 180-degree phase shift in the *RC* network consisting of three capacitors and three resistors; sufficient gain must be produced by the oscillator tube to make up for the loss in the network. For the circuit shown, a gain of 29 times is required to sustain oscillation (Reference 1, bibliography). The frequency of oscillation is determined by the equation

$$f = \frac{10^{12}}{2\pi\sqrt{6}\,RC} = \frac{10^{12}}{15.4\,RC}$$

where R is in ohms and C is in micromicrofarads. If the oscillator tube has a gain less than 29, oscillation will not begin; if excessive gain is obtained, appreciable distortion may be produced.

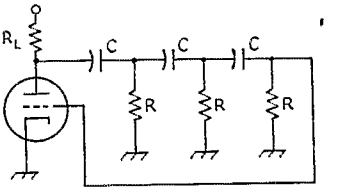


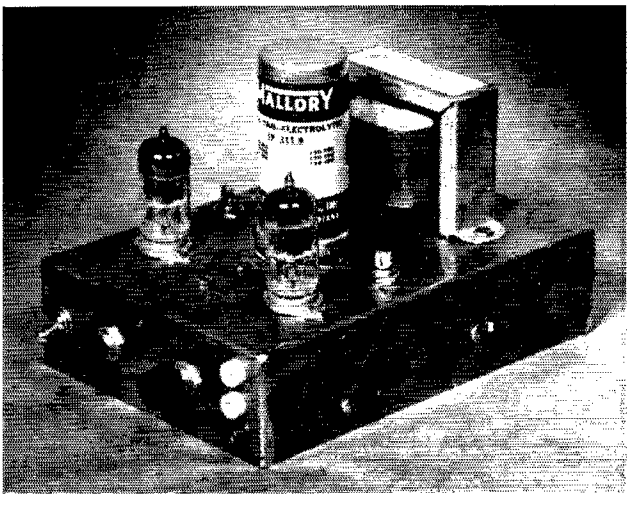
Fig. 1 — The basic phase-shift oscillator circuit.

The phase shift through the network at harmonic frequencies is always less than 180 degrees and in some cases approaches zero. This gives rise to negative feed-back which reduces the gain at harmonic frequencies; therefore, essentially a pure sine wave results. Maximum harmonic reduction occurs at the point where the system is just able to sustain oscillation.

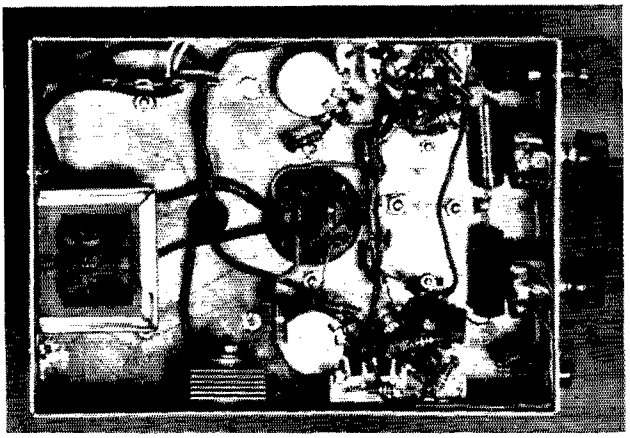
General Circuit Description

A single 6AN8 tube is used as oscillator and output section for each channel of the generator. The pentode section functions as the oscillator

* 412 E. Maple St., Lombard, Ill.



The two-tone test generator is a compact and inexpensive unit and provides two audio signals of different frequencies and equal amplitudes for testing any type of s.s.b. generator. Distortion is extremely low if proper care is used in adjustment.



Arrangement of parts below chassis. The two oscillator-buffer circuits are identical in circuit but not in component values. The three electrolytic condensers in the power supply are contained in a single can-type unit (Mallory 311.9) thus conserving space underneath.

proper; the triode section operates as a cathode follower output. A half-wave selenium rectifier followed by considerable filtering provides good d.c. for the oscillators. The complete schematic is shown in Fig. 2.

The 1000-ohm controls in the cathode circuits of the pentode stages are used for controlling distortion. The controls permit adjustment of the oscillator tube gain to the point where oscillation will just be sustained. This also corresponds to the point where minimum distortion occurs. Two additional 1000-ohm controls in the cathodes of the triode cathode followers provide control of outputs from either channel.

The R and C component values for the networks shown in the schematic of Fig. 2 are approximately correct for the generation of 400- and 1000-cycle tones. Other values are given in Table I.

It is important that the linearity of the cathode follower be good since otherwise distortion may be added by this stage. The use of a low-μ triode tube such as the triode portion of the 6AN8 permits the handling of higher grid swings without distortion. Since the signal handled is small, the possibility of distortion becomes negligible. The effective output impedance of the cathode follower is approximately equal to

$$\frac{10^6}{g_m}$$

in shunt with the cathode resistance to ground (where g_m is the transconductance in micromhos). The output impedance is therefore of the order of only several hundred ohms. This is desirable since output signals may readily be coupled into a combining network without appreciable interaction. The tapped-down take-off point from the plate of each oscillator tube reduces external loading on the oscillator and

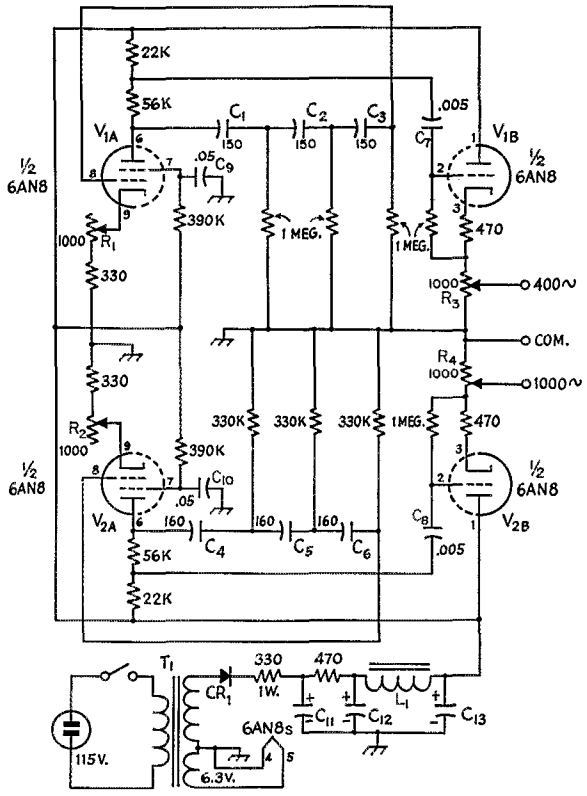


Fig. 2 — Circuit of the dual a.f. test oscillator. Resistors are ½ watt, 10 per cent tolerance, unless otherwise specified. Capacitance values below 0.001 μf. are in $\mu\mu$f. Potentiometers are linear-taper 1-watt composition.

C_1-C_8, inc. — Silver mica, 5 per cent tolerance.
C_{11}, C_{12} — 120-μf. 250-volt electrolytic.
C_{13} — 40-μf. 250-volt electrolytic.
L_1 — 5 henrys, 50 ma. (Stancor C-1325).
CR_1 — 75-ma. selenium rectifier.
T_1 — 125 volts, 50 ma.; 6.3 volts, 2 amp. (Stancor PA-8421).

also reduces the output level to the point where the cathode-follower grid circuit can handle the signal without distortion.

When used for lowest distortion, the output of either channel is of the order of 1 to 1.5 volts r.m.s. Output levels of 8–10 volts r.m.s. are obtainable if a few per cent distortion is tolerable. The increased output capability is obtained by readjusting the oscillator cathode resistance.

The total "B" current drain of both oscillators and output stages is about 16 ma. Line-voltage variations do not greatly influence the oscillator frequency; therefore voltage stabilization is not required. Larger screen by-pass and coupling capacitors do not add particularly to the performance of the unit since fixed-frequency operation is used.

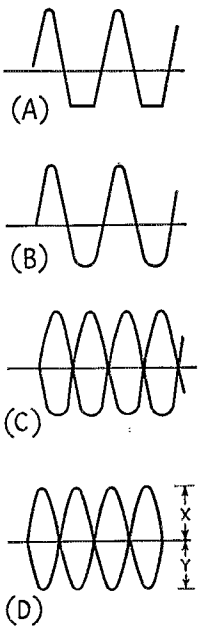


Fig. 3 — Improper operating conditions are shown by 'scope traces. A — Excessive oscillator tube gain. B — Excessive oscillator tube gain, but not as much as in A. C — Same as B except with change in 'scope sweep speed to facilitate estimating second-harmonic distortion by the degree of asymmetry (X greater than Y). D — Optimum symmetry (X = Y), minimum even-order harmonics, low distortion in output.

Typical voltage readings taken with a d.c. v.t.v.m. are as follows:

1) B+ at output of filter = +120 to +130 volts.
2) E_{sg} = +30 to +40 volts.
3) E_p = +55 to +80 volts.
4) E_k (pentode) = 0.2 to 0.3 volt.
5) E_k (triode) = 6 to 7.5 volts.

Construction

The chassis layout of the phase-shift oscillator is not critical. The entire unit is constructed on a 5 × 7 × 1½-inch chassis. The grid leads of the oscillator tubes are preferably kept short and dressed away from a.c. supply and filament leads. One side of each filament of the 6AN8 tubes is grounded. The photographs of the chassis will assist the builder in making a suitable layout. The small power transformer is capable of supplying as many as four individual oscillators. If desired, a 6X4 rectifier may be substituted in place of the selenium rectifier; in this case the 330-ohm 1-watt current-limiting resistor in series with the rectifier may be removed.

TABLE I

Freq. (c.p.s.)	*R*	*C* μμf.
250	1 meg.	260
300	"	216
350	"	186
400	"	162
500	680 K	191
600	"	159
800	"	119
1000	390 K	166
1250	"	133
1500	"	111
2000	270 K	120

Miniature silver mica capacitors were used in the phase-shift networks for compactness; however, conventional micas may be used successfully if space is available. The coupling capacitors C_7 and C_8 may be Hi-K disk ceramic or paper types. Components for the phase-shift network are mounted on terminal strips or boards for rigidity and neatness. The capacitors C_1 through C_6 are not visible in the bottom view since they are beneath the terminal strips which are located on each side of the chassis. The controls R_1 and R_2 are located on each side of the electrolytic filter capacitor. The output controls, a.c. switch, and output tip jacks are on the front flange of the chassis. The layout shown will provide good accessibility to nearly all components.

Adjustment & Checking

After the wiring has been completed and checked the unit may be turned on and each output observed on a 'scope. If no output appears, adjust the cathode resistor of the oscillator to just slightly beyond the point where oscillation starts.

With the values of cathode resistances shown on the schematic, it should normally be possible to stop oscillation near one end of the control and produce high (but slightly distorted) output near the other end of the control. At the point where the distortion becomes noticeable, the wave will usually have an appearance similar to that shown in Fig. 3A or 3B, which indicates even-harmonic distortion (principally second). If a distortion meter or wave analyzer is available it will be simple to adjust each cathode control to the point where lowest distortion is obtained. Since such equipment is seldom available to the ham or experimenter, a reasonable means of minimizing the distortion is to apply the signal under test to the vertical plates of a 'scope and adjust the horizontal sweep speed until a pattern similar to Fig. 3C is obtained. The distortion control can now be rotated until dimensions *X* and *Y* are as nearly equal as possible (see Fig. 3D). In other words, if *X* and *Y* are made equal, any asymmetry due to second harmonic distortion is negligible.

(*Continued on page 120*)

The All-Electronic "Ultimatic" Keyer

Part II — How It Works

BY JOHN KAYE,* W6SRY

• Part I (*QST*, April, 1955) of this article described what the key does and how it can be built. Here is the explanation of the circuits and pertinent test data. Part I is required, since it carries the circuit diagram.

THE electronic Ultimatic is best considered as two separate units, a code generator and a selector-memory-sequencer (SMS). The generator is composed of a time base, two character-generating triggers, and a relay-control tube or an optional d.c.-output tube for direct control of vacuum-tube keyers. The SMS comprises a twin-lever key, two memories, two interlocked-sequencer circuits, two multiple-character holding circuits, and two sequence-seizure circuits. This SMS structure is completely symmetrical. One side only will be discussed. Each paragraph concerning it can also serve to describe the other side by substituting "dot" for "dash" and vice versa and considering the corresponding circuit components. Refer to Part I for the circuit diagram. To extend the stability range, grid-current loading is used in several places. For this reason, some of the voltages to be cited will differ from those calculated from straight voltage-divider action of resistor strings.

Time Base

The multivibrator, V_1V_2, generates a sufficiently-square wave at its cathodes from which C_2R_4 differentiates alternate positive and negative pulses for operation of the generator triggers. The "mark/space" ratio of this type of oscillator has been found to be substantially independent of plate voltage over a wide range, and consequently, no voltage regulation is required. The elevated grid return of V_1 provides a mark/space ratio of 45/55 with R_3 at ground, increasing to 90/10 before failure as the arm is moved toward the cathodes. A capacity of 0.05μf. at C_1 gives a minimum speed below 5 w.p.m. and a maximum above 100. Heaven forbid anyone turning it loose on me!

Relay Output

During spacing, the relay is energized because the grid of V_3 is held at ground potential at the junction of R_{12} and R_{13}. The normal "back" contact is used to key the external circuit. On "mark" the junction of R_{12} and R_{13} drops to −15 volts, cutting off V_3. Relatively heavy spring tension on the relay minimizes armature travel time. When the grid of V_3 returns to ground potential for spacing, the current through V_3 is sufficient to open the contact promptly. Slower armature travel at this time, caused by the stiff spring, is of no consequence. With 0.004-inch armature travel, this method of relay operation results in practically zero variation in the mark/space ratio to, fantastic as it may sound, well above 100 w.p.m.

*2296 West Nicolet, Banning, Calif.

Idle Code Generator

V_5V_6 and V_7V_8 are cathode-coupled triggers, with V_6 and V_7 conducting in the idle condition. Voltages of +15 and +12 stand on R_7 and R_{15}, respectively. When the output is to remain spacing, both sequencors, V_{10} and V_{11}, are cut off, with cathodes held at +1.7 and +.9 by R_{22} and R_{23}, to compensate for the negative contact potentials in the control clampers D_1, D_2 and V_4. Positive pulses from C_2R_4 are clamped at +.9 to the grid of V_8 by D_2 and R_{16}. The junction of R_{10} and R_{11} holds the grid of V_4 at its cathode potential of +1.7, clamping positive pulses to the grid of V_5 at +2.2 volts. These pulse amplitudes are too low to affect the triggers. Negative pulses are not affected by the dot control V_4R_6, but are grounded out by D_1R_{16}.

Dot Generation

When the output is to be a dot, V_{10} is made conductive by SMS action, establishing +10 volts at R_{24}. This effectively cuts off V_4, whose grid does not rise above +8 volts at $R_{10}R_{11}$. The first succeeding positive pulse from C_2R_4 rises to +10 volts at the grid of V_5 to transfer conduction to that tube. The resultant drop across R_8 transmits a 60-volt negative pulse toward the grid of V_7 via C_4 and R_9. This cuts off V_7 and transfers conduction to V_8. The junction $R_{12}R_{13}$ stabilizes at −15 volts to cut off V_3, releasing the relay for marking output.

The following negative pulse cuts off V_5 and returns conduction to V_6. As V_5 cuts off, a positive pulse is transmitted via C_4 to the grid of V_7, to return conduction to that tube. The junction of R_{12} and R_{13} returns to ground potential, and V_3 pulls up the relay for spacing output.

Even if the key is held closed, with a constant +10 volts standing on R_{24}, the output cannot again go to marking until the next positive timing pulse, ensuring a full half cycle of spacing output to complete the dot.

Dash Generation

When the output is to be a dash, V_{11} is made conductive by SMS action, and +10 volts

stands on R_{25}. The first positive pulse from C_2R_4 rises to +10 volts at the grid of V_8, transferring conduction from V_7 to V_8 and the output to marking. The following negative pulse toward the grid of V_8 is grounded by D_1, and V_8 remains conductive.

Conduction in V_8 reduces the potential at R_{15} to +2.2 volts. The voltage at the junction of R_{10} and R_{11} drops to −0.5 to cut off V_4, whose cathode now stands at +0.9 volts. (The cut-off voltage is low because the plate voltage is only about 10 volts.) C_5R_{14} delays this drop until well after the first positive pulse has decayed at the grid of V_5. The second positive pulse can now trip V_5V_6 to V_5 conduction. V_8 continues to conduct, of course. The second negative pulse cuts off V_5, which returns conduction to V_7 and the output to spacing. The output cannot again go to marking until the next positive pulse, ensuring the half cycle of spacing to complete the dash after 1½ cycles of marking output.

When conduction is first transferred from V_7 to V_8, a 19-volt negative pulse is transmitted from the grid of V_7 toward the plate of V_5 via C_4, but R_9 limits it to insufficient amplitude to upset stable conduction in V_6. If SMS action has transferred sequencor conduction to V_{11} by the time of the second positive pulse in the dash, the elevation of the cathode of V_4 is only incidental, since the drop at $R_{10}R_{11}$ has already cut off V_4.

Automatic Spacing Characters

As in the relay model, interletter and interword spacing characters are obtained by allowing one or two positive pulses to go by. Closure of a key at any time following a passed-up positive pulse produces marking output beginning at the next positive pulse.

Memory Actuation

The dot-memory trigger $V_{13}V_{14}$ idles with V_{13} conducting. This is the opposite tube of the pair from that in the code generators, facilitating the use of readily-derived positive memory-clearance pulses and a simple sequencing structure. While idle, C_{12} discharges and C_{13} charges through R_{31}. Closure of the dot key lifts the grid of V_{14} on charging current to C_{12} to the +10-volt value standing at $R_{37}R_{38}$. C_{13} discharges immediately and ensures C_{12} action despite a possibly scratchy contact at the key. The comparatively slow (2 millisecond) charge rate of C_{13} through R_{31} prevents unwanted memory actuation from contact scratch as the key is released. The grid of V_{14} rises from −13 volts and stablizes at +10 volts with V_{14} conducting. The key may be immediately opened and the dot selection will be stored in the actuated trigger until cleared by appearance of the dot at the output.

Memory Clearance

The dot memory is cleared under control of D_5R_{34} by a positive pulse to the grid of V_{13}, generated by $C_{11}R_{36}$ from the V_3 plate swing as the output goes to marking. To prevent spurious memory retrip, D_7 grounds the negative pulse generated as the output goes to spacing.

Only one sequencor tube can conduct at a time. If the output character following the time of dot storage is to be a previously-selected dash, V_{11} conducts and only +1.7 volts stands at R_{24}. The clearance pulse toward the dot memory is clamped to that amplitude by D_5R_{34}, insufficient to clear the memory. When V_{10} is conductive for dot output, the pulse is allowed to rise to +10 volts at the grid of V_{13} and return conduction to V_{13} to clear the memory. The dash memory $V_{15}V_{16}$ behaves identically, with clearance under the control of $V_{11}D_6R_{35}$.

Sequence Interlock

When the dot memory is idle and the dot key is open, the junction of R_{30} and R_{32} applies −13 volts to the grid of V_{10}, via R_{21} and R_{31}, to cut off the tube. Tripping of the dot memory applies +10 volts from $R_{30}R_{32}$ toward the grid of V_{10}. If V_{11} is being held conductive by a positive selection potential from the dash memory or key, its plate current through R_{18} lowers the potential at $R_{19}R_{20}$ to −7 volts. The positive potential directed toward the grid of V_{10} by a dot selected under this condition is clamped by D_3R_{21}, and the grid of V_{10} is held below cut-off. This guarantees prior transmission of an earlier selected dash. C_7 stabilizes the negative interlock voltage against spurious releases by plate voltage fluctuations caused by line-voltage changes and distributed capacitive couplings. This is necessary at very low line voltages, where the interlock potential drops to around −3 volts.

With the dash memory clear and the dash key open, V_{11} is cut off by −13 volts at $R_{39}R_{40}$, and $R_{19}R_{20}$ stands at +12 volts. This allows the +10-volt dot selection potential to reach the grid of V_{10} via R_{21}. The cathode of V_{10} rises to +10 volts to start a dot on the next positive time-base pulse, and permits the memory clearance pulse to reach the grid of V_{13}. Conduction through V_{10} and R_{27} lowers $R_{28}R_{29}$ to −7 volts, to clamp at D_4R_{26} any subsequently selected dash until after the dot starts. Additionally, by thus locking out V_{11} and holding R_{25} and the cathode of D_6 at +0.9 volts, clearance of the dash memory (when actuated after dot storage but before that dot starts) is prevented.

For a series of dots, the key is held closed and +10 volts from R_{37} R_{38} holds V_{10} conductive via R_{21} (and V_{11} locked-out) after the dot memory clears at the start of the first dot, until the key is released or the sequencor is "seized" by subsequent actuation of the dash memory. The similar structure of the dash sequencor behaves identically under interlock control of the dot sequencor, to provide single or multiple dashes.

Sequence Transfer

Assume a dot and a dash, selected in that order before any output starts, and the keys

(Continued on page 122)

• Recent Equipment —

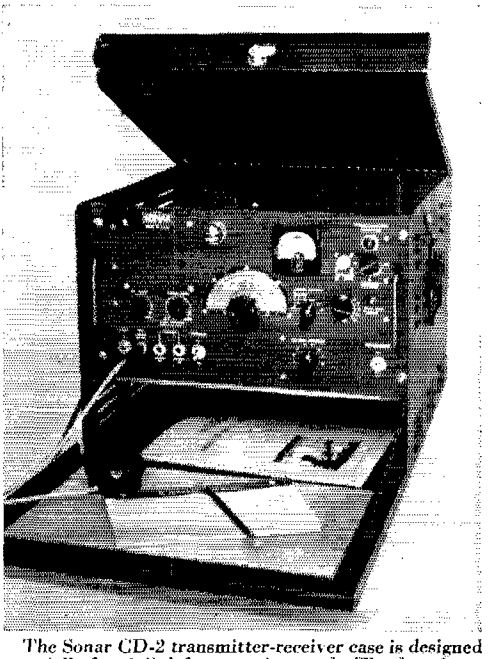
The Sonar CD-2 Transmitter-Receiver

As its name implies, the Sonar CD-2 was designed especially for civil defense radio service. As one of the few v.h.f. amateur-band pieces of gear presently approved by the Federal Civil Defense Administration for matching funds, it is of more than ordinary interest. To qualify for FCDA approval, v.h.f. equipment must comply with fairly stiff specifications as to frequency stability and selectivity.

Achieving the required stability in the transmitter was probably no great problem; crystal control and reasonable care in mechanical and electrical design take care of that. But adequate selectivity in a 2-meter receiver runs to some appreciable complication, and when selectivity is achieved, oscillator instability is likely to be something of a headache. A glance at the block diagram, Fig. 1, will show how these matters are handled in the CD-2.

The receiver uses ten tubes. The front end has a 6BK7 series cascode, for low noise figure, followed by a 6AK5 pentode. Self-tuned coupled circuits are used between the second half of the cascode and the 6AK5 grid, and between the 6AK5 plate and the first mixer. Coupling between these circuits is adjusted to give the desired flat response across the band, and the series of circuits gives reasonably high attenuation of signals outside that band. Oscillator stability is assured through the use of a voltage-regulated oscillator-doubler arrangement, with a self-tuned circuit in the doubler plate lead, and very light coupling between the oscillator and doubler.

Output from the first mixer is at 10.7 Mc., and there is one stage of i.f. amplification at this frequency. Then follows a 6U8 mixer-oscillator, the latter crystal-controlled, converting to 455 kc. Two stages of i.f. at 455 kc. work into a conventional diode-triode combination that performs the functions of detection, a.v.c., noise limiting and audio amplification. The receiver ends up in a 6AQ5 power audio stage, where a choice of speaker, 'phones-with-speaker, or 'phones alone is afforded.



The Sonar CD-2 transmitter-receiver case is designed especially for civil defense station needs. The drop front has a plywood insert to make a writing surface. Space for log, message blanks, microphone cables and other accessories is provided, and the cover and front lock together to prevent unauthorized use.

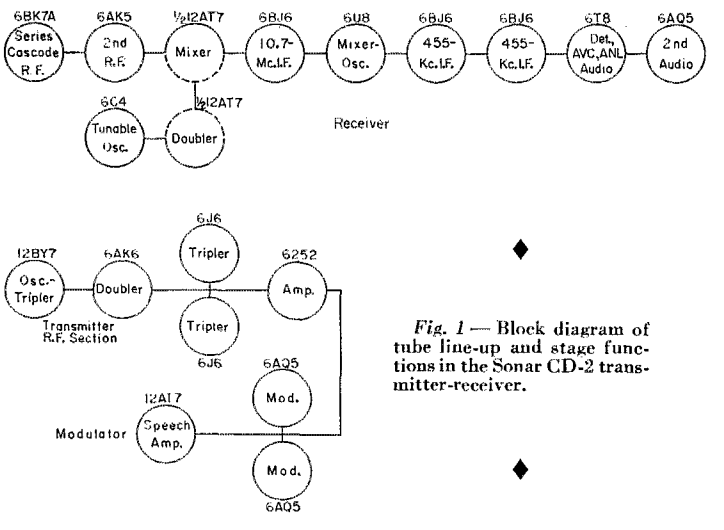
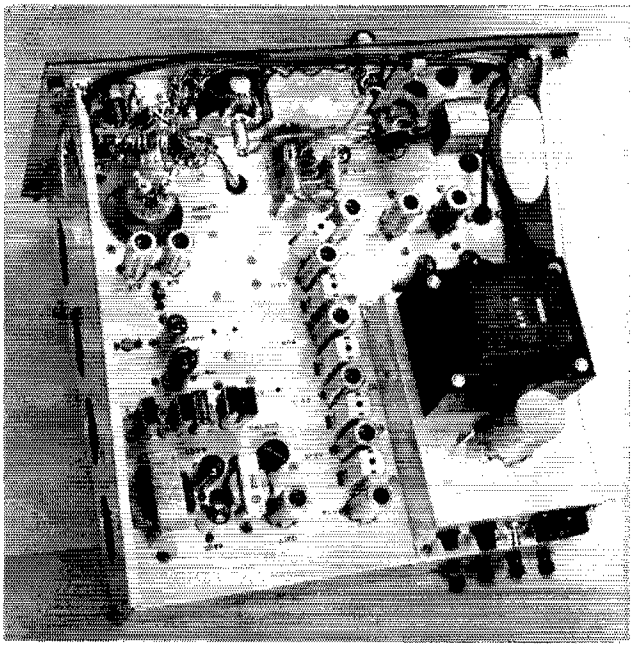


Fig. 1 — Block diagram of tube line-up and stage functions in the Sonar CD-2 transmitter-receiver.

The transmitter line-up consists of a 12BY7 crystal oscillator-tripler, using 8-Mc. crystals, a 6AK6 doubler, a pair of 6J6s in push-pull-parallel tripling, and a 6252 as a straight-through amplifier on 144 Mc. Inductively-coupled double-tuned circuits are used in the last three stages to provide essentially flat response across the band and good attenuation of unwanted oscillator-multiplier frequencies. The rated



Interior of the CD-2. Transmitter components are at the left; receiver and power supply on the right.

♦

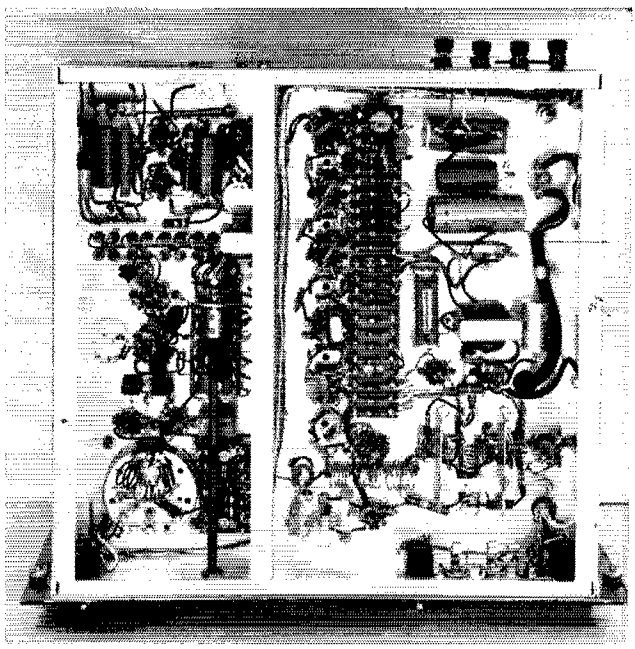
output of 17 watts seems quite conservative and is readily developed.

Modulation is supplied by a pair of 6AQ5s, driven by a 12AT7. A Type F1 carbon button microphone is used, and there is provision for either push-to-talk or toggle-switch control of the send-receive operation. A small amount of r.f. output is coupled off at the antenna connection to an r.f. voltmeter to provide for tuning up. Indication of transmitter tuning is shown on a meter, which doubles as a tuning meter for reception, and in addition there is a red jewel light that indicates both output and modulation. The circuit used for these purposes is reproduced in Fig. 2.

Tuning & Adjustment

In keeping with its intended service, the CD-2 is designed so that a minimum of adjustment is required in normal operation. Alignment adjustments of both transmitter and receiver are preset, and should not require adjustment except in case of parts failure or other damage. In the case of the receiver, the operator merely turns the calibrated dial, and adjusts the audio level to suit conditions. Maximum downward swing of the meter indicates proper tuning of a signal.

The transmitter has provision for eight crystal-controlled channels, selection being made with a single front-panel switch. The only tuning adjustments are the final plate tank and the antenna series-tuning capacitors. A front-panel "calibrate" switch applies screen voltage to the crystal oscillator, when the station is in the



Bottom view of the Sonar transmitter-receiver. Receiver and power supply occupy the large section.

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"receive" position, to permit checking the operating frequencies and the receiver calibration against each other. The harmonic from the crystal oscillator in the 144-Mc. band is strong enough to make an appreciable dip show on the tuning meter as the receiver is tuned across the operating frequency.

The CD-2 housing and accessories are designed for its rôle as a civil defense control station.

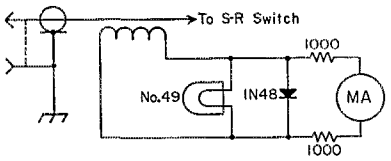


Fig. 2 — **Tuning indicator circuit used for checking transmitter adjustments in the CD-2. In the complete circuit, the meter is also switched to indicate strength of the received signal.**

The drop front and hinged top lock together with a cut key, so that unauthorized use can be prevented. The bottom portion of the case has ample space for log, message blanks, spare cables and other small accessories. The front cover has a large plywood insert, to provide a writing surface for field use. The cover can also be removed readily, to save space in a permanent installation. Carrying handles are provided on the sides of the case. The shelf on which the chassis rests is copper plated, to provide good contact with the chassis, and it is made of expanded metal for full ventilation. The front panel has a shaded desk light that can be turned on or off by a toggle switch.

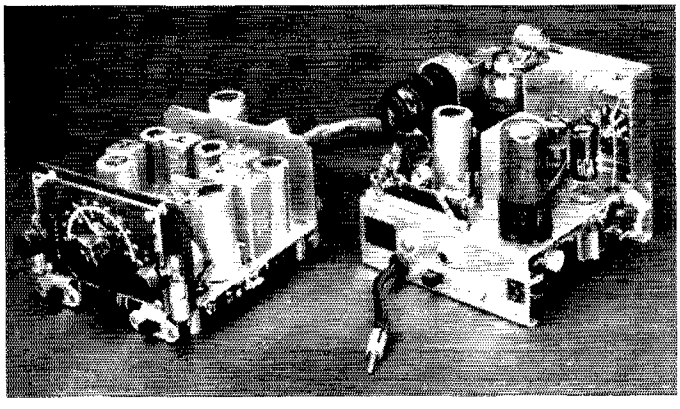
The power supply works on either 6-volt d.c. or 115-volt a.c. input, separate cables being plugged into a single receptacle on the rear wall of the chassis. The socket is reached through a hinged door in the back of the cabinet. Selenium rectifiers are used, this being the first instance we've seen where they have been applied to amateur gear of this power rating. The result should be superior regulation, and an appreciable saving in drain when the rig is run from a 6-volt source. An operating check of the unit showed the total drain from a 6-volt storage battery to be 20 amperes on receiving and 33 on transmitting. Extended use with storage-battery power should not be attempted unless a satisfactory means of charging is at hand, as output drops rapidly after the first 5 minutes of use from a fully-charged battery.

The manufacturer supplies the CD-series gear for any 4.5-megacycle segment of the spectrum from 50 to 180 Mc., so a CD-6 is also available for use in the amateur 50-Mc. band. Both amateur band units may be expected to find considerable acceptance in areas where c.d. planning is well organized, and supported by local or state-wide governmental agencies. — *E. P. T.*

The Gonset 6-Meter Communicator

If lack of suitable ready-made gear has been a factor in the present rather low state of activity on the 6-meter band, here's a complete package that should go a long way toward injecting new life into what could be one of our most interesting slices of the r.f. spectrum. Certainly the 2-Meter Communicator has become one of the most familiar features of the v.h.f. scene. This has come about because it combines in one small convenient unit many features that make for pleasant and effective 2-meter work.

The new 6-meter model is physically an almost exact duplicate of the popular 2-meter job. It is built, insofar as possible, around the same components and subassemblies that are used in the 2-meter rig, and it has the same useful gadgets. These include a tuning eye that works on both transmitter and receiver; a crystal spotter, for checking transmitter frequency and receiver calibration; an adjustable squelch, for quieting the receiver during stand-by periods; universal power supply, for both mobile and home-station use; the option of either carbon or crystal microphone input; provision for use of the audio system



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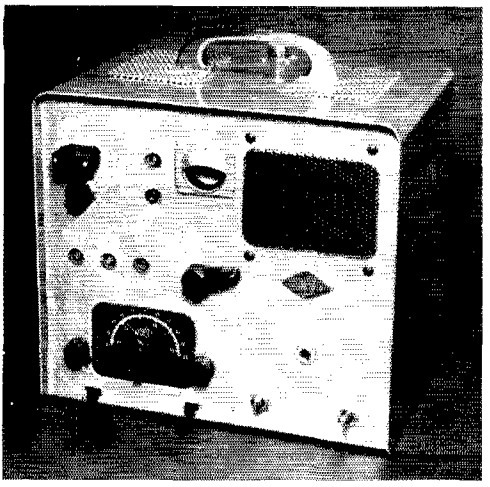
The double-conversion receiver unit, left, and combined transmitter and audio system, right, are little more than good-sized handfuls.



The 6-Meter Communicator by Gonset is physically an exact duplicate of its 2-meter counterpart. Individual adjustment of all transmitter stages is made through holes in upper left side of the front panel, proper setting being indicated by closure of the tuning eye. Receiver has squelch-level, volume and noise limiter controls, lower left.

for public-address work; and many other features.

In addition, there are innovations that help the 6-Meter Communicator cope with conditions different in several respects from those encountered in 2-meter operation. The receiver is a double-conversion job, providing considerably better selectivity than the single-conversion 6-Mc. i.f. in the 2-meter receiver. The tuning range is extended one megacycle below the edge of the band, permitting monitoring of the mobile services in the 49-Mc. region for signs of band openings. Enough use of these frequencies is made in most parts of the country so that something will be heard almost any time that sporadic-*E* or F_2-layer skip is present. There is a built-in low-pass filter, connected permanently in the antenna lead, to reduce harmonics from the transmitter and spurious responses in the receiver.

For obvious manufacturing reasons, the transmitter has the same tube line-up as the 2-meter one, but there is one less multiplier stage. A 6CL6 crystal oscillator-multiplier, with either 8- or 12-Mc. crystals, drives a 12AV7 parallel doubler to 50 Mc. The final stage is a 2E26, delivering an output of about 6 watts. (We measured better than 6 watts with a Micromatch into a matched load.) The modulator has a 12AX7 amplifier working into a 6V6GT. This also serves as the receiver audio system.

The receiver front end has a 6BQ7A cascode r.f. amplifier and a 12AT7 mixer-oscillator, with 11-Mc. output. The receiver oscillator is on the high side, so there is no problem with 28-Mc. images. Mixer output is 11 Mc., and there is one stage of i.f. amplification, a 6BH6, at this frequency. Then follows a 6BE6 converter to 1500 kc., and a 6BJ6 i.f. amplifier. The functions of detector, noise limiter, a.v.c. rectifier and first audio amplifier are combined in a 6T8, which feeds the audio system. A subminiature 6BG7 dual triode handles the squelch. Our noise generator shows that the noise figure of the 6-Meter Communicator is better than is required for good weak-signal reception.

The power supply is identical to the 2-meter unit, having two 6X4 rectifiers, and provision for either 6-volt d.c. or 115-volt a.c. input. Connections for these two types of operation are made by separate cables supplied with the unit.

A variation from the 2-Meter Communicator is seen in the antenna furnished. The 19-inch whip is replaced by a polyethylene-insulated half-wave Zepp that can be rolled up and carried in a pocket. The quarter-wave whip idea is less effective with the 6-meter rig, as there is insufficient metallic mass in the cabinet to serve as a ground-plane at this lower frequency. The manufacturer also offers 6-Meter yagi antennas that can be used individually or in stacked pairs.

Cabinet appearance, power supply and audio system are identical to the 2-Meter Communicator. The 6-meter model is supplied for either 6- or 12-volt operation. — *E. P. T.*

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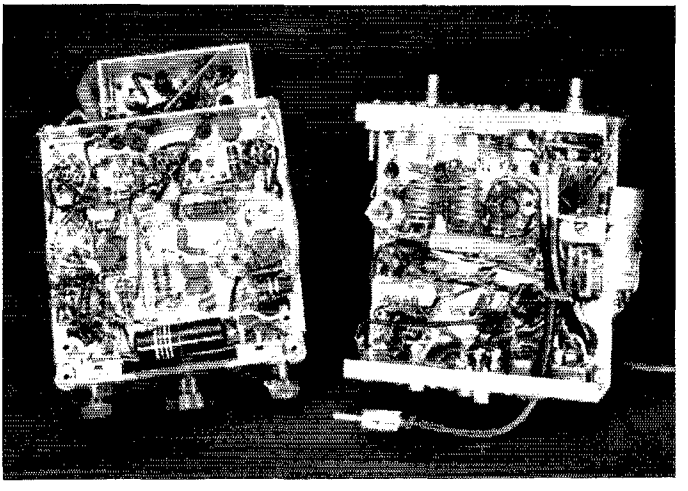


Bottom views of the receiver and transmitter used in the 6-Meter Communicator. Outboard unit on back of receiver is cascode r.f. amplifier. Receiver and transmitter use common audio system.

Happenings of the Month

BOARD MEETING

In May the Board of Directors of the American Radio Relay League will meet to examine the record for 1954, and to come to decisions charting a continuing course for the future. The director of your division is *your* voice in League affairs. Communicate to him your views on matters of the day so that he may be informed, as is required of him in the By-Laws, "as to conditions and activities in his territorial division and as to the needs and desires of the members therein in order that he may faithfully and intelligently represent the true interests of such members."

TECHNICIANS GET 50 MC.

In mid-March FCC released its decision in Docket No. 11157, dealing with Technician Class privileges: the 50–54 Mc. band is opened to that class of license effective April 12th; FCC dismissed its proposal to open also the 144-Mc. band to Technicians. The text of the order follows:

1. As a result of its consideration of petitions for rule making filed by James M. Price and Tom A. Walker, the Commission adopted the Notice of Proposed Rule Making in this proceeding, and it was published in the Federal Register on September 11, 1954, 19 FR 5917. The Notice proposed amendment of Section 12.23(d) to permit operation by Technician Class amateur operators in all amateur frequency bands above 50 Mc. which would have the effect of adding the 50–54 Mc. and the 144–148 Mc. bands to the privileges presently available to the Technician Class licensee. The petitions of Messrs. Price and Walker proposed addition only of the 50–54 Mc. band to the existing privileges for the Technician Class operator.

2. Comment on the proposed amendment was submitted by some 18 amateur organizations and over 125 amateurs individually. In regard to the 50-Mc. band, there appears to be substantial expression of approval of provision for Technician Class operator privileges therein.

3. As evidenced by the comment received, there appears to be considerable controversy as to whether technicians should be allowed to operate in the 144 Mc. band. Because of the opposition expressed by the American Radio Relay League, and because it does not find the arguments expressed in the comments otherwise decisive, the Commission is hereby dismissing that portion of the proposed amendment having to do with technician privileges in the 144 Mc. amateur frequency band.

4. This amendment is issued pursuant to authority contained in Sections 4(i) and 303(f), (g), and (r) of the Communications Act of 1934, as amended. IT IS ORDERED, That effective 3:00 a.m., EST, April 12, 1955, Section 12.23(d) of Part 12, Rules Governing Amateur Radio Service, IS AMENDED as set forth in the attached Appendix.

FEDERAL COMMUNICATIONS COMMISSION
Mary Jane Morris
Secretary

Adopted: March 9, 1955
Released: March 10, 1955

APPENDIX

SECTION 12.23(d) OF PART 12, RULES GOVERNING AMATEUR RADIO SERVICE, IS AMENDED AS FOLLOWS:

(d) Technician Class. All authorized amateur privileges in the amateur frequency band 50-to-54 Mc. and in the amateur frequency bands above 220 Mc.

QST ARTICLE AWARDS

The Executive Committee has announced its selection of three outstanding articles which appeared in *QST* during 1954, and awarded the authors cash prizes of $300, $200 and $100. Single-sideband, as might be expected from its rapid development in 1954, was the subject for the No. 1 spot — the judges were unanimous in making the first award to Warren B. Bruene, WØTTK, for his November article, "Distortion in Single-Sideband Linear Amplifiers." A special, and hitherto untreated, phase of TVI ran a close second — the next award was to F. E. Ladd, W2IDZ, for his two-part article in June and July,

On March 19th, 200 VEs representing all of Canada met in Montreal to honor Canadian Director Alex Reid, VE2BE, who on December 31, 1954, became the first director to complete 25 years of continuous service on the ARRL Board of Directors. Amateurs from all parts of Canada joined to present Alex with a single-sideband exciter unit and accessory gear, as a token of appreciation. Here (*l. to r.*) are: ARRL General Manager Budlong, W1BUD; Mrs. Gordon Lynn; Director Reid; Mrs. Reid; ARRL President Dosland, WØTSN.

"50 Mc. TVI — Its Causes and Cures." Antennas, as last year, provided the third subject — the award going to William B. Wrigley, W4UCW, for his February article "Impedance Characteristics of Harmonic Antennas."

CHAMBERS' 25TH

On March 6th, C. Vernon Chambers, *QST* Technical Assistant, became the seventh member of the present ARRL Hq. staff to reach the 25-year mark.

"Vern" came to Hq. as an office boy, but the inevitable happened — the bug bit, and he shortly became W1JEQ. His interest and developing ability made him a logical candidate for

W1JEQ

lab work, and he turned out a number of pieces of gear for *QST*, with special attention to low-power equipment for the beginner. He was associated with Ross Hull in the development of u.h.f. gear for the *Handbook* and carried that work to completion after Hull's untimely death. Vern then took over the ARRL Technical Information Service until World War II interrupted with both Army and civilian service in the field of guided missiles.

Chambers' postwar projects for both *QST* and the *Handbook* have included a goodly number of items at beginner level, but have ranged into many other fields as well — mobile gear, development of high-power r.f. chokes, and all sorts of general transmitting designs. His bandswitching rig in January 1954 *QST* brought more response from amateurs than perhaps any other article postwar.

When we use on Vern the old saw, "The second 25 years are the hardest," it isn't really funny: he has that much longer to go before reaching retirement age!

OPERATION IN GREENLAND

For some months negotiations have been in process for the authorization of amateur operation in Greenland by U. S. citizens. Permission has now been granted, under an agreement with the Danish government, and the U. S. military is to issue detailed rules and regulations as well as issue call signs from the block KG1AA through KG1LZ.

NOVICE TALKING BOOK

The Division for the Blind, Library of Congress, through the facilities of the American Foundation for the Blind, has produced a new Talking Book, "The Radio Amateur's Novice Examination, Questions and Answers." Excerpted from ARRL publications, and with code practice material especially written and taped by Hq., the package consists of eight 12-inch record sides. It is available to qualified blind readers through the 28 regional libraries in the usual manner (see list page 30, January 1953 *QST*). Thomas B. Hedges, W3QQS, assistant chief of the Division, contemplates expanding the Talking Book program to higher grades of amateur license if interest warrants.

A.R.R.L. QSL BUREAU

The function of the ARRL QSL Bureau system is to facilitate delivery to amateurs in the United States, its possessions, and Canada of those QSL cards which arrive from amateur stations in other parts of the world. All *you* have to do is send your QSL manager (see list below) a stamped self-addressed envelope about 4¼ by 9½ inches in size, with your name and address in the usual place on the front of the envelope and your call printed in capital letters in the upper left-hand corner. (Bold-face type indicates change since last *QST* listing.)

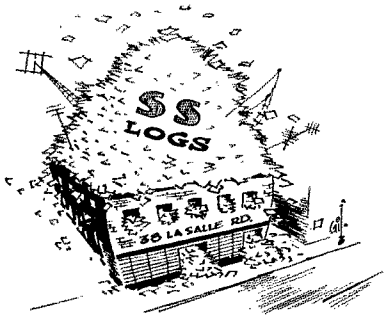
W1, K1 — J. R. Baker, jr., W1JOJ, Box 232, Ipswich, Mass.
W2, K2 — H. W. Yahnel, W2SN, Lake Ave., Helmetta, N. J.
W3, K3 — Jesse Bieberman, W3KT, Box 34, Philadelphia 5, Penna.
W4, K4 — Thomas M. Moss, W4HYW, Box 644, Municipal Airport Branch, Atlanta, Ga.
W5, K5 — Oren B. Gambill, W5WI, 2514 N. Garrison, Tulsa 6, Okla.
W6, K6 — Horace R. Greer, W6TI, 414 Fairmount St., Oakland, Calif.
W7, K7 — Mary Ann Tatro, W7FWR, 513 N. Central, Olympia, Wash.
W8, K8 — Walter E. Musgrave, W8NGW, 1294 E. 188th St., Cleveland 10, Ohio.
W9, K9 — John F. Schneider, W9CFT, 311 W. Ross Ave., Wausau, Wisc.
WØ, KØ — Alva A. Smith, WØDMA, 238 East Main St., Caledonia, Minn.
VE1 — L. J. Fader, VE1FQ, 125 Henry St., Halifax, N. S.
VE2 — Harry J. Mabson, VE2APH, 122 Regent Ave., Beaconsfield West, Que.
VE3 — W. Bert Knowles, VE3QB, Lanark, Ont.
VE4 — Len Cuff, VE4LC, 286 Rutland St., St. James, Man.
VE5 — Fred Ward, VE5OP, 899 Connaught Ave., Moose Jaw, Sask.
VE6 — W. R. Savage, VE6EO, 329 15th St., North Lethbridge, Alta.
VE7 — H. R. Hough, VE7HR, 2316 Trent St., Victoria, B. C.
VE8 — W. L. Geary, VE8AW, Box 534, Whitehorse, Y. T.
VO — Ernest Ash, VO1A, P. O. Box 8, St. John's, Newfoundland.
KP4 — E. W. Mayer, KP4KD, Box 1061, San Juan, P. R.
KH6 — Andy H. Fuchikami, KH6BA, 2543 Namauu Dr., Honolulu, T. H.
KL7 — Box 73, Douglas, Alaska.
KZ5 — Gilbert C. Foster, KZ5GF, Box 407, Balboa, C. Z.

21st ARRL Sweepstakes Results

Part I — C.W.

BY PHIL SIMMONS, W1ZDP

SAYS W5VNW: "Thanks for 40 hours of solid enjoyment. As the operator of a fixed, low-power station, the Sweepstakes is my choice of all the contests." Says W1UTA: "I like the SS because it offers good practice in operating procedure, the thrill of raising new sections, an opportunity to learn how the rig really performs, but best of all, the chance to study the personality of a good cross-section of Hamdom. I have observed with a grin the leisurely fellow whose clock is five minutes slow, the hurry-hurry boy who doesn't wait for a 'roger,' and the operator who CQs 15 times before you find you've already worked him." Says WØBUR: "I like the absence of the cut-throat dog-eat-dog competition that marks some other contests." Says W4CVM: "Conditions were about as near perfect as I can remember them. There seemed to be more of the 'old ham spirit' this year, and all of the regulars were on hand: W3BES, W4IA, W9IOP, W1FTX, W4KFC, W4CIU and many others." Says W8APC: "Judging from the serial numbers



being sent the second week end, the entire population of the state of Connecticut will be needed to check the logs!"

The foregoing colorful contestimonials show why *1796* entrants (1394 c.w.) enjoyed themselves immensely (and why contest-checker W1CUT, ex-W5TQD, almost went back to Texas). They indicate, too, why the 1954 SS

Md.-Del.-D.C. leader W3JTK settled for 180,540 points, ranked fifth amongst the 1394 c.w. entrants with a 100 per cent home-brew rig. The gadget at the upper right, a photoelectric-keyed CQ SS wheel, gave a good account of itself, Jack reports.

Jack Bryant, W5TFB, was stricken by SS-itis at an early age. Now 17, Jack already has stacked three consecutive North Texas wins, was tenth high nationally and top W5 in the '54 doings.

moves into the record books as the biggest ever held, dwarfing previous highs registered in 1939 and 1953. Griping about contest rules and poor conditions was all but nonexistent as scores rocketed to adding-machine proportions and 84 hard-working section and Novice winners earned certificates for brasspounding.

We're pleased to revive a popular prewar SS feature which listed, among other items, the equipment and bands of the section leaders. Aided by some fast slip-stick fumbling, one finds that there is real thought-food here; e.g.:

1) About 85 per cent of the 72 section winners utilized the trusted 20–40–80-meter band combination (although five of them scooped up extra credits on 15 meters).

2) Seventy-seven per cent fell in the 100-watts-or-less category, while the rest ran high power.

3) The *average* winner racked up 590 contacts in 66.6 sections for 97,450 points, was active 35 hours with 175 watts input.

4) Low-power champ was 25-watt Oklahoman W5WZV.

5) One-band champ was South Texan W5WQN with 704 QSOs on 7 Mc.

The set-ups in the tabulation typify the "new look" in SS circles, as compared with the May, 1940 *QST* version, which recorded such bottles as

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860s, T-40s, HK-254s and 211s in vogue in those days. (*And you just can't hardly get them no more!*) Riffle through your old-time *QST*s and see for yourself what the previous generation of SS enthusiasts worked with.

Now here's a foursome that knows the business by heart! Each sends code reminiscent of a W1AW *Qualifying Run and sports a clean, ether-wrenching signal.* Each salted away over 1100 contacts and attained, for the first time in SS annals, a final score in excess of *200,000 points.* Congratulations are in order, then, to W4KVX

C.W. WINNERS, 21ST A.R.R.L. SWEEPSTAKES CONTEST

Section	*Call*	*Score*	*Transmitter*	*Watts Input*	*Receiver*	*Bands Used*
E. Penna.	W3GHM	147,502	6BA6-6AQ5-2E26-813	95	HQ129X	80, 40, 20
Md.-Del.-D. C.	W3JTK	180,540	VFO-807-813s	100	Super Pro (modified)	80, 40, 20
S. N. J.	W2GND	85,313	32V3	100	HRO60	80, 40, 20
W. N. Y.	W2SSC	133,175	Sig. Shifter-809	99	75A3	80, 40, 20
W. Penna.	W3LMM	104,512	BC610E	700	NC240D	80, 40, 20
Illinois	W9ERU	157,230	32V1	100	75A1, SX43	80, 40, 20
Indiana	W9IOP	208,506	VFO-6AQ5-4-65A	100	75A3, DB23	80, 40, 20
Wisconsin	W9RQM	143,080	VFO-813	90	HRO50T	80, 40, 20
No. Dakota	WØARB	103,599	6AG7s-2E26-814	100	SX71	80, 40, 20
So. Dakota	WØSMV	19,936	6AG7s-2E26-813	350	HQ129X	80, 20
Minnesota	WØYCR	139,650	VFO-807s	95	Super Pro	80, 40, 20
Arkansas	W5MSH	92,400	6V6-6L6-812A	100	NC240D	80, 40, 20
Louisiana	W5KC	141,468	32V3	100	HRO 7	80, 40, 20
Mississippi	W9APY/5	72,371	6AG7s-6AQ5-807-4-250A	100	BC348, BC453, SOJ	80, 40, 20
Tennessee	W4TJI	91,803	Sig. Shifter-1625s-814s	450-480	S76, DB22A	80, 40, 20
Kentucky	W4KVX	209,353	Sig. Shifter-813	80-100	Super Pro (BC453 2nd i.f.)	80, 40, 20
Michigan	W8DUS	113,971	32V2	100	75A3, DB23	80, 40, 20
Ohio	W8LQA	146,213	VFO-807-35T	100	HQ129X	80, 40, 20
E. N. Y.	W2IFP	80,010	6AG7s-807-813s	95	BC312, Q5er, RME10-20	80, 40, 20
N. Y. C.-L. I.	W2IVS	117,775	12AU7-5AU6-5763s-6146	95	NC240D	80, 40, 20
N. N. J.	W2TPJ	80,404	PTO-6AQ5s-807s	100	BC224	80, 40, 20
Iowa	WØNWX	131,850	Lysco 600-HT20	99	SX88	80, 40, 20
Kansas	WØBCI	109,784	32V3	95	SX28	80, 40, 20
Missouri	WØLLU	64,103	6AU6-6AG7-807	30	SX71	80, 40, 20, 15
Nebraska	WØURB	109,395	VFO-Viking II	95	SX71, FL8A	80, 40, 20
Connecticut	W1BIH	101,250	VFO-Bandbox-6146	80	HQ129X, Q5er, FL8A	80, 40, 20
Maine	W1IKE	81,453	VFO-Bandbox-6146	90	75A3	80, 40, 20
E. Mass.	W1IAP	106,225	310B (exciter-amp.)	100	75A2	80, 40, 20
W. Mass.	W1JYH	119,340	310B-4-125A	100	HRO5	80, 40, 20
N. H.	W1ARR/1	102,935	32V2	95	75A2	80, 40, 20
R. I.	W1CJH	64,431	VFO-813	90	75A1	80, 40, 20
Vermont	W1RWP	58,476	BC457A-6L6s-814s	150-250	BC342J, Q5er	80, 40, 20
Alaska	KL7EVR	43,330	6SJ7-6AC7-6AG7-4E27	95	BC348Q	40, 20
Idaho	W7TYG	14,006	VFO-6AG7-1625s	100	Homebuilt super	80, 40
Montana	W7KVU	202,210	5100	100	75A3, DB23	80, 40, 20, 15
Oregon	W7GEB	116,253	310B-813	100	75A2	80, 40, 20
Washington	W7NLI	126,114	VFO-4E27	100	NC200	80, 40, 20
Hawaii	KH6IJ	32,670	4-250As p.a.	1000	HQ129X	40, 20
Nevada	W7KEV	168,448	VFO-807-4-65A	100	HQ129X	40, 20
Santa Clara V.	W6HOC	127,294	6AK6s-6AG7-6AQ5s-4D32	95	Super Pro	80, 40, 20
East Bay	W6TT	78,768	4-250As p.a.	600	75A3	80, 40, 20
San Francisco	W6BIP	72,781	6K7-6SK7-6L6-6AG7s-6L6-813-VT127As	500	SX28, Q5er	80, 40, 20, 15
Sacramento V.	W6MYT	27,775	ARC5-807-4-125As; ARC5-807-T40s	125; 650	SX28A	80, 40, 20
San Joaquin V.	W6MPG	47,439	Sig. Shifter-1625s-304TL	750	SX25	40, 20
No. Carolina	W4VHH	69,370	6V6-6L6-809	100	HQ129X	80, 40, 20
So. Carolina	W4TL	68,741	HT18-6146s	100	HRO5	80, 40, 20
Virginia	W4KFC	203,850	VFO-807-257B	100	75A2	80, 40, 20
W. Virginia	W8PQQ	52,488	VFO-304TLs	700	75A2	80, 40, 20
Colorado	WØEWH	79,275	6AG7s-6L6-2E22-826s	100	SX71	80, 40, 20
Utah	W7QDM	85,844	6AG7s-807s	90-95	BC348	80, 40, 20
Wyoming	W7HRM	69,438	VFO-807-813	300	NC200, DB20	80, 40, 20
Alabama	W4RAL	64,654	VFO-12A6-12SL7-12A6-1625s	95	SX28	80, 40, 20
E. Florida	W4LVV	101,756	310B-813	95	HRO	80, 40, 20
W. Florida	W4WKQ	109,743	VFO-813	95	HRO7A	80, 40, 20
Georgia	W4FCB	62,712	Viking II	150	HQ129X	80, 40, 20, 15
West Indies	KP4AAC	31,625	813s p.a.	90	HRO50, BC453, Q5er	40, 20
Canal Zone	KZ5NB	4900	6AG7-6V6-807s	35	Homebuilt 8-tube super	20
Los Angeles	K6CEF	130,123	5814-6AU6-5763s-6146	100	75A3	80, 40, 20
Arizona	W4KMF/7	82,800	BC459-6L6s-814	100	HQ129X, Panadaptor	40, 20
San Diego	W6EPZ	142,076	4-250As p.a.	100	75A1	40, 20
Santa Barbara	W6ULS	119,653	32V2	95	75A1, preamp.	80, 40, 20, 15
No. Texas	W5TFB	152,479	HT18-HT20	100	S76, Hetrofil	80, 40, 20
Oklahoma	W5WZV	41,120	TBS50	25	SX28	80, 40, 20
So. Texas	W5WQN	121,440	6AK5s-5763-2E26-4-65As	100	SX25, BC348, Q5er	40
New Mexico	W5QNZ	126,936	VFO-829-304TL	1000	HRO60 (plus i.f. strip)	80, 40, 20
Maritime	VE1AR	103,850	VFO-6AG7-814-810s	90	HQ129, Q5er, SOJ	80, 40, 20
Quebec	VE2BX	56,560	5763-6C4-6AG7-2E26-807W	75	SX25	80, 40, 20
Ontario	VE3AUU	62,235	6C4-6AQ5-807s; 6C4-6AG7-2E26-813	95	HQ129X	80, 40, 20
Manitoba	VE4MX	45,900	6AG7-6L6-2E26-812A	100	HQ140X	80, 40, 20
Saskatchewan	VE5CW	44,756	VFO-Viking II	115	HQ129X, DB22A	80, 40, 20
Alberta	VE6ZR	42,776	BC221-6AC7s-807	70	SX28	80, 40, 20
B. C.	VE7ZK	62,245	6C4-6AQ5s-6146	75	NC240D	80, 40, 20

for his all-time record-smashing 209,353-point tally, and to W9IOP, W4KFC and W7KVU for their totals of 208,506, 203,850 and 202,210, respectively.

And for their savvy and downright stick-to-it-iveness, plaudits and salaams to these others who broke 125,000: W3JTK 180,540, W7KEV 168,448, W3EIS 165,638, W9ERU 157,230, W9YFV 154,030, W5TFB 152,479, W3GHM 147,502, W8LQA 146,213, W3FRY[1] 145,726, W8BTI 144,540, W9RQM 143,080, W6EPZ 142,076, W5KC 141,468, W3AEL 140,875, WØYCR 139,650, W3JBC 134,502, K6BLL[1] 133,590, W2SSC 133,175, WØTKX 133,043, W3CTJ 132,313, WØNWX 131,850, W9NPC 131,823, W3BES 130,488, W3GRF 130,315, K6CEF 130,123, W4PNK 129,634, W9PNE 129,330, W3JTC 128,845, W6HOC 127,294, W5QNZ 126,936, W7NLI 126,114, W8EV 125,925.

Section-hunting remains the favorite pastime of a goodly share of the gang, and it's quite an art. Here is the sharp-eared crew that bagged all 73 ARRL sections in '54: *W1s* EOB JTD ZDP, W2FEB, K2BZT, *W3s* ADZ ALB BES CTJ FRY JBC JNQ JTC KT, *W4s* KVX YFA, W5TFB, *W6s* BIP EPZ HOC MUR PYH ULS UTV YK, *K6s* BLL CEF, *W7s* GEB KEV KVU PQE, *W8s* DUS EV, *W9s* IOP RQM YFV, WØTKX. Note that all U. S. licensing areas made the grade. Saskatchewan, Yukon/N.W.T. and Idaho would seem to be the toughies; 17 of the 37 experts named one of the three as the last section snagged. But K2BZT, who made the "clean sweep" in just 257 contacts, and ex-W1AW op W1JTD, who did it in 310, are the two who worked the *mostest* with the *leastest*. Choosy WØQDF likewise merits honorable mention for getting 72 out of a mere 74 QSOs.

Heartening indeed are the many friendly new faces that crop up yearly in the special Novice competition which the Sweepstakes affords. When three or more KN/WN people enter logs from a given section, the leader nabs an appropriately-endorsed Novice certificate. The following yearlings earn a burst of applause, and the certificate as well, for graduating *magna cum laude* from their first venture into contest capers: *WN1s* BLD CDD, KN2HXR, WN3ZKH, WN5HIS, KN6EVR, *WN8s* SRK TGB, *WN9s* GBC HAH IGV, WNØSQE. See you in the '55 SS *minus the "N,"* fellows!

[1] Multioperator station.

Sidelights

Lavish antenna systems were brought into play by the 200-grand quartet. W4KVX relied on 280- and 405-foot zepps, a 7-Mc. ground plane, and a 14-Mc. beam; all four were suspended from or mounted on telephone poles. W9IOP found an end-fed 136-foot wire, a 40-meter ground plane, and a 20-meter rotary to his liking; and so did W4KFC, who utilized an identical bunch of skyhooks. Out west, W7KVU made that huge signal even huger with such paraphernalia as (1) for 80 meters, a wire 12 wavelengths long and a half-wave zepp; (2) a 7-Mc. ground plane and zepp; (3) 3-element wide-spaced rotaries for 15 and 20. . . . Lament from multiops *W3s* WIE WIF at close of festivities: "Brother, are we tired." (Boys, you weren't alone!) . . . W8CUP says his FL8A filter saved the day. . . . W2BRC got 43,935 and W2CJM 13,069 points with attic antennas. . . . *W2MUM* pounded brass for the Order of *BO* (Boiled Owls). . . . Overheard on 20 the last Sunday: W1JYH explaining the rules to W1KGH/VE8. After Rog had paved the way, the mob descended. . . . K2ENO broke in a new SX-24 and got 7 additional states. . . . Anchor man for Ohio Valley Amateur Radio Association was *8-watt* W8BAE. . . . Those who swapped messages with Iowan WØNWX unwittingly nailed FO8AJ/WØ. Bob was using the transmitter-inhaler combo of the famous Clipperton DXpedition (July, 1954, *QST*). . . . WØFVD is positive his code speed improved as a result of struggling with weak sigs in the QRM. . . . In '53 WN1YMA made 34 QSOs, in '54 W1YMA got 741! How's *that* for improvement! . . . W4LVV found conditions good except for one weird 90-minute spell on 20 meters when it was impossible to raise anyone although incoming signals were strong. . . . W6OAY is confident QSLs will come through from several new states worked. . . . W3BQU/5 landed 23,490 points with a 24-watt transformerless rig. A voltage doubler juiced the p.p. 117L7s in the crystal oscillator circuit. Dimensions: a pocket-sized 4-by-4 inches. . . . KV4BK, ex-7CO (1912), 6RX (1920), and W5RX (1947), enjoyed the "other side of the fence" despite fierce QRM. QRT for 20 years, Charles

Budding contester Dick Brandt, KN2HXR, E. N. Y. Novice winner, got the most markers registered by a KN/WN in SS competition — over 10,000. For further news of Dick's operating sojourns, see the Novice Round-up results on page 50.

NOVICE C.W. WINNERS, 21ST A.R.R.L. SWEEPSTAKES CONTEST

Section	*Call*	*Score*	*Transmitter*	*Watts Input*	*Receiver*	*Bands Used*
Md.-Del.-D. C.	WN3ZKH	5003	Viking II	75	HRO5	80, 40, 15
Illinois	WN9GBC	3250	807s p.a.	70	SX42	80
Indiana	WN9IGV	6695	6AG7-6L6-807	60	NC125	80
Wisconsin	WN9HAH	2640	AT1	35	S76	40
Michigan	WN8SRK	468	AT1	15	SX71	80
Ohio	WN8TGB	3313	AT1	30	NC98	80, 40
E. N. Y.	KN2HXR	10,036	AT1	35	S40B	80
Iowa	WNØSQE	3413	Ranger	65	S76	80, 40
Connecticut	WN1CDD	3803	Globe Scout	50	S40B	80, 40, 15
E. Mass.	WN1BLD	5740	TBS50	50	HQ129X	80
Los Angeles	KN6EVR	8229	Viking II	75	NC173	80, 40
No. Texas	WN5HIS	2719	Lysco 600	50	SX28A	80, 40, 15

returned to top c.w. form rapidly in the SS. . . . Alaskan *pace-setter KL7EVR* apologizes for his difficult-to-read log transcribed at 16,000 feet during a KL7-to-W7 flight. . . . A 2-tube regen job performed the receiving chores for W6FAR. . . . W4KFC's 1183 stations worked in '53 is still tops. . . . With the same 30-watter he had last year as a Novice, W9YOS was tickled to multiply his score by 3. . . . W4KVX employed a card logging system complete with automatic time stamp and numbering machine to assist in avoiding or nullifying repeat QSOs as they occurred. . . . W8OTK thanks the boys for QRSing for him his first time out. . . . W7PQE got ten KL7s but had to cajole VE5 and KH6 non-SSers into swapping preambles. . . . Complete break-in system (March, 1954, *QST*) — using tubes for antenna-switching and receiver-quieting — worked great at W7GEB. . . . We can thank W1RWP for increased Vermont activity. Stan has been carrying on a feverish one-man campaign to get better representation from that elusive section. . . . W4KMF/7 avows the competition in Arizona is considerably less rugged than it was in Virginia. . . . W5WZV captured his first SS scalp since 'way back in '36 and '37 when he earned Philippine honors as KA1US. . . . W1WAI snared his 48th state, learned much about when to work which bands. . . . W11AP used a receiver-controlled VFO on 7 Mc. . . . W9RQM's XYL presented him with a new junior op during the SS. . . . The last 25-cycle power areas were being converted to 60 cycles near VE3ACB and intermittent power leaks held down his score. . . . W4KFC tells a little tale about a newly-recruited Potomac Valley member, W4NQM. Sparkie was calling a Vermonter when his key actually fell apart, whereupon he scooped up a screwdriver, finished the call with the blade, and landed the Vermont station! . . . "My first SS in 19 years. The last time I entered, as W2BMX, I won for E.N.Y. with two crystals, 152 contacts. Needless to say, I was feeling my way in this one. Just wait 'til next year!" — *W4CXA*. . . . "What a wonderful time! The SS seems to get better every year. Conditions were the best that I can remember, and operating proficiency and signal quality were better than ever before. Chirps, yoops and clicks were at a low ebb, making operating a distinct pleasure. . . . Some sort of award should be given to the XYLs who are the backbone of a good score. Where would we be without the hot coffee, special meals at off-hours, and plentiful supply of sharp pencils and log sheets. Yes, they deserve a big hand for their help!" — *W7KVU*. . . . "Surprised to end up with the same number of contacts (499) in 21st as in 20th SS. Also was lucky enough to have Vermont and VE8 reply to my CQ machine." — *W6BIP*. . . . "Wonderful contest! Found 21 Mc. wide open but nobody there; 14 Mc. best band out here." — *W7GEB*. . . . "The 20-watt transmitter that gets RST 599 1000 miles away on 3.5-Mc. SS eve, when the customary handful of stations are tuning up for the event, is fairly ineffective in the melee starting at 1800 EST the next day, but 75 to 100 watts does the job FB. You can get the contacts with lower power but you have to work hard and be discouragingly patient. Every year, though, I'm back with more determination than ever." — *W8DM*. . . . "First contest and it was a barrel of fun." — *W8IRO*. . . . "My object each year has been to work all sections. Thought I had it this time when a VE8 answered but discovered too late that I had missed Sacramento Valley. Oh well, maybe *next* year!" — *W8ZJM*. . . . "Wow, what a battle! Heard the W6s working W1QMM (Vt.) on 20 but couldn't find him. My family is beginning to speak to me again!" — *W3LMM*. . . . "Gained valuable operating experience and learned how to tune up the rig in a hurry." — *WØTLD*. . . . "Conditions excellent the first session and almost as good the second. Sections I usually have trouble logging were in abundance, but there seemed to be a dearth of KZ5, VE5 and VE8 participants. This was my twelfth SS." — *WØYCR*. . . . "Bettered previous scores made as W3UVB and W8YJE and finally went over 100,000 points. No repeat contacts thanks to my first use of ARRL Operating Aid No. 6." — *W4CVI*. . . . "My second SS and pleased to better last year's score considerably. A foolproof break-in system is a must!" — *VE2CB*.

Next month — be the good Lord willing! — we'll bring you a symposium of club and 'phone highlights, including an A3 equipment tabulation and such photographs as we can muster. Di-dah-di-di-dit!

C. W. SCORES

Twenty-First Sweepstakes Contest

Scores are grouped by Divisions and Sections. . . . The operator of the station first-listed in each Section is award winner for that Section unless otherwise indicated. . . . Likewise the "power factor" used in computing points in each score is indicated by the letter A or B. . . . A indicates power up to and including 100 watts (multiplier of 1.25, c.w.), B over 100 watts (multiplier of 1). . . . The total operating time to the nearest hour, when given for each station, is the last figure following the score. . . . Example of listings: W3GHM 147,502–831–71–A–39, or, final score 147,502, number of stations 831, number of sections 71, power factor of 1.25, total operating time 39 hours. . . . An asterisk denotes Novice certificate winners in sections where at least 3 Novice logs were submitted. . . . Multioperator stations are grouped in order of score following single-operator station listings in each section tabulation, with calls of participants in parentheses.

ATLANTIC DIVISION

Eastern Pennsylvania

W3GHM	147,502-	831-71-A-39	
W3JBC	134,502-	737-73-A-38	
W3CTJ	132,313-	725-73-A-35	
W3BES	130,488-	719-73-A-39	
W3CPS	116,200-	664-70-A-40	
W3EQA	112,590-	626-72-A-39	
W3JNQ	111,325-	610-73-A-38	
W3DLR	103,680-	576-72-A-36	
W3ALB	99,280-	544-73-A-30	
W3IXN	82,283-	477-69-A-27	
W3ADZ	81,030-	444-73-A-30	
W3HHK	75,098-	485-62-A-40	
W3KT	75,008-	417-72-A-30	
W3BIP	74,120-	436-68-A-38	
W3CPV	69,300-	396-70-A-30	
W3KDF	66,185-	427-62-A-26	
W3MWC	64,508-	423-61-A-39	
W3LEZ	63,860-	412-62-A-17	
W3NOH	62,865-	381-66-A-14	
W3EVW	56,871-	267-71-A-25	
W3ISE	55,500-	370-60-A-31	
W3GHD	54,437-	325-67-A- –	
W3ARK	51,816-	382-68-B-33	
W3RAF/3	51,693-	357-58-A-32	
W3MDE	47,925-	270-71-A-32	
W3MWL	45,360-	320-72-B-28	
W3TYW	43,734-	307-59-A-40	
W3MDO	42,075-	281-60-A-34	
W3TPC	33,810-	322-42-A-34	
W3QBD	32,873-	245-54-A-37	
W3CHH	32,688-	262-50-A-16	
W3RRI	32,336-	378-45-B-40	
W3ADE	31,175-	215-58-A-18	
W3SOH	30,070-	194-62-A-24	
W3CGS	28,875-	210-55-A-19	
W3ENH	27,945-	243-46-A-24	
W3KFK	27,840-	233-48-A-32	
W3SQX	24,558-	209-47-A-13	
W3MJB	20,800-	208-40-A-27	
W3TJW	18,662-	217-43-B-27	
W3UOE	17,588-	201-35-A-11	
W3VXQ	17,588-	202-35-A-26	
W3DFJ	17,438-	155-45-A-21	
W3DYL	15,502-	169-46-B-14	
W3YVJ	15,080-	210-29-A-21	
W3KFQ	14,880-	155-48-B-10	
W3ZJG	12,480-	156-32-A-24	
W3OCU	12,000-	120-40-A- 6	
W3HTR	11,750-	100-47-A-24	
W3GSD	11,550-	140-33-A- –	
W3WHJ	10,153-	133-31-A-21	
W3QLL	9975-	133-30-A-11	
W3VDV	8080-	101-40-B- 8	
W3DWR	6900-	120-23-A-10	
W3TDF	5608-	100-23-A-14	
W3CLC	5394-	93-29-B- 6	
W3UUA	5280-	88-24-A- 3	
W3FXX	4518-	70-26-A- –	
W3NZTB	4420-	72-26-A-25	
W3OY	3750-	60-25-A- 8	
W3GAG*	3575-	65-22-A- 7	
W3TMN	3341-	52-27-A-15	
W3UXX	3150-	70-18-A-11	
W3JLB	2940-	56-21-A- 6	
W3YHX	2940-	62-21-A-18	
W3YWU	2678-	61-18-A-15	
W3ANZ	2600-	50-26-B-15	
W3HOG	2250-	60-15-A-17	
W3YLL	1381-	33-17-A-14	
W3WWD	245-	14- 7-A- 3	
W3PNL	175-	10- 7-A- 1	
W3ZPT	15-	3- 2-A- 1	
W3VXP	10-	4- 1-A- 3	
W3FRY (W3s BES LVF)	145,726-	801-73-A-33	
W3OVV (W3s KT OVV)	54,060-	318-68-A-18	
W3KHJ (W3s KHJ YEK, K2GVV)	23,449-	242-39-A-35	
W3EAN (W3s EAN ZBN)	22,000-	250-44-B-11	

With this spiffy layout, John Ryan, W7KVU, brought home a blistering 202,210 points and the Montana wallpaper. When he feels like creating additional db. for DX chasing, John uses the B & W 5100 to excite p.p. 4-400As at one kw.

Md.-Del.-D.C.

W3JTK..180,540-1003-72-A-39
W3EIS...165,638- 947-70-A-40
W3AEL..140,875- 805-70-A-40
W3GRF..130,315- 780-67-A-40
W3JTC..128,845- 706-73-A-40
W3FQB..119,801- 695-69-A-40
W3KDP.112,438- 644-70-A-40
W3IKN..111,325- 730-61-A-40
W3DVO..111,176- 645-69-A-40
W3EIV...104,363- 606-69-A- –
W3QQO...93,680- 589-64-A-38
W3MCG..89,780- 538-67-A-40
W3DRD...86,620- 448-71-A-32
W3MFJ...81,520- 511-64-A-37
W3UE....77,350- 442-70-A-39
W3IYE...70,850- 436-65-A-32
W3KLA...70,805- 497-57-A-40
W3VOS...67,786- 445-61-A-26
W3HVM...64,725- 435-60-A-39
W3WV....60,860- 449-68-B-26
W3TMZ...60,605- 392-62-A-27
W3OQJ...45,430- 415-44-A-33
W3CIQ...45,203- 287-63-A-37
W3MPR...43,858- 333-53-A-33
W3HTK...36,988- 270-55-A-25
W3VAN...33,104- 187-71-A-14
W3FDJ...27,613- 236-47-A-22
W3HDV...27,349- 218-51-A-28
W3YIV...26,831- 203-53-A-20
W3CDZ...22,540- 161-56-A-17
W3JZY...22,244- 166-67-B-23
W3VJV...19,570- 207-38-A-33
W3NHA...19,129- 207-47-B-20
W3HXN...14,513- 215-27-A-29
W3RV....12,246- 157-39-B-17
W3FY....11,760- 171-35-B-14
W3YAG...11,701- 127-37-A-26
W3UZS...11,610- 109-43-A-23
W3MSK...11,500- 100-46-A- –
W3WU....9010- 106-34-A-16
W3VEB....8500- 101-34-A-11
W3IBX....8325- 111-30-A-13
W3RYX....7880- 100-40-B-11
W3WAF....7183- 115-26-A-18
W3VBO....6540- 112-24-A-24
W3RRT....6126- 86-29-A- –
W3WBI....5885- 108-22-A-15
WN3ZKH*..5003- 75-29-A-31
W3ROU....4290- 74-24-A- 5
W3WBJ....4205- 60-29-A-18
WN3ZSA...2138- 34-18-A-35
WN3ZAQ....665- 21-14-A-22
W3CDQ.....360- 16- 9-A- 3
W3UTK.....175- 10- 7-A- 5
W3FQE.....135- 9- 6-A- 6
WN3ZGP.....23- 4 3-A- 3
WN3YVR.....5- 2- 1-A- 1
W3GQF (W1RJN, W2HEI, K2BRY, W3s RJA SZP WSE)...58,000- 401-58-A-38
W3TCO (W3TCO, W8KEZ) 47,453- 333-57-A-37
W3TN (W3s TN URV) 41,160- 294-56-A-37
W3WIE (W3s WIE WIF) 26,686- 293-37-A-40

Southern New Jersey

W2GND..85,313- 528-65-A-40
K2ERC...80,798- 513-63-A-39
W2ZQK...76,130- 511-60-A-40
K2CPR...74,200- 424-70-A-34
W2CAG...74,106- 538-69-B-34
W2OXA...56,160- 352-64-A-26
W2HDW...52,138- 489-43-A-39
W2PAU...52,096- 407-64-B-23
W2DAJ...43,036- 371-58-B-27
W2ZVW...42,880- 268-64-A-17
W2LYL...27,965- 239-47-A-13
W2SDB...26,780- 206-52-A-22
W2YPQ...20,008- 151-53-A- –
W2PNA...16,720- 176-38-A- –
W2QDY...16,050- 214-30-A-27
W2QKJ...14,070- 134-42-A- –
W2UAP...14,000- 140-40-A-15
W2BWW...12,240- 136-36-A-26
W2HAZ.....6460- 76-34-A- 7
K2EWR.....5130- 108-19-A-18
W2EBW.....4125- 63-33-B-11
W2DMU.....4030- 62-26-A-13
W2LTI.....2380- 56-17-A- 9
W2VMX.....1040- 33-16-B- 5
K2WAO[3]....260- 13-10-B- 5
W2HBE.....119- 10- 5-A- 2
K2BHQ (W2SJB, K2BHQ) 67,650- 412-66-A-40
KN2IJC (KN2s HXD IJC) 810- 29-12-A-36

Western New York

W2SSC...133,175- 761-70-A-39
W2FEB...89,204- 476-73-B-40
W2FNZA...52,390- 403-52-A-34
W2FXA....52,054- 332-63-A-31
W2VJO....42,679- 300-57-A-34
K2GAL....42,150- 284-60-A-40
W2EMW...30,100- 215-56-A-25
W2KEC...23,460- 231-51-B-19
K2EVP...21,275- 185-46-A-31
K2CUE...21,080- 273-31-A-18
W2YGW...20,398- 199-41-A-18
W2FIU....19,763- 237-34-A-36
W2WOE...18,275- 170-43-A-12
W2EJM...13,090- 154-34-A-32
K2GIG...12,813- 127-41-A-16
W2QBB.....8586- 80-54-B-22
W2OVP.....6683- 100-27-A-14
K2BDI.....6355- 82-31-A- 9
W2KKT.....4928- 73-27-A-14
K2GWN.....4318- 80-22-A-15
W2CTA.....3100- 50-31-B- 6
K2GVN.....2600- 50-26-B-11
W2MTA.....2580- 44-24-A-29
W2KEL.....2496- 52-24-B- 7
W2RSV.....1845- 42-18-A- 3
W2ZRC.....1680- 42-20-B- 4
KN2GKK...1509- 41-17-A-38
W2DRN.....1120- 29-16-A- 8
K2HRE.....938- 25-15-A-15
K2DG.....578- 21-11-A- –
W2PFI.....158- 9- 7-A- 2
W2DKS.....152- 10- 8-B- 1

Western Pennsylvania

W3LMM..104,512- 736-71-B-40
W3PWN..103,155- 598-69-A-36
W3VIW...82,209- 625-67-B-38
W3NRE...73,220- 523-56-A-39
W3NKM...30,063- 241-50-A-29
W3GEG...25,480- 260-49-B-11
W3WTG...24,765- 200-52-A-28
W3KQD...23,010- 177-52-A-20
W3UGV...15,157- 129-47-A-17
W3NUG...13,760- 172-40-B-17
W3ZEW...12,840- 161-32-A-32
W3UHN...10,563- 163-26-A- –
W3IDO...10,200- 102-40-A-23
W3VTJ...10,000- 100-40-A-24
WN3ZDA....7608- 97-34-A-27
W3CKS.....5355- 102-28-A- 9
W3AKG.....455- 14-13-A- 3
W3LOD.....378- 21- 9-B- 4
W3VKD.....18- 3- 3-B- 1

CENTRAL DIVISION

Illinois

W9ERU..157,230- 875-72-A-40
W9YFV...154,030- 844-73-A-40
W9NPC...131,823- 787-67-A-38
W9PNE...129,330- 720-72-A-40
W9AMU..114,488- 649-71-A-39
W9ZAB...113,580- 631-72-A-39
W9WFS...106,650- 598-72-A-28
W9KLD...105,380- 597-72-A-38
W9VIC...105,471- 613-69-A-39
W9TKB...101-228- 620-66-A-38
W9WBL...90,450- 503-72-A-37
W9MEM...89,850- 627-66-B-34
W9QQG...67,875- 462-60-A-40
W9LUO...58,484- 409-59-A-32
W9WHF...54,366- 357-61-A-37
W9WQE...42,750- 302-57-A-37
W9WIO...34,694- 229-61-A-17
W9MRQ...32,508- 301-54-B-22
W9OIJ....32,190- 222-58-A-17
W9YLS....30,750- 246-50-A-31
W9AGM...30,740- 212-58-A-17
W9EET....30,375- 226-54-A-26
W9YPV....29,412- 259-57-B-35
W9KMN...29,290- 202-58-A-19
W9CLH....29,250- 266-45-A-36
W9ZJS....28,710- 250-58-B-32
W9OIN....27,088- 197-55-A-32
W9WYB...26,500- 200-53-A-17
W9NJZ....25,639- 239-43-A-31
W9TZN....21,033- 180-47-A-20
W9ASK...20,627- 183-47-A-35
W9ZSQ....20,445- 176-47-A-31
W9BRQ...15,980- 136-47-A-27
W9REC...15,413- 137-45-A-24
W9QGG...15,401- 168-37-A-20
W9VBV...15,265- 143-43-A-19
W9NII....15,180- 165-46-B-12
W9ZOU...13,443- 145-38-A-23
W9QQX...12,793- 121-43-A-14
W9YDQ...11,594- 133-35-A-18
W9APE...11,298- 135-42-B-21
W9DOR...11,264- 176-32-B-37
W9VOX...11,025- 105-42-A-21
W9NZG...10,280- 137-35-A-17
W9ZQC....9945- 117-34-A- –
W9YRS....9563- 132-30-A-25
W9IET....9090- 102-36-A-17
W9CKC....8000- 100-32-A-14
W9CNF....5500- 100-22-A-38
W9HXW...5270- 69-31-A-14
W9VSV....5193- 72-31-A-23
W9BOO....4945- 88-23-A-11
W9BJN....4402- 74-31-B-13
W9HLB....4256- 76-28-B- –
W9TRC....3728- 65-23-A- 8
W9IDO....3328- 61-22-A- 9
WN9GBC*..3250- 50-26-A-21
W9REV....3150- 60-21-A- 4
W9ZMJ....3025- 55-22-A-15
W9ZQG....2790- 38-31-A- –
WN9IRH...2778- 52-22-A-39
W9LHS....2695- 43-28-A-11
W9AA.....2574- 50-26-B- 7
W9DRN....2563- 41-25-A- 9
WN9HFB...2530- 46-22-A- –
W9EDH....1936- 45-22-B- 5
W9FDY....1575- 35-18-A-10
W9TVN.....715- 22-13-A- 6
W9EGJ.....633- 23-11-A- 8
W9GIH.....316- 15-11-A- 6
W9FJH.....289- 17- 7-A- 4
W9ALO.....245- 15- 7-A- 5
W9JAT.....236- 15- 7-A- 3
W9QCP.....200- 10- 8-A- 3
W9BAJ.....180- 10- 8-A- 5

John Driscoll, W2SSC, heard 761 stations reply during a 39-hour operating stint, consequently latched onto the Western New York certificate with no strain. He was W2 leader, too.

W9TTJ.....165- 11- 6-A- 6
WN9LKJ....158- 11- 6-A- 4
WN9GQN.....8- 4- 1-A- 3
W9TGY (W9s RMH TGY) 114,660- 642-72-A-40
W9OCB (W9s DWD OCB) 104,975- 620-68-A-40
W9OKI/9 (W9s LMP OKI) 33,198- 271-49-A-22
W9AQJ (W9s AQJ OKQ) 30,250- 220-55-A-20
W9VYD (W9s VYD WDR) 5375- 86-25-A-24

Indiana

W9IOP...208,506-1151-73-A-40
W9PEY...113,275- 702-65-A-34
W9UMU...92,400- 567-66-A-40
W9YXX...70,060- 452-62-A-40
W9UKG...68,340- 411-67-A-40
W9NH....54,000- 375-72-B-35
W9SFR...52,920- 420-63-B-36
W9DGA...52,615- 310-68-A-16
W9CNG...49,280- 308-64-A-28
W9AZM...43,225- 268-65-A-37
W9FGX...36,468- 257-58-A-39
W9VAY...17,945- 195-37-A-40
W9ZMN...12,054- 144-42-B-27
W9MWM..10,450- 115-38-A-17
WN9IGV*..6695- 105-28-A-26
WN9HRY...5625- 71-30-A-30
WN9CUC...2090- 46-19-A-14
WN9JKB.....23- 3- 3-A- 1
W9PMZ (W1TVI, W3QLU, W8s DSO MNV) 32,395- 296-55-B- –

Wisconsin

W9RQM..143,080- 784-73-A-35
W9GWK..100,909- 569-71-A-40
W9WEN...97,268- 590-66-A-39
W9VOD...93,150- 548-69-A-32
W9RKP...73,500- 420-70-A-38
W9OT....72,160- 452-64-A-25
W9GIL....70,725- 410-69-A-30
W9SZR/9..47,600- 300-64-A-22
W9WJH...42,625- 280-62-A-27
W9WAN...42,330- 333-51-A-35
W9UDK...40,906- 300-55-A-25
W9DIK....37,570- 315-52-A-35
W9HMU...36,338- 255-57-A-28
W9YZA....27,720- 201-56-A-27
W9VZK....26,063- 247-50-A-29
W9CXY....25,579- 179-57-A-35
W9ZDM....20,273- 162-51-A-23
W9FPA....17,523- 163-43-A-25
W9KXK....16,280- 148-55-B-24
W9CFL....14,677- 155-38-A-20
W9BCC....13,016- 136-39-A-31
W9HDJ....12,700- 127-40-A-19
W9CCO....12,300- 128-41-A-24
W9HDH...11,655- 126-37-A-14
W9FDX....9975- 105-38-A-12
W9KZU....9500- 100-36-A-11
W9YOS....8840- 104-34-A-29
W9CVY....8424- 109-39-B-14
W9DGB....7605- 85-36-A-15
W9VZP....5925- 79-30-A-14
W9WZL....5920- 74-32-A- –
W9FWX....5148- 73-36-B-13
W9FXA....5148- 71-29-A- 4
W9AEM....4140- 69-24-A- 7
W9WUQ....3421- 62-23-A-22
W9QGR....3416- 61-28-B- 7
W9RTP....3404- 74-23-B- –
W9ZAO....2869- 78-15-A-11
WN9HAH*..2640- 51-22-A-25
W9DPN....2470- 38-26-A-11
W9JSE....2405- 37-26-A- 9
W9CFN....1650- 36-26-B-16
WN9HCA...1445- 34-17-A-27
WN9GHJ...1235- 40-13-A-22
W9CFO.....1106- 31-15-A- 7
WN9GHY....959- 33-13-A-27
WN9DUG...425- 18-10-A- 4
W9LSK.....175- 10- 7-A- 1
W9IUQ.....75- 6- 5-A- 1
W9MGT.....3- 1- 1-A- 1
WN9KFJ.....3- 1- 1-A- 1
W9BTM (W9BTM, WN9GWS) 7069- 100-28-A-31

DAKOTA DIVISION

North Dakota

W0ARB..103,599- 630-67-A-40
W0EOZ...73,775- 456-65-A-32
W0CAQ...10,620- 120-36-A-13
W0KTZ.....6160- 70-44-B-14
W0QGP.....2190- 37-24-A- 5

South Dakota

W0SMV....19,936- 180-56-B-10
W0TLD....10,900- 110-40-A- –

Minnesota

W0YCR..139,650- 804-70-A-39
W0TKX..133,043- 729-73-A-39
W0WET...52,672- 413-64-B-31
W0JNC....35,438- 264-54-A-14
W0PDN....34,810- 236-59-A-12
W0LCN....29,631- 216-55-A-27
W0RLI....29,588- 287-52-B-35
W0PBI....17,538- 157-46-A-24
W0FUX....12,150- 123-40-A-19
W0HPV....7480- 88-34-A-28
W0QDL....6400- 82-32-A-10
W0WAB....4875- 65-30-A-10
W0QBW....3125- 50-25-A- 5

DELTA DIVISION

Arkansas

W5MSH...92,400- 578-64-A-36
W5WUN...55,390- 387-58-A-37
W5BYJ....28,554- 218-53-A-29
W5WUW (W5s DAF WUW) 10,865- 107-41-A-11

Louisiana

W5KC....141,468- 797-71-A-38
W5MCT...124,740- 699-72-A-40
W5WG....106,265- 629-68-A-40
W5WMU...42,853- 291-61-A-25
W5NDV....41,374- 281-59-A-30
W5BI.....19,110- 156-49-A-11
W5TRQ....12,495- 123-42-A-16

Mississippi

W9APY/5..72,371- 463-63-A-22
W5ONL/5..35,105- 240-59-A-16

Tennessee

W4TJI....91,803- 652-71-B-35
W4DIJ....88,644- 563-65-A-40
W4VOS...82,620- 488-68-A-40
W4CVM...71,400- 422-68-A-34
W4UOA...65,505- 398-66-A-37
W4UIO...63,860- 412-62-A-40
W4WQT....57,505- 436-53-A-40
W4OGG...50,750- 350-58-A-22
W4DMT...46,050- 308-60-A-30
W4SQE...30,113- 220-55-A-36
W4UVP...21,438- 175-49-A-28
W4BWZ...16,675- 150-46-A-40
W4TPL....12,146- 119-41-A-10
KN4ACG...5063- 86-25-A-29
W4TIE.....1760- 32-22-A- 6
W4WOX....1020- 26-16-A- 5
W4UWA.....338- 15- 9-A- 1
WN4GFV.....3- 1- 1-A- 1

GREAT LAKES DIVISION

Kentucky

W4KVX	209,353	1147-73-A-39	
W4CVI	101,530	576-71-A-37	
W4JBQ	97,663	601-65-A-40	
W4OMW	71,625	480-60-A-39	
W4YFA	59,310	325-73-A-30	
W4YDL/4	40,698	367-57-B-35	
K4FBW	16,965	175-39-A-16	
W4SUD	14,400	133-45-A-12	
W4FSB	8265	98-38-A-22	
W4BPX	7910	118-28-A-27	
W4EPA	4900	56-35-A- 5	
W4HEA	3994	131-15-A-36	
W4UTO	2328	49-19-A- 5	
W4AUC	2283	42-22-A- 6	

Michigan

W8DUS	113,971	632-73-A-40	
W8HJK	102,150	571-72-A-40	
W8NSS	73,750	500-59-A-20	
W8NOH	59,500	425-70-B-29	
W8ARR	54,270	326-67-A-34	
W8RAE	53,680	352-61-A-34	
W8HRC	45,644	276-67-A-31	
W8DLZ	44,769	278-65-A-19	
W8GB	32,938	216-62-A-26	
W8UMX	32,598	221-59-A-29	
W8TKW	27,160	194-56-A-35	
W8JKX	23,280	194-48-A-17	
W8DM	21,525	205 42-A-26	
W8IRO	20,805	225-38-A-29	
W8PVI	18,348	210-44-B-22	
W8HAN	16,369	146-45-A-22	
W8GEB	15,800	163-40-A-29	
W8MSK	15,290	141-44-A-34	
W8GP	14,760	123-48-A-15	
W8SCU	14,006	150-47-B-29	
W8CCJ	13,860	160-44-B-23	
W8MGZ	12,906	150-35-A-17	
W8FX	10,982	162-34-B-24	
W8IVK	10,530	117-45-B-24	
W8CUP	5355	83-34-A- 5	
W8KPI	4590	51-36-A- 7	
W8EGI	4480	64-28-A- 8	
W8JEF	2150	43-20-A- 7	
W8INF	1395	31-18-A- 6	
W8HVZ	1275	31-17-A-18	
W8TRN	570	19-12-A- 3	
WN8SRK*	468	17-11-A-13	
WN8QVI	88	7- 5-A- 5	
WN8RMN	19	3- 3-A- 5	

W8YY (W88 GYU KPP, K2S CLL DYF)
29,070- 300-51-B-27

W8GLK (W8S BWS GLK JBT OSG PYQ RGB)
8856- 124-36-B-12

Ohio

W8LOA	146,213	849-70-A-40	
W8BTI	144,540	803-72-A-40	
W8EV	125,925	699-75-A-37	
W8BOJ	123,812	709-70-A-31	
W8OYI	122,060	718-68-A-39	
W8VTF	113,678	659-69-A-40	
W8ZJM	108,990	611-72-A-32	
W8UZJ	91,575	555-66-A-29	
W8LHV	89,600	560-64-A-37	
W8BQT	86,450	618-70-B-38	
W8NDU	83,080	496-67-A-40	
W8RSP	80,495	478-68-A-22	
W8ZAU	76,800	512-60-A-33	
W8OPA	76,500	425-72-A-31	
W8VQI	70,040	412-68-A-35	
W8ROX	67,155	407-66-A-23	
W8FJP	60,265	367-68-A-38	
W8RSW	52,448	333-63-A-21	
W8MQQ	45,356	308-59-A-32	
W8DQC	45,220	266-68-A-16	
W8DQG	42,770	329-52-A-21	
W8SDJ	42,350	308-55-A-39	
W8URG	42,055	324-65-B-29	
W8GJG	35,360	272-65-B-25	
W8DNC	35,125	281-50-A-31	
W8QYI	33,688	245-55-A-27	
W8DAE	32,460	271-60-B-19	
W8DWP	29,548	224-53-A-26	
W8GQ	29,433	193-61-A-27	
W8EAR	27,613	235-47-A-30	
W8IFX	26,961	237-57-B-14	
W8HUE	25,740	235-55-B-34	
W8NPF	25,625	209-50-A-21	
W8HDA	22,950	180-51-A-17	
W8PUZ	21,600	230-48-B-22	
W8NVJ	17,693	171-42-A-21	
W8LOF	17,625	150-47-A-14	
W8NMA	16,700	167-50-B-10	
W8FYI	16,256	149-45-A-28	
W8TND	16,200	135-48-A-17	
W8APC	14,616	126-58-B-17	
W8CGY	13,600	140-50-B-17	
W8NNC	13,545	151-36-A-20	
W8NGE	13,325	130-41-A-23	
W8FDC	13,294	151-46-B-30	
W8AL	13,050	131-40-A-20	
W8ZLH	12,986	151-43-B-26	
W8NOX	12,720	159-40-B-19	
W8RO	11,605	106-44-A-14	
W8JAQ	11,445	116-42-A-28	
W8HBJ	11,250	101-45-A-13	
W8JIA	10,676	110-39-A-10	
W8VDF	10,596	88-49-A-17	
W8FRD	9635	96-41-A-13	
W8MXO	9600	120-40-B-10	
W8ELB	9200	94-40-A-26	
W8GXZ	7800	104-30-A-11	
W8YPT	6598	91-29-A- 9	
W8NMR	6210	92-27-A-11	
W8YGR	6035	71-34-A- 9	
W8OYV	6018	83-29-A-19	
W8QCU	5721	101-23-A- 8	
W8NJS	5693	100-23-A-26	
W8HSM	5425	79-28-A-11	
W8PXO	5184	72-29-A-12	
W8CTP	5031	83-25-A-17	
W8GLT	4689	62-31-A- 7	
W8PMQ	4286	76-27-A-16	
W8MOH	3968	69-23-A-10	
W8EXT	3850	55-28-A- 8	
WN8TGB*	3313	66-25-A-38	
W8TTJ	3300	55-24-A- 7	
W8BAE	2903	43-27-A-16	
W8KAK	2760	48-23-A- 3	
W8OTK	2560	40-32-B- 8	
W8PSW	2200	40-22-A- –	
W8GH	2100	40-21-A-10	
W8OOS/8	2058	50-21-B-12	
W8BUM	1890	28-27-A- 6	
W8VZE	1800	40-18-A-11	
WN8SRH	1700	43-17-A-14	
W8ESG	1688	27-25-A- 3	
W8KC	1610	35-23-B- 6	
WN8SWB	1219	41-15-A-27	
WN8TBI	1085	36-14-A-31	
WN8TNK	998	29-14-A-20	
W8PM	978	23-17-A- 2	
W8ET	900	24-15-A- 4	
W8DYZ	538	22-10-A- 8	
W8BOS	520	16-13-A- 8	
W8RCJ	468	17-11-A-19	
WN8QXJ	440	16-11-A- –	
WN8SSP	405	14-12-A-10	
W8DIR	400	20- 8-A- 5	
W8NOS	280	16- 7-A- –	
WN8SES/8	270	12- 9-A- 8	
WN8PKU	260	14- 8-A- 3	
W8YUV	140	8- 7-A- –	
W8JJU	106	16- 5-A- –	
W8JDN	56	7- 4-B- 1	
W8IKM	40	8- 2-A- 2	

W8FGX (W8FGX, CN8FL)
63,248- 472-67-B- –

W8JOY (W88 JOY NGG NGS)
8079- 153-23-A-38

HUDSON DIVISION

Eastern New York

W2IFP	80,010	515-63-A-29	
W2HSZ	66,080	413-64-A-34	
K2EIU	63,761	523-49-A-39	
W2JKJ	29,400	241-49-A-22	
K2ESM	18,200	208-35-A-33	
W2CJM	13,069	128-41-A-29	
K2HJX	12,600	170-30-A-24	
K2BLC	12,209	214-29-B-21	
KN2HXR*	10,036	138-31-A-40	
W2NZE	7326	100-37-B- 6	
K2CQS	6143	124-21-A- –	
W2APH	5712	119-24-B- 7	
K2DRN	5348	93-23-A-26	
W2KXS	4860	72-27-A-14	
KN2GSB	4169	74-23-A-30	
W2TYC	2960	83-20-B- 9	
KN2HOU	2850	58-24-A-30	

W2SZ (WITCJ, W2S KRL WZQ)
54,988- 481-59-B-40

N.Y.C.-L.I.

W2IVS	117,775	677-70-A-39	
W2RDK	107,100	612-70-A- –	
W2KTF	103,190	609-68-A-38	
W2HQL	92,300	520-71-A-35	
W2QMO	81,250	500-65-A-40	
K2DGT	78,400	490-64-A-39	
W2TUK	75,300	502-60-A-37	
K2DCJ	74,090	478-62-A-35	
W2JBQ	71,198	434-66-A-36	
W2IVU	65,130	501-52-A-39	
W2MUM	60,165	383-63-A-38	
W2OPY	58,995	417-57-A-35	
K2JEB	58,900	381-62-A-34	
K2CF	57,378	389-59-A-40	
W2LPJ	56,048	423-53-A-34	
W2VL	51,200	400-64-B-29	
W2UXY	44,745	314-57-A-17	
W2LGG	42,395	278-61-A-36	
W2DLO	41,406	308-67-B-27	
W2CWD	38,591	378-41-A-35	
W2MDM	36,698	311-59-B-29	
K2CQP	35,368	302-47-A-22	
W2AZS	32,596	281-58-B-28	
W2NCG	29,663	285-42-A-24	
W2KTU	29,325	230-51-A-30	
W2AOD	27,885	254-44-A-30	
K2CMV	27,720	252-44-A-29	
K2CRH	27,675	308-36-A-37	
K2EP	25,088	256-49-B-26	
W2NLI	22,500	180-50-A-23	
W2PZE	21,679	214-41-A-12	
W2AEV	19,125	153-50-A-15	
W2OTC	17,850	140-51-A- 9	
W2TNI	16,275	210-31-A-30	
W2LCS	13,388	153-35-A-21	
K2CFB	12,960	144-36-A-26	
W2GDO	12,800	160-32-A-20	
W2YSL	12,600	140-36-A-14	
W2GP	12,440	156-32-A- 9	
K2ECY	11,288	105-43-A-10	
K2ABW	10,250	125-41-B-17	
W2UNS	10,000	125-32-A-10	
W2CPA	9605	113-34-A-25	
K2GBH	9484	145-27-A-22	
W2WUQ	8820	127-28-A-15	
W2MZX	8550	115-30-A-22	
W2RZH	8250	100-33-A-22	
W2OWO/2	7939	111-29-A-19	
K2GGG	7840	115-28-A-20	
W2UAL	7619	133-23-A-17	
K2ENO	7425	92-33-A-23	
K2CQI	6406	103-25-A-18	
W2LGS	5583	77-29-A-10	
W2BOT	5412	83-33-B-10	
W2KOZ	4894	68-29-A- 6	
K2GXL	4080	68-24-A-11	
KN2ICU	3245	63-22-A-18	
K2HID	3144	67-24-B-19	
W2OBU	2680	67-16-A- 6	
KN2IEG	2375	48-20-A- –	
W2DBI	2080	52-16-A-12	
W2THS	2025	54-15-A-20	
K2HRS	2000	50-16-A-22	
W2AWH	1995	39-21-A- 6	
W2HHE	1702	37-23-B- 9	
K2HZB	1700	44-16-A- 9	
W2DQN	1406	38-15-A- 4	
K2GMF	1138	35-13-A-21	
W2ENW	775	31-10-A- 3	
W1RTV/2	280	17- 7-A- 9	
K2DZE	275	22- 5-A- 7	
W2BFJ	240	12-10-B- 4	
W2APM/2	125	10- 5-A- 4	
K2DEM	105	7- 6-A- 1	
K2GNE	80	8- 4-A- 3	
K2CKW	63	5- 5-A- 1	
W2YHP	13	5- 1-A- 2	

Northern New Jersey

W2TPJ	80,404	511-63-A-36	
W2GBY	78,908	501-63-A-39	
W2OIB	73,455	483-59-A-39	
W2CQB	67,680	564-60-B-32	
K2EGZ	62,620	409-62-A- –	
W2TWC	52,320	327-64-A-20	
W2DMJ	51,548	358-58-A-27	
W2MPP	49,025	372-53-A-40	
W2CWK	48,240	268-72-A-27	
K2BZT	46,811	257-73-A-19	
W2JIB	44,033	309-57-A-25	
W2BRC	43,935	303-58-A-33	
W2HWH	41,439	369-47-B-29	
K2CCF	39,258	386-41-A-34	
W2LRO	34,980	264-53-A-27	
W2OM	29,500	200-59-A-17	
W2DEN	28,856	203-57-A-22	
W2LQP	28,765	262-44-A- –	
K2GFX	28,052	232-49-A-22	
W2LSX	27,090	301-36-A-10	

(*Continued on page 130*)

W2AQT	26,400	160-66-A-25	
K2GAS	25,840	272-38-A-29	
W2GKE	24,444	194-63-B-19	
K2GMI	23,730	230-42-A-21	
W2EBG	23,033	249-37-A-25	
W2CVW	22,724	188-49-A-21	
W2CFX	19,316	152-51-A- 5	
W2LPV	19,014	186-41-A-23	
K2EPP	18,918	167-46-A-35	
K2BCK	18,233	143-51-A-11	
K2EUN	15,750	140-45-A-16	
K2GLQ	14,250	143-40-A-21	
K2BJA	13,600	136-40-A-20	
W2ABL	13,043	141-37-A-10	
W2IPJ	12,615	177-29-A-21	
K2CZY	10,065	125-33-A-16	
K2EPT	8160	102-32-A-17	
W2KKR	5813	75-31-A- 6	
W2JME	5270	62-34-A- 5	
K2GLR	4800	66-30-A-15	
K2DNW	4130	61-28-A-36	
K2EPM	3680	92-16-A-18	
W2FCC	3500	70-25-B- 7	
W2PCI	2346	51-26-B- 6	
K2GJZ	2300	46-20-A- 6	
K2GLS	1658	40-17-A-10	
K2GJU	1105	26-17-A- 5	
W2EWZ	1069	29-15-A- 3	
W2BU	924	33-14-B- 9	
W2QPM	850	20-17-A- 4	
W2JV	540	18-10-A- 2	
W2COG	490	15-14-A-14	
KN2HSW	326	15- 9-A-10	
W2NEP	50	5- 4-A- 1	

MIDWEST DIVISION

Iowa

WØNWX	131,850	735-72-A-40	
WØNCS	111,960	622-72-A-34	
WØCXN	100,643	567-71-A-34	
WØPZO	100,050	581-69-A-37	
W1RCS/Ø	52,550	352-60-A-35	
WØKYL	49,836	353-59-A-35	
WØAQV	31,535	285-53-A-24	
WØUJC	27,063	218-50-A-24	
WØOZO	23,858	203-47-A-17	
WØPJY	21,293	174-51-A-22	
WØATA	13,980	118-48-A-11	
WØLJW	12,096	144-42-B-15	
WØVFM	8456	108-33-A-13	
WØDSP	7880	99-40-B-10	
WØGVY	7531	125-25-A-21	
WØKVJ	5560	82-32-A- 6	
WØGWE	4785	66-29-A-10	
WØBGB	4505	53-34-A- 7	
WØGWP	3672	69-27-B- 5	
WNØSQE*	3413	65-21-A-31	
WØAZR	3375	54-25-A-10	
WØNAI	2530	47-22-A-11	
WNØVXO	2310	42-22-A-32	
WØPAN	919	25-15-A- 7	
WØUJJ	540	18-12-A- 9	
WNØUID	500	20-14-A-25	
WØJKT	440	16-13-A- 8	
WNØWDK	15	3- 2-A- 7	

Kansas

WØBCI	109,784	622-71-A-34	
WØIUB	77,804	466-67-A-26	
WOGAX	57,881	368-63-A-38	
WØWMH	39,883	301-53-A-37	
WØIPQ	39,353	300-54-A-28	
WØSVE	38,990	279-56-A-25	
WØEZT	37,400	277-55-A-30	
WØBYV	35,136	288-61-B-25	
WØYRN	34,930	250-56-A-29	
WØYFE	34,350	230-60-A-21	
WØAWB	23,855	184-52-A-15	
WØUAT	22,800	190-48-A-21	
WØLUH	22,005	163-54-A-24	
WØNFX	21,560	200-55-B-15	
WØEVD	20,782	164-51-A-15	
WØCFM	17,920	239-40-A-18	
KØFCA*	14,784	161-48-B-19	
WØJFG	12,320	114-44-A-24	
WØBJX	11,700	120-40-A-16	
WØQVO	10,230	125-33-A-11	
WØRBO	5643	61-37-A-17	
WØSPF	5476	80-37-B-11	

Roger Corey, W1JYH, has been sending forth headphone-rattling sigs from New England environs for years. In the 21st SS Rog wound up with 119,340 points, No. 1 tally for W. Mass. section and W1-land. (*Photo by W1KFV*)

May 1955

Results—1955 Novice Round-up

BY ELLEN WHITE, W1YYM

MORE PARTICIPANTS, more operating savvy, and more fun for all personified the Novice Round-up, '55 style. With over 200 WN/KN competing Novices available to QSO, high tallies proved the rule, not the exception. After all, ". . . There is certainly no lack of operating ability on the part of the WNs. In most cases, excellent technique and a knowledge of operating procedure equal to that of the higher classes were exhibited." — *W5VNW*

After a quick look-see at how *you* placed in *your* section, you may wish to compare your score with the following call-area leaders. In this summary, only contact and section totals are given; full details may be found in the complete tabulation.

WN1CKA	180-45	KN6EVR	110-43
KN2HXR	219-42	WN7YAQ	126-50
WN3ZKH	245-47	WN8SYZ	140-40
WN4FRO	139-47	WN9GWS	185-44
WN5FJN	173-61	WNØVKI	295-55

Two of the tougher states to acquire while working for WAS are Utah and Rhode Island. Not so in the NR! On our left, representing Rhode Island, WN1BIS supplied a multiplier for 134, while WN7WSS from the Beehive State (Utah) was a choice one for 115. In the words of KN6HAN, "The contest brought out a lot of the rarer ones!"

Sidelights

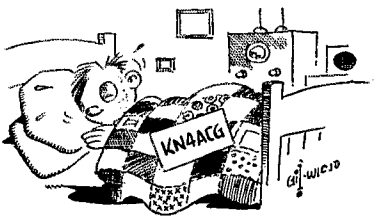
From down Virginia way, W4YZC reports some of the best signals emanating from WN1ACD, KN2HXR, WN3ZKN, KN4ASU/4, WN8SWB, WN9GWS and WN9GBC. From the West Coast, San Joaquin Valley leader KN6HFA reports outstanding signals from W1MX, WNØVKI, KN4ANW, WN5FJN, W4VRT and W1WPO.

Giving testimony to sharp ears for faraway sections, the following licensees racked up 45 or more of those juicy multipliers. In descending order are eight star performers: WN5FJN, WNØVKI, WN7YAQ, WN9GBC, WN7WSS, WN3ZKH, WN4FRO and WN1CKA. Not only that, but "during the contest I worked my first ZL and an XE" reports WN1CKA.

"After having taken part in two SS contests, I believe that the NR is about four times as difficult a test of operating ability." — *W1SSZ*. Yet, in spite of QRM, QRP, QSB *and* homework, twelve of the boys came through with 150 or more QSOs. Well-earned plaudits to WN1CKA, KN2HXR, KN2ICU, KN2JKC, WN3AML, WN3ZKH, WN4GFT, WN5FJN, WN9GWS, WN9HFB, WN9ICE and WNØVKI.

Round-up Remarks

"My copying has improved; the NR helped me recognize numbers at faster speeds." — *KN2JGU*. . . . "Between the kitchen, the store, the 'phone and the neighbors I managed to get in 35 hours of operating time. Had good technical



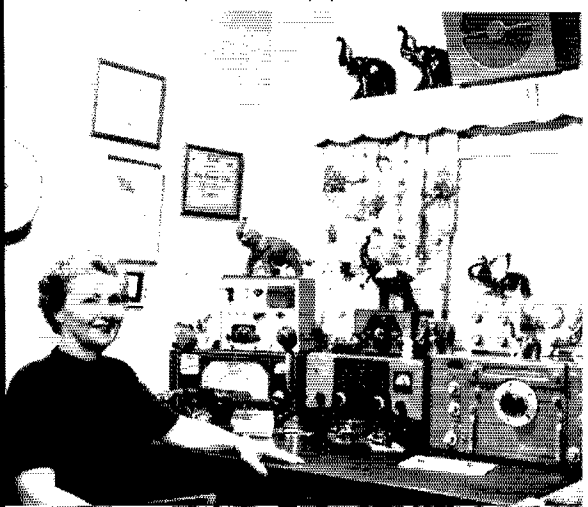
"I'D LIKE TO CATCH UP WITH THE GUY THAT GAVE ME THE FLU ON THE NEXT TO THE LAST NIGHT OF THE CONTEST."

advice from OM W7HMQ. Bring on the Field Day." — *WN7WHV*. . . . "My ears are still red after being broken in by a brand-new set of headphones." — *WN9ILE*. . . . "Found some snappy operators for future FD and SS contests." — *W8OMK*. . . . "That WN1AXD — what a beautiful fist!" — *W1VNX*. . . . "FB 60% QSL percentage." — *W1AW*. . . . Our nominee for the neatest log keeper (indicating 35-w.p.m. certification): KN4ASU/4.

Non-Novice High Scorers

Again this year, many non-Novice stations supplied a helping hand. Calls shown in bold-face are those of last year's participating WN/KN operators, returning in '55 to help the new licensees. The following scores are shown in alphabetical order. W1AW 3321,[1] W1BDI 720, W1CDD 1218, W1GKJ 900, W1JYH 3132,

[1] W1QIS, W1WPR, W1YYM oprs. [2] W1YFM, W4YHD, W5ZID oprs. [3] WØHAW, opr.



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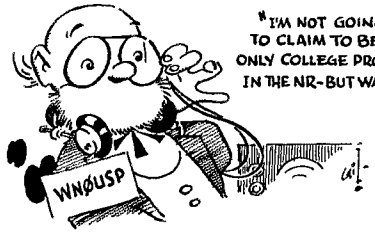
Equipment of aid to WN7WHV (Puyallup, Wash.) in acquiring 162 QSOs in 41 sections consists of a Lysco 600 for 21 Mc. topped by a Communicator for monitoring the Pierce County c.d. frequency, a Ranger for 40 and 80 (beneath the RME 23 preselector), and an HRO-50 with Selectoject. Alice collects elephants too!

W1MX 11,328,[2] W1RFC 1392, W1SAD 1520, W1SSZ 1580, W1VNX 1817, W1WPO 7600, W2LS 1344, W2MTA 736, K2AFQ 186, K2DEM 21, **K2DNW 45,** K2EDH 4192, **K2EIU 4480, K2EPP 352, K2GDE 3240,** K2GMI 1281, K2HVN 5285, W3FY 3480, W3NRE 6300, W3RRI 1173, W3WAF 819, W3YHU 1206, **W4BXV 3382,** W4BZE 8600, W4IA 798, W4OMW 924, W4WRM 247, W4YZC 930, **W4ZYV/2 6,** W5VNW 1100, W5WUR 2400, W6PCA 360, K6AUZ 616, K6BBD 128, K6CUX



238,[3] W7PQJ 63, W7VIU 1152, W7VWS 63, W8JDN 5510, **W8MSK 704, W8NGU/5 3255,** W8NMK 3848, W8NWH 1026, W8OMK 2320, W8OTI 4012, W8QXQ 5586, W9CLH 3232, W9KLD 2263, W9SZR/9 3696, W9WAN 6300, W9WJV 6270, WØJFG 525, VE3BSW 440.

ATLANTIC DIVISION

Eastern Pennsylvania

WN3AML.....7995-205-39-36
WN3YTM.....5850-135-39-39
WN3ZTB.....5313-151-33-34
WN3ZRQ.....4860-152-30-37

Md.-Del.-D. C.

WN3ZKH....11,515-245-47-31
WN3ZSR.....2398-109-22-20
WN3ZGN.....1007- 38-19- 7
WN3ZFY..... 270- 20- 9-28

Southern New Jersey

KN2JKC.....8040-186-40-35
KN2KDO.....2068- 94-22 36
KN2JGU.....1596- 74-19-17
KN2IIW.....1520- 65-19-25
KN2JWZ..... 120- 10- 8-11

Western New York

KN2JVN.....1260- 48-20-26
KN2JAD.....768- 38-16-14
KN2IDP.....459- 27-17-12
KN2IWG.....360- 24-15- 7
KN2JZT.....114- 6- 6- 1
KN2JVH.....28- 7- 4- 5

Western Pennsylvania

WN3ZHQ.....5705-143-35-29
WN3ZQW.....5168-127-34-27
WN3ZGI.....1416- 59 24-15

CENTRAL DIVISION

Illinois

WN9HFB.....7421-161-41-10
WN9ICE.....7224-153-43-37
WN9GBC.....6550-131-50-34
WN9JDJ.....5796-123-42- –
WN9LBZ.....2100- 75-28-28
WN9GCY..... 644- 26-14-16
WN9MAK..... 207- 13- 9-13
WN9KMK.... 140- 10- 7-10
WN9JFE..... 42- 4- 3- 2

Indiana

WN9HHN.....5499-126-39-37
WN9HNJ.....3367- 91-37-35
WN9ICL.....2100- 60-28-11

Wisconsin

WN9GWS.....9020-185-44-39
WN9DUG.....2673- 81-33-24
WN9KHW.....2268- 84-27-36
WN9HAH.....2044- 73-28-24
WN9GYE..... 60- 12- 5- 2
WN9JDO..... 56- 8- 7-14
WN9KUW.... 16- 8- 2- 7

DAKOTA DIVISION

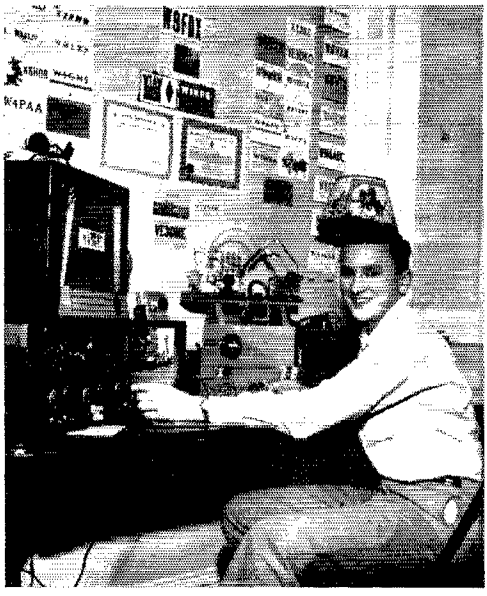
Minnesota

WNØUKY..... 768- 33-16-25

DELTA DIVISION

Arkansas

WN5IED.....2201- 71-31-10



Leading the Ninth call-area listings is reason enough for the pleased look of WN9GWS! This Milwaukee Radio Amateur Club member sports an SX-71 and 6AG7-807 rig. Antennas are coax-fed half waves on 80 and 10. Ron's fine score summed up 185 contacts in 44 different ARRL sections. (*Photo by W9MOT*)

Louisiana

WN5GAI.....3990-100-38-24
WN5FSN.....1200- 35-24-10

Mississippi

WN5DRP.....3536- 89-34-27
WN5FPI..... 912- 38-24- 3

Tennessee

WN4FRO.....7473-139-47-25
KN4ACG.....5031-110-39-23
KN4AOJ.....2910- 82-30-23
KN4ACF..... 640- 25-16-14
WN4GFV..... 368- 23-16-10

GREAT LAKES DIVISION

Michigan

WN8UAP.....2352- 69-28-27
WN8SYV.....1768- 53-26- 8
WN8RIE..... 825- 50-15-10
WN8SRK..... 520- 20-13- 6
WN8SAN..... 429- 29-11-13
WN8PWZ..... 144- 12-12- 3

Ohio

WN8SYZ.....6200-140-40-39
WN8RSK.....2610- 80-29-35
WN8SAQ.....2511- 81-31-27
WN8SWB.....1650- 60-22-16
WN8RMF.....1632- 68-24-35
WN8TDL.....1564- 48-23-25
WN8TJF.....1550- 62-25-23
WN8QIZ.....1430- 55-26-36
WN8SRG..... 931- 39-19-10
WN8UPH..... 882- 42-21-19
WN8SUW..... 714- 27-17- 8
WN8TTO..... 558- 31-18- –
WN8TJJ..... 279- 16- 9-11

HUDSON DIVISION

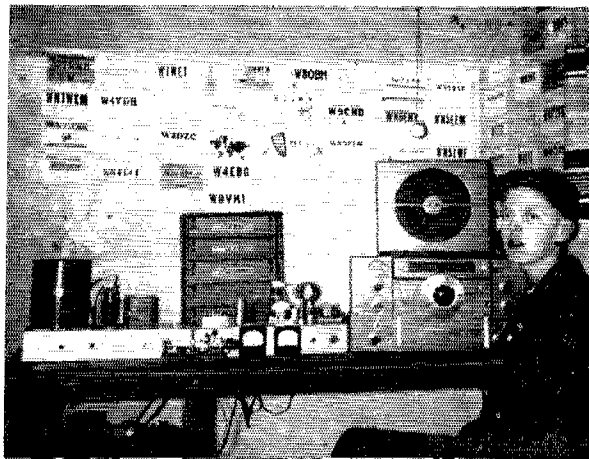
Eastern New York

KN2HXR.....9618-219-42-32
WN8RGF/2...3906-106-31-23
KN2HOU.....3074- 93-29-19
KN2IQI.....1850- 74-25-30
KN2KET.....1302- 93-14-21
KN2JQZ.....1080- 54-20-22
KN2GZB..... 147- 21- 7- 4

N. Y. C.-L. I.

KN2ICU.....7421-166-41-23
KN2IBH.....3683-112-29-21
KN2HMG.... 1659- 64-21-15

(*Continued on page 140*)



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During the first week of the contest, WNØVKI paused to rebuild his 5763-4D32 rig. Result? Seventy-five watts and fine operating ability (plus an HRO-60) garnered 295 QSOs for Dick! This contest leader from Omaha worked 47 of the 48 states in his first 4 months on the air. Vermont is still the elusive 48th.

May 1955

HAMFEST CALENDAR

ALABAMA — The Birmingham Amateur Radio Club will hold its annual Hamfest at the State Fair Grounds, Birmingham, Sunday, May 15th. For further information and tickets write P. O. Box 603, Birmingham, Ala.

GEORGIA — The Atlanta Radio Club hamfest will be held May 28th–29th. The place for the Saturday night Dutch supper is Joe's Steak House on the four-lane highway near Marietta. Guests will be accommodated at the Marietta Motel and other motels nearby. The Sunday hamfest will be at Robertson's Tropical Gardens on West Paces Ferry Road at the *Chattahoochee River*. Barbecue chicken will be served, and refreshments will be available. Tickets are $3.00. Tickets and motel accommodations may be handled through Jack Farr, W4TJS, 572 Wells Ave., Hapeville, Ga., or Tom Moss, W4HYW, 1009 Connally Drive, East Point, Ga.

INDIANA — Clifty Falls picnic, sponsored by the Madison Amateur Radio Club, will be held at Poplar Grove, Clifty Falls State Park, Madison, on Sunday, May 15th, 10 A.M. to 4 P.M. No registration fee; the only cost is a 10 cent charge for admission to the state park. This is a family affair, so load up the lunch basket, XYL and the kids for a big time. Only a short drive from Cincinnati, Louisville or Indianapolis. Plenty of shelter, so come rain or shine. For further information contact W9QOT, R.F.D. No. 6, Madison, Ind.

ILLINOIS — Sunday, May 22nd, Fourth Annual Mississippi Valley Hamfest at Rock Island County Conservation Grounds on Big Island, Milan. There is a new road along the Canal fellows so the going will be smooth. There will be plenty of good food and fun for all. Advance registration tickets are $1.25 or $1.75 at the gate. For advance registrations write Harry Studer, W9RYU, R.R. No. 1, Milan, Ill.

ILLINOIS — Starved Rock Radio Club Hamfest, June 5th, at a beautiful new and larger site, overlooking the *Illinois River* at the South edge of Ottawa, Ill. Follow Rt. 23 south through Ottawa, cross *Illinois River* bridge, go up hill, and turn left at Center Street eight blocks to CIO picnic area. Site features large dining hall and kitchen, new auditorium, meeting rooms and space for display of equipment. For the ladies and children, special attractions, all modern facilities, lots of picnic tables, playground equipment, swimming pool, etc. The usual good program and features of previous hamfests. Registration $1.00 if postmarked before May 28th, $1.50 at hamfest. Listen on 3940, 3920 and 3515 kc. for late news or write W9MKS, Utica, Ill., for details and advance registrations.

KANSAS — The Hi Plains Amateur Radio Club sixth annual Hamfest will be held at Plains, May 22nd. Registration will be $1.00. A covered-dish luncheon will be served at noon, and everyone is invited to attend. Please bring a covered dish and service for your own group.

KANSAS — The Central Kansas Radio Club, Salina, 7th annual Hamfest will be held June 5th. Starting at 10 o'clock till (?); all inquiries should be addressed to Howard Baker, 404 Woodlawn, Salina, Kans.

MISSOURI — The Greater St. Louis Radio Amateur's annual Hamfest will take place May 22nd. Games, entertainment for adults and children. Refreshments obtainable on grounds. Admission, adults $1.00, children free. Creve Coeur Farmer's Club.

NEW MEXICO — The Amateur Radio Caravan Club of New Mexico, Albuquerque chapter, will sponsor the 5th annual New Mexico State Hamfest on Saturday and Sunday, June 4th and 5th, in Albuquerque. Stations will be on 29.6 Mc. and 3838 kc. to direct mobiles into Albuquerque. Registration will begin Saturday, June 4th; $2.50 in advance and $3.00 at the gate. All amateurs and their families, both in and out of the State of New Mexico, are invited to attend. For further information contact the club at 107 Washington St., S.E., Albuquerque, N. M.

NEW YORK — The Rochester Amateur Radio Association will hold its annual Western New York Hamfest Saturday May 21st in the Doud American Legion Post at 898 Buffalo Road (Rt. 33) near the western city limits of Rochester. The tops in speakers and honored guests as usual. Whether your special interest is mobile, DX, traffic, v.h.f./u.h.f., c.d., hi-fi, or renewing old acquaintances, don't miss this one! Registration from 1 P.M. to 5 P.M. Banquet at 7 P.M., $3.75 per person as always. For advance registration write to RARA, P. O. Box 1388, Rochester 3, N. Y.

NEW YORK — The New York Radio Club is holding its third annual Picnic and Transmitter Hunt at Bethpage State Park, Long Island, N. Y., on Sunday, May 22nd, starting at 11 A.M. Women and children free; all OMs $1.00. All hams are welcome and a good time is assured.

OKLAHOMA — The North Fork Amateur Radio Club of Western Oklahoma will hold its Third Annual Hamfest and Picnic at the Quartz Mountain State Park and Lugert Lake on May 21st and 22nd. Registration fees will be $2.50. For further information contact Jay Thompson, W5ZZP, Sayre, Okla.

PENNSYLVANIA — The Breezeshooter's Tri-State Hamfest will be held on Sunday, May 22nd, at the Lodge, North Park, Pittsburgh, Penna. Registration free. Come one, come all!

RHODE ISLAND — The Providence Radio Association will again hold the largest Rhode Island gathering of amateurs, its annual Dinner Dance at Johnson's Hummocks on May 14th at 8 P.M. Entertainment for all.

TEXAS — The South Texas Emergency Network will have its tenth annual Convention in Kerrville on May 27th–29th. There will be a barbecue, two dances, two water carnivals, three transmitter hunts, a swap session, and the usual banquet and business sessions. There will be many entertainment and educational features.

FEED-BACK

In Hadlock, "Improved Audio Circuit for the 50-Mc. C.D. Unit," page 36 of the March issue, Fig. 2 should show a 0.1-megohm screen dropping resistor for the left-hand section of the 6U8.

In Fig. 2 of Thomason, "Mobile S.S.B. Receiver for 80 and 40," in March *QST*, a connection should have been shown between the cathode of the 6SQ7 and junction of the 0.15-megohm and 2700-ohm resistors and 15-μf. capacitor.

A not-too-serious error got past us in "A 5-Band Antenna Coupler," by McCoy, in April *QST*. In Fig. 2, a jumper should be shown between Pins 2 and 4 in "D." If the jumper isn't used, only half of the total capacitance is available.

Strays

At the request of the local government, VP2DL, Windward Islands, B.W.I., broadcast a debate put on by native officials. The program was transmitted on a non-ham frequency and met with much enthusiasm. *L. to r.:* His Honor, Mr. Josse, Asst. Administrator; Government Secy. Hugh Grell, VP2DH; Missionary Merritt Hoath, VP2DL; and Mr. William Surbrook, VP2DA.

Hints and Kinks For the Experimenter

LUCITE REPLACEMENT FOR WINDOW GLASS

A SHEET of ⅛-inch lucite, cut to size and used as the replacement for a cellar windowpane, provides an easily worked surface for mounting feed-line feed-through insulators, etc. Mount the lucite in place with regular glazier's tacks and putty. Save the window glass for the day when it becomes desirable to return it to the frame.

— *E. M. Fry, K2CW*

FULL RANGE SPEED CONTROL FOR SEMIAUTOMATIC KEYS

A HIGHLY successful method of controlling the speed of a bug or semiautomatic key is shown in Fig. 1. With this system, it is possible to slow down the dot frequency instantaneously to any desired rate.

The drawing is more or less self-explanatory. The only parts added to the original key are a hairpin-shaped piece of iron wire and one or more small cylindrical Alnico magnets such as those used in speaker manufacture. The hairpin is held in place under the thumbscrew which normally holds the sliding weight in position and the magnet or magnets hold themselves in the cradle formed by the hairpin.

The hairpin can be made from a section removed from an iron coat hanger. Before mounting the hairpin, move the regular weight up to

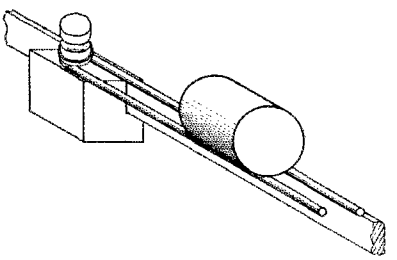

Fig. 1 — **Detail drawing of the speed-control for bugs or semiautomatic keys.**

the maximum speed position. When the cradle is locked in position, orientate it with the open end facing toward the rear of the key. Thus, by merely removing the magnet or magnets, top speed is available without need for loosening any screws. To come down to a slower speed, put a magnet or two on the cradle (preferable sizes are those having a diameter measuring between ¾ and 1¼ inches) and slide same to the most effective position. Even with the heaviest combination of weights on my bug, and while keying at the rate of less than six dots per second, I can get over 50 cleanly formed dots before the bug comes to rest.

For a few weeks after this idea was first put to work, I had the extra magnets lying around on the desk where they were easily misplaced. When I finally remembered the basic properties of magnets, I simply placed them against the front panel of my receiver where they stay put until wanted.

— *Cyrus T. Read, W9AA*

PROTECTION OF TETRODE SCREEN GRIDS

ONE of the disadvantages of using a fixed screen supply is the excessive screen dissipation that occurs when plate voltage is unintentionally removed from the tube. This drawback of the fixed-supply system can be overcome by feeding the screen through the contacts of a normally open s.p.s.t. relay as shown in Fig. 2. Voltage for the relay is obtained from the

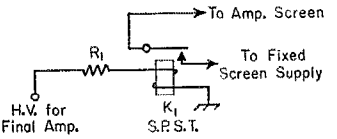

Fig. 2 — **Protective circuit for fixed screen-supply operation.**

high-voltage plate supply through the dropping resistor, R_1. The value of resistance and the wattage rating of R_1 will be determined, using Ohm's Law, by the resistance of the relay winding and by the output voltage of the h.v. supply.

The most desirable feature of the system is that it is automatic. If the plate voltage is removed from the tube because of a blown fuse, defective component or the unintentional opening of a control switch, the relay opens and breaks the screen voltage lead.

— *Don Priebe, W8MQQ*

[EDITOR'S NOTE: This circuit is quite similar to the one described by WØNCV in *QST* for December, 1952. However, in the event of an opening in the relay winding, W8MQQ's arrangement does not affect operation of the power-supply bleeder as would be the case with the previously-described installation.]

HOMEMADE RUBBER STAMPS

IN "Hints and Kinks," *QST*, November, 1954, there appeared a brief article on homemade QSL cards printed with a rubber stamp. This prompts me to call attention to an article entitled, "You Can Make Your Own Rubber Stamps," presented in the September, 1954, issue of *Popular Science*.

— *Herbert Sinofsky, W2GKS*

Correspondence From Members-

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

PIRATE G

44 Hawkhurst Road
Coldean, Brighton
Sussex, England

Editor, *QST:*

I am being inundated with QSL cards, mostly from W hams, purporting to be confirmation of 3.5-Mc. contacts (c.w.) over the past few months and nearly all during the hours 0100-0400 GMT. All report high signal strength — which gives me an impression that the station making these contacts may be on the American continent. At any rate, they are all "pirate" contacts as I do not work 3.5 Mc. and *never* work during the "little hours"! . . .

. . . Their cards sent to me reporting the "contacts" with my station are being held for evidence for the G.P.O. here! Incidentally, my name is Cyril and nearly all the cards sent address me as Carl so I guess my "pirate" is using that name on the air.

— *C. T. Fairchild, G3VV*

THIRD-PARTY TRAFFIC

MARS/Amateur Station K3WBJ
Walter Reed Army Med. Center
Washington 12, D. C.

Editor, *QST:*

If one listens on 20 meters he is certain to hear Stateside stations handling traffic with the DL4s, Gs, CSs, Fs and others. Most Stateside amateurs do not realize that FCC prohibits third-party traffic with foreign countries, excepting Liberia, Cuba, Canada, Chile, Peru, Ecuador, and those stations operating beyond the continental U. S. A., such as KZ, KP, KG, KL, KA, etc., who are licensed by FCC.

The only way traffic can be passed to the U. S. A. from Germany is on MARS frequencies where the German station becomes a U. S. military station using military calls issued by chief Army or Air Force MARS, Pentagon, Washington, D. C.

It is possible that the Stateside amateur does not know this or is too kind-hearted to reply "Sorry OM, but we are not supposed to handle traffic with DL4 stations."

To those who are accepting 'phone-patch traffic and written messages from DL4 amateurs, I say let's do our duty and follow the rules of FCC — no traffic from Germany on the amateur bands.

— *Pfc. Merle W. Wynn, W1DLO*

[EDITOR'S NOTE — Message traffic for U. S. military personnel overseas is permitted only with amateur stations identified by properly authorized call signs having a one- or two-letter prefix beginning with W or K.]

NOT THIS WAY

1595 N. Virginia St.
St. Paul 3, Minn.

Editor, *QST:*

. . . In tuning across 14 Mc. I hear a weak ET3 in Ethiopia. When he finishes his CQ I call him, but he comes back to a W1. After giving the W1 his report and expressing delight in working the W1 again, he turns it back to the W1. This W1 immediately opens the formalities with the words "Say, I worked you two months ago and I still haven't got your QSL — how come? Also, if you run across that ET2 in Eritrea, tell him I haven't got his, either."

If I had been the ET3, I would have thereupon turned off the rig and slunk away, but the ET3 gamely comes back and says, "Say, OM, mail delivery in this country is really very poor compared to the U. S. A. We consider if we get a letter from your country in two months that that would be normal delivery time. I also been off the air since last working you as my 837 oscillator failed and I just managed to bum a substitute from a passing camel caravan." He then turns it back to Soft-hearted John, the W1 station, whose first words of sorrow, condolence, and understanding go like this:

"Well, if mail delivery in your country is so lousy as to take 2 months, you'll probably be getting my card any day, so how's about mailing me your card airmail today?" I never did hear the ET3 come back to that bit of genius so maybe even he forgot he was a gentleman.

To my mind a suitable cartoon to illustrate how bad this QSL mania has become would be one like "Gil" made up years ago of a big bandit with a blackjack in his hand hovering over a small cringing citizen and overhead the words "Gimme your handle"; but in this case substitute the words "Gimme your QSL."

. . . I wonder how many U. S. hams understand the value to a foreign ham of postage. Eight cents is plenty but even to me 25 cents for airmail is pretty strong between paydays. I looked up the ET3 and he was listed as an Air Force man so I would presume even he ate off crockery and not gold plate. (Ethiopian Air Force man, that is!)

Every time a DX station calls CQ, hordes of U. S. stations call him and flood him with QSLs. He no doubt already has hundreds of U. S. cards, but being a gentleman, he is obliged to mail his in return and postage can become an important item. Include return postage coupons to defray the return postage and to help remind him to QSL. If he happens to be wealthy, he can turn the postage money over to his favorite charity.

Don't lose your head if a foreign ham doesn't QSL. Who knows — maybe he is having labor trouble with the fellows that turn his tread-mill-powered generator like the OQ5 in the Belgian Congo I read of years ago. After all, it's not quite as bad as having a doctor tell you that you have cancer.

— *Cliff Proetz, W0PDN*

'PHONE-BAND C.W.

133 Cherry Ridge Rd.
Peoria, Ill.

Editor, *QST:*

I read the letters sent in by W5UWQ and W4UWA (March 1955, p. 46) and I agree with both of them, to a certain extent.

Contrary to what most 'phone addicts seem to think, c.w. is not "a thing of the past"; it plays just as large a rôle in ham radio as 'phone does. I will admit, however, that some c.w. operators are inconsiderate enough to work in the 'phone bands, and I agree that these bands should be set aside for 'phone only.

As for s.s.b., the letter from W8HKE (right below the other two letters) hits the nail on the head. I hope most of the anti-s.s.b. men read it carefully.

Let's face it; all three are here to stay. Instead of arguing about which one to eliminate we should try to get 'phone and c.w. separated, and convince those d.s.b. guys that s.s.b. is doing more good than harm.

— *Bill Wildfong, W9IWC*

58 Throop Ave.
Auburn, New York

Editor, *QST:*

In reply to W5UWQ's letter griping about c.w. on the 'phone bands — I agree with him completely. However, I feel that something should be done about the overlapping of the VE 'phone band and the American Novice band on 80

(*Continued on page 144*)

YL NEWS and VIEWS

BY ELEANOR WILSON,* W1QON

Additional YL Clubs

The following augments information on YL clubs given in this department last month:

Canal Zone QRMarys — YLRL unit; organized 1952; seven members (all of the Canal Zone YLs); meets bimonthly at members' homes; no dues; president KZ5DG, Grace Dunlap, Box 28, Balboa Heights, C. Z.; issues the Canal Zone QRMary-Go-Round Certificate.

San Diego Young Ladies Radio League — YLRL unit; organized 1947; seven members; meets second Friday of the month at the American Red Cross Building, 3650 5th Ave., San Diego, Calif.; no dues; president, W6OLP, Alice McCleary, 1524 Missouri St., San Diego 9.

XYL Club — Composed of wives and feminine relatives (licensed and nonlicensed) of members of the Black Hills ARC, Rapid City, S. Dak.; organized 1948; meets monthly in members' homes; dues $1.25 a year; purpose is to assist the Black Hills ARC with its annual hobby show and to aid in its recreational program.

Sentiments on C.W.

What is c.w. to me? It is a magic key that opens many mysterious doors — an ethereal bridge forged of countless dits and dahs, borne aloft on the wings of light, space, and divine mystery . . . a sparkling want that spans great distances or hops backyard fences to afford its disciples a brief glimpse into the lives of others. . . . It is a lilting language which commands either detached respect or frank and warm love, depending upon whose mind it touches. . . . C.w. is a subtle bonding agent that delicately welds two strangers into an intimate oneness for a fleeting moment . . . a delightful, tantalizing and yet thoroughly satisfying mistress to all her lovers.

These thoughtful words were copied by OM W6KMJ, Dan Peterson, of Long Beach, during a recent 40-meter QSO with W6OQY, Betty Entner, of Coronado. Dan, impressed by Betty's "beautiful bug fist" and devotion to c.w., shares her sentiments with us with the hope that they may strike a spark in the hearts of many struggling YL Novices and inspire them toward the mastery of the necessary 13 w.p.m. for their General Class license.

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

COMING YL GET-TOGETHERS

May 20th–22nd — LARK Convention, W9 YLs, Allerton Hotel, Chicago. Write W9MYC.

June 24th–27th — First YLRL International Convention, Hotel Miramar, Santa Monica, Calif. W6UHA, general chairman.

YLs You May Have Worked

Lenore Kingston Conn, W6NAZ, has been a familiar face and voice to countless amateurs and to the general public as well for some 15 years. Licensed in 1939 (as W9CHD, later W2NAZ), she has combined her multiple radio activities with years of free-lancing as a radio actress and a commercial announcer for radio and TV.

Considered "a sort of 'pioneer'" in TV, she started work in that medium in 1941. Lenore is a member of the Los Angeles YLRC and a charter member of the YLRL (Vice-Pres., 1947). She is currently editing a second edition of the YLRL Directory, which will contain information on more than 500 YLRL members. She also edited the first edition in 1948. Married to W6MSC, technical director for NBC-TV, Lenore divides her hobby time at her Sherman Oaks QTH between c.w. and 'phone, primarily on twenty. Lenore's friends testify that she is a conscientious worker and deserves the success she has enjoyed in her vocation and avocation.

Keeping Up with the Girls

The annual luncheon and installation of officers of the N.Y.C. YLRL took place Feb. 19th at a downtown restaurant. YLs who attended were new officers W2IQP, Pres.; W2IGA, V.P.; W2MVV, Secy.; Helen Zuparn, Treas.; and members *W2s* EEO, EUL, JZX, OWL, PZA, QGK, QWL, TBU, K2AFR, and KN2DPN. . . . Three KZ YLs plan Stateside vacations this summer: KZ5KA, Kay (W9RIH), KZ5PL, Pat; and KZ5DG, Grace (WØDLU). KZ5DG worked all but six of her 240 contacts in the YL-OM contest on 15 'phone. . . . W8HWX, Lillian, hasn't missed a session of the 40-meter YLRL net since its inception in 1953. . . . W4YYJ, Lois Anne, has her 25w,p.m. Code Proficiency Certificate. . . . VE3DEA, Denny, attended a ham gathering in Scotland and enjoyed meeting 150 OMs, some of whom she has QSOd on 20 'phone since returning home to Toronto. . . . During the Mothers' March of Dimes for polio, *W4UDI* and *W4UDQ* relayed to mobiles who picked up money at various collection points in Memphis, Tenn. Lenette and D. B. also assisted with relays in a welcome-home reception for the National March of Dimes poster child. . . . W1ZOL, Leta, of Bangor, Me., has assembled a Johnson Ranger and is enjoying 40 meters. . . . W1LYR continues to handle considerable traffic for Presque Isle and vicinity. Along with W1UZR, Rita, and W1YTE, Isabel, *Hazel checks into the Sea Gull Net daily*. . . . W1YYM, Ellen, of Hq., reports that about 6 per cent of participating Novices in the 1955 Novice Round-up were YLs — by call: WN1COL, *KN2s* INQ, KER, WN3YTM, WN4HYV, *KN6s* EIG, HTC, HWH, WN7WHV, WN8UAP, *WNØs* UZM, VGE, VVY. . . . W4RLG, Frances, YLRL chairman of the Fourth District, is home after almost a year in a hospital. . . . Two new harmonics announcements: a boy in February to W3RXV, Peg, editor of *YLRL Harmonics*, and OM W3RXW; a girl in January to W4HHI, Joanne.

(*Continued on page 148*)

Armed Forces Day Program—May 21st

THE Army, Navy and Air Force invite all U. S. amateur radio operators to participate in the Armed Forces Day Program for 1955. The amateur activities are jointly sponsored by the Army Signal Corps, Air Force Directorate of Communication, and the Naval Communications Division.

A receiving contest will be open to anyone who can copy International Morse Code at 25 w.p.m. Listeners who submit a perfect copy of the transmission will receive a Certificate of Merit, attesting to their code-copying proficiency, from the Secretary of Defense.

A military-to-amateur transmitting and receiving test will be conducted for all holders of valid U. S. amateur radio licenses. Headquarters stations of the Army, Navy and Air Force will establish radio contact with amateur stations and will acknowledge these contacts with special QSL cards. Each service headquarters station will QSL separately so amateurs will have an opportunity to qualify for three different QSLs.

In addition, a radioteletype transmission will be sent from MARS Headquarters and from official Navy stations. Any amateur station capable of receiving radioteletype transmissions is invited to copy the special message. A special letter of acknowledgment will be awarded to each amateur who participates.

MARS directors and Naval Reserve organizations are being urged to feature radio activities at their military installations as part of this year's plan for inviting the public to visit the Armed Forces "at home" in 1955.

C.W. Receiving Competition

The c.w. receiving competition will feature a message from the Secretary of Defense. All individuals, amateur operators and others, are eligible to participate. A Certificate of Merit will be issued to each participant who makes perfect copy.

Transmissions will be at 25 w.p.m. on the following schedules:

May 21st	*Station*	*Frequencies (Kc.)*
1900 (EST)	WAR	14,405; 20,994
1900 (EST)	NSS	121.95; 4390; 9425; 12,804; 17,050.4; 22,491
1900 (EST)	AIR	3347; 6997.5; 143,460
0600 (GCT) (0100 EST May 22, 2200 PST May 21)	WAR	14.405; 20.994
2200 (PST)	NPG (Navy Radio, San Francisco)	114.95; 6428.5; 9277.5; 12,966; 17,055.2
0100 (EST) (May 22)	AIR	3347; 6997.5; 143,460
1100 (GCT) (2000 Item May 21)	NDT (Navy Radio, Yokosuka)	2287.5; 4545; 9427.5; 13,471.5; 16,445; 23,010

Each transmission will commence with a five-minute CQ call. It is not necessary to copy more than one station, and no extra credit will be given for doing so. Transmissions should be submitted "as received"; do not correct possible transmission errors. Punctuation will be spelled out and should be copied as sent. Copies should be mailed to Armed Forces Day Contest, Room BE-1000, The Pentagon, Washington 25, D. C. Time, frequency, and call letters of the station copied should also be included.

Military-to-Amateur Test

Military stations WAR, NSS and AIR will be on the air between 1800 and 2400 EST on 21 May 1955, to contact and test with amateur radio stations. The military stations will operate on spot frequencies outside the amateur bands as follows:

	Frequencies (Kc.)
WAR (Army Radio Washington)	4025 (A-3) 6997.5 (A-1)
NSS (Navy Radio Washington)	4010 (A-1) 7375 (A-1) 14,385 (A-1)
AIR (Air Force Radio Washington)	3347 (A-1) 7635 (A-3) 14,405 (A-3)

Contacts will consist of a brief exchange of location and signal report. The military station will not be permitted to handle traffic nor exchange messages.

Radioteletypewriter Receiving Competition

The radioteletypewriter receiving competition will feature a special joint message from the Chief Signal Officer, USA; the Director, Naval Communications, USN; and the Air Force Director of Communications. A letter of acknowledgment will be sent to each amateur participant who submits a copy made from the radioteletype transmission of this message. Transmission will be at 60 w.p.m. on the following schedules:

May 21st	*Station*	*Frequency (Kc.)*
1300 (EST)	NDC (Norfolk, Va.)	7375
	AIR (Washington, D. C.)	7915
1300 (CST)	NDS (Great Lakes, Ill.)	7375
	A4USA (Atlanta, Ga.)	5760
1300 (MST)	NDF (New Orleans, La.)	7375
	or NDW2 (Salt Lake City, Utah)	
	A5USA (Fort Sam Houston, Texas)	14,405
1300 (PST)	NDW (Treasure Island, Calif.)	7375
	AF6AIR (Hamilton AFB, Calif.)	14,405

Each transmission will commence with a period of ten minutes of test and station identification to permit amateurs to adjust their equipment. At the end of the test period, the message will be transmitted. Copy should be submitted "as received" to Armed Forces Day Contest, Room BE-1000, The Pentagon, Washington 25, D. C. Time and call of station copied and name and call of amateur receiving the transmission should be included.

The World Above 50 Mc.

CONDUCTED BY EDWARD P. TILTON, W1HDQ

THE best 50-Mc. season in years could be about to begin. Interest in the band, lagging for some time, shows every sign of coming back strong. How well it comes back will depend on how well we respond to the opportunity that is inherent in the opening of the band to Technician Licensees, effective April 12th. Conditions are almost sure to be better than for several years, and for the first time we have a real incentive that will attract new hams. Now it's up to 50-Mc. enthusiasts the country over to make the most of this chance to sell the band, and keep it sold.

Why has 50-Mc. interest lagged? We have to go back to the resumption of activity following World War II for all the factors. One certainly was war-surplus gear, or the lack of it. Right at the most opportune time for the good of the 2-meter band, just as we were changing over from 112 to 144 Mc., thousands of SCR-522s and other surplus gear for the new band were dumped on the market. You could get on 2 for next to nothing, and v.h.f. men by the thousands snapped up the chance.

But the 6-meter band enjoyed no such bonanza. During the first months on the air, we had to make the shift from 56 to 50 Mc., at a time when there was no gear, surplus or new, for the new frequency. What we had we made ourselves, and it is a credit to amateur radio that we managed to show several hundred active stations on 50 Mc. almost at once. The 6-meter band was intriguing territory, and it attracted quite a few operators who were interested in more than just routine QSOs, though it was good for that kind of hamming, too.

Then came TVI. First in the New York area, then elsewhere as new TV stations appeared on Channel 2, 50-Mc. men found the going too rough for many of them. Since the lifting of the TV allocations "freeze" and the resultant opening of many new Channel 2 stations around the country, the number of active 50-Mc. stations has dropped off from its already none-too-healthy level.

TVI in Channel 2, from 50-Mc. transmitters, is undoubtedly one of the more difficult problems hams have had to face, but there are redeeming factors, even here. Not the least of these is the less avid interest in TV on the part of the general public. Televiewing is more general than ever, of course, but with more than one channel available in nearly all localities, interference in one of them is not the life-and-death matter it once was. Remember, too, that it is usually a receiver fault; if your rig is "clean" you can stay on the air. And we are learning that the Channel 2 problem is not insurmountable. W2IDZ showed the way in a two part article in June and July, 1954, *QST*; an effort that won him second place in the "Outstanding *QST* Article of the Year" contest for 1954, incidentally.

How bad is the problem, anyway? It's rough, if you live in a weak-signal Channel 2 area, with a forest of TV antennas around you, but there are several tricks that can be employed advantageously, in addition to the filters described by W2IDZ. It's a local problem, mainly, so you can help things a lot by using a high antenna, to keep the main radiation pattern from warming up neighboring TV arrays. Low power works

This antenna system could be the means of achieving the long-sought goal of 144-Mc. DX up the Pacific Coast. A 30-foot parabola mounted on a dolly, so that it can be rolled around on the flat roof, it is erected on a 1200-foot elevation directly above Hollywood. The lights of the Los Angeles area stretch out for 20 miles toward Long Beach in this night shot by KN6GLG. K6EGP is seated at the left, W6COH climbs the framework on the rear of the reflector, and K6BXW is at the right. W6MJ, who sent the picture in, says that a kilowatt rig will be feeding the array this spring.

wonders, and fortunately, operating on 6 with no more than a few watts can be real fun.

If you don't have Channel 2 to worry about, 6 is likely to be one of the most TVI-free bands we have. What interference you do encounter is easily cured, in almost all cases except where Channel 2 is involved. In many areas, the extensive shielding and filtering, now so commonly practiced in low-frequency circles, may be wholly unnecessary. Thousands of U. S. hams could operate around the clock on 50 Mc. without the slightest worry about TVI. The main thing is to get them to try it!

A series of *QST* articles for the 50-Mc. newcomer begins in this issue. Technician licensees in all parts of the country will be building 6-meter gear in the coming months. One of them may be your neighbor, or a member of your radio club. Like any other beginner, he may need help. When he gets ready to go on the air he'll need somcone to talk to. It's some time since we've had an opportunity to develop new activity on 6. Let's not muff this one!

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

The best West Coast 2-meter DX in several years is reported this month by K6CAL, San Diego. Her 146.5-Mc. signals were heard by W6SXK/mm at a distance of more than 600 miles out in the Pacific, at 2037 PST, Jan. 28th. The report was delayed until the completion of a round trip by the *Hawaiian Rancher*, the ship on which W6SXK makes the run to KH6-land regularly. Cliff has also heard the Bay Area repeater station, K6GWE, at distances of more than 300 miles.

Such reports point up the fact that conditions along the Pacific Coast may be very favorable for long-distance v.h.f. propagation. The K6GWE antenna is a simple nondirectional affair, and the 16-element beam at K6CAL/W6IBS was aimed at Los Angeles during the 600-mile reception, so the signal was heard off its side. How long will it be before home stations in San Diego or Los Angeles work into the Bay Area, or farther? We feel that such an event still awaits only the use of high power, big antennas, c.w. techniques, and selective low-noise receivers on regular schedules.

A likely prospect for such DX is the set-up shown in the adjoining photograph. This 30-foot parabola should provide the antenna gain (though we feel that the dipole is in the wrong position!) and the members of the Two Meter and Down Club who are in back of project say that there will be a high-powered rig feeding the big array this spring. This would seem to have what it takes to work K6GWE, W6AJF, or any of the other good set-ups in the Bay area, and it shouldn't stop there. With W6JIP, W7OKV and others around Portland using high power, and W7LHL reported to be nearly ready to go with a kilowatt rig in Seattle, why stop at the Bay area?

It's less than 1000 miles from Los Angeles to Seattle. Portland is about 850 miles. San Diego to San Francisco is less than 500 miles. Are these impossible distances on 144 Mc. in 1955? Having had a good look at the terrain along these paths last fall, we still feel that the best possible equipment and techniques will turn the trick within a month of the first time they're tried. We hope that there is provision in that Hollywood array for going to horizontal polarization, and that there will be a keying jack in that high-powered rig!

An attractive prospect for 2-meter DX off the Atlantic Coast is Bermuda. W3YHI sends word that VP9BM is to be on 2 regularly with 100 watts, a low-noise converter and a rhombic centered on Philadelphia. Address: M/Sgt. J. W. Wenglare, 1934 AACS Sqdn, APO 856, Postmaster, N. Y.

Another buddy of W3YHI (when they were DL4CK and DL4XS on 144 Mc.) is getting set to make a name for himself on 144 Mc. in North Africa. Jo visited us during the winter, full of plans for high power, rhombics, hot converters and other 2-meter DX necessities. Then he was about to hop off for Casablanca, and we're standing by to hear from him any day that he is ready to take on all comers for a shot at the 2-meter DX record.

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2-METER STANDINGS

	Call	States	Areas	Miles		Call	States	Areas	Miles
	W1RFU	19	7	1150		W6BAZ	3	2	320
	W1HDQ	19	6	1020		W6NLZ	3	2	360
	W1CCH	17	5	670		W6MMU	2	2	240
	W1IZY	16	6	750		W6GCG	2	2	210
	W1IEO	16	5	475		W6QAC	2	2	200
	W1UIZ	15	6	680		W6EXH	2	2	193
	W1KCS	15	5	600					
	W1AZK	14	5	650		W7VMP	4	3	417
	W1MNF	14	5	600		W7JU	3	2	247
	W1BCN	14	5	650		W7LEE	3	2	240
	W1DJK	13	5	520		W7YZU	3	2	240
	W1MMN	10	5	520		W7JUO	2	2	140
						W7RAP	2	1	165
	W2ORI	23	8	1000					
	W2UK	23	7	1075		W8BFQ	29	8	850
	W2NLY	23	7	1050		W8WXV	28	8	1200
	W2AZL	21	7	1050		W8WJC	25	8	775
	W2QED	21	7	1020		W8RMH	22	8	690
	W2BLV	19	7	910		W8DX	22	7	675
	W2OPQ	19	6	—		W8SVI	21	7	725
	W2DWJ	17	5	632		W8SRW	20	8	850
	W2AOC	17	5	600		W8SVI	20	7	—
	W2UTH	16	7	880		W8WRN	20	8	670
	W2PAU	16	6	740		W8BAX	20	8	685
	W2PCQ	16	5	650		W8JWV	18	8	650
	W2LHI	16	5	550		W8EP	18	7	800
	W2CFT	15	5	525		W8ZCV	17	7	970
	W2DMV	15	5	—		W8RWW	17	7	630
	W2AMJ	15	5	550		W8WSE	16	7	830
	W2QNZ	14	5	400					
	W2BRV	14	5	590		W9EHX	23	7	725
						W9FVJ	22	8	850
	W3RUE	23	8	950		W9EQC	22	8	820
	W3NKM	19	7	660		W9KLR	21	7	690
	W3IBH	19	7	650		W9UCH	21	7	750
	W3BNC	18	7	750		W9ZHL	21	7	—
	W3FPH	18	7	—		W9BPV	20	7	1000
	W3TDF	17	6	720		W9KPS	19	7	660
	W3KWL	16	7	720		W9MUD	19	7	640
	W3LNA	16	7	720		W9REM	19	6	—
	W3TDF	16	5	570		W9LF	19	—	—
	W3GKP	15	6	800		W9ALU	18	7	800
						W9JGA	18	6	720
	W4HHK	26	8	1020		W9WOK	17	6	600
	W4AO	23	7	950		W9MBI	16	7	660
	W4PCT	20	8	—		W9IAB	16	6	750
	W4JFV	18	7	830		W9ROV	15	6	—
	W4MKJ	16	7	665		W9LEE	15	6	780
	W4UMF	15	6	600		W9DSP	15	6	760
	W4OXC	14	7	500		W9JNZ	15	6	560
	W4JHC	14	5	720		W9DDG	14	6	700
	W4WCB	14	5	740		W9FAN	14	7	680
	W4TCR	14	5	720		W9QKM	14	6	620
	W4UBY	14	5	435		W9UIA	12	7	540
	W4IKZ	13	5	720		W9ZAD	11	5	700
	W4JFU	13	5	720		W9GTA	11	5	540
	W4ZBU	10	5	800		W9JBF	10	5	760
	W4UDQ	10	5	850					
	W4DWU	8	6	625		WØEMS	26	8	1175
	W4TLA	7	4	850		WØIHD	24	7	870
						WØGUD	22	7	1065
	W5RCI	21	7	925		WØONQ	17	6	1090
	W5JTI	19	7	1000		WØINL	14	6	830
	W5QNL	10	5	1400		WØOAC	14	5	725
	W5CVW	10	5	1180		WØTJF	13	4	—
	W5AJG	10	4	1260		WØZJB	12	7	1097
	W5MWW	9	4	570		WØWGZ	11	5	760
	W5ML	9	3	700					
	W5ABN	9	3	780		VE3AIB	20	8	890
	W5ERD	8	3	570		VE3DIR	18	7	790
	W5VX	7	4	—		VE3BQN	14	7	790
	W5VY	7	3	1200		VE3DER	13	7	800
	W5FEK	7	2	580		VE3BPB	12	6	715
	W5ONS	7	2	950		VE2AOK	12	5	550
						VE3AQG	11	7	800
	W6ZL	3	3	1400		VE1QY	11	4	900
	W6WSQ	3	3	1390		VE7FJ	2	1	365

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and emergency power, and operation is scheduled for the height of the DX season, in the latter part of June and early July. There should be a batch of new candidates for the coveted 50-Mc. WAS award before W2QCY/7 finishes his rounds. Right now, Roy is looking for two stalwart and experienced 6-meter DX men to accompany him. Any takers?

If you prefer picnics to expeditions, here are a couple of talk-eat parties scheduled for the same date, July 31st. The Annual Turkey Run V.H.F. Picnic, a fixture in Midwestern v.h.f. circles, will be held, as always at the State Park of that name, just north of Terre Haute, Ind. W9ZHL, Terre Haute, is the man to see for more information. And W8NOH, Grand Rapids, Mich., tells us that the v.h.f. fraternity of Western Michigan will congregate for the same purposes at Allegan County Park on the shores of Lake Michigan, also on July 31st.

W8NOII also writes of an interesting comparison of 2 and 75 in checks made with W9RXS, Milwaukee, Wisc. This path of about 120 miles across Lake Michigan shows very satisfactory signals with 100 watts on 144 Mc. On 3.9 Mc., a 400-watt rig has rough going, what with skip effects and heavy QRM.

A 175-mile sked has been kept reliably on 144 Mc. by W9ZHL and WØYRX, near St. Louis, since last October. On only three occasions since that time has communication been difficult on voice, and many other stations in the St. Louis area and Western Illinois have called in also.

Last month we mentioned the appearance of W1DEO, Cape Elizabeth, Maine, on 144 Mc. Herb has been on regularly since, working W1OOP, Needham, Mass., nightly. He is also on 50 Mc., and is working down into Connecticut on that band also, though signals are stronger on the higher band, when conditions are above normal. W1DEO is presently working on 144.12 and 50.7 Mc.

If you were waiting for a shot at Florida, following our recent report that W5VWU was moving there, don't wait any longer. W5AJG writes that he worked W5VWU/mobile, en route back to New Mexico. Leroy reports that the tropospheric season began early this year, in the Gulf States, with W4UUF, Pensacola, Fla., working into Texas on the night of March 11th. The following morning signals were excellent from W5RCI, Marks, and W5JTI, Jackson, Miss., so W5RCI and W5AJG went to 220, for their first contact on that band. The distance is about 370 miles. W5AJG has been running daily skeds on 144 Mc. with W5HXK, Watonga, Okla., 230 miles, for the past three weeks without a miss.

The 220-Mc. band is very much alive in Swarthmore, Ridley Park, Springfield and other towns west of Philadelphia, according to W3TEE. Several stations are on nightly between 2100 and 2200, some having been at it for several years. W3UGA holds the local record with more than 1000 QSOs on 220, and W3KPK is not far behind. All sorts of equipment is in use, including simple modulated oscillators and dipole antennas. Anyone needing help in getting started may get in touch with any of the gang, the more active members being *W3s* AHL KPK RWH QMQ QZT TEE UGA UKG YQS.

The Philadelphia area is good round-table territory. A 6-meter group has held forth each Monday night for years, and they frequently join in a similar session held in the Washington area on Sunday mornings. The over-the-air friendships thus formed were brought to a more personal status on March 20th, when a delegation consisting of W2ORA and *W3s* CGV CUB MXW RQT GGR and W8NRM/3 visited the Washington stations in a body. First stop was W3OJU, District Hts., Md., where *W3s* YHI JES UJG WOD and W4UMF joined the party. Next they converged on W3OTC, Silver Spring, where Bob played them some recordings to show how their signals sound at the southern end of the circuit. The final shack stop was W3KMV, Chevy Chase, where a main attraction was a 5-over-5 array for 50 Mc., soon to be described in *QST*. The party wound up with dinner at O'Donnell's Restaurant. A return visit to the City of Brotherly Love is now planned.

More Philadelphia area v.h.f. activity: The York Road Radio Club has about 40 crystals on 146.25 Mc. An informal net is conducted each Sunday at 0930 on this frequency, with the club station, W3RDM, as control. A club project recently completed the construction of 14 tunable converters, with 6BQ7 front ends. A companion transmitter is next on the program. Chief engineer for this project is W3NKD. The club is pushing for polarization standardization, to end the confusion now prevalent within a 100-mile radius, and they want ARRL to assist in this.

For a long time we've been pushing as hard as we know how for horizontal polarization. Conversion to horizontal is well along throughout New England, New York, and Northern New Jersey. In view of the improvement in working range that has resulted, and the excellent results in working the vertically-polarized mobile stations that have shown cross polarization to be no problem in that connection, we feel that there is little reason to continue vertical polarization at any home station. The way to get standardization on horizontal is simply to change over. If any appreciable number do it, the rest will follow.

OES Notes

K2BAH, Richmond Hill, N. Y. — Would like to hear from near-by operators interested in 220 Mc.

K2DYC, Phelps, N. Y. — Made several crossband contacts 220–144 Mc. with W2QS, but no activity heard on 220 as yet.

W3UQJ, York, Penna. — New 50-Mc. rig with 4D32 in final, and 3-element array nearing completion. New 220-Mc. station, W3AJD. Nightly skeds kept with W3LZD on 220.05 Mc. at 2200, and Sundays at 0900 and 1230.

W4HHK, Collierville, Tenn. — Joint 50-Mc. receiver project with W4BAQ. Has crystal-controlled front end that can be switched to either communications receiver tuning 7 to 11 Mc., or to fixed-tuned i.f. for reception of local CD net frequencies. Meteor skeds on 144 Mc. continue with W2UK and W1HDQ, as do scatter skeds with W4PCT and W9WOK. Statewide Tennessee net on 50.5 Mc. in prospect.

W4UIW, Miami, Fla. — New 6-meter converter completed. Made duplex crossband contacts, 2 to 6, with W4KQG, and with W4ZDR on 11 and 6.

W5FPB, Albuquerque, N. Mex. — Reception of unidentified DX signals from the west on 144 and 432 Mc., Feb. 18th, reported by W5DNK and W5FAG.

W7JRG, Billings, Mont. — New 6-meter rig and beam ready for the spring DX season.

W8WRN, Columbus, Ohio — Work well along on 432-Mc. tripler-amplifier using 6524 tubes. Converter for 432 Mc. modified to tune 8 to 12 Mc., replacing the former triple-conversion arrangement to 50 Mc. Lots of local activity observed on 144 Mc.

WØMOX, Lawrence, Kansas — 2-Meter band checked daily on hour and half hour, 0630 to 0800, and evenings beginning at 1930 CST. New 125-watt rig for 50 and 144 Mc. completed. WØKEC and WØZDB working on 420 Mc.

W7VMP 144-Mc. May-June Schedule

Experience has shown again and again that 144-Mc. signals can be heard over paths of up to 500 miles consistently, if optimum equipment and techniques are employed at both ends. What lies in between, in the way of mountains, may have very little to do with it, except that when the mountains are at the right point along the path the signal is better than would be the case over flat terrain.

Most of our inability to work over mountains on the v.h.f. bands in the past has been the result of insufficient power, ineffective antennas or poor receivers. With these factors taken care of, v.h.f. men in many locations that once seemed "impossible" are finding that 2-meter DX can be worked. The only real problem, when equipment is taken care of, is the lack of stations to work.

We would have once considered it ridiculous to try 144 Mc. between Phoenix, Ariz., and Los Angeles, for instance, but W7VMP has done it often. Results have also been obtained on schedules with Albuquerque, a mountainous path of about the same length in the opposite direction.

After a rebuilding operation on the exciter, in the interest of improved c.w. stability, The Three Fenwicks are ready for more 144-Mc. DX schedules. Here is what W7VMP will be up to in May and June. All times are in MST. Transmissions will be on c.w., with 1 kilowatt input. Frequency: 144.0165 Mc. Antenna: 32 element horizontal array, 72 feet up. 2000 — transmit east. 2005 — listen east. 2010 — transmit northeast. 2015 — listen northeast. 2020 — transmit north. 2025 — listen north. Other skeds will be made, and kept, upon request.

TI9MHB

Or Why a DXer Leaves Home

BY JOHN R. BECK,* W6MHB

OFF the west coast of Costa Rica lies fabulous Cocos Island, subject of many legends concerning hidden pirate treasure. While eavesdropping on a QSO between KV4AA and W6VBY, I learned that an expedition had been organized to journey to that tiny dot in hope of finding legendary pirate loot. Moreover, the adventurers needed someone to keep them in touch with their families via amateur radio. Being a DX-minded ham, this was a wonderful opportunity to set up as a rare DX station and be part of what promised to be a highly exciting adventure.

Arrangements were made for me to become a member of the expedition and it looked as though I was all set. My XYL, Margaret, said that I would kick myself for the rest of my life if I didn't go, and my employers — the Navy Department — in effect said the same thing.

On January 8th our party sailed from Los Angeles for Costa Rica on the *Isle of Capri*. Operating as W6MHB/mm on 21 Mc., preliminary traffic handling was commenced along with a few conventional QSOs. Many contacts were made despite an S9 noise level from numerous generators, fans, blowers and the like. During our voyage, the ocean was generally smooth except for two storms that lasted five days out of the thirteen we were at sea. Nevertheless, I was unable to operate for only one day; it was just too rough to sit on my camp stool in the radio shack. Also, I had wheel watches from twelve to four — both morning and afternoon — causing operation to be limited to the morning hours during which 21 Mc. was open.

On the second day out of Los Angeles, we received news that Costa Rica was in a state of revolution. Naturally, there was much worry over this, both among the expedition members and stations worked. Roy Colwell, W6LW, undertook to relay news concerning the rebellion. Broadcast reception was anything but dependable.

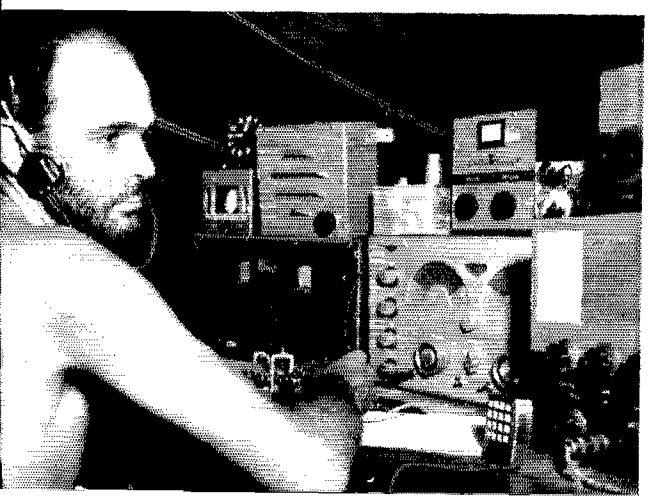
We arrived at the Costa Rican port of Puntarenas on the 21st of January — a very hot and steamy spot. Upon clearance with the Port Captain, we took a jeep to San José, capital of Costa Rica, to have our contract to hunt treasure signed and seek permission for amateur operation while on Cocos. The fact that our treasure-hunting contract with the Costa Rican government clearly stated that there was to be no radio communication, except with government stations on the mainland, definitely complicated matters. Conferences with Tommy Gabbert, TI2TG/K6INI, brought out information that the Radio Club of Costa Rica was greatly interested in having Cocos represented on the DX bands. He said that David L. Maduro, TI2DLM, the guiding light of that organization, would be the man to see for assistance in securing government approval. David was contacted and he and I made trips to see the radio inspector. It was agreed that if no mention was made of the purpose of the expedition, it might be possible to operate as TI9MHB. With the signing of the expedition contracts to hunt treasure on the island, permission was granted.

I was really in high spirits!

We departed for Cocos with a full crew and all of our equipment. The voyage again was smooth, and at four on the morning of February 7th, we dropped anchor in Chatham Bay. There was work aplenty to be done. Rafts had to be constructed and camping gear and food had to be moved ashore, not to mention setting up ham radio gear. Landings were difficult in the surf and could only be made at low tide as places to beach the small boats often became nonexistent. Furthermore, many jagged rocks protrude from the water, making the shore boatwork dangerous as well as difficult.

By sundown on February 9th all of the radio equipment had been unloaded and set up. The generators were serviced and tested and all was ready with the exception of an antenna system. A clear spot extending across the sandy beach looked like an ideal place for installing a long-wire. Don Wallace, W6AM, had previously presented me with

* 1567 Terrace Road, Walnut Creek, Calif.



♦

Operating as TI9MHB from Cocos Island, John R. Beck, W6MHB, spent many hours at his operating position to provide a large number of stations with a rare DX contact. Working 15 to 160 meters, 2024 contacts were logged at his remote location.

♦

a good-sized spool of wire which was strung 900 feet to a tree trunk on the far side of the beach. Height: about *ten feet* above high tide!

The transmitter was tuned to 7003 kc. and seemed to perk. Two receivers were in operation, one to monitor my own transmissions and the other to listen to the frequency specified for stations calling.

To test the long ears of the DX fraternity, first transmissions consisted of "DE TI9-MHB," sent once and at intervals. Nothing happened for several minutes. The boys were supposed to be waiting on pins and needles and for a time it was thought that the super long-wire was not so super after all. Finally W1DDF answered; then he of the calloused ears, KV4AA. While a five-minute QSO with Dick was in progress, the boys caught on and the pile-ups were beginning to form.

Our camp's location was excellent for working the United States and Europe. Since most of the island terrain is very steep, the only direction in the clear extended from approximately the Rocky Mountains eastward to North Africa. The effect of the hills was borne out by the fact that all Pacific island signals were quite weak. EL2X was worked, but his fine signal was all but inaudible most of the time.

The reports received while using the long-wire were not too favorable. To correct the situation, a ground plane for 40 meters was put up on the beach area when the tide was low. Rocks weighing up to one hundred pounds were piled to a height of six feet around the base of the supporting poles. The ground wires were tied to some of the larger rocks surrounding it, but the first time the waves roared in they were scattered over the surrounding area. However, the antenna remained erect and it was left that way for the entire period of operation. Later an antenna of the same type was put up for 14 Mc. When the tide was in, water came to within eight inches of the bottom of the radiator and the ground planes were submerged.

Fifteen meters was good while it was "in." Calling stations apparently did not hear each other too well as there was quite a bit of calling out of turn. For 'phone operation, it proved to be the best band because of the lack of commercial QRM and the amount of space available.

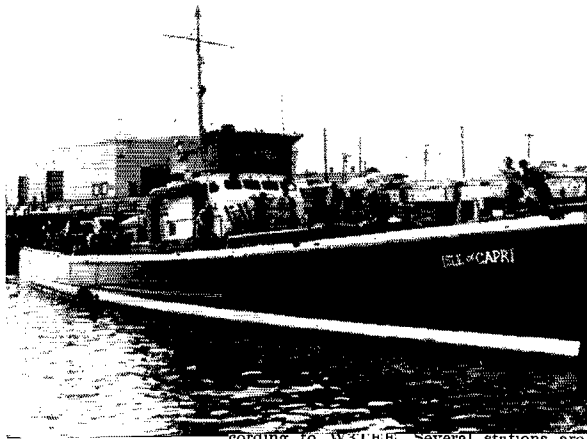
Twenty, of course, was the stand-by in the daytime. Usual conditions prevailed except that W6s required openings for loud signals. These occurred in the early morning and just before the band closed for Ws in the late afternoon. During the openings, W6 signals were tremendous

and equaled those from other districts. Normally, most stations heard from W7-land eastward were S9 during the entire daylight period.

Operation on 14 Mc. 'phone was slow because of the large number of strong stations calling simultaneously. Nevertheless, many contacts were made in spite of the QRM.

For the first few evenings Forty was very good but when the pile-ups got down to the weaker stations commercial interference became troublesome.

Eighty provided a big surprise. It seemed to be the best band for all-around contacts and many stations reported our signals strongest on that band. It was found that the long-wire did not function too well on Eighty. Something better had to be erected. Two trees, one in our camp, were found situated about 150 feet apart. A bow and arrow, used by one of the expedition members for hunting, was used to get a piece of light twine over one of the trees. The twine was fastened to an insulator at one end of a 3.5-Mc. doublet and then raised. One of the Costa Rican boys climbed, "Tarzan style," up the vines that hung from the other tree and secured the far end. This new antenna was forty feet high and seemed to perform very effectively.



The *Isle of Capri* being made ready for the voyage to Cocos Island.

Many European contacts were made on all bands and I was greatly surprised at the solid signals that were booming in from that part of the world. Many U.S.S.R. stations were heard working each other. In fact, several times during our schedules with W6LW, these stations were much louder than Roy.

A few contacts were also made on 75 'phone, but broadcast harmonics from the Mainland proved troublesome on that band.

I had promised several of the 160-meter gang that I would make an attempt to operate on the "top." So the old long-wire was loaded up and several CQs were sent. Just about the time it was thought that 160 was for the birds, WØNWX, "ye olde Clippertonian," heard my peanut whistle and the first 160-meter QSO with Cocos was in the books. Twenty-one contacts on that band followed. Subsequent reports from England indicated that TI9MHB was heard in Europe by at least one listener. The morning after the 160-meter operation, seaweed was hanging from the long-wire. How the thing worked is beyond me!

An attempt was made to improve the contact format used by previous expedition and contest ops. One gimmick was to end a transmission with the call of the station being worked, the idea being that everyone calling should know the characteristics of my signal. Also, if there was interference during the first part of my transmission, it might be gone before the end. The fact that very few repeats were requested indicated that the practice paid off.

Another scheme, although not new, was to specify the calling frequency. I had my VFO running at all times so I was unable to listen in on my own frequency. Calls were always requested to be from ten to twenty kc. higher.

On twenty 'phone, especially, the calling frequency system was abandoned because the resulting heterodynes were so fierce that it was impossible to read anyone. The practice of not specifying a listening frequency and continuously tuning over the entire 'phone band was the only logical solution. This jammed up the band fairly effectively for everyone but seemed to be the only way that stations could be copied. Some of the *sharper* (?) operators would make nice long calls after every transmission from me. Naturally, this did nothing to alleviate QRM.

Several hundred messages were handled and the expedition crew and their families were quite pleased with TI9MHB's efforts to maintain efficient communications between them. The DX gang stood by in a most commendable manner during the traffic-handling periods. All traffic for the expedition was handled by W6DFY, W6LW, WØCO and WØELA.

Who provided the best signals? W4KFC was one of the better from the East Coast; even on 160 he peaked to S9. The Midwest provided the most consistently strong signals. W8DUS was always thundering. From the West Coast, W6YMD stood head and shoulders above all others.

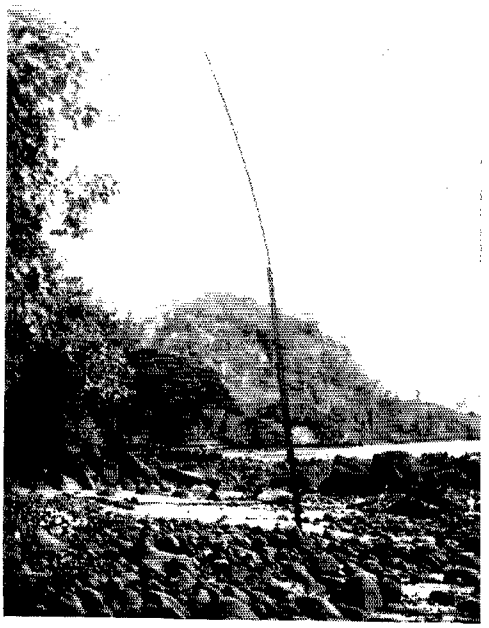
Finally, on February 22nd, the expedition had completed its task. The equipment was loaded aboard the *Isle of Capri* and we sailed for Puntarenas on the evening of the same day. Upon my return to San José, Ted Westlake, TI2BX, and his wife, Virginia, invited me to their beautiful country home. It was there that the process of returning flesh to my bones began (I had lost some fifty pounds during the expedition).

Later, W6LW, W6TT and TI2RU arranged for me to fly home. Arriving at the Oakland airport, I was greeted by W6DIP, W6LW, and Margaret, my ever-faithful wife.

In conclusion, thanks to all who helped make TI9MHB a reality: The Northern California DX Club; the Radio Club of Costa Rica; W6TT and W6DUB of Elmar Electronics who supplied a good portion of the equipment; W6DIP who loaned me a receiver and a generator; and W6KEK who supplied another generator.

The TI hams are certainly a wonderful group and their hospitality and generosity are not easily exceeded. They treated our group royally and we are more than grateful for their help and consideration.

And so now — the end of a wonderful journey. Did I hear someone say, "Where next?" ?



The shore at Chatham Bay is littered with rocks. The larger ones are carved with the names of ships and seafarers who have visited Cocos. Some inscriptions date back over 100 years; almost to the time pirates were active in the area. The expedition also left its share of autographs.

Chief inhabitants of Cocos are hermit crabs, wild pigs, deer, and small lizards; there are also many tropical birds. Fishing is excellent but sharks up to six feet in length infest the waters surrounding the island.

Rising above the rocks on the shore of Chatham Bay stands the ground plane antenna used by TI9MHB for 40-meter operation. The antenna remained erect despite merciless pounding by waves.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How:

When the hounds of spring are on winter's traces . . . goes the first stanza of the Wouff Hong Song, the hallowed club anthem of our beloved DXHPDS (DX Hoggery and Poetry Depreciation Society). We swiped that from Swinburne because we know he referred to DX hounds in particular and because we, too, congregate annually around this time. Yes, indeed, a goodly crowd was there!

It was put up to Great Circles Root to get the show on the road after the first round of Old Haywire began radiating. This he did with a lilting lament to the late QSL file of one bright boy who didn't believe in DXCC's "DX insurance":

"Two-fifty confirmed," claimed O'Squire
Who dared them to call him a liar.
"Send in, men? What for?
I'll wait till I've more!"
You guessed it: O'Squire had a fire.

Slickrig Toppenbottom followed Circles to the rostrum with a blast directed at schizophrenic DX stations who advocate operating procedures they themselves negate:

This rare one bleats out in great heat:
"Spread out! Spread out or I'll queet!"
So we move for the jerk
And who does he work?
The lid who remains zero-beat.

Then Owlbait Ostrowski limned in rhyme the impressive ingenuity of 100,000 McScree, a bird who tallies his DX score in terms of kilocountries:

"The rules are all wrong!" cried McScree
Whose Slobovian card was n.g.
So he made his own list
And there's nothing he missed —
All stations are countries, you see.

The next ration of ridicule, delivered by Feeders N. Twining, was dedicated to that small pack of watt-mad megacyclic megalomaniacs who erroneously visualize themselves as ham-band Voices of America:

When Two-Gallon Mossbrain dropped dead
We found nary a tear being shed.
For Hamdom, no loss —
Such input made Moss
Just a bootleg commercial, instead.

W6MUR, the sole out-of-towner to brave the vicissitudes of this year's DXHPDS powwow, then rose to the occasion with a tongue-in-cheek salute to all purveyors of scuttlebut DXpeditionary sensationalisms:

One rare catch popped up "in Albania,"
And another "in West Transylvania";
The grapevine went mad
But the outcome was sad . . .

You'll have to finish that last one yourselves, gang, for Bill's punch line was drowned out by commotion in the rear of the hall. A flying squad of our sworn adversaries from the Euphemistic Order of DXpurgators barged in and broke up our gathering with tear gas, cherry bombs, and a shower of leaflets labeled, "It's Only a Hobby, Fellows."

What:

And *what* a hobby! (They laughed and laughed when little Elmer said he was going up into his attic to chat with the U. S. Undersecretary of State and the King of Nepal. They didn't know that Elmer was a ham.) But that is neither here nor there. Before we tackle our monthly "How's" Bandwagon we should remind you that

In the text to follow, frequencies (given in number of kc. above the lower band-limit) appear in parentheses, times without. E.g., (9) = 14,009 kc., if the paragraph deals with 20-meter work. Times are GMT, using the nearest whole-hour figure such as 7 for 0720 or 0650, 0 for 0015 or 2349. As a rule each DX call is mentioned but once per band.

20 c.w. gets us off to a flying start. The swing from winter to summer conditions gives 14 Mc. a capricious turn but W9HUZ swapped salutations with **CRs** 5JB (95), 7CN (68) 14, **EAs** 9DF (88) 21, ØAB (65) 22, **FB8BR** (68) 18–19, **FG7XB** (78) 17–18, **KT1UX** (40) 22, Jan Mayen's **LB1LF** (21) 14, **LZ1KSA** (1) 15, a **VQ8** and **3V8AB** (46) 21 . _ . _ . _ An FB8, **KM6AX** and **VQ5EK** (67) 19 worked W8YIN . _ . _ . _ W4AUL met up with **ET3GB** (8) 20–21, **FA8CR** (10) 19, **FY7YE** (48–67) 18–20, **HKØAI** (55–112 t8) 20–21, **SV1SP** (19) 18–20 and a Rio de Oro EA9. Some time back John retired from the DX racket after reaching 107 confirmed but, "By chance one day I happened to tune over 20 and, brother, that did it — I'm gone, but *gone*, again!" . _ . _ . _ W4TFB made away with **CR6CJ** 20, **EA6AF** (52) 13–18 of the Balearics, an FY7, **GD3UB** 12, **HA5KBA** (75) 16–19, an SV1, **4X4BX** (90) 17, 9S4AB 18 and W4DGW/**ZD4** 22 in Takoradi harbor . _ . _ . _ K2BZT caught **ET3S** (62–75) 14–22, F9QV/**FC** (50) 15, **GD3s** HPN IBQ (50) 19–20, **HAs** 5KBZ (62) 18, 7KLD (70) 18, HE9LAA (62) 19, I1BLF/**Trieste** (49) 13, **JAs** 3AB 3AF 4BB 6HK, **KAs** 2USA 7DM, **SPs** 3KAU

* *New Mailing Address:* Effective immediately, please mail all reports of DX activity to DX Editor Newkirk's new address: 4128 North Tripp Ave., Chicago 41, Illinois.

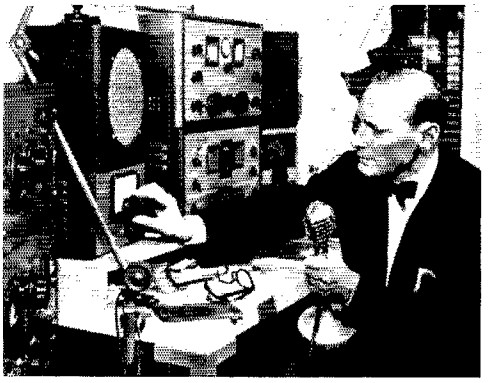
(30) 15, 5AA (10) 17, 8KAF (62) 16, 9KAS (68) 16. ST2AR, TA3US (50) 13–21, VQ2HR, YO3RF, 4X4BT (82) 19 and 9S4AX (1) 17. Nice haul! . . . . . CR5AF, FO8AB (64), MP4QAL (65) 15, OY7ML (5), PJ2BA of Bonaire Isle, PZ1QM (20) 23–0, ZDs 6BX (80) 14 and 8AA (3–60) 18–23 of Ascension chatted with W4QCW of KC4AB fame . . . . . W5UUK put his hooks into CEØAD (20) 2–3 of Easter Isle, CR7AD, an EAØ, EA8BF (42) 0, an ET3, HH5SS (25) 0, SPs 3AN 9KAD (60) 14, a VK1 and ZB2A (15–31) 12–20 . . . . . CS3AC (55), GC2FZC (35), LZ1KAB (80) and VQ2JN (50) came back to W9IHN . . . . . W3UXX cornered FP8AP (74) 18, FM7WP, EA6AU, EL5B, I1YCG/Trieste, IT1TAI, KG4AO, SP5AA, VP3VN, 5A2TZ and one 3A2AF (10–30) 12–15 who is reported by many other contributors . . . . . ET3LF (38) 20, MP4QAH 17, VSs 6CU 12 and 9GV 17 contacted DL4ZC . . . . . A rundown of results at random shacks, *W2GVZ:* ZD8, long-path KC6HX (40) of Mays Island, Carolines. *W2OLU:* ZB1JRK (35) 20. *W2QBB:* CR7AN (26) 21. *K2EUN:* many Europeans, an EA9 and FP8AP with a 15-watt 6L6 c.c.o. *W3AXT:* ET3, FF8AQ, FG7, LU6SA of rare La Rioja. *W3TVW:* FA8RJ, TF3NA, YV5s BJ DE. *W4PVD:* CR7IZ 13, OY2Z 9, VQ6LQ 14. *W6OWD/1:* I1BNU/Trieste, SP6WF, TF3KG (70) 20, YUs 1GC (70) 16, 1GH (10) 18. *W6UED:* DU7SV (89) 1, JA1CR, KA2OJ, VP8BD of Grahamland. *W8KAK:* EA9AP (2–52) 18–19, FY7, KR6LJ for 1st Asian. *WØVFM:* OX3PW 17, VQ4FM 21, St. Martin's PJ2MA. *KL7BBV:* CE7ZJ near his antipode, a DU, ship 8M8CWC in mid-Pacific . . . . . ZD3A (6) 21–22 is a new Gambian reported at W5ASG down Arkansas way . . . . . So. Calif. DX Club's *Bulletin* specifies c.w. 14-megacyclers CE7AA (50) 3, FE8AE, FL8AI (150) 16–17, FR7ZA (19) 16–17, HI8EW (65), MP4QAJ (60) 15, SVØWL (53) 15, one VQ1RY (20) 0, YA2AA (17), YS1O (30) 14–15 and many others . . . . . West Gulf DX Club's *DX Bulletin* fills us in on CE7s BS (35) 1, ZT (82) 40, CN2AD (55) 20, CRs 4AL (20) 11, 6AI (62) 20, 6AR (30) 20, 6BP (110) 22, 6CZ (38) 20, CT3AB (10) 18, EAØAC (8) 5, EL2L (69) 17, F9YP/FC (40) 17, FD8AA (10) 15–18, FF8s AJ (100) 21, AP (50) 13, BB (60) 18, MM (81) 18, FQ8s AK (59–95) 22, AU (89) 20, HB1MX/HE (70) 0–1, HH3DL (13) 22, one HV1ZZ (167) 14, HZ1HZ (15) 16, KR6s KS (8) 1, LF (90) 14, LUs 1ZV (78) 1, 5ZF (20) 2–3, MB9BJ (30–50) 13–19, MP4BBS (30) 15, OD5LX, SVØWT (90) 13, TF3s AB (17) 0, MB (45) 22, UA3KP (73) 12, UR2KAA (86) 13, VK9OK, VQs 2GW (25) 20, 3FN (89) 21, VR3A (75) 21–0, VS9AS (7) 20, VU2CP (52) 13, ZBs 1LU (34) 18, 2I (12) 21, ZDs 2DCP (30) 20, 4BM (63) 19, 6EF (90) 19–21, ZE3JL (14) 19, ZP5AY (100) 23, ZS3P (64) 18–19, 5As 3TR (57) 15, 4TK (12) 15, 4TO (67) 15 and Netherlands New Guinea's JZØAG (70) 14–15.

20 'phone brooks booming business of late. W4QCW is quite satisfied with the likes of F9YP/FC, GD3IBQ, HI6EC (175), HKØAI (130) 22, KS4AW (180) 22, KT1UX, PJ2MA, SVØWO, VPs 1OJS 5AE (148) 9, ZB1AJX, ZD3BFC (138) 15 and 3V8BP . . . . . CR6BX (99–113) 23, EL2X (112) 22, GD3ENK (190), ZD4BR (115), ZE2KR (105–120) 0 and 5A1TA (185) set well with W9HUZ . . . . . OD5AB and VP8AO got away from W2GBC but CR6CK, CT2AG, CT3AE, EAs 8AI 8AX 9AR (140), FP8AP, HC8GI (110) 18–19, HH2LR, KA3RR, KT1s LU WX, M1B (100) 0, OE13USA, PJ2AF, TG9MB, VPs 1AB (157) 0, 2DA 2DN 2KM 7NX, VQs 2DT (130) 22–23, 4FQ, YN4CB (120) 14–15, YS1MS, YU1GM, ZBs 1S 2A (105–130) and 5A2CL didn't . . . . . W4CBQ puts his hard-to-remember school French to good use in running down French Colonial A3ers. ET2XX (182), FQ8AD, an FP8, OD5 and SVØ boost Bob to Rung No. 112 . . . . . Radiotelephone doings here and there, at *K2BZT:* VQ4RF (120) 20–21. *W3AXT:* FG7XB. *W5UUK:* FM7WN (129), HKØ, VQ2. *W6UED:* HC1ER, TG9 . . . . . CS3AC (190) 14, EAs 8BA (130), 9DF (116) 17, FD8AA (172) 18, FM7s WF (120) 23, WQ (110–150) 23, FO8AB (160) 12, FY7YE (115) 13, GC6FQ (128) 20, HB1MX/HE (103) 13, HR1CB (150) 14, KC6s A1 (202), CG (245), LB1LF (21) of Jan Mayen Isle, VP8AQ (106) 1, VQs 4FK (125) 20, 5EK (150), VR3A (122) 14, VS1FS (142) 14, XZ2ST 14, YI2AM (163) 15, YO3RF (135) 16, ZDs 1DK (135) 20, 4BF (120) 23, 6AH (130) 16, 3V8BL (150–172) 21 and 4X4DX (290) 18 are stalked by WGDXC sleuths . . . . . SCDXC headhunters are after KP6AK (218) 2, OK1MB (185), VK9s RH (143), RM (145), VPs 2DA (130), 2GW (156) 23, VQs 5BVF (183) 22, 8CB (113) 21, VR6AC (352) 1, ZC3AC (293) 0, ZP5CF (130) 16, Marion Island's ZS2MI (105) and 9S4BS (110) . . . . . *Newark News* Radio Club monitors picked up 14-Mc. radiotelephones CN2AD, CN8s EM IE MM TY 17, CRs 5AC 21, 5NC 6AT 6CB 6CJ, CTs 2AF 3AB, EAs 8BQ 9BC, EL9A, ET2US, FAs 3GZ 8CC (195), FB8XX, FF8BB, FL8BC, FQ8s AC AK 22, HKs 3PC 4BD (165), I1BNU/Trieste (215), JA4BB, KAs 2NA 3RR 7BG 7GM 8RK, KC6AB, KGs 4AO 4AP 6FAA, KR6AZ, KV4BB, LX1BU, OQs 5EI 22, 5FM (157) 20, 5GH ØDZ, OH9OC of Lapland, PJ2s CE CH (140), ST2s GB 20, NW, SVØs WK 20, WS, TA3US, TF3MB, TG9AI, VPs 1GG 2VA 7NG 7NN, VQs 2FU 3EZ 4AA 4AQ 21, 8AR 20, VSs 4HK 9GV, YA1ZT 20, YI2DIQ, YNs 1LB (135), 4DP (135), YU1AD, ZC4AA, ZD2FHW, ZEs 3JY 5JI, ZM6AT 0, ZSs 3E 8I, 3V8AS, 4X4BR, 5As 2TS 2TZ and 3TE (195) 20.

40 c.w. now is more selective because of roving thunderstorms. For instance, a patch of QRN over New York City may be a big break for Connecticut and southern New Jersey DXers — less competition. Anyway, here's W4TFB's 7-Mc. bag: CR7s CI (5) 5, CN (8) 5, EL2X 7, FAs 8DA 6, 8RJ 7, 9RW 7, KC6CG (10) 11, LU9ZE 8, OQ5RU (12) 5 and YU2HG 6 — it's 118/89 for Don and DXCC won't be long now . . . . . EA9AP (25), Bisk's JZØDN (34), LU4ZI (10), OX3AY (3) and a VR1 fattened the swag at W9HUZ . . . . . CE3DZ, DU7SV, HK4s BD (25) 7, DP (45) 0, JAs 1CR 1VE 1VX 4BB 6BO, a JZØ

CN8ML emits a fat Casablanca signal on 14- and 21-Mc. 'phone with Panda and Bendix gear, uses a Collins receiver and a pair of rotary beams. Operator Richard Keel comes from a DX family; a brother and cousin are HB9s PU and P, respectively. When you've worked all three stations you are eligible for the WAK certificate issued by CN8ML — Worked All Keels.

SM5RM of Stockholm can give linguistically-inclined DXers workouts in fluent English, German, French, Spanish, Italian and three Scandinavian languages. Olif runs 150 watts on several DX bands, is building a 500-watt final amplifier, owns a printing business and has been hamming for 30 years. (*Photo via W9TRD*)



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VK9RM recently moved from Lae to Wau, New Guinea, and here he is getting acquainted with his new neighbors. Gainsaying last month's Jeeves episode, Peter reports these local dandies as quite hail fellows well met.

♦

and KC6 contacted W6UED . _ _ _ . W5UUK does okay on 40: CR6AI (8) 4, EAs 8BF 9DF (15) 6, FR7ZA, OQ5s CP (6) 4, GU (5) 6, a TI9 and ZS3K were worked . _ _ _ . CR7CO, CX6AD, LU9UH of Province Eva Peron (a rare one for RCA's awards) and ZS3HX (22) 5 grace W3AXT's ledger . _ _ _ . CN8EB, GC3KAV, HH3DL (48) 6, KG4s AO and AV made the grade with W3WPG who finds 40 hottest between 4 and 6 on the GMT chronometer . _ _ _ . W1ORP picked off ZC4XP (37) 22, ZE5JA, 3V8AB and 4X4BR without much difficulty . _ _ _ . An EA9, KG4AJ, KV4AA and YU2AE swapped c.w. with W1APA who finds 7-Mc. c.w. a cinch compared with his usual 40-'phone DX pastime . _ _ _ . W4CAY captured JAs 1KM 7BO ØCQ (not 1wo), a JZØ, KC6 and long-haul VK6SA . _ _ _ . Now, samples of 40-meter code luck around the circuit, at *W2GVZ:* HKØAI (39) 4. *W2QBB:* TF3MB (8) 0, YV1AD (32) 0. *K2BZT:* IIBNU/Trieste. *K2EUN:* with 15 watts, KH6IJ, CO8AQ. FA8, OK1AEH, YU1FC 22 answered *K2GZN. K2JKA:* HC4MK, HH3. *W3TYW:* IIBLF/Trieste, VP4BN. *W4QCW:* OX3, TI9, ST2AR (10) 2. *W5ZAK:* OX3BE. *K6EBH:* DU7, JA6AD. *K6EYT:* JAs 1CP 3FJ. *W7VWS:* JA3AB, KL7s AWB FAK. *W8YJB:* OX3AY, TF3ZM. *WØVFM:* ZSs, VPs 6AM 7NM 10. *DL4ZC:* HK5DM . _ _ _ . 40-c.w. candidates DU1SCS (21) 13–14, EAs 6AF (30) 3, 9AP (50) 6, FM7WD (23) 5, FY8AA (0) 5, HA5KBA (5) 7, JAØWH (12) 13, KD6AT (17) 12, KR6OY (18) 12, KT1UX (40) 2, LU8ZC (10) 5, PJ2s AA (13) 3, AN (6) 3, UAØKKB (21) 13–14, VP8s AU (40) 5, BH (8) 2, VQs 4AQ (4) 5, 5EL (2) 3–4, 8CB (20) 13, VR2CG (27) 7, YS1O (17) 12–13, YV1EV (5) 3 and YU3CB (7) 3 are specified by WGDXC . _ _ _ . SCDXC adds CN8MG (12), FG7XB (10) 3–4, FF8JC (18) and VQ2HR (15) to this prefix pudding . _ _ _ . Novice doings on the 40-meter DX tangent are unheralded but not uncommon. WN3ZKH hooked CO2GU, VP6KL, W4FHI/VO6 and WP4AAQ, plus 45 states. KN2JKC knocked off CM7JA, CO2BL and DL1FF on 7188 kc. W8RGF/2 heard ZL3GQ calling WN5FQR and other unsuspecting WNs around 7178 kc. at 0830 GMT. Other DX stations appear to get a bang from thrilling the WN/KN 7-Mc. gang so you Novices had better pass up no weak signals!

40 'phone DX work attracts but a hardy few. W1APA has what it takes, and it takes plenty. Gil collected CM2ZZ (193) 13, COs 2NT (186) 12, 8LS (210) 14, HH2s JL (194) 12, RM (120) 11, KG4s AG (255) 12, AJ (208) 6, AV (267) 2. KH6s AGB (215) 11, AUB (210) 11, KV4BK (210) 11, PJ2AF (223) 11, PY7AGR (265) 3, TI2GC (194–250) 12–13, TG9VS (206) 11, VPs 1OJF (300) 4, 2GW (200), 2LN (120) 12, 4TI (193) 12, 6JR (220) 11, 6KL (192) 12, 9BO (120) 12, 9BL (175) 12 and VK3ATN (100) 12 . _ _ _ . NNRC ears twitched over 7-Mc. voicers CTs 1CL 3AE, DU7SV, EAs 8AX 8BQ 9AS, EL2X (65), HH2s IA PL, HI6EC, HKØAI, HP3s FL OJ, HR1JB, JA2CT, KG6GX, KL7BBK, LUs a-plenty, PYs likewise, KJ6FAA, TG9BG (190), VPs 2DN 6FO 6WR 9L, Tasmanian VK7WA, YN4CB (70), ZLs galore and ZS1PM.

80 c.w. has forty's atmospherics-selectivity in no-trump and times ten. Stronghearts hold fast on 3.5 Mc., however, and doubtless there will be considerable DX worked by the W/K gang right through the hot months. DU7SV (20) 13, EL2X (12) 5–6, GD3UB (6) 0–1, HA5KBA (12) 1, HB1MX/HE (2) 5 and ZD2DCP (6) 6–7 contacted W9HUZ . _ _ _ . EAØAE and HI8EW (9) carried W4BRB to the *80-meter 117-country* mark . _ _ _ . W5UUK gassed with an EL2, HK4DP, KL7PI, KM6AX, TI2s BX and PZ . _ _ _ . W3AXT concentrated on CTs 1UX 2BO 2, 3AB (18), EA8BF 2, FA9s RW RZ (10) 7, FP8AP, LU2GB, LZ1KAA, OE5JK, PY6FI, VP7NG and ZS2A . _ _ _ . Eighty good DX fortune at this shack and that, at *W2IVS:* VP7NX (5) 5, ZB1BF. *W2LPV:* FA9, KV4AA, OK2DG. *K2BZT:* FP8, KT1UX, OE2JG. *K2HZR:* HZ1HZ,

SP9KAD, YU1AD, 9S4AX. *W4TFB:* FA8DA. *W6NJU:* KR6LJ, XE2OK. *W8YIN:* KM6 VP7 ZS 9S4. *W9UDK:* XE1OE, ZLs 1BY 3GQ. *WØVFM:* KH4 KH6 KV4. *DL4ZC:* Ws 2HFP 4CDC . _ _ _ . WGDXC and SCDXC list 3.5-Mc. radiotelegraphers FF8AR (13), GD3IBQ 0, HK4BD (17) 7, HA5KK 4, JAs 1CJ (5), 8AH (18), LA8RB 8, LZ1KDP 6, OE3SE 4, PJ2AA 4, PY5EK 3, UA9DH, UB5CF, VK7KM 12, VP8BD 2, YU2AEF and ZB2A 4.

15 'phone is the preferred playground of numerous DX chasers these days and W6ZZ confirms the reason why: CEs 3II 6AB, HC1s FK FS, HP3FL, KAs 2KC 8RK, KG4AR, KL7s AN BFW BGG CC, KM6AX, KV4BD, VP5AE of Turks, VQ2s DT FU, YV5FL, ZL1s BY MQ, ZS6s CV ZO and ZP5IB. Miles also collected ten more MMs on 21-Mc. A3 . _ _ _ . HK3DP and PJ2AR were new 15-meter countries for W6NJU . _ _ _ . W4DOU now has 80 countries on 21 Mc. thanks to CT3AE, FA3OA, HI6EC, OQ5RU, YS1RA and others . _ _ _ . Still searching for an Asian, W4UWC reached the 72-country mark on fifteen by way of TG9CR, VP3YG, a VQ2, VP8AQ of the So. Orkneys and ZB1AJ; six weeks on 21-Mc. 'phone furnished 67 countries for 10-meter specialist W4NQM . _ _ _ . Fifteen-A3 desiderata here and there, at *W1HDQ:* VP1GG. *W3TYW:* HC1PL, KH6s. *W6UED:* HC1, KG6GX, OA5G. *W6NJU:* DU7SV, KA2KC, VKs, ZLs and VR2CG . _ _ _ . 21-Mc. 'phones reported by NNRC: CN8CS, CP5EP (220), EAØAC, EL2X, GDs 3ENK 6IA, KV4BI, OA5E, OQ5VP 20, PJ2AO, VP8AZ, VQ4AR, YV5BV, ZE2KR 21, sundry ZLs, 3V8BP and 4X4DK.

15 c.w. got a play, too, and even the Novice gang bestirred their DX bones. WN3ZKH scored with FA8s DA RJ, Gs 2IO 3DCU, GM3GJB and KZ5DM while WN7WSS provided Utah for TI9MHB's Novice-band WAS effort . _ _ _ . EA6AF (75), IIBLF/Trieste (67), KT1UX (10), ZB2A (15) and ZS3K (100) waggled keys with W9HUZ . _ _ _ . W3TYW assembled a pile of Europeans while W7VWS consorted with several KH6s, KL7CGA, XE2OK and ZL1BY . _ _ _ . ZEs 3JP and 5JJ came back to W5UUK . _ _ _ . DL4ZC worked OA4ED, HZ1HZ and a ZS5 without fuss or bother . _ _ _ . WGDXC got the fifteen-A1 goods on AP2K, CE3AG (1) 18, CR6AI (33) 18, FAs 8CR (20) 16, 9RW (20) 17, FF8AJ (30) 16, FR7ZA (180), FY7YC (75) 20, HK4DP (2) 18, VP7NX (40) 17, VQ2GW (30) 16, ZDs 6BX (50) 17, 9AC, ZS3K (100) 19, 3V8s AP AX BL and BP.

10 'phone and c.w. received narcotic shots in their ionospheric arms or else the ARRL DX Test deserves the credit. Anyhoo, a few mailbag missives have favorable comments concerning the 28-Mc. range. W6NJU worked A3 with LUs 7BQ 7QB 8FAO, KH6AFS and TI2BX . _ _ _ . ZS3E was a welcomed 10-meter customer at W8YIN around 28,320 kc. . _ _ _ . W1WXC recommends present-day 10-meter work for DXers who like to *dig* for 'em and reports W1s HJB LSZ ONK QNC UQW and YWU enjoying this strenuous sport. W1WXC ran down CR6BX, CXs 3AA 7BA, HC1MB, KZ5s, KV4BI, LUs 4AAR 4DZI 8AM, TI3LA, VPs 1GG and 2KM on voice.

160 c.w. activities may be in the post-mortem stage for most participants in the past season's doings but you'd better keep an ear on this band. It's a tricky one!

The North American path fizzled out somewhat to make European pickings slim but several South American folk turned up to enliven recent 1.8-Mc. soirees. **YV5s** DE FH and **HK4DP** worked a flock of W/K brethren; W1s BB and ZL, in that order, were among the first to nab the Colombian. YV5FH's performance was topped with a smooth **WØNWX** 'phone QSO . . . . . W1BB understands that W2SKE was the only North American to put a consistent

The pile-ups inspired by Burma's XZ2OM are all out of proportion to the mere 25 watts Mike runs to a 3-stage 807 rig on 7-, 14- and 21-Mc. 'phone and c.w. Dipoles radiate on 40 and 20, a ground-plane on 15, and an AR-88 receives. XZ2OM was in there pitching during this year's ARRL DX Test although his reception was hampered by unusually severe KA, KR6 and KG6 interference.

signal into Europe on 160 during the ARRL Test, A3 section . . . . . W6KIP/6, strongly abetted by W8GDQ, continues his efforts to work **VS6CQ** on one-sixty and results to date feature a W6KIP/6-VS6CQ crossband contact on 160-40 meters. The perseverence of W6KIP/6 deserves plaudits inasmuch as he persists in the face of East Coast success with European and African DX, listening to people working stuff he can't quite pull through out his way. It certainly would be some form of poetic justice if W6KIP/6 succeeded in making the grade with VS6CQ. This will be a very fancy 160-meter QSO! . . . . . **TI9MHB**'s 1.8-Mc. activity boosted the top-band countries totals of Ws 3EIS 9FIM 9PNE and many others. **KH6IJ** and **KL7TM** appeared on the band; **KG4AB** and **XE2OK** showed up during the Test to swell the list of near-but-rare 160-meter countries available . . . . . We close the Bandwagon on a sad note this month with word of the passing of outstanding 160-meter DX specialist VE1EA. Clarry, along with G5BY and W1BB, pioneered the annual Transatlantic Tests in the years before WW-II. VE1EA, you will recall, scored the first recorded North America-Asia QSO (with HZ1KE) in January of 1951.

Where:

XZ2OM confirms that all XZ2-bound QSLs can be sent via Box 611 or Box 367, Rangoon, Burma. Mike adds, "I will do my best to [help] any station needing an XZ2 QSL. Full QSO information is required, together with IRCs, and cards will arrive direct." . . . . . W2GT emphasizes that FG7XB does *not* receive QSLs via Box 11, Pointe-a-Pitre. Use this address only: 44 Chemin des Petites Abymes, same town. Antoine, who started out QSLing upon QSO, rapidly is becoming disillusioned with that approach; we have on hand his list of prominent DXers who as yet haven't bothered to answer his cards . . . . . As previously noted, a new slate of VK1s is active from Australian outposts on Macquarie and at Mawson Base, Antarctica. In lieu of other addresses they can be QSLd via WIA. W1OJR reports fast response from VK4FJ on behalf of VK1EG if IRCs are sent. Along this same line, when you seek to do business with other good Samaritans helping out rare DX stations with QSL problems, by all means coöperate fully by sending self-addressed envelopes plus postage or IRCs where necessary. It's more than enough that such agents contribute time and effort without incurring monetary expense as well . . . . . U. S. QSLs for QSOs (over 300) with PJ2MA (PJ2AA) on St. Martin Island can be shipped via W1PST, but all non-U. S. amateurs should QSL direct to PJ2AA . . . . . Don't look now but scattered U.S.S.R. QSLs are sliding through QSL bureaus once more . . . . . Periodically we caution newcomer DXers to QSL DX stations via foreign radio-society bureaus *only* when instructed to do so by stations worked, or when so noted in this column. Unlike your ARRL QSL Bureau, which handles cards for ARRL members and nonmembers alike, many overseas societies make their bureau facilities available for members only. QSLs they receive for nonmembers may be returned, pigeonholed or destroyed. So, when you work a flock of stations in Outer Baldonia *don't* just drop your QSLs into an envelope and ship the lot to the Outer Baldonian Radio Society QSL Bureau. That could be an excellent way to guarantee yourself a rockbottom QSL-returns percentage! Another thing: Unless exception is noted in this column, do not mail foreign-bound QSLs to the ARRL QSL Bureau. Your League bureau is chartered only for the distribution of QSLs incoming from overseas and foreign sources . . . . . The accuracy of the individual items to follow is by no means guaranteed, nor are they in any case necessarily "official." Garnered mainly from third-party sources, they are published here in the hope that they *may* assist someone to a fast QSL or two. W1s APA RDV UED WPO, W2s BBK GT OLU, K2JCS, W4s AUL CBQ QCW TFB, W5UUK, W6ZZ, W8s KAK YIN, W9s CFT EU TRD, WØVFM, F7ER, EDR, OVSV, NNRC, NCDXC, SCDXC, WGDXC and WIA deserve your gratitude for these:

CM2ZZ, A. Noble, Calle 14, 727 Almendares, Havana, Cuba . . . . . **CO1AF**, A. F. Gonzales, Apartado 38, Artemisa, Cuba . . . . . **CR6AT**, P. O. Box 1454, Luanda, Angola . . . . . **DU9WX**, Box 12, Iligan City, P. I. . . . . **ET2TV**, c/o Kagnew Station, Asmara, Eritrea . . . . . **FB8BC**, Box 587, Tananarive, Madagascar . . . . . **FB8BP**, J. de St. Amand, 143 Avenue Foch, Tananarive, Madagascar . . . . . **FY7YE** (QSL via W4ML) . . . . . **HI6EC** (QSL via CM9AA) . . . . . **HK1GO**, Box 342, Baranquilla, Colombia . . . . . ex-**HR1FV**, F. H. Vogel, ZP5IB, U. S. Embassy, Asuncion, Paraguay . . . . . **KG4AG**, G. Hodges, Navy 115, Box 41, FPO, New York, N. Y. . . . . **KP4ZW**, Box 120, Ramey AFB, Puerto Rico . . . . . **KP6AK** (QSL via KH6OR) . . . . . **KV4BK**, P. O. Box 618, Christiansted, V. I. . . . . **LU2RD**, F. Medina, B. Belgrano 553, Catamarca, Argentina . . . . . **LU3TB**, P. F. Altamirano, Ave. 17 de Octubre, 319 I.ºo. A., San Salvador de Jujuy, Argentina . . . . . **LU6JF** (QSL via RCA) . . . . . **LU9SA**, A. Nomicarios, Dest. Aeronautico, Chamical (La Rioja), Argentina . . . . . **LU9ZE** (QSL via LU8FP) . . . . . ex-**MD5SX**, R. H. Taylor, G3KAP, 45 Albert Rd., Deal, Kent, England . . . . . ex-**MF2AG**, G3KEI, 1 Hq. Sig. Troop, Wilton Pk., Beaconsfield, Bucks., England . . . . . **MP4QAL**, F. Walshe, Decca Navigator, Shell Oil Co., Dohah, Qatar, Persian Gulf . . . . . ex-**OX3BA**, A. Barsted, Boulevarden 23, Aalborg, Denmark . . . . . **OX3PW** (QSL via EDR) . . . . . ex-**OX3RD**, V. Hansen, Baggesens Alle 91, Esbjerg, Denmark . . . . . **OZ6OJ** (QSL via EDR) . . . . . **PJ2BA**, P. O. Box 383, Curacao, N.W.I. . . . . **PJ2MA** (QSL to PJ2AA) . . . . . **PZ1QM** P. O. Box 631, Paramaribo, Surinam . . . . . **SU1AS**, Ahmed S. El Gawahergi, Box 2034, Cairo, Egypt . . . . . **SU1IC**, Ibrahim M. Charmy, 1 Mohamet Pasha Shukri St., El Aguza, Giza, Egypt . . . . . **SVØWU**, Hq. JUSMAGG, APO 206, New York, N. Y. . . . . **TG9VS**, P. O. Box 115, Guatemala City, Guatemala . . . . . ex-**VK9GW**, G. A. Warner, c/o OTC, Bringelly, N. S. W., Australia . . . . . **VK9RM**, P. Mongries, Wau, T. N. G. . . . . **VK9VG**, c/o Dept. of Posts and Telegraphs, Lae, T. N. G. . . . . **VK9VW**, G. Stobie, c/o P. O., Port Moresby, P. T. . . . . **VK9WK**, c/o RTC, Madang, T. N. G. . . . . **VK9XK** (QSL via VK3XK) . . . . . **VP2KF**, P. O. Box 182, St. Kitts, Leewards, B. W. I. . . . . **VP2VA**, I. Humphries, Tortola, British Virgin Islands, B. W. I. . . . . **VP3VN**, 9 Howes St., Georgetown, British Guiana . . . . . ex-**VP8AO**, J. Lenton, 34 Lynwood Ave., Luton, Bucks., England . . . . . **VQ4FT**, Box 61, Nairobi, Kenya . . . . . **VS1GN**, 1925864 SAC Stone, Singapore Signals Center, RAF Changi, Singapore 17, Malaya . . . . . **YU1GM** R. W. Thompson, Philco Techrep, c/o U. S. Embassy, Belgrade, Yugoslavia . . . . . ex-**ZB1DM** (QSL to W1RFZ) . . . . . **ZB1JRK** (QSL via ZB1E) . . . . . ex-**ZC4FB** (QSL via G3ATU) . . . . .

ZC6UNJ, Box 490, Jerusalem via Israel . . . . **ZD3A**, Box 285, Bathurst, Gambia . . . . **ZD9AC** (QSL via SARL) . . . . ex-**ZL1AIO**, B. Bellringer, G3JYF, 14 Green Lane, Redruth, Cornwall, England . . . . ex-**ZS1RG** (QSL to G6UT) . . . . **3V8BL**, Box 747, Tunis, Tunisia . . . . **4S7YL** (QSL via W5EFC).

Whence:

Asia — From the pen of Asian airman XZ2OM: "Regarding W DX, W6s frequently are heard, but very few W1s and WØs. VE/VOs are so rare I wonder if they are on the air!" Mike lists XZ2s EM KN ST and SY as other currently active Burmese amateurs . . . . HZ1AB reports a surprising lack of W5 W6 and W7 signals during the ARRL DX Test but other U. S. call areas were breaking through consistently. Ron has trouble loading some of the various antennae he rigs up, for the HZ1AB stock of antenna-coupler components is quite limited . . . . Japan's International DX League lost its headquarters by fire but pluckily plugs on. IDXL issues several DX certificate awards that may be of interest to wallpaper hunters. For information on same write the organization at Box 56, Central P. O., Kyoto . . . . An intriguing tidbit from the pages of *Zero-Beat*, organ of the Hampden County (Conn.) Radio Association: "W1YCG hopes to operate from Afghanistan if permission can be obtained. Will be using a Viking Adventurer for both c.w. and 'phone. Start listening around July 1st." . . . . WGDXC Asiatic gleanings: G3FQX heads for a ZC4 session. . . . VS9XZ has been operated by ex-SU5XZ. . . . MP4BBS (G8RP) does shipboard hamming off Bahrein island with a BC-610.

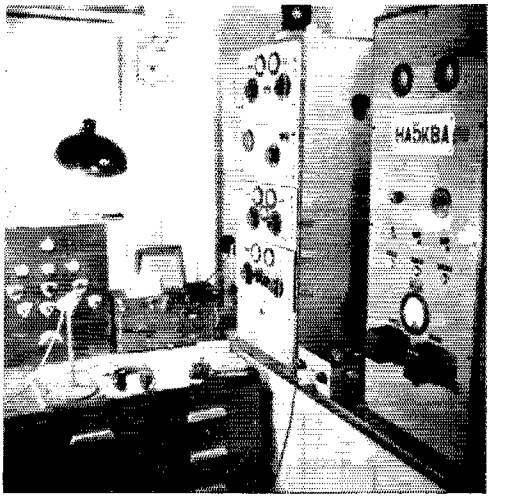
Africa — After six months at the key of ZS1RG, G6UT finds 100-plus ARRL DXCC List countries in his log. OT St. Johnston now is back in the U. K. picking up where he left off on the G6UT DX trail . . . . W7PCZ was EL2X's 48th state after a year of WAS effort. EL2X now has a DX tally close to the 200-country mark . . . . EL5B (ex-DL3WH) finds the fishin' easier with his present call sign, although he did all right in Germany, too . . . . There are gratifying signs that Egypt is taking a more tolerant view toward amateur radio. Several official licenses now appear to exist . . . . CN8ML, a Swiss in Morocco, especially likes to rag-chew with W4s because he spent considerable time in Floridian environments . . . . Club African comments. *SCDXC:* One ZD3ES soon should be available. . . . FL8AI often is heard by EL2X but no answers result. *WGDXC:* FE8AE's inactivity is the result of illness but Marcel still had hopes of doing 100-watt business on several DX bands before leaving the 'Roons.

Oceania — No U. S. amateur yet has collected the NZART (New Zealand) WAZL award. G6BS turned the trick, though, so it *is* possible. WØIUB stands ready to provide information on WAZL and all interested North American DXers are invited to apply . . . . The scarcity of VK2s in the 1955 ARRL DX Test was caused by serious New South Wales flood conditions, the worst in recent years. Most VK2s on the air at that time were QRL pushing emergency traffic on WIA's emergency nets. VK2WI was NCS on 3525 and 7050 kc. Favorable newspaper publicity resulted from a communications task well done . . . . Pago Pago's KS6AB is being coaxed back to 20 from his 80-meter hideout by WGDXC cohorts.

Europe — Yank-in-Yugoslavia YU1GM reports bagging his 100th country. "Am not faring so well in the confirmations department but have caught up on my own QSLing now and am keeping it current. Those who have not received cards will eventually get them as most went through bureaus. I have worked nearly 2000 W stations and shall be switching to 15 and 10 meters as conditions improve." The YU1GM address appearing in this month's "Where" promises faster results than Bob's old via-APO listing . . . . ZB1JRK, slated to remain in Malta until August, punches out a big 25-watt signal by virtue of a 650-foot long-wire, as noted by W2OLU. ZB1DM closed station for return to New England . . . . Albanian and Vatican State continue to be the object of Dxpeditionary intentions by several well-known DXers, but so far not so good . . . . Another trophy for diploma-hunters: WAYUR (Worked All Yugoslav Republics). W1UED, who spotted it, suggests those interested write the sponsoring organization, Savez Radioamatera Jugoslavije, Trg. Republike 3/IV, Belgrade, Yugoslavia . . . . W4CBQ has it that SVØWU shortly will be heard from Rhodes . . . . European club diggings, *NCDXC:* Never lose heart — W6TT just received a QSL for a 1930 QSO with SM6SB. TT was CAZ in those days. *WGDXC:* Over 1500 QSLs, 1000 from W/Ks, have been received by Monaco authorities as a result of phoney 3A2 activity. . . . Write UBA (Belgium), Post Box 634, Brussels, for information on their new WABP (Worked All Belgian Provinces) DX award. . . . ZB2s I M and O are current Gibraltar actives.

South America — When you burn up your only plate transformer in British Guiana you go off the air for a while until you (1) get it rewound, or (2) scrounge another. WØVFM reports such a revolting development at VP3VN who normally runs 40 watts to an 807 on several bands, receiving with an HQ-120. No surplus counters or supply houses down Georgetown way . . . . FY7YE closed in on the 3000-Ws milestone and has developed quite a QSL backlog. But thanks to W4ML and others, Mario's pasteboard problem rapidly nears solution . . . . WGDXC sources find that HC8GI of the Galapagos, a retired Chicagoan, settled in the islands with an 18-watt Harvey-Wells exhaler, a couple of dipoles and an XYL.

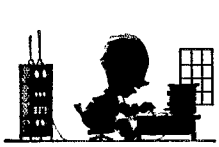
Hereabouts — VP1GG, due for QRT shortly, hopes to appear next from VR2 environs. W1HDQ hears he'll be taking a ham-band vacation until around November . . . . VP2VA, host to W2BBK's recent FP8AK/VP2 DXcursion, is a retired British engineer down British Virgin Islands way. Ivan knows no c.w. but gets great kicks from 20- and 75-meter 'phone operation. VP2VA's home is powered by a battery Windcharger set-up while his ham gear runs off a 1.5-kw. 110-volt generator . . . . WØBAF contributes a brilliant color shot of his 100 hard-earned DXCC QSLs which causes Jeeves to wonder: What is more colorfully impressive than a large display of DX pasteboards? . . . . ADXC (Alaskan DX Certificate) is a new one issued by the Anchorage Amateur Radio Club, P. O. Box



"Hungarian headquarters station" HA5KBA has logged about 3000 QSOs since activating in October of last year. Its staff of several operators is hunting for the last few states needed for WAS and has worked well over 100 ARRL DXCC Countries List items. Chief op "Bandi," HA5BM, put this home-built equipment through fast paces during the 21st ARRL DX Competition recently concluded. QSLs for HA5KBA go via W3AXT who provided this photograph.

211, Anchorage, Alaska. Ten KL7 confirmations, including at least one from each of the following Alaska areas, will do the job: southeastern Alaska (the area bounded by British Columbia), northern Alaska (the area north of the Arctic Circle), Aleutian Alaska (the Islands plus Kodiak), and central Alaska (what's left). Write AARC for complete rules . . . . OT DXer W4MR felt the nip of the DX Bug once more and reports similar awakenings in the shacks of local W4s AIT CS and ZH. McSwindle and W2GVZ were right! . . . . W1APA observes that KG4AG is operated

(Continued on page 150)



Operating News

F. E. HANDY, W1BDI, Communications Mgr.
R. L. WHITE, W1WPO, Asst. Comm. Mgr., C.W
PHIL SIMMONS, W1ZDP, Communications Asst.

GEORGE HART, W1NJM, Natl. Emerg. Coördinator
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., 'Phone
LILLIAN M. SALTER, W1ZJE, Administrative Aide

Full Addresses and Proper Check Required on Originations. Ever find yourself on the delivery end and unable to do the job? All amateurs (and MARS originators too) are asked not to permit amateur traffic to start on its way by radio *unless* it can carry an adequate address to insure delivery. Each handling station should have an understanding about the check or word count before receipting (QSL) for the message! The *newcomer* is urged to study all the concise information in the League's booklet *Operating an Amateur Radio Station* relating to checking, servicing and handling messages. It's part of the tradition of amateurs that they actually can communicate, and in a responsible manner. Both old and new timers may benefit by rereading W3ECP's "Net Know-How" in March *QST*.

But let's hear from Cy Read, W9AA, who takes up this matter with Hq.: "I am still running a full head of steam about the way messages are coming through. Some addresses are 'strictly from hunger.' In this case there was no one nearer, and the NCS asked me to mail it. In due time it came back marked 'unknown' whereupon I sent out a SVC. . . . It appeared that many of the traffic stations located in small towns or at great distances don't seem to realize that any message going into a big city must have a *complete and accurate address*, if it is to get through. Get the boys to understand and insist on a proper address on every message originated, and our service will be improved. Note the check on the original message doesn't agree with the text count. . . ."

The example Cy attached was a MARS origination (Hawaii). The principle of needing more address applies to many a U. S. A. amateur radiogram. Refile procedure is given in detail, page 130, June '53 *QST*. All amateurs should refuse to start messages unless they are complete and in standard ARRL form for amateur circuits. There are more amateur nets functioning effectively to get traffic through than *ever* before. Make texts concise, address complete, with a 'phone number where feasible, and operators *should* check them carefully as to destination. Haphazard and rubber-stamp originations generally impair more than they advance the amateur traffic reputation!

How to Improve Your "Fist." Sending at home on a code practice oscillator or buzzer *in step with tape-sent transmissions* is a good way that some are overlooking to improve one's sending. You can note from page 70 in this *QST*, the days when we send practice text from *QST* if you wish to try this. Experienced amateurs concede it is much easier to copy at high speed than it is to send manually *and well* even at moderate speeds. Interspersed periods of sending practice are worth while, since they buck up the ability on the receiving side too.

Smoothness in sending requires good spacing and rhythm. Newcomers: to avoid having your sending fall into the category where TEST becomes "NST" and CQ becomes "NNQ" bear in mind that by copying tape (automatic) transmissions regularly with some time spent *sending* in step with the tape, such defects can be overcome. Code then becomes most enjoyable and effective for two-way communications.

Country Considerations. What makes a country in the ARRL Countries List? Not many DXers think much about this since the standard list for reference is reprinted up-to-date in *each* January *QST*, and put out in folder form. You can mark your countries as you work them, while collecting your 100 cards to submit for DXCC. Watch *DXCC Notes* headings in *QST* for any possible list changes; such are usually additions. "How's DX?" may give you additional facts about the presence or absence of signals or countries, also "where to find" the DX reported, documenting your kind assistance. The ARRL Countries List is a yardstick for DX, the standard for use in connection with the ARRL DX Competition and the DX Century Club. But we started to tell you what's behind the list in terms of country policy.

The League Communications Department is assigned the honor and responsibility for making operator certifications and awards. A standard published list assures uniformity, and one goal for all concerned to work toward, either contestwise or for countries credits. A group of experienced staff-member licensed amateurs assist the Communications Manager in arriving at decisions through discussion and analysis of operating problems requiring administrative review. On countries the "approach to the problem" may, we think, interest you.

There are three criteria on which facts are determined in approaching any countries problem: (1) Does the area have political independence? (2) Does it have adequate geographical separation from a parent nation? (3) Does it have foreign lands in between? Of course, whatever the list permits, it is *the same* for all working to the goal. But the reason respect for our list is general is, we think, because it is progressively kept up to date as governments change; also that

any modifications only follow League inquiry and precedents and consultation with authorities such as our U. S. Department of State, Webster's *Geographical Dictionary*, and Rand McNally.

The ARRL Countries List is the guide in determining what to send us in order to qualify for the ARRL DX Century Club award. It is available to members of the League on request; ask for Operating Aid No. 7.

— *F. E. H.*

CODE-PRACTICE STATIONS

The following is an up-to-date list of all stations participating in the ARRL Code-Practice Program:

W1ACT, Fall River ARC, 57 Richmond St., Fall River, Mass.; 3545 kc.; Mon., Wed., Thurs. and Fri., 1900 EST; 5–7 w.p.m.

W1QZO, Harry Warner, 11 Berlin St., Wollaston, Mass.; 146.8 Mc.; Tues. through Sun., 1900 EST; 6–14 w.p.m.

W1SRB, Al Vesce, 84 N. Main St., Thompsonville, Conn.; 29.6 Mc.; Mon., Wed. and Fri., 1930 EST; beginner's speeds.

W2HEI, William Teso, Mountain Ave., Hillburn, N. Y.; 3950 kc.; Sat. and Sun., 1400 EST; 5–18 w.p.m.

K2IBC, Avenel Radio Club by W2FSL, Adolph F. Elster, 53 Commercial Ave., Avenel, N. J.; 3675 kc.; Sat., Sun. and holidays, 0730 EST; beginner's speeds.

W2NRM, Howard B. Jack, 12 Beech St., Ramsey, N. J.; 29.118 Mc. and 1880 kc.; Mon. through Fri., 0715 EST; 29.118 Mc.; Mon. and Thurs., 2200 EST; 3–8–15 w.p.m.

W3KWH, Steel City Amateur Radio Club, R.D. 5, McMichael Rd., Pittsburgh 5, Pa.; 29.108 Mc.; Wed., 2000 EST; 5–13–25 w.p.m.

W3UVD, Walter C. Downes, R.D. 2, Box 328, Jeannette, Pa.; 3585 kc.; Sun. 0930 EST, Wed. 1830 EST; 5–15 w.p.m.

W3VEJ, James M. Alcorn, 2071½ Longfellow St., Vandergrift, Pa.; 7150 kc.; Mon. and Wed., 1900 EST; 5–15 w.p.m.

W4RUR, for St. Petersburg Amateur Radio Club, E. J. Blatt, 538 16th Ave. So., St. Petersburg, Fla.; 28.05 Mc.; Mon. and Wed., 1900 EST; 6–22 w.p.m.

W4ZRH, Carlton R. Commander, 17 Joyce St., Mt. Pleasant, S. C.; 3700 kc.; Mon. through Fri., 1830 EST; 5–13 w.p.m.

W5JRV, for Galveston County Amateur Radio Club, Blanchard Boldman, 4802 Ave. Q½, Galveston, Tex.; 1882 kc.; Mon. and Fri., 1900 CST; 3–15 w.p.m.

W5USN, Dan Baird, W5SPZ, chief-in-charge, 8th Hdqtrs. USNR Radio Station, Marconi Drive and Robert E. Lee Blvd., Route 3, New Orleans 24, La.; 7100 kc.; Mon. through Fri., 1230 CST, 15 w.p.m., 7100 and 3750 kc.; Fri. through Mon., 1930 CST, 15 w.p.m.

W6JZ, Ray Cornell, 909 Curtis St., Albany 6, Calif.; 3590 kc.; Mon. Wed. and Fri., 1830 PST, 5–25 w.p.m., 1920 PST, 35–45 w.p.m. (When needed, schedule maintained by W6EFD.)

K6USN, Cmdr. J. M. McCoy, 12th Naval District Reserve Electronics Stn., Bldg. 7, Treasure Island, San Francisco, Calif.; 3590 kc.; Tues. and Thurs., 1830 PST; 5–25 w.p.m.

K7FCV, Lyle B. Clemans, CWO USAF, MARS Base Dir., Davis-Monthan AFB, Tucson, Ariz.; 3825 kc.; Tues., 1830 MST; 8–20 w.p.m.

W7FWD, O. U. Tatro, 513 N. Central, Olympia, Wash.; 3646 kc.; Mon. through Fri., 1700 PST; 4–25 w.p.m.

W8MAI, Blossomland Amateur Radio Assn., c/o W8FGB, Dean Manley, R.F.D. 1, Box 147F, St. Joseph, Mich.; 1890 kc.; Mon. through Fri., 2000 EST; 5–20 w.p.m.

W9KLD, for Kankakee County Radio Club, Don Rockwell, 685 Rutledge Ave., Kankakee, Ill.; 1895 kc.; Mon. through Sun., 1900 CST; beginner's speeds.

W9NPC, for Fox River Radio League, Lewis R. Hill, 212 N. Evanslawn Ave., Aurora, Ill.; 1810 kc.; Mon. through Sat., 1900 CST; 5–20 w.p.m.

W9UIN, Joseph H. Kadlec, 1148 Ashland Ave., Evanston, Ill.; 7240 kc.; Sat. and Sun., 0800 CST; 5–7½ w.p.m.

WØEGQ, Bob McMullin, Route 1, Lehigh, Nebr.; 3755 kc.; Mon. through Sun., 1800 CST; 5–13 w.p.m. with text from *The Braille Technical Press*. Same schedule alternated with WØLGG, Bertha V. Willits, 108 N. 19th St., Marshalltown, Iowa, with text from *QST*.

WØLQC, F. Bion McCurry, 1234 Stanford, Springfield, Mo.; 29.18 Mc.; Tues., 2130 CST; beginner's speeds.

WØONF, for Se Kan Radio Club, Kenneth M. Parker, Box 141, Howard, Kansas; 3805.5 kc.; Mon., Wed. and Sat., 1730 CST; 3½–15 w.p.m.

WØQDF, W. H. DuBord, 10247 Midland, Overland, Mo.; 29.6 Mc.; Mon. and Wed., 2000 CST; Mon. 5–13 w.p.m., Wed. beginner's speeds.

WØSQE, Bill Heitritter, 1114½ Virginia St., Sioux City, owa; 3750 kc.; Mon. through Fri., 1600 CST; 5–13 w.p.m.

FIELD DAY STATISTICS

By Roy T. Harmon, WØIUB

Field Day is the most important event of the year in amateur radio. It started in 1933 and has continued to the present day (except for the war years), and Field Day records should interest many hams. Americans seem to like records as incentives. The four-minute-mile hope kept track fans enthused for many years even though there were no milers around who could come close to it. Following this line of thought, I sat down with my *QST* back issues and figured out the postwar records for Field Day. I used numbers of contacts to determine winners, since multipliers and point systems have changed from time to time.

Some of the feats look almost impossible, while others seem like they could be beaten easily by concerted effort. One fact that surprised me was that so many of the records were set in 1949, 1950 and 1951. One would think that since Field Day popularity has always grown from year to year, all of the records would have been set in 1953 and 1954, but not so! The W6MBA mobile rig sure must be a corker, and W3JTK's outstanding work as single operator at home has stood unchallenged since 1949. And in 1951 eighty-seven ops participated at one club set-up; what a circus that must have been!

Here are the figures. Hope the hams around the country enjoy them.

Simultaneous Transmitters	*Most Contacts*	*Call Used By Club*	*Year*
1	594	W8BDA/8	1951
2	983	W3BES/3	1954
3	1151	W4KFC/4	1951
4	1425	W6PD/6	1954
5	1198	W4FU/4	1949
6	1434	W4FU/8	1953
7	1570	W4FU/8	1954
8	1593	W2GSA/2	1951
9	1911	W2GSA/2	1953
10	2665	W3FRY/3	1953
11	1255	W5SC/5	1954
12	1626	W1OC/1	1953

Class of Competition	*Most Contacts*	*Call*	*Year*
One transmitter (unit or individual), 1 op	304	W6EYH/6	1949
One transmitter (unit or individual), 2 ops	520	W6TSW/6	1953
Two transmitters (unit or individual), 2 ops	535	W6AOA/6	1951
Mobile, 1 op	277	W6MBA/6	1950
Mobile, multi-op	274	W6MBA/6	1951
Home rig on emergency power, 1 op	240	W1TIA	1952
Home rig on emergency power, multi-op	248	W2SZ	1953
Home rig on commercial mains, 1 op	406	W3JTK	1949
Home rig on commercial mains, multi-op	833	W4KFC/4	1954

Year	*Number of Participants*	*Number of Log Entries*
1946	1936	187
1947	2702	288
1948	4660	305
1949	4942	495
1950	5935	609
1951	6118	644
1952	6451	522
1953	7007	692
1954	8380	819

Largest Number of Participants:
87, Northern N. J. Radio Assn. (1951)

A.R.R.L. ACTIVITIES CALENDAR

May 7th: CP Qualifying Run — W6OWP
May 12th: CP Qualifying Run — W1AW
June 3rd: CP Qualifying Run — W6OWP
June 11th-12th: V.H.F. QSO Party
June 17th: CP Qualifying Run — W1AW
June 25th-26th: ARRL Field Day
July 2nd: CP Qualifying Run — W6OWP
July 11th: CP Qualifying Run — W1AW
July 16th-17th: CD QSO Party (c.w.)
July 23rd-24th: CD QSO Party ('phone)
Aug. 5th: CP Qualifying Run — W6OWP
Aug. 16th: CP Qualifying Run — W1AW
Sept. 3rd: CP Qualifying Run — W6OWP
Sept. 14th: CP Qualifying Run — W1AW

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 May 12th at 2130 *EDST*. Identical texts will be sent simultaneously by automatic transmitters on 1885, 3555, 7125, 14,100, 21,010, 52,000 and 145,600 kc. The next qualifying run *from W6OWP only* will be transmitted on May 7th at 2100 PDST on 3590 and 7138 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 will be made from W1AW each evening at 2130 *EDST*. 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 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.

Date	Subject of Practice Text from March *QST*
May 3rd:	*A Compact Dual Beam* . . ., p. 11
May 6th:	*Frequency Marker with 50-Kc. Intervals*, p. 14
May 9th:	*Overtone Crystals* . . ., p. 16
May 11th:	*Flexibility in the Antenna Coupler*, p. 18
May 16th:	*Low-Noise Receiver Design*, p. 20
May 19th:	*The Multimatch Antenna System*, p. 22
May 24th:	*The "Hidden Gem,"* p. 24
May 26th:	*Transmitter Hunting — Seattle Style*, p. 25

BRIEF

An amateur recently wrote the ARRL Communications Department as follows: "Is it possible to obtain a duplicate A-1 Operator Club certificate? Some time ago my wife pitched mine in the alley in a fit of pique. Now my *new* wife might like to see how important the old boy is!" (P. S.: He got the certificate.)

W1AW SUMMER SCHEDULE

(Effective June 1, 1955)

(All times given are Eastern Daylight Saving Time)

Operating-Visiting Hours:

Monday through Friday: 1300-0100 (following day).

Saturday: 1900-0230 (Sunday). Sunday: 1500-2230.

A mimeographed local map showing how to get from main highways (or from HQ. office) to W1AW will be sent to amateurs advising their intention to visit the station.

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

C.w.: 1885, 3555, 7125, 14,100, 21,010, 52,000, 145,600 kc.

'Phone: 1885, 3945, 7255, 14,280, 21,350 kc.; 52, 145.6 Mc.

Times:

Sunday through Friday, 2000 by c.w., 2100 by 'phone.

Monday through Saturday, 2330 by 'phone, 2400 by c.w.

General Operation: Use the chart below for determining times and frequencies for W1AW general contact with any amateur. Note that since the schedule is organized in EDST, the operation between 0000 and 0100 each day will fall in the evening of the previous day in western time zones.

Code-Proficiency Program: Practice transmissions at 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and at 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday are made on the above-listed frequencies. Code practice starts at 2130 each day. Approximately 10 minutes' practice is given at each speed. On June 17th instead of the regular code practice, W1AW will transmit a certificate qualifying run.

W1AW OPERATING NOTE

Until June 1st, when the complete W1AW Summer Schedule detailed elsewhere on these pages goes into effect, W1AW will conduct general operation as shown on the chart on page 70, Sept. 1954 *QST, except that EDST instead of EST will be used.* Other operation will follow the pattern set down on page 71, March 1955 *QST*, also in EDST instead of EST. *Exceptions:* (1) On May 12th, W1AW will transmit a Code-Proficiency Qualifying Run instead of the regular code practice. (2) On May 20th, W1AW will make a special transmission for frequency measurement instead of the regular code practice. (3) W1AW will be closed from 2230 EDST May 29th, until 1500 EDST May 31st, in observance of Memorial Day.

W1AW GENERAL-CONTACT SCHEDULE

(In Effect June 1, 1955)

W1AW welcomes calls from *any* amateur station. Starting June 1st, W1AW will listen for calls in accordance with the following time-frequency chart.

Time (EDST)	*Sunday*	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
0000-0100[1]	.....	.....	3555[3]	.....	3945	7125[3]	.....
1300-1400[2]	.....	21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	21/28 Mc.	.....
1500-1600	.....	7125	14,100	7255	14,100	7125	.....
1600-1700	.....	14,280	7125	14,100	14,280	14,100	.....
1800-1900	.....	14,280	14,280	14,280	14,100	7255	.....
1900-1930	.....	7255	.....	21,010	.....	14,280	.....
1930-2000	.....	14,100	.....	3555	.....	14,280	.....
2000-2030[1]	14,280	3555[3]	14,100	14,100	7125[3]	14,100	.....
2030-2100	14,280	3555	14,100	14,100	7125	.....	.....
2100-2130[1]	145.6 Mc.	21,350	145.6 Mc.	52 Mc.	21,350	.....	.....
2230-2300	.....	.....	1885	.....	1885	.....	.....
2300-2330	.....	.....	3555	.....	3945	.....	.....
2330-2400[1]	.....	3945	7255	3945	7255	3945	.....

[1] Starting time is approximate. General-contact period on stated frequency begins immediately following transmission of Official Bulletin, on c.w. at 0000 and 2000, on 'phone at 2100 and 2330.

[2] Operation will be on 21,010, 21,350, 28,060 or 29,000 kc., depending on band and other conditions.

[3] W1AW will listen for Novice Class licensees on the Novice portion of this band before looking for other contacts.

Having just finished compiling some figures based on 169 EC annual reports received (10 per cent of all ECs), we thought you might be interested in some of the statistics and estimates derived therefrom. We'll present these in expository fashion, so you won't have to try to interpret from tables.

First of all, let us note the percentage of EC annual reports received — 10 per cent. Not too good, is it? Yes, we know that being an EC has a lot of work connected with it, and to a person not too fond of paper work (and who is?) it seems as though Headquarters or the SEC or someone is constantly badgering ECs for reports. Actually, all we ask is a Form 5 (post-card size) once a month to the SEC and a one-page group of figures once a year. From these, we can glean some well-educated national estimates, since 100 per cent response is unthinkable.

You see, we *use* these data; we're not just trying to make you work for nothing. Once each month we summarize SEC reports (which are based on your monthly Form 5 reports to the SEC), and once each year we summarize EC annual reports and make estimates of national totals based on this. Naturally, the larger the percentage of reports received, the more accurate our estimates will be. However, based on the 10 per cent received this year, here's about what the AREC looks like nationally.

We have about 40,000 AREC members, of which 75 per cent are full members. Almost 13,000 of these are "signed up in RACES," by which they probably mean they are enrolled in local, regional or state civil defense communications with RACES in mind, whether or not they are RACES-authorized. There are about 780 existing RACES plans within the AREC structure, not all approved by FCDA and FCC as yet. Most AREC members continue to operate on the 28-Mc. band (over 20,000), but 3.5-Mc. c.w., 3.8-Mc. 'phone and 7 Mc. also have strong followings — and of course most of them operate regularly on more than one band. Six and two meters have shown great increase in popularity, however.

The AREC has an estimated 17,000 mobile units in operation. Ten meters is still the most popular band for mobile emergency communication, followed by 80/75 meters, 2 meters and "other" bands, in that order. However, since the 1953 year end, the greatest percentage increase in mobile emergency operation has been on two meters. The increase on ten meters has been slight.

Nearly all estimates are up from last year, an indication that amateur interest in emergency work is still on the increase, probably a result of the impact of civil defense. Our estimates show a decline in the number of fixed stations having emergency power available, and declines in the number of AREC members using 80 c.w., 75 'phone and two meters (although *mobile* operation on 2 shows a large increase).

Interesting? We thought so, and encouraging, too. How accurate are these estimates? Just exactly as accurate as a 10 per cent response in reporting will allow.

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Fellows, how about putting *dates* on the emergencies, drills and tests you tell us about? We had reports on four different emergencies lined up this month that had to be shelved because there was no hint as to *when* the emergency occurred. The date of a blizzard, tornado, fire or other memorable local occurrence might be well known to you, but chances are we never heard about it — so *date your emergencies*, will ya, huh?

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W5ZU calls our attention to an emergency operation which occurred last year that never got written up, except in his SCM column. We think it should be recorded in this column. It seems that last October 6th, 7th, 8th they had quite a flood in the Roswell-Dexter-Hagerman-Artesia-Carlsbad region of New Mexico when seven inches of rainfall within 48 hours sent the Hondo and Pecos Rivers on a rampage. Roswell amateurs *W5s* BZA/BZB QKG TBP WPA YFN YUM YWU ZM ZU gathered on 3838 kc. while mobiles *W5s* BZA BZB WPA YUM visited the flood area and relayed reports. Once the situation was "eased," a few stations stayed on hand all night while the rest got some sleep. During the night, W5WPA participated in the rescue of a truck and workers at the Hondo Dam, west of Roswell. At 0630 on the 7th, W5ZU fired up as control station with *W5s* ARD CXC EFT PSP UTS QKA RNG YAS ZGC AHQ FAB PGJ RZS TDB UP in the net, in addition to those on the previous night. Emergency work conducted included: (1) Assistance to Southern Union Gas Company in coördinating work on an eight-inch gas main crossing the Felix River north of Hagerman (mobiles *W5s* CXC BZA/BZB WPA, and fixed stations *W5s* AK YAS PSP). (2) An emergency call for boats to be furnished by the National Guard was coördinated by *W5s* BZA CXC and AK, and later rescue of a man on an overturned boat was coördinated by *W5s* AK ARD CXC. (3) Communications for radio station KSVP, which had to leave the air; CAA was notified that tower lights were off (W5PSP and W5ZU). (4) Reports on flood conditions were relayed up and down the valley. (5) W5UP stood by at National Guard Headquarters in Roswell to link units in Dexter and Hagerman areas. (6) W5BZA/BZB mobile encountered extremely high water between Dexter and Roswell; as a result, the road was closed to traffic. (7) Railroad tracks were washed out near Dexter, W5BZB reporting same to the Santa Fe Railroad office. (8) Because of the loss of life and number of missing persons, many welfare messages were handled in the 3838-kc. network.

— *W5ZU, SCM New Mexico*

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On January 14th, an Air Force C-45 ran out of fuel 20 miles northwest of Austin, Texas. Upon hearing the engines quit as the plane passed overhead, W5YYM contacted W5TFY in Austin and set the Austin Emergency Net in operation on 29.2 Mc. A few 'phone calls indicated the authorities knew the plane was down, but had no idea where. W5YYM soon located the airplane on a ranch about

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This is the Queens County RACES Control Center in New York, in action during the RACES-AREC drill held on February 14. On the left, standing, is Bob Link, W2VKF, RACES Radio Supervisor for the city, and ARRL Emergency Coördinator, explaining the setup to Ben Hamilton, W6VFT, visiting RO and EC from San Diego, Calif.

♦

a mile from the nearest road. Doctors and ambulances were ordered and the CAA, Texas Department of Public Safety and Sheriff's department were notified. Mobiles *W5s* KNM PRO QZJ left immediately for Lake Travis to aid in the search for a crew member who bailed out and was missing. For the first 30 minutes YYM/m was the sole means of communications between the scene of the crash and the state police and other authorities. Much traffic was handled concerning directions to the scene of the crash, medical aid, etc. The missing crewman was found by a ranch hand so all mobile units except YYM returned to Austin by 2030. The net closed down at 2115. Mobile units participating were *W5s* FXN EUD QZJ PRO. W5TFY was NCS. — *W5TFY.*

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Amateurs in Paterson, N. J., assisted police in solving some mysterious crimes during 1954. EC W2ESW was contacted by the civil defense director, at the request of police, and 21 amateurs set up a net on two meters, with a

Three amateurs who assisted the Illinois Central Railroad during the ice storm last December received citations from the railroad on March 2nd. Shown holding their medals are, left to right, W9PQS, W9KXN and W9PEK. W9KRH was also cited.

control station at police headquarters in charge of KN2CYZ. Each car was assigned a "beat" in the neighborhood where the assailant was known to be operating. The patrol started at 0100 and continued until 0530. This continued for four months, but no further attacks were made. However, on October 14th at 0347 one of the cars (W2ZOE with KN2JCR) reported a suspicious character on one of the streets in the area, and he was picked up by police. His retention resulted in eventual arrest and the solving of a number of previously-unsolved robberies. This continuing patrol in coöperation with Paterson police was conducted by the following amateurs: *W2s* ESW GQD ZOE NEZ GLO MIU NPT ESC KXR FLQ WBY EHM, *K2s* CMB GYH CVR EIZ, *KN2s* JCR IPF IEY IDH CYZ. Thanks to Mr. Arthur Donnelly, a Paterson *Morning Call* police reporter, for this report.

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Members of the American Legion Amateur Radio Net and the Lancaster, Calif., AREC and Civil Defense collaborated in assisting search operations for a crashed jet plane on January 13th. Search was conducted from 1900 to 0500 the next day using the 10 meter c.d. frequency, but distances proved too great and the search was reorganized using 75 meters. Here the situation was just the opposite, with long skip making multiple relays necessary. W6EJU's portable emergency trailer was set up as control station, with one relay via W6OLG. W6EJU, K6ARY and K6FCZ operated the control station. Amateurs were responsible for finding the pilot's body and unopened parachute, first reports of this coming from W6PIQ. W6WJF says that training in traffic handling showed up clearly in all operations. Other amateurs reported to have participated in this emergency include *K6s* HWB DBH GZZ AJN BNS and W6GRO.

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Reportwise, we started the new year with a bang, as 17 SECs submitted monthly reports, representing 3878 AREC members. This beats January of 1954 and 1953 both in reports and coverage, and also ties January of 1953 in reports, so we're off to a flying start. Let's keep those reports coming in! Initial reporting sections: Minn., Wash., Maritime, Tenn., W. N. Y., W. Fla., N. Y. C.-L. I., Ga., Ky., E. Fla., Ala., East Bay, San Joaquin Valley, La., Wis., Colo., Ont. Thanks, fellows, for your support. Now how about you other 56 SECs?

RACES News

A good many RACES organizers have written us for "the latest dope on RACES," or information on how to organize RACES. These are pretty general requests, and they usually get pretty general answers. Just in case you are contemplating asking us the same sort of questions, here are some answers:

1) There is a brief boildown on how to organize RACES in our booklet "Emergency Communications," distributed free of charge to all AREC members. If you'd like a copy, just ask for it.

2) The complete RACES regulations are included in any recent edition of *The Radio Amateur's License Manual*, available from ARRL for fifty cents. Or, if you're interested only in the RACES regulations, your best bet is to write to the Superintendent of Documents, Government Printing Office, Washington, and ask for Part 12, FCC Regulations, Rules Governing the Amateur Service. It'll cost you twenty cents a copy.

3) Three articles on the subject of RACES were written in 1953, and most of the information therein still applies. In any event, it's good background. Read "The Radio Amateur Civil Emergency Service" in three parts, in March, April and May 1953 *QST*. Other articles on RACES have appeared in 1953 *QSTs* for Jan., Feb., July, Sept., and 1954 *QSTs* for Feb., Apr., July, Aug., Sept., Nov., and Dec.

4) If you have any specific questions or problems, write and tell us about them. We'll try to help you.

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FCDA now will approve for matching funds civil defense equipment installed in private cars *provided* title remains with the state or political subdivision. So if you've been held up in getting that mobile rig installed for civil defense because you think you can't get matching funds for installation in private cars, now you can go to it. Reference is FCDA Memorandum COMM-2.

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Speaking of matching funds, there still seems to be some confusion regarding the term "FCDA approval" as it applies to RACES equipment. Such approval has to do *only* with matching funds, and admittedly the FCDA specs are high. If your civil defense people want to pay the whole price (and this is invariably considerably less than you would have to pay for gear that does meet FCDA specs), *any* type of amateur equipment is permissible, provided it complies with *FCC* regulations.

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What's new in your RACES outfit? Got any hot ideas you'd like to share with the rest of the amateur world? How about gimmicks for recruiting, training, getting results in drills, building gear, etc.? Come on, you RACES enthusiasts, *give!*

NATIONAL CALLING AND EMERGENCY FREQUENCIES (kc.)

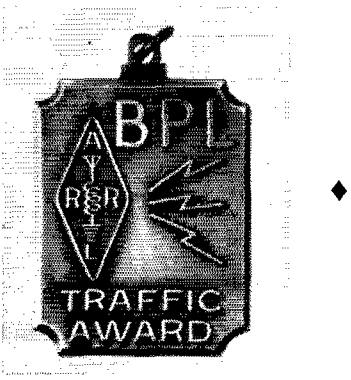
C. W.		*'PHONE*	
3550	14,050	3875	14,225
7100	21,050	7250	21,400
	28,100		29,640

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.

TRAFFIC TOPICS

Someone reminded us that we have never printed a picture of our BPL Traffic Medallion, authorized by the Board of Directors at its 1954 meeting. Most of you traffic men (and gals) who have been working so hard to get this award don't even know what it looks like. So here it is, about twice actual size. Purty, ain't it?



How do you get it? Well, it's easy — all you have to do is to make BPL three times since June 1, 1954. After your third BPL is printed in *QST*, we send you a little card that says you handled all that traffic by yourself, at your own station, on amateur frequencies, in standard ARRL form. You sign this card, send it back to us, and we send you the medallion.

You only get one medallion, so take care of it. We're not going to send you one for each three times you make the BPL. Wear it on your watch chain, or as a necklace ornament, and wear it proudly at club meetings, conventions, or other amateur gatherings. It's a mark of distinction, like a Phi Beta Kappa key.

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Miscellaneous net reports: (1) The Early Bird Net traffic count for February was 782. (2) The Transcontinental Relay Net had 28 sessions, traffic total of 1230, participation by seven stations. (3) The North Texas-Oklahoma Section Net had 28 sessions, 923 check-ins, 333 messages handled. (4) The First Call Area of the Transcontinental 'Phone Net registered 674 message counts with 14 stations participating. (5) The College Net met 8 times, was attended by 56 different stations, handled 13 messages.

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National Traffic System. We have just completed compilation of some NTS 1954 statistics, which might be of interest. NTS nets reported 9642 sessions in 1954, handled 106,904 messages. We received 285 reports altogether, about half of them reports of section nets, the rest regional and area. About 25 per cent of the reported NTS traffic total for the year was reported by section nets. Kudos to the managers of 1RN, 4RN, 8RN, EAN and CAN for a 100 per cent reporting job during 1954. RN6, 9RN, TEN, TRN and PAN also reported every month, but data on the report were incomplete or not properly executed through misunderstanding. This makes ten of the 14 NTS nets at regional and area level turning in reports every month during 1954. A very wonderful reporting record, gang. We dream of 1955 and a perfect record. Yes, we said "dream."

The Tenth Regional Net handled by far the greatest amount of traffic (21,972) during the year, with 9RN second with less than half as much (7822). Much of this traffic, in both cases, was "through" traffic not ordinarily handled at regional level, although 9RN returned to a strictly regional function with its separation from TLJ in April. Among the remaining regional nets, RN6 was high with 4501, followed closely by RN5 with 3874 and 4RN with 3765. The three area nets were very close, with PAN tops at 9506, followed by EAN with 8109 and CAN at 7715.

All in all, a very good NTS year, showing a continued increase in interest and activity. Of course we can't show an increase forever, but we think still more progress can be made before we reach a peak. Let each NTS net endeavor to do its share to account for an even better showing in the year 1955.

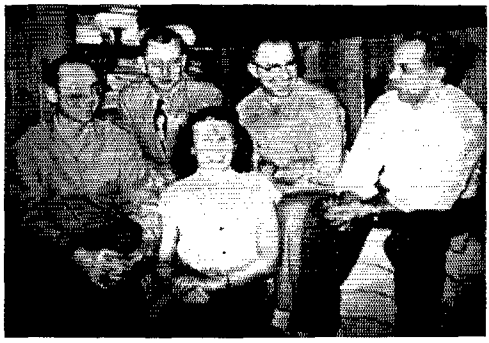
February reports:

Net	*Sessions*	*Traffic*	*Rate*	*Average*	*Representation*
1RN	24	300	0.51	12.5	91%
2RN	48	275	0.65	5.7	100
4RN	21	155	0.31	7.4	38
RN5	44	640	0.93	14.5	61
RN7	45	148		3.3	37
8RN	37	259		7	85
TRN	35	131	0.59	3.8	82
EAN	24	728	0.95	30.3	97
CAN	20	788	1.01	39.4	98
PAN	24	853	1.04	35.6	100
Sections*	549	3713			
TCC Central		360			
Summary	871	8350	PAN	9.6	2RN/ PAN
Record	871	10,670		19.1	
Late reports:					
TEN (Jan.)	68	1886		27.7	63%

* Section nets reported: NLI (N.Y.C.-L.I.); QKN, QKS & QKS-SS (Kans.); NEB (Nebr.); CN & MCN (Conn.); TLCN (Iowa); AENB & AENP (Ala.); MON (Mo.); WVN (W.Va.); Tenn. Regular & Tenn. Early; NTX (No. Tex.); KYN (Ky.); Minn. Sect. & Minn. Phone; WSN (Wash.); QMN (Mich.).

At the time this copy was being written, reports were missing from 3RN, RN6, 9RN, TEN and two TCC directors — just after we got through bragging above about the reporting record for 1954. No doubt some of them will be coming through late, and whether or not we can get them into the copy remains to be seen. NCSs can help their net managers to report on time by reporting their session figures to him promptly. Depend on your report not making *QST* unless received here by the fifteenth of the month, even though we can sometimes squeeze it in late; because sometimes we can't.

W1BVR is proud of the fine work being done by his 1RN gang. All section nets reported 100 per cent in 2RN. Negotiations are about completed for a new 3RN manager. Representation on 4RN is needed from C. Z. and West Indies; any help from down there? RN5 net certificates have been issued to W5GVS and W4UHA. RN7 *still* needs



A few of the Minn. Section Net gang got together in WØKJZ's shack for the above snapshot. That's Lydia, WØKJZ, in front, while gathered about her from left to right are WØDQL (TEN Manager), WØCGK, WØOMC and WØTKX. Lydia is manager of the Minn. Junior Net.

representation from Saskatchewan and Alaska, both zero for February; several other sections have been spotty, mostly represented by only one or two stations. W8DSX has designated W8JWX assistant 8RN manager for West Virginia. We should be able to announce new managers for 3RN, RN6 and PAN in the near future.

TCC news: W6QPY got himself married and has dropped out of TCC temporarily. W6PKL.Ø and VE7QC have combined to take over his many functions. WØBDR, WØSCA and W9JUJ are performing all the functions in Central Area TCC. Some "night owls" are needed for a late-hour (0030 EST) function in Eastern Area TCC, on Monday, Wednesday, and Saturday; contact W8UPB.

SECOND ANNIVERSARY RADIOTELETYPE SS

The RTTY Society of Southern California announces final results of the RTTY SS, held the week end of February 20th. Ninety-four stations in thirty-two ARRL sections were reported active, with W2BDI (S.N.J.), W8ZM (Mich.) and W3PYW (Md.-Del.-D. C.) turning in the top scores. The following tabulation lists call, score and number of sections worked:

W2BDI	2800–24	W5HZF	520–13
W8ZM	2600–20	W9ZBK	515–12
W3PYW	2520–24	W6OWP	456–
W8BI	2318–19	W7CO	405–15
W6CG	2080–20	W8IJV	396–11
W6AEE	2000–20	W1RBF	370–10
W9BP	1840–23	W3UWM	360–12
W7LPM	1780–20	W1AW	341–11
W9TCJ	1760–20	KL7CK	270– 9
W3MHD	1722–21	W6JUE	270– 8
W6MTH	1566–18	W6ZBV	145–
W8GRL	1134–14	W5MYI	144–
W6IZJ	1030–15	W9LDH	64–
W6LDF	1062–18	W6OGG	40– 4
W2TKO	1020–15	VE3GL	32– 4
W7PQJ	800–16	W4ZPZ	18–
W6ZNU	728–14	W7CGA	16– 2
W1FGL	720–12	W6OLC	16– 2
W3KYR	715–13	W9QM	8– 2
W3LMC	636–12	W9QBH	6– 2
W1BGW	546–13	W5ENH	2– 1
W1BDI	533–13	W2SKK	2– 1
W7NVY	531– 9		

Besides the the stations whose scores are reported above, the following are known to have taken part: *W2s* JAV PAT PAU PTW, W3CRO, W5BFX, *W6s* BNB CMQ DOU EGZ EV FLW KMT MZO NCO NPB NWM PNW SCQ VIH, *K6s* BTH BWJ, *W7s* LU PVF, *W8s* BYB DVL HP KFA LLL, *W9s* AKM BGC DRW DW GRW GVN JBH LLX NRC SPT UAU VOK, VE2ATC.

SUPPLEMENT TO NET DIRECTORY

The following list of nets will supplement and correct the listings on page 78, Nov. 1954 *QST*; page 74, January *QST*; and page 75, March *QST*. This list brings the record up to date as of March 18, 1955, and may be used to correct the cross-indexed master multilithed net directory.

An asterisk (*) indicates correction from previous listing in November, January or March *QST*. This is the final *QST* net supplement prior to fall reregistration of all nets.

Name of Net	*Freq.*	*Time*	*Days*
Ala. Emerg. Net ('Phone) (AENP)*	3955	1800 CST 0800 CST	Daily Sun.
Birmingham Emerg. Net (AENR)	29,560	1300 CST 1900 CST	Sun. Thu.
Chattahoochee Valley Emerg. Net	3910	1330 CST	Sun.
Erie Co. (N. Y.) Civil Defense Amateur Radio Net	50,600 53,580 145,200 145,320 145,440 147,000 147,120	1930 EST	1/3 Thu.
Gadsden (Ala.) Emerg. Net	29,560	1900 CST	Wed.
GAS Emerg. Net (Fla.)	29,000	1930 EST	1/15 ea mo.
Huntsville (Ala.) Emerg. Net	3825	1400 CST	Sun.
Kalamazoo Amateur Radio Club Emerg. Ten-Meter Net	29,600	2000 EST	Wed.
Kankakee Co. (Ill.) C.D. Net	145,800	1900 CST	Tue., Thu.
Kansas Novice Net (QKN)	3735	1400 CST	Sun.
Key West Emerg. 'Phone Net	29,080	1930 EST	Wed.
Mobile Amateur Radio Club Net (Ind.)*	29,493	1930 CST	Mon., Wed., Fri.
Mohawk Hudson Training Net	3716	1300 EST	Sat.
N. Y. Slow-Speed Traffic Net (NYSS)*	3595	1730 EST	Mon.–Sat.
Newfoundland Net	3750	1900 NST	Daily
North East Texas Emerg. 'Phone Net	3970	0800 CST	Sun.
Northland Net (Que.)*	3675 3755	1900 EST 1915 EST	Mon. Wed.
Nutley (N. J.) Radio Club 'Phone Net	29,400	1230 EST	Sun.
Palmetto Net (FN) (Fla.)*	3675	1830 EST	Mon.–Sat.
The Prep. School Net*	3895	1400 EST	Wed.
Slow-Speed Net (SSN)	3695	0930 EST	Sun.
South La. Emerg. AREC Net	3830	0800 CST	Sun.
South Texas Emerg. Net (e.w.)	3780	1930 CST	Mon.
Teenage Net (TAN)*	3630	1815 EST	Daily
Teen-Ager's Net (TAN)	3815	1600 PST	Mon.–Fri.
Texas Novice Traffic Net	7191	1900 CST	Tue.
Tropical 'Phone Tfc Net* (TPTN)	3945	1730 EST	Daily
Upper Peninsula Net (Mich.)	3930	1000 EST	Sun.
Wash. Amateur Radio Traffic System (WARTS)	3970	1800 PST	Mon.–Sat.

BRIEF

On June 3, 4 and 5, K2ITG/2 plans operation from the Adirondack Council Camporee, Meacham Lake, N. Y. Command equipment will be operated from a gas-powered supply using 75 meters and other bands.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for February traffic:

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W3WIQ	68	860	789	49	1766
WØBDR	16	725	701	17	1459
W3CUL	73	697	531	155	1456
W9JUJ	19	680	635	70	1404
WØSCA	25	607	593	0	1225
W4PL	4	600	568	24	1196
W6SWP	58	528	460	65	1111
W9DO	23	512	486	49	1070
WØCPI	7	513	473	40	1033
W2KEB	35	515	246	141	937
W4PEC	10	444	430	10	894
W7PGY	24	431	402	29	886
K5FFB	102	333	389	46	870
W7BA	13	407	396	9	825
W4YIP/6	3	513	175	125	816
W9NZZ	227	260	1	258	746
W7FRU	3	382	306	56	727
W4TYE	1	339	339	0	679
W8GRF	28	19	287	308	642
W2KFV	16	360	190	70	636
W5MN	12	313	264	42	631
W6YDK	25	298	260	38	621
W4COU	12	298	281	11	602
K2BJS	22	285	269	25	601
W6BSD	11	294	280	14	599
W4IYT	8	289	278	10	585
W8FYO	7	289	225	61	582
W2RUF	22	311	172	63	568
W7VAZ	5	279	267	12	563
W4OGG	16	250	270	15	551
W3WV	19	285	199	36	539
W7APF	7	263	262	1	533
W4PJU	8	259	219	40	526
W9TP	3	515	203	0	521
W6YHM	10	255	224	31	520
W4HKK	2	257	245	12	516
K2CQP	35	240	217	15	507
W2LPJ	11	240	223	28	502
Late Reports:					
K6FCZ (Jan.)	25	460	440	20	945
W4PJU (Nov.)	12	256	153	103	524

More-Than-One-Operator Stations

Call	*Orig.*	*Recd.*	*Rel.*	*Del.*	*Total*
W6IAB	46	1642	1524	138	3350
K4FDY	15	712	418	13	1158
KA2GF	116	383	309	74	882
K8WAY	52	395	401	10	858
KØWBB	12	103	370	36	821
KA2AK	100	306	280	26	712
K4WAR	96	305	284	21	706
K9FCA	92	219	358	13	682
K6FDG	208	157	82	75	522
Late Report:					
KA7LJ	523	251	149	102	1025

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

W4CFJ	180	WØLJW	125	K4FET	111
W4HDR	180	W1UKO	123	WØKQD	105
W4KKW	175	W7MWR	117	W9AA	104
K4WBG	148	W8DAE	116	W4UHA	103
KA2HQ	139	W3RV	111		

More-Than-One-Operator Stations

W4SKH/4	101	K3WBJ	100

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W8ARO, WØNIY.

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.

Station Activities

• 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, W. H. Wiand, W3BIP — SEC: IGW. RM: AXA. PAM: PYF. E. Pa. Nets: 3610, 3850 kc. The West Philadelphia RA held its annual Dinner Party Feb. 22nd. The club wishes to thank DVB, OWK, and WN3ZIA for a very fine banquet. The York Road RC, now 105 members strong, meets on the 1st and 3rd Tue. of each month in Elkins Park at 8:15 P.M. Visitors are invited. The club station, RDM, is net control for its 2-meter net in session every Sun. evening at 9:30 P.M. on 146.25 Mc. All hams in the Philadelphia Area are invited to check in. VMJ reports the club is all set for Field Day. JNQ, NNV, and VOI are newly-appointed OOs, while ZSH is now OES. TYW has a new ground plane working on 15 meters and ZFL is building a beam for the same band. AZZ, ex-K6GHL, now on his way back to Germany, is looking forward to a DL4 call. KAG is back on the air moving to a new QTH. VVV/WUE, an XYL/OM combination, currently active on the PFN, is sporting a new Viking KW. We're pleased to report QGI is back on the air after six weeks in the hospital. OZV is looking for more traffic. UOE is up to 43 countries on 80 meters using his 807s but still needs Asia to make WAC on that band. DUI raises a good question. Are we going to have another picnic this year? Let's plan for it now and announce the date and place in this column. NNV reports his two sons, WNs 3AQI and AQM, are soon to be transferred to Kelly AFB. EAN keeps in touch with his Dad in Miami Beach on 20 and 40 meters. ZBD is a newcomer to the traffic business and the only c.w. outlet for Reading in many a year. The EPA Net welcomes your presence, OM. ABT reports better luck in hearing DX since tuning the receiving antenna. The most recent Novice station to report is WN3BFM. Welcome, OM. Traffic: (Feb.) W3CUL 1456, OK 124, TEJ 91, WUE 66, DUI 65, VVV 58, GES 56, OZV 55, MWL 50, UOE 38, BFF 31, PYF 27, ELI 20, QLZ 17, PVY 7, VPY 7, ZBD 6, JNQ 5, ADE 2. (Jan.) W3MWL 39, ABT 2.

MARYLAND-DELAWARE-DISTRICT OF COLUMBIA — SCM, Arthur W. Plummer, W3EQK — On a recent Sat. at 6:30 P.M. approximately 150 members of the Amalgamated Association of Ozone Sniffers gathered at the famous Olney Inn between Washington and Baltimore where they were nobly entertained with masterful demonstrations of metaphysics and mendacity by DWD. A very interesting informal talk was given by George Sterling, 3DF/1AE, who also presented Haraden Pratt, ex-SKH, with the only certificate of its kind for being the oldest ham in or out of captivity. It seems that he started his hobby of spark-gapping the ozone way back in Sept. 1905. Information from several W4s present is to the effect that the Roanoke Division Convention will be held Aug. 12-13-14 at the Chamberlain Hotel at Old Point Comfort, Va. For information contact 4HV or 4NV. RVL reports the Radiation Lab. Radio Club, ZIB, had two transmitters in operation at Parkton, Md., during the V.H.F. Sweepstakes. The Club also sponsored a transmitter hunt Jan. 20th which was won by QLF, with VLL right on his heels. Eighteen stations out of 59 checking into the MEPN for January received the rating as toppers. NNX is now Deputy Chief of RACES in Baltimore under SKK, who is Chief RACES Officer. HTB is the new District Radio Officer Northeast District, replacing NNX. NKX is the new Southern District RACES Coördinator and QER takes his place as new Southern District RACES Officer. Other new appointments are YYB Northern District Deputy Radio Officer, KWX as Northwestern District Deputy RO, and UOJ for the Southwestern. CVS and YJB are active in the net at Northern. ZAR has received an appointment to the Air Academy. EMZ has been appointed RO for Northwestern Dist. ZNH has his General Class ticket. MAZ's XYL, Nina, is studying for her ham ticket. RKK has left Northern and is now attached to Main Control. John Bagliani, owner of Radio Electric Supply Co. in Baltimore, and well known to everyone in electronics, was operated on during the latter part of February in Mercy Hospital but is coming along very nicely. EQK has a new Hammerlund HQ-140X. GBB is moving from Baltimore City to Anne Arundel County. The Delaware Amateur Radio Club of Wilmington now meets the 2nd Wed. of each month in the meeting room of the Grace Methodist Church. At the February meeting the DARC heard a talk on transistors by a Bell Telephone Company representative. TGF is rearranging his station and expects to be much more active. EQK received a TPA certificate from the Radio Club of Argentina for having worked the 21 Pan-American Countries and Canada. He needs only a QSO with a British Colony station in Asia to get the WBE certificate. MZK has completed a cubical quad for 20-meter c.w. Ron also is sporting his OTC certificate. CDQ is teaching code like mad these days and is very active on 40 meters. HKS hopes to be on soon with a new rig. QCB reports he recently made a killing on some nice equipment. LMC recently was guest speaker at the Aero Amateur Radio Club. KLA was named chairman of the Club TVI committee. WN3YZJ has completed ten-element "Brownie" beam for 2 meters and is on nightly with a Gonset Communicator. YQD skeds UJG regularly on 220 Mc. along with 4UMF and signals are from S4 to S9 with seldom a miss. YQD is using an 832A into 16 horizontal elements. Traffic: (Feb.) W3WV 539, K3WBJ 376, W3UE 274, PKC 171, RV 135, ONB 121, PQ 107, HC 26, EQK 9. (Jan.) W3COK 90, MCG 76, ONB 63.

SOUTHERN NEW JERSEY — SCM, Herbert C. Brooks, K2BG — PAM: ZI. New appointments: K2EDL as OO and YRW as OBS. EGP and EWN has reactivated the South Jersey 2-meter Net at 1900 Tues. on 145.4 Mc. UKS, Ocean City, expects to be "chief" aboard the SS *North America* on the Lakes this summer. Look for Bill on all bands 20 meters and below. We are indebted to K2CEF, Pleasantville, for the Southern Counties Amateur Radio Society news. The SCARA meets the 2nd Mon. of each month at the Pleasantville City Hall. CGP is active on 20 meters with a new three-element beam. Art has worked 109 countries. AQP is on 2 and 75 meters. K2KAA, K2JIO, and K2EQC are giving 160 meters a fling. HIB has just returned from a 6-month trip in and around the Mediterranean. The SCARA runs two nets, Sun. at 10:30 A.M. on 3975 kc. and Mon. at 8 P.M. on 1815 kc. The Club is planning more activities in c.d. The DVRA WAS Contest is going strong with many participants. LSS and K2BDK, both on 40-meter c.w., are working good DX. IIA is heard regularly on 40 meters. ZNO has moved to a new QTH so operation is temporarily suspended. K2INQ has dropped the "N." FB, Peggy. The Burlington County Radio Club is holding weekly drills Fri. nights on 2 and 10 meters. KN2JWZ, Lawrenceville, is interested in starting a Novice net. Drop him a line for particulars. ADA is on the mend after a recent operation. LYL has a new rig on 10 meters. Again we urge that emergency gear be kept in good repair and be given periodic checks. Traffic: W2RG 127, ZI 30 ASG 16, K2BG 10, W2SUG 10, YRW 8.

WESTERN NEW YORK — SCM, Edward G. Graf, W2SJV — Asst. SCM: Jeanne Walker, 2BTB. SEC: UTH/FRL. RM: RUF. PAMs: GSS and NAI. NYS meets on 3615 kc. at 6:30 P.M. and 3925 kc. at 7 P.M.; NYSS on 3595 kc. at 8 P.M.; NYS C.D. on 3509.5 and 3993 kc. at 9 A.M. Sun.; TCPN 2nd Call Area on 3970 kc. at 7 P.M.; SRPN on 3970 kc. at 10 A.M.; ISN on 3980 kc. at 3 P.M. New officers of Lockport ARC are K2EGD, pres.; TPE, vice-pres.; A. Retzloff, secy. JFN, treas. The meeting topic was Show and Tell. Those bringing gadgets and telling about them were FEB, ZOC, RXM, YLT, JFN, RUI, ALR, CWB, and K2s GKM, ALZ, and ELS. DVD's XYL is K2GHF. Niagara RC officers are LCP, pres.; CMV, vice-pres.; VE3IM, secy.; RVJ, treas. Net certificates have been issued to COB, ZZG, BKC, MZ, PKG, and K2s APV and CIG. A new club has been formed in Watertown with ZYD, pres.; K2DUO, vice-pres.; K2GWN, secy.; and KN2JDE, treas., which meets the 2nd/4th Thurs. at 7 P.M. in Jefferson County c.d. rooms in Thompson Park. FE and QQ are active OOs. BLO, EZP, and PZF are on 2 meters. K2HXC received General Class license. K2GVF dropped the "N." VMW is on with an 813. FJN runs 150 watts into a Zepp on 75 meters. K2HLY now is General Class on all bands running 35 watts. KN2HJC and his 10-year-old son, KN2HJD, are boning up for the General Class exam. QWA, on 75 meters, purchased a surplus Collins 30-J and is modifying it for ham use. TQ finds 15-meter DX good. UXC has 813 final running 300 watts. ETW is on with a B&W. DUZ is on 20-meter 'phone. G8X uses an Elmac for fixed and mobile. OZY has been appointed RO for Clinton County. *Corning QRM* states

the first group of walkie-talkies has been completed. The Club conducts code classes. KEL is catching up on DX on 20 meters after OBS work. CXM is running propagation tests with SZ, IYU, AEE, and others on 160, 80, 75, and 2 meters. FDI had help putting up a 20-meter beam. K2GWN is coördinator of the Tri-State Net on 3687 kc. at 0700 daily, with 1ZHO and K2EQP assisting. OPD has resigned as manager of NYSS and K2DYB has taken over. EMW is running 200 watts to an 813. All amateurs interested in forming a club in Clinton County, please contact K2HJC. KN2LBL is a new Novice in Morrisonville. QBB received his WAS certificate and is on 20-meter c.w. since swapping his BC-312 for an HQ-129X. The KBT held an auction. New officers of Elmira ARA are K2DNN, pres.; SHE, vice-pres.; WZF, secy.; KN2HWB, treas. K2BUI is putting c.d. modifications to a Viking II. K2DOZ and PPR have new HQ-140 receivers. K2GOK, of Olean, now in the Air Force with the call KR6PR, would like to hook up with Stateside pals on 20 meters, 'phone or c.w. K2DYC reports that K2DXE worked France in the Novice band. K2s DOL and DAO, are on 220 Mc. KN2s KIR, KTE, KTF, and LAD are graduates of Auburn ARA code classes. K2GVS is chairman of AARA Field Day. K2GVJ has a B&W. RARA has passed the 200 mark in membership. OWF has an 829B on 6 meters. The RARA v.h.f. group met at the home of ZS. The RARA is compiling a club directory for members. PUN and UTH reported some new countries in the DX Contest. UTH and SJV were guests of KBT president UHI. 1HDQ and UHI have a sked on 144 Mc. Sat. at 8 A.M. and would like some activity after the sked. AIC is back from Korea and in college in Wisconsin. Traffic: (Feb.) W2RUF 568, OE 126, YGW 102, HKA 96, ZRC 89, K2DJN 60, DSR 58, W2DSS 43, CXM 38, K2DG 13, CUQ 11, W2FEB 10, RQF 10, K2AHH 4. (Jan.) W2CXM 62, K2AMZ 16, W2WS 8.

WESTERN PENNSYLVANIA — SCM, R. M. Heck, W3NCD — SEC: GEG. RMs: NUG, UHN, GEG, and NRE. PAMs: AER and LXE. The W. Pa. Traffic Net, which meets on 3585 kc. at 7 P.M. Mon. through Fri., reports 248 attendance and 144 messages handled during February. TMA has taken a job with CBS-Hytron and will be moving to Danvers, Mass., so has resigned as president of the Bucktail Amateur Radio Club of Emporium. RVS is palnning a c.d. net for Cameron County on 29,460 kc., 146,820 kc. and 6 meters if necessary. TYC is working the YLRL nets. IIX, RMX, RJM, and NGZ are building equipment. RLH occasionally joins the 29,080-kc. Commuters Net. LEH and ZHM are working 220 Mc. WII is n.f.m. on 40 meters. VEE is busy with school activities. VEF is working the club station. PTU is on 80, 75, 40, and 10 meters. OLB has moved to Elmira, N. Y. OGN is back working part time. ZKY passed the General Class exam. NMJ is working DX and traffic. The South Hills Brass Pounders and Modulators *Monitor* editorial staff, LDB, VKS, QOQ, ZSP, and TFU, get out the SHBPM news. ZDK received his new ticket on his birthday. OKU is trying s.s.b. NYG is operating from a new QTH. KPO is mobile on 10 meters. New calls are WN3AWU and WN3AYB. The Radio Assn. of Erie reports gains in the membership. STK is giving weekly code classes. TNM has joined the Lake Erie Emergency Net. MS is working DX. NXK is putting on a shortwave demonstration at Vernondale High School. New calls are WNs BHJ, BBO, BFB, AQU, and ZQS. From Steel City ARC, NKM is giving s.s.b. a try-out along with MTP. JSS is reported transferred to Boston. WN3ANX is on 40 meters. TZW donated the Club a 300-watt c.w. rig. CUM, who has drawn the job of reporting the news from the Butler County Amateur Radio Assn., describes the build-up of an active Butler County C.D. Net with 12 operators checking in each Thurs. at 7 P.M. on 29.6 Mc. LXQ is reported doing a fine job working as liaison between W.Pa. C.W. Net and the Pa. 'Phone Net (PFN 3850 kc. 1830 EST Mon. through Fri., PYF manager). LMM is proud of his new A-1 Operators Club certificate. Traffic: W3W1Q 1766, LMM 158, QPQ 126, LXQ 120, NRE 90 KUN 60, UHN 57, NUG 47, SIJ 34, OEZ 25, KNQ 15, UTX 11, NCD 7, PWN 3, NMJ 1.

CENTRAL DIVISION

ILLINOIS — SCM, George T. Schreiber, W9YIX — Section Nets: ILN (3515 kc.) IEN (3940 kc.) RMs: BUK and MRQ. PAM: UQT. SEC: HOA. Asst. SEC: VTL. Cook County EC: HPG. It has been announced that the annual Starved Rock Radio Club's now justly famous hamfest will be held June 5th, same place. OO renewals the month: KA, ICF, JMG, and PHE. ORS: WFS, BPU, UVM, OIN, MRQ, JMG, and KJ. OPS: ACU, PHE, and ICF. Making BPL this month are AA, who now becomes eligible for the traffic medallion, DO, and K9FCA. A new Novice is OIH, 11 years old, who has adopted the slogan "Old Intelligent Ham." BUK revived the Illinois C.W. Net paper, *Illinois NUZ*, and got out an interesting issue. CZB lost four power transformers in a damp basement but stays on the air through RGU, the c.d. station at Rockford. HUX says he has moved so many times he can reassemble his transmitter blindfolded. He likes his new VFO. The Society of Radio Operators provided a demonstration of amateur radio for the Lions Club, with ZNY on the air from the meeting place. UVM/Ø now is chief operator of KARL, the student-owned broadcast station at Carleton College. CSW had plenty of rig trouble, but has the 30K running again and is sparking the North-Central 'Phone Net as NCS four mornings a week. PNK and K9FCA spell him two days. The Net meets at 0700 CST with 15 states checking in. DO made the public prints, as did MRW, with laudatory newspaper stories. New kw. rigs are sported by KJ and BUK. JMG built a modulator for his 30-watt job. When someone calls for Ruth, at GVO, he might be asking for the OM, whose last name is Ruth, or the XYL, whose first name is spelled that way. ING has returned from Mexico, where he operated XE1XE. INF travels so much he is tickled when he can get back to Chicago to attend the Hamfesters Club. AA is playing with a new trick keying relay and prevents BCI and TVI; maybe he'll write about it. Organizers of the Kankakee RACES 2-meter Net are KLD, HKA, NKR, and QDK. Again TAL warned of interference to Loran by 160-meter stations off-frequency and PBI checked 15 Novice harmonics near 7500 kc. Watch out, fellows! Congrats to WVR and his XYL on their new daughter. NBB has moved to Champaign, and PK to Michigan. SKR spends his spare time dreaming up antenna couplers and building low-pass filters. Freeport amateurs have organized a club, as yet unnamed, but with the following officers: ECS, HAF, CHU, GUY, and RQY. PPM and ZMJ are on the air with new portable 6-meter rigs. They also run a code class and graduated Novices OEZ, OOG, MPN, OFP, and OOC. ZSN's new QTH is Washington, Ill. HPJ and EVA bought Russian code teletypewriters and are busy converting them to send English characters. AVJ gets good results with a pair of phased verticals on 80 meters. SEF writes he is almost blind now, but has a good chance of recovering. TQL took two days of vacation for the DX Contest and broke down the first hour. NN visited a ham club and heard himself roasted for stealing the rare ones before he identified himself. JCX received General Class license and manages to get on the air daily. HYK celebrated his 80th birthday and still keeps a regular sked with his son, DPY. Traffic: W9IDO 1070, K9FCA 682, W9IDA 411, AA 281, SME 153, QQG 106, YIX 54, MXF 53, BUK 52, MRQ 45, VHD 40, BRD 26, STZ 25, LXJ 20, FRP 15, WVR 7, KLD 5, PHE 5, CNF 4.

INDIANA — SCM, George H. Graue, W9BKJ — The LCARC concluded its year of activity by holding its second annual banquet with more than 200 in attendance. The NERC has new club headquarters in the City Hall Building. The FWRC held its annual auction. The mobile group demonstrated at a father-son church banquet on how amateur radio can serve civil defense. The MARC (Madison) is planning its 3rd annual hamfest in May, the exact date to be announced later. The TARS reports 35 members certified to RACES. DGA, UHC, AIN, and FJI mobiled to Princeton to visit URQ, TKK, ZZR, and N9JEP. DQI has a new Gonset Communicator. SWN and ZPP are f.m. on 147.3 Mc. UMS is out for DX with a kw., likewise BBC. ZHJ has a new Viking Ranger. SVL had a nice write-up in the Perfect Circle Corp. news organ. Wheel Static held a transmitter hunt with NAR the winner and MYI a close second. DRJ became a proud grandpappy recently. QZC wants a sked for test on 220 Mc. January total traffic on QIN was 612, February total was 476, as reported by OLX net manager. YIP, net manager for IFN, reports a total of 233. WWT, net manager for RFN, reports 125. EHZ reports 113 for CAEN. Those making BPL in February were JUJ, NZZ, and TT. JUJ is keeping 11 schedules daily. NZZ received the coveted A-1 Operator certificate. TT has a new Signal Generator. WWT has applied for OBS appointment. New NCs on QIN are WRO and SKP. IMO is building 220-Mc. rig for 64-element beam. KPL has a new Collins transmitter and receiver. CRP is convalescing after a long illness. EAU has a three-element beam on 14 Mc. AQB expects to be an OPS soon. SVL has a new HT-9, also new mobile rig. CC is recovering from a hernia operation. PPS is operating at YB. NH has worked 20 countries and has been heard in 5 others on 160-meter c.w. NTR received a 1-kw. rig as a gift. Traffic: W9JUJ 1404, NZZ 746, TT 521, WWT 365, WRO 227, TG 182, STC 160, OZQ 156, EHZ 150, TQC 136, UQP 132, BKJ 88, QYQ 88, ZYK 69, CTF 63, WUH 48, FGX 46, VNV 40, AQB 35, NTA 34, PQA 33, YIP 33, CEA 26, SVL 26, CMT 24, ZRP 24, DOK 22, EHE 22, CC 21, YB 18, QR 17, EQO 12, SKP 11, DZC 8, KDV 8, GDL 7. BDP 5, ZIB 4, FSA 3, NH 3, PPS 3, YVS 2, DKR 1, GDL 1.

WISCONSIN — SCM, Reno W. Goetsch, W9RQM — SEC: OVO. PAMs: ESJ and GMY. RMs: IXA, RTP, and UNJ. Nets: BEN, 3950 kc., 6 P.M. daily; WIN, 3685 kc., 6 P.M. daily; WPN, 3950 kc., 1215 Mon.-Sat., 0930 Sun. Wisconsin mobile and c.d. frequency: 29,620 kc. New calls in Waukesha are WN9MMA, MOP, and ONH. DIK has a new Matchbox antenna coupler. IIU is planning on the Field Day use of the new 750-watt gas generator. SDK picked up 3 new countries during the first week end of the C.W. DX Test. RKP has 15 countries on 3.5 Mc. Because of the proximity of RTTY and the resultant QRM, WIN shifted its frequency from 3625 to 3685 kc., effective March 15th. WPN had 30 sessions in January with 801 QNI and 138 messages handled, according to SAA. KXK is the proud owner of a new Johnson Viking II

(*Continued on page 82*)

LISTENING on almost any amateur band one is likely to get the impression that a new type of r.f. amplifying system has recently been developed. This "new" system eliminates all T.V.I., all spurious and harmonic radiations, has high efficiency, has low efficiency, uses only special tubes, can use any tubes, etc., etc. Thus, it is evident that some degree of confusion exists and it seems appropriate to again review some of the clear-cut facts about linear amplifiers.

THEY are not new at radio frequencies as they have been used for years by commercial services. All amplifiers have some degree of distortion thus developing harmonics and inter-modulation products. A linear by its nature will have less of these unwanted products, but good operating and engineering practice make mandatory a carefully designed, tuned tank circuit or pi-network output to reduce spurious radiations to a minimum level.

THE efficiency of a linear amplifier is lower than a Class C stage when rated on a plate power input basis, but when used for S.S.B. and properly rated and measured can provide about 65% plate efficiency.

ALMOST any tubes can be used as linear amplifiers. Some, however, will have higher internal losses than others, but would also exhibit these same characteristics when used in Class C applications.

A CONVENIENT measure for evaluating linear amplifiers on a cost basis, for a given plate input, is to compare the combined replacement cost of the r.f. and rectifier tubes. For 500 watts input and Class B operation the most economical combination is a pair of 811-A's and 866-A's for a total cost of slightly more than $14.00. The associated circuit simplicity for this combination also assures increased reliability and further economies. The dollars thus conserved can be spent for the most efficient r.f. input and output circuits to reduce drive requirements and obtain the maximum suppression of spurious signals.

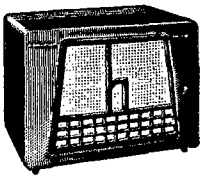
ALL of these features, and more, are in the new HT-31 amplifier soon to be announced.

Fritz Franke

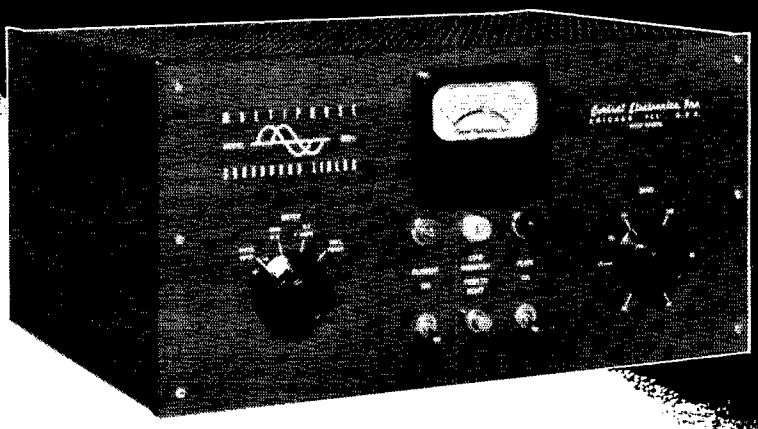
Bill Halligan, Jr.

W. J. Halligan W9AC

for hallicrafters



NOW a BROAD-BAND* LINEAR

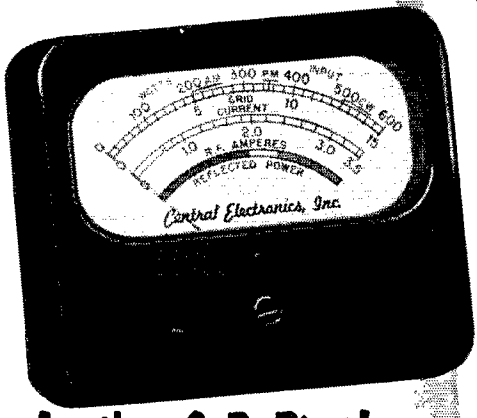


MULTIPHASE
600 L
NO TUNING CONTROLS

SINGLE KNOB BAND-SWITCHING 10-160

FOR USE ON SSB, AM, PM & CW

WIRED, WITH TUBES AND BUILT-IN POWER SUPPLY **$349.50**



Another C.E. First!

METER FEATURES NEVER BEFORE FOUND IN A TRANSMITTER

- Reads power input directly in watts
- Reads grid current
- Instantly reads output in RF amperes — no lagging thermocouple
- Indicates reflected power caused by mismatched load
- Calibrated input levels for AM, PM and CW.

. . . and switch the meter to any position while transmitting!

*PATENT PENDING

WRITE FOR LITERATURE

a new concept in linears

CENTRAL ELECTRONICS takes pride in presenting a product of intensive research — the new Multiphase 600L Broadband* Linear. "It is destined to change the entire concept of RF amplifier design in the military, commercial and amateur fields." There are no tuning controls, servos or moving parts other than bandswitch.

- Single 813 in Class AB_2.
- New band-pass couplers provide high linear efficiency: 60 to 65%.
- Designed for 50 — 70 ohm co-axial input and output.
- Easy to drive — Approx. 2 watts effective or 4 watts peak drive power required for 500 watts DC input.
- Built-in power supply — bias and screen regulation, 45 mfd. oil filled paper output capacitor. Excellent static and dynamic regulation.
- Extremely low intermodulation distortion.
- Automatic relay protects 813 and RF couplers.
- Excellent stability — complete freedom from parasitics.
- Effectively TVI suppressed — RF compartments thoroughly shielded and Hypassed.
- Choice of grey table model, grey or black wrinkle finish rack model.
- Table model cabinet size — 17⅝" W, 8¾" H, 13" D.

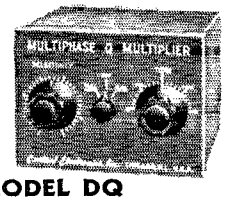
MULTIPHASE EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

Watch for early announcement of other new CENTRAL ELECTRONICS equipment.

MODEL AQ



MODEL DQ

MODEL B SLICER

NEW MULTIPHASE "Q" MULTIPLIER AVAILABLE THREE WAYS

1. It's built-in the new Model B Sideband Slicer.
2. *Plug it into your present Model A Slicer.*
3. Attractive Desk Model, for installation directly into receiver.

The new Multiphase "Q" MULTIPLIER is a tunable IF electronic filter that provides tremendous receiver selectivity for peaking or rejecting a signal on AM, CW or SSB. It employs a *new two tube circuit* with a special* very high "Q" pot core inductor. Continuously variable selectivity from 60 cps to normal IF pass-band. Nulls out interfering heterodynes without affecting speech intelligibility. Peak the desired signal; interfering carriers are attenuated up to 50 db.

*PATENT PENDING

MODELS

MODEL AQ

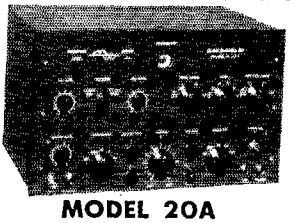
"Q" MULTIPLIER for installation in *Model A Slicer. Includes new front* panel. Power-IF cable plugs into accessory socket.
Wired . . . $29.50 Kit . . . $22.50

MODEL DQ

Desk Model "Q" MULTIPLIER for use with any receiver having 450 to 500 KC IF. In attractive case 5½" W, 4"H, 5" D, *with connecting power-IF cable.* Power requirements, 225 to 300 VDC at 12 ma., 6.3 V at .6 amps, can be secured from receiver. Can provide added selectivity and BFO for mobile SSB or CW reception.
Wired . . . $29.50 Kit . . . $22.50

MODEL B

Sideband Slicer, same as Model A Slicer but includes built-in "Q" MULTIPLIER. AP-1 not needed.
Wired $99.50
Kit $69.50



MODEL 20A

- **20 Watts Peak Envelope Output SSB, AM, PM and CW**
- **Completely Bandswitched 160 thru 10 Meters**
- **Magic Eye Carrier Null and Peak Modulation Indicator**

Choice of grey table model, grey or black wrinkle finish rack model.
Wired and tested **$249.50**
Complete kit **$199.50**

458 CONVERSION KIT

Basic 458 Conversion Parts Kit, 15 to 160 meters, with dial, etc. $15.00
458 Deluxe Case and Panel Kit, matches size and appearance of Slicer. . . $10.00

NEW — FOR 10 METERS

MODEL 458-10 xtal controlled converter package to extend 458 VFO into 10 meter band. For use with above 458 Conversion Kits.
Wired $37.50
Kit $27.50

Check These Features NOW IN BOTH MODELS

- **Perfected Voice-Controlled Break-in on SSB, AM, PM.**
- **Upper or Lower Sideband** at the flip of a switch.
- **New Carrier Level Control.** Insert any amount of carrier without disturbing carrier suppression adjustments.
- **New Calibrate Circuit.** Simply talk yourself exactly on frequency as you set your VFO. Calibrate signal level adjustable from zero to full output.
- **New AF Input Jack.** For oscillator or phone patch.
- **CW Break-in Operation.**
- **New Gold Contact Voice Control Relay.** Extra contacts for muting receiver, operating relays, etc.
- **Accessory Power Socket.** Furnishes blocking bias for linear amplifier and voltage for optional VFO (Modified BC458 makes an excellent multiband VFO.)
- **40 DB or More Suppression** of unwanted sideband.

SIDEBAND SLICER

MODEL A IMPROVES ANY RECEIVER

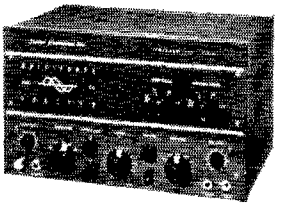
Upper or lower sideband reception of SSB, AM, PM and CW at the flip of a switch. Cuts QRM in half. Exalted carrier method eliminates distortion caused by selective fading. Easily connected into any receiver having 450-500 KC IF. Built-in power supply. Reduces or eliminates interference from 15 KC TV receiver sweep harmonics.
Wired and tested **$74.50**
Complete kit **$49.50**

AP-1 ADAPTER

Plug-in IF stage — used with Slicer, allows receiver to be switched back to normal.
Wired and tested, with tube **$8.50**

NEW AP-2 ADAPTER

Combined AP-1 and xtal mixer. Allows Slicer to be used with receivers having 50, 85, 100, 915 KC and other IF systems. One xtal suffices for most receivers. **$17.50**



MODEL 10B

SUCCESSOR TO THE POPULAR MODEL 10A

- **10 Watts Peak Envelope Output SSB, AM, PM and CW**
- **Multiband Operation** using plug-in coils.

Choice of grey table model, grey or black wrinkle finish rack model. With *coils for one band.*
Wired and tested **$179.50**
Complete kit **$129.50**

QT-1 ANTI-TRIP UNIT

Perfected Voice Operated Break-in with loudspeaker. Prevents loud signals, heterodynes and static from tripping the voice break-in circuit. All electronic — no relays. Plugs into socket inside 20A or 10B Exciter.
Wired and tested, with tube **$12.50**

WRITE FOR LITERATURE

MULTIPHASE EQUIPMENT

Central Electronics, Inc.

1247 W. Belmont Ave. Chicago 13, Illinois

See Trade Publications on Multiphase "REJUVA-TUBE" — A New CRT REJUVENATOR

New Heathkit VFO KIT

MODEL VF-1

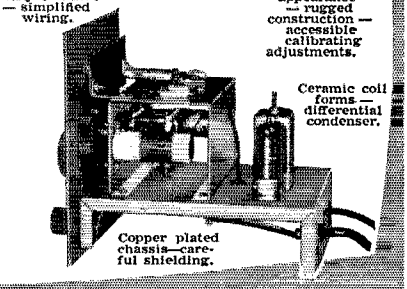
$19.50

Ship. Wt. 7 lbs.

- Smooth acting illuminated and precalibrated dial.
- 6AU6 electron coupled Clapp oscillator and OA2 voltage regulator.
- 10 Volt average output on fundamental frequencies.
- 7 Band calibration, 160 through 10 meters, from 3 basic oscillator frequencies.

Here is the new Heathkit VFO you have been waiting for. The perfect companion to the Heathkit Model AT-1 Transmitter. It has sufficient output to drive any multi-stage transmitter of modern design. A terrific combination of outstanding features at a low kit price. Good mechanical and electrical design insures operating stability. Coils are wound on heavy duty ceramic forms, using Litz or double cellulose wire coated with polystyrene cement. Variable capacitor is of differential type construction, especially designed for maximum bandspread and features ceramic insulation and double bearings.

This kit is furnished with a carefully precalibrated dial which provides well over two feet of calibrated dial scale. Smooth acting vernier reduction drive insures easy tuning and zero beating. Power requirements 6.3 volts AC at .45 amperes and 250 volts DC at 15 mills. Just plug it into the power receptacle provided on the rear of the AT-1 Transmitter Kit. The VFO coaxial output cable terminates in plastic plug to fit standard ¼" crystal holder. Construction is simple and wiring is easy.



Heathkit AMATEUR TRANSMITTER KIT

MODEL AT-1

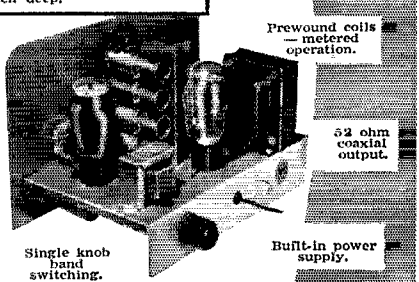
$29.50

Ship. Wt. 16 lbs.

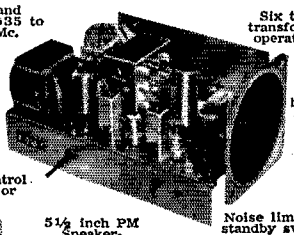
SPECIFICATIONS:

Range 80, 40, 20, 15, 11, 10 meters.
6AG7 .....Oscillator-multiplier.
6L6 .....Amplifier-doubler
5U4G ..... Rectifier.
105-125 Volt A.C. 50-60 cycles 100 watts. Size: 8⅛ inch high x 13⅛ inch wide x 7 inch deep.

Here is a major Heathkit addition to the Ham radio field, the AT-1 Transmitter Kit, incorporaring many desirable design features at the lowest possible dollar-per-watts price. Panel mounted crystal socket, stand-by switch, key click filter, A. C. line filtering, good shielding, etc. VFO or crystal excitation—up to 35 watts input. Built-in power supply provides 425 volts at 100 MA. Amazingly low kit price includes all circuit components, tubes, cabinet, punched chassis, and detailed construction manual.



Heathkit COMMUNICATIONS RECEIVER KIT



SPECIFICATIONS:

Range.....535 Kc to 35 Mc
12BE6 .....Mixer-oscillator
12BA6 .....I. F. Amplifier
12AV6 Detector—AVC—audio
12BA6 ....B. F. O. oscillator
12A6.....Beam power output
5Y3GT .....Rectifier
105-125 volts A. C. 50-60 cycles, 45 watts.

A new Heathkit AR-2 communications receiver. The ideal companion piece for the AT-1 Transmitter. Electrical bandspread scale for tuning and logging convenience. High gain miniature tubes and IF transformers for high sensitivity and good signal to noise ratio. Construct your own Communications Receiver at a very substantial saving. Supplied with all tubes, punched and formed sheet metal parts, speaker, circuit components, and detailed step-by-step construction manual.

MODEL AR-2

$25.50

Ship. Wt. 12 lbs.

CABINET:

Proxylin impregnated fabric covered plywood cabinet. Shipg. weight 5 lbs. Number 91-10, $4.50.

HEATH COMPANY

BENTON HARBOR 9, MICHIGAN

New HEATHKIT DX-100 PHONE AND CW TRANSMITTER KIT

MODEL DX-100

Shpg. Wt. 120 lbs.

$189.50

Shipped motor freight unless otherwise specified. $50.00 deposit with C.O.D. orders.

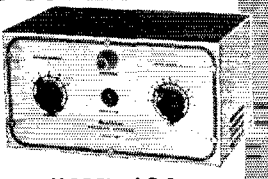
- **R.F. output 100 watts Phone, 125 watts CW.**
- **Built-in VFO, modulator, power supplies. Kit includes all components, tubes, cabinet and detailed construction manual.**
- **Crystal or VFO operation (crystals not included with kit).**
- **Pi network output, matches 50-600 ohms non-reactive load. Reduces harmonic output.**
- **Treated for TVI suppression by extensive shielding and filtering.**
- **Single knob bandswitching, 160 meters through 10 meters.**
- **Pre-punched chassis, well illustrated construction manual, high quality components used throughout—sturdy mechanical assembly.**

This modern-design Transmitter has its own VFO and plate-modulator built in to provide CW or phone operation from 160 meters through 10 meters. It is TVI suppressed, with all incoming and out-going circuits filtered, plenty of shielding, and strong metal cabinet with interlocking seams. Uses pi network interstage and output coupling. R.F. output 100 watts phone, ... 125 watts C W. Switch-selection of VFO or 4 crystals (crystals not included).

Incorporates high quality features not expected at this price level. Copper plated chassis—wide-spaced tuning capacitors — excellent quality components throughout—illuminated VFO dial and meter face—remote socket for connection of external switch or control of an external antenna relay. Preformed wiring harness—concentric control shafts. Plenty of step-by-step instructions and pictorial diagrams.

All power supplies built-in. Covers 160, 80, 40, 20, 15, 11 and 10 meters with single-knob bandswitching. Panel meter reads Driver I_P Final I_G, I_P, and E_P, and Modulator I_P. Uses 6AU6 VFO, 12BY7 Xtal osc.-buffer, 5763 driver, and parallel 6146 final. 12AX7 speech amp., 12BY7 driver, push-pull 1625 modulators. Power supplies use 5V4 low voltage rect., 6AL5 bias rect., 0A2 VFO voltage reg., (2) 5R4GY hi voltage rect., and 6AQ5 clamp tube. R.F. output to coax. connector. Overall dimensions 20⅞" W x 13¾" H x 16" D.

Heathkit ANTENNA COUPLER KIT



MODEL AC-1

$14.50 Shpg. Wt. 4 lbs.

Poor matching allows valuable communications energy to be lost. The Model AC-1 will properly match your low power transmitter to an end-fed long wire antenna. Also attenuates signals above 36 Mc, reducing TVI. 52 ohm coax. input—power up to 75 watts—10 through 80 meters—tapped inductor and variable condenser—neon RF indicator—copper plated chassis and high quality components.

Heathkit GRID DIP METER KIT

MODEL GD-1B

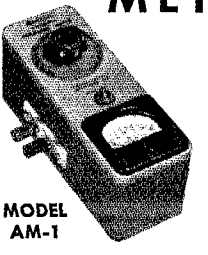
$19.50 Ship. Wt. 4 lbs.

The invaluable instrument for all Hams. Numerous applications such as pretuning, neutralization, locating parasitics, correcting TVI, adjusting antennas, design procedures, etc. Receiver applications include measuring C, L and Q of components—determining RF circuit resonant frequencies.

Covers 80, 40, 20, 11, 10, 6, 2, and 1¼ meter Ham bands. Complete frequency coverage from 2—250 Mc, using ready-wound plug-in coils provided with the kit. Accessory coil kit, Part 341-A at $3.00 extends low frequency range to 350 Kc. Dial correlation curves furnished.

Compact construction, one hand operation, AC transformer operated, variable sensitivity control, thumb wheel drive, and direct reading calibrations. Precalibrated dial with additional blank dials for individual calibration. You'll like the ready convenience and smart appearance of this kit with its baked enamel panel and crackle finish cabinet.

Heathkit ANTENNA IMPEDANCE METER KIT



MODEL AM-1

$14.50 Shpg. Wt. 2 lbs.

Use the Model AM-1 in conjunction with a signal source for measuring antenna impedance, line matching purposes, adjustment of beam and mobile antennas, and to insure proper impedance match for optimum overall system operation. Will double, also, as a phone monitor or relative field strength indicator.

100 ua. meter employed. Covers the range from 0 to to 600 ohms. Cabinet is only 7" long, 2½" wide, and 3¼" deep. An instrument of many uses for the amateur.

HEATH COMPANY

A SUBSIDIARY OF DAYSTROM, INC.

BENTON HARBOR 9, MICHIGAN

(*Continued from page 76*)

and VFO. LNM worked TI9MHB on 160 meters with his Viking Ranger. RQK has had good luck on 14 Mc. with 40 watts out east. WN9GZS has a four-element beam on 144 Mc. CCO received his 9RN certificate. The present roster of WIN lists 40 members. YZA is active on WIN with a Viking II and an RME-70. WN9HYV, using a BC-454, reports an unusual 4-way QSO between 9N8X, 8NSX, 9PCY, and 8PCY. OVO would like to hear prospective EC candidates for Rusk, Barron, Sawyer, Washburn, Burnett, and Polk Counties. If there is no EC in your area, recommend a qualified candidate to the Section Emergency Coördinator, OVO. New EC appointees are KTE, Eau Claire; IYF, Dunn County; and DOH, Buffalo, Jackson, and Trempealeau Counties. FCF is building a 14-, 21-, and 28-Mc. preselector for his HQ-129. GPU, OGT, and OOL handled communications for the CAA over a 20-hour period between La Crosse and Madison, when wire facilities were disrupted and unavailable. Traffic: W9CXY 263, IXA 168, CCO 118, RTP 57, SAA 41, RUB 30, DIK 23, UIM 18, FFC 16, YZA 16, IQW 13, KWJ 12, IIU 7, RQM 6, SZR 6, OVO 2, SDK 2.

DAKOTA DIVISION

SOUTH DAKOTA — SCM, J. W. Sikorski, WØRRN — Asst. SCMs: Earl Shirley, ØYQR and Martha Shirley, ØZWL. SEC: GCP. PAMs: GDE, BNA, NEO, and PRL. RM: SMV. The Mitchell ARC is affiliated with ARRL and officers are GCP, pres.; EYB, vice-pres.; GWW, secy.; GWL, treas. The newly-organized club in the Lead-Deadwood Area has chosen the name of Signal Hill Amateur Radio Club. While on a trip to California, GDE worked mobile on all bands and logged 183 QSOs. New General Class licensees in Vermillion are TMB and TLU, while ZIL is a Novice. OOP/Ø, EXX, GWA, OKX, and GXD demonstrated a ham station and handled traffic at a hobby show in Freeman. Ex-CSX now is 9LON at Green Bay, Wis. UVL has a call for his workshop at the State Police, ZRC, and STI answers to ZDE at home. KSW now is working for GDE. OO LXQ sent out six reports in February, and actually received a "thank you" from one of them. Net traffic: 75-meter Net (Jan.) 1105 QNI, average daily traffic 5; (Feb.) 1333 QNI, average daily traffic 6; C.W. Net 12 sessions, QNI, 107, traffic 31; 160-Net 28 sessions, 1018 QNI, traffic 104; NJQ Net 25 sessions, 623 QNI, traffic 125. SCT, operating in the 4 S.D. nets and Iowa, was QNI 109 of a possible 115 sessions. TLO received 2nd-class commercial telephone license. Traffic: WØSCT 109, DVB 16, RRN 16, SMV 13, PHR 11, GDE 10, MPQ 8, NWK 8, TLD 7, BQH 5, QKV 4.

MINNESOTA — SCM, Charles M. Bove, WØMXC — Asst. SCM: Vince Smythe, ØGGQ. SEC: GTX. RMs: DQL and KLG. PAMs: JIE and UCV. New converts to s.s.b. are SW, HEO, DDN, GGQ, and BHY. New net time for the Minn. Junior Net is 1700 CST. Special certificates are issued for reporting in at least twice out of every three sessions. Stickers also are issued for the one with the highest traffic count each month. GTX has been appointed OPS and KLG is the new RM of the MSN. YLZ and his wife Helen have a new baby girl. The Padre Net meets Tue. at 12:30 P.M. between 3890 and 3900 kc. EOF and OTU are net controls. The roster consists of OEF, UYU, YZH, JDR, EYK, UBL, TPN, QTR, OTU, and EOF. KJZ has worked WAS on 80-meter c.w. OOQ attended a radio club meeting in St. Paul. TQQ has been vacationing in Hawaii. K6EA's mother-in-law was ill in Pasadena, Calif. He tried to get a message to her so contacted WMA, who got hold of TF, at Orchard Lake, who got in touch with OA5G, in Peru. He relayed the message to VO1 in Newfoundland, who sent it to K6DDQ, at Pasadena, a former Twin City resident. Disser, Communications Officer in the CAP, has been teaching code to Novices and giving them their exams. Some of them who passed are WNØZID, ZIE, ZIG, ZHL, ZHM, ZHO, and TYQ. HPV is running 500 watts. The Twin City Area Radio Clubs have joined hands and organized the Twin City Area Amateur Radio Council, or TWARC. The Council will act as an advisory group for the coördination of and betterment of amateur radio in the metropolitan area. It will unite all clubs in one group in case of emergency. OVO built a beam for WMA and RGJ and TJI erected it for him. IRJ is the proud owner of a new HQ-140K receiver. IRD is vacationing on the West Coast. RNY is planning on 6 meters and 420 Mc. OJJ is planning c.w. mobile. ZJA is a new Novice trained by QDP and QDR. Traffic: WØKLG 175, WMA 128, DQL 127, CID 124, IRJ 118, QBW 107, QNY 99, KFN 92, KJZ 83, RVO 78, MVG 66, MVH 61, TKX 47, HIN 39, KNR 39, LST 34, UCV 32, QDP 29, TQQ 27, OJH 22, TJA 22, GTX 16, VPO 16, MXC 14, VBD 13, LUX 12, NJZ 12, QGD 12, RQJ 12, NTV 11, GGQ 10, NJT 8, ABA 7, BUO 7, AFP 6, FCU 6, OJP 6, OPA 5, RQV 5, MBD 4.

DELTA DIVISION

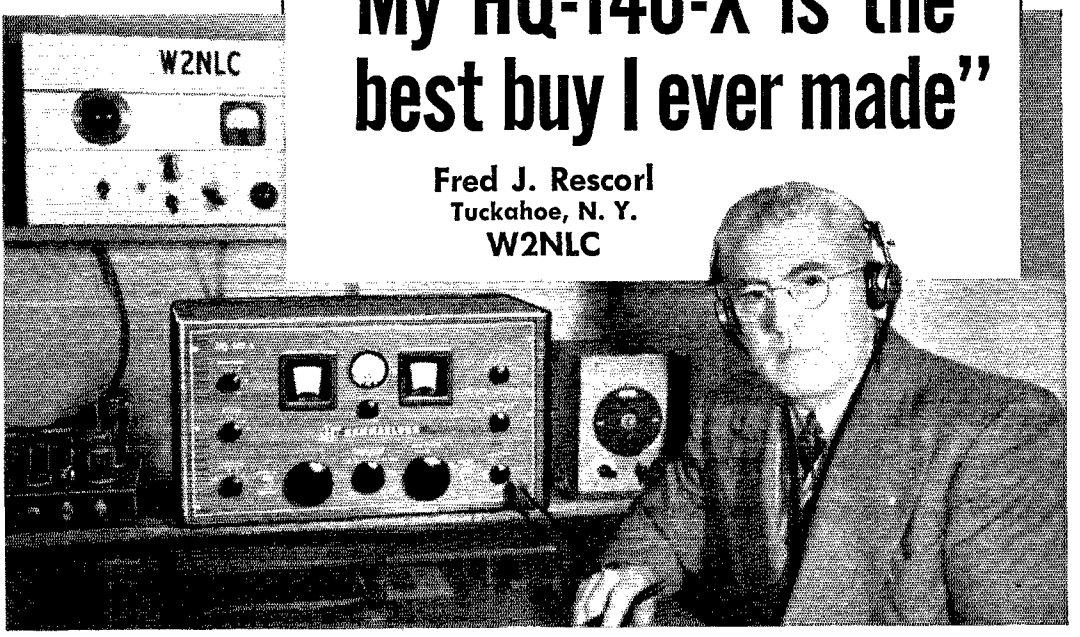
ARKANSAS — SCM, Owen G. Mahaffey, W5FMF — The OZK C.W. Net is picking up every week. We now have a nice bunch of new members who are doing a swell

(*Continued on page 84*)

Science Teacher-Ham says—

"My HQ-140-X is the best buy I ever made"

Fred J. Rescorl
Tuckahoe, N. Y.
W2NLC

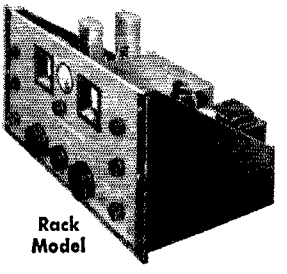


Fred J. Rescorl is both a science teacher and a ham, and as such can appreciate both the practical and theoretical sides of radio. Fred has been a satisfied Hammarlund customer for years, using Hammarlund capacitors and other components in home-built equipment, and now has a Hammarlund HQ-140-X receiver in his ham station.

Fred is enthusiastic about Hammarlund products. In his latest letter, he says, "My HQ-140-X is the best buy I ever made. It's the receiver I recommend to my friends. It has performed the way you said it would — outstanding sensitivity and selectivity, with almost no frequency drift."

Fred J. Rescorl's happy experience with Hammarlund products is no accident. Rather, it is the result of careful engineering exemplified in the professional characteristics of the HQ-140-X.

Be completely satisfied with your next receiver. Get an HQ-140-X! It's available either as a cabinet model or for rack-mounting. For complete details, write to The Hammarlund Manufacturing Co., Inc., 460 W. 34th Street, New York 1, N. Y. Ask for Bulletin R5


Rack Model

HAMMARLUND

job on 3790 kc. at 7: P.M. and we welcome more. HEE is our new PAM. Let us all help him get the Ozark 'Phone Net going on 3810 kc. CAM is a new General Class licensee in Pine Bluff. BUX reported on the c.w. net with a new rig and a nice signal. The Southwest Arkansas Amateur Radio Club at Pine Bluff plans a hamfest in early June. WN5HJO is a new ham in Siloam Springs. He paid us a visit. SXM is our new RM, taking the place of MSH, who was rather suddenly called to Europe on a radio job. I would like to have the news from more radio clubs. Traffic: W5SXM 54, FMF 33, WUN 6, BUX 2, PX 1.

LOUISIANA — SCM, Thomas J. Morgavi, W5FMO — LJT is new EC for Lake Charles. IHR resigned because of illness. Officers of the Southwest La. ARC are FDC, pres.; BWZ, vice-pres.; ZAK, treas.; BMK, secy. The emergency net meets each Sun. at 1400 CST on 3850 kc. Istrouma ARC's new officers are WQX, pres.; YSN, vice-pres.; ONM, act. mgr.; URR, asst. to ONM; UNQ, treas.; FMN, secy. On the morning of Feb. 26th at 0300 Baton Rouge had a successful simulated emergency. The Istrouma ARC participated using its new emergency truck complete with gasoline-driven a.c. generator for emergency power. WQX is now VFO. DUS has completed a new rig with 813 in the final. The South La. Emergency Net meets at

(*Continued on page 86*)

EXCLUSIVE! NEW!

VIKING RANGER with Timed Sequence Keying

NO CLICKS! NO CHIRPS!

CLEAN and CRISP ELECTRONIC BREAK IN!

- **New Time Sequence Keying**
- **75 Watts Input CW • 65 Watts Input Phone**
- **Built-in VFO • TVI Suppressed**
- **Instant Bandswitching • 7 Amateur Bands**

Viking "Ranger" Transmitter/Exciter Kit complete with tubes and all necessary instructions, less crystals, key, and mike. **$214.50** Amateur Net

Viking "Ranger" Transmitter/Exciter wired and tested including tubes, less crystals, key, and mike. . . . . **$293.00** Amateur Net

For the complete story on the Viking "Ranger" write for Booklet 724 containing detailed information, and schematic diagram.

Here it is! The new, improved Viking "Ranger" with the perfect keying system. No more clicks and chirps even when driving a full kilowatt! Timed sequence keying provides ideal "make" and "break" on your keyed signal, yet VFO is keyed for fast break-in. Press the key and the VFO turns on quickly (before the keyed amplifier), and it stays on a fraction of a second after the amplifier cuts off. Wave shaping is then applied to the keyed amplifier stages for a perfect waveform. Time delay sequence is adjustable and may be set to operate so fast that a "breaking" signal can be heard between transmitted dots! Entirely electronic in operation, the system utilizes a type of grid block keying without relays and provides clean and crisp electronic keying.

Buy your Viking "Ranger" today! Truly the finest low power rig available, it packs enough power for enjoyable contacts all over the world. Later using the "Ranger" as an exciter you can add a Viking Kilowatt Power Amplifier and enjoy the ultimate in high power performance and convenience.

E. F. JOHNSON COMPANY

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0800 Sun. on 3830 kc. The Net is under the direction of DKU, the EC, with YDC, TDY, and BV, Asst. ECs. UJK is chairman of the planning committee. HEJ, our PAM, is in the hospital at this writing. We all wish him a speedy recovery. NG, our RM, reports that Baton Rouge is not suffering for lack of new blood. A large crop of Novices are coming up. SQI received a European QSL that completes his quota for WAC. EA has a new 'scope. CEW has two new rigs on, TVI-free, and worked three new countries on 'phone. SPZ has a new 20-meter beam, three elements 50 feet high. HUT is the new EC for New Orleans. UQK resigned as EC when his new job took him to Houston, Tex. FMO recently put on a frequency measuring demonstration using secondary standard, cycle counter, oscillograph, audio oscillator, and a receiver at the Greater New Orleans Amateur Radio Club which was well received. Traffic: W5NG 89, MXQ 74, NDV 47, EA 39, SQI 6, ONM 5.

MISSISSIPPI — SCM, Dr. A. R. Cortese, W5OTD — Well, fellows, this will be my last report as SCM for Mississippi. I have enjoyed serving you for the last two years and appreciate all the help given me. Mr. Julian Blakely, your new SCM, is a fine fellow and deserves all the aid you can give him. RY has a short beam on 20 meters. WN5GDW is on with a Heathkit and wants to work more Mississippi hams. EWE has a new 15-meter beam. TIR knows where you can get a 1000-v.d.c. generator. The Jackson Hamfest will be held the last Sunday in August. The usual good time will be had and I hope I'll see all of you there. Traffic: W5VME 92, EWE 71, TIR 34, OTD 6, RY 2.

TENNESSEE — SCM, Harry C. Simpson, W4SCF — SEC: RRV. PAM: PFP. RM: WQW. WQW was visited by GZ and a multitude, and visited LC, HEZ, VBA, BMI, KN4AOK, and BQG. Many Tennessee friends will miss FEI, who moved to Atlanta. WHN now has ART-13 Mobile. GFV, new General Class, is building a VFO and modulator. ZJY is building a new kw. It finally comes out — JU hasn't been on c.w. lately because the tree supporting his c.w. antenna died. IIB reports Chattanooga C.D. Exercise Interim worked nicely on both 'phone and c.w. TDZ reports a good attendance on the Chattanooga Area Radio Net. WQT has 3 new countries on 80 meters. The Clarksville Club teaches code to local Boy Scouts, shows ARRL films at meetings, and welcomes new member 9YKT. WHC, now is /KL7 and is looking for Tennessee contacts. The Memphis Club Station, EM, worked the Heart Fund drive, assisted by mobiles ADM, AFB, IBG SUK, ZGG, FYJ, STI, CV, GQQ, PKI, IQX, WTI, YMB, LVM, DIX, DCH, CRP, BDK, UDI, UDQ, ACK, RLU, RBL, BAO, ADY, WTJ, ATQ, BTZ, HMJ, HHK, and WBK. New 2-meter Memphis stations are PKI, WTI, AFB, FRB, and FRE. The Knoxville Club's new officers are TYU, pres.; TZJ, vice-pres.; SVE, secy.; J. P. Morgan, program chairman; and PHW, publicity chairman. Oak Ridge Operators Club, Inc., operated SKH/4 at the Hobby Show. Brother Luke, an operator at YN4CB, is visiting his many friends in Memphis. Traffic: W4PL 1196, OGG 551, K4FET 265, W4PFP 231, SCF 147, WAX 118, WQW 109, SKH/4 101, CXY 91, IIB 90, TZD 90, PQP 87, BQG 78, K4FEU 72, W4ODR 52, VJ 44, YMB 40, ZJY 40, HIH 33, IV 32, AFB 31, RRV 27, HEZ 19, TIE 19, SAR 15, UVS 15, TDZ 10, RMJ 6, BAQ 5, FLW 5, HSX 5, HUT 5, UOA 5, UDI 4, GFV 3, YPG 2, NPS 1.

GREAT LAKES DIVISION

KENTUCKY — SCM, Robert E. Fields; W4SBI — NIZ is really carrying the ball for the new (KPN) Kentucky 'Phone Net. The first 14 days of the new Kentucky Net operation showed these figures: 236 stations called in, an average of 16.7 stations per net; 32 messages handled, an average of 2.28 per net. Net time is 1:30 P.M. CST. Mon. through Sat. and 8:00 A.M. Sun. The frequency is 3960 kc. CDA, SEC for Kentucky, asks that all Kentucky ECs report to him the number of AREC members they have signed up. Every amateur in Kentucky should register station facilities and availability as an operator with AREC. Registration forms may be had by contacting your EC, SEC, or SCM. The Mic-Key Radio Club of Russellville has a Novice Emergency Net operating Sun. at 2:00 P.M. CST and Thurs. at 7:00 P.M. CST on 3735 kc. under the capable leadership of JHU. The Novice Net has 15 active stations at the present time. Our hat is off to you, Marvin. Traffic: K4WBG 420, W4KKW 369, K4FBW 92, W4NIZ 64, RPF 54, HSI 49, CDA 47, SBI 42, JCN 41, GFG 19, HEA 12, ZDB 12, ZDA 11, KRC 7, URF/1 5, K4AXE 4, W4SUD 4.

MICHIGAN — Thomas G. Mitchell, W8RAE — Asst. SCMs: Joe Beljan, 8SCW; Bob Cooper, 8AQA. SEC: GJH. With HKT retiring as our SCM I am sure that you will join me in expressing our thanks to him for a job well done and extend to him best wishes for the future. In taking over the duties of this office I pledge you my very best effort to maintain the same calibre of service that you are accustomed to. Many thanks to all who supported me in the election. There is no misunderstanding on my part that this is a one-man job. Rather, it is one of coördinating the coöperative efforts of all members in this section. Let's all keep striving to keep the fine reputation that we in Michigan enjoy. Examination of the appointments file indicates a laxity on the part of some appointees to have their appointment certificates endorsed. Please be reminded that failure to keep your appointment current is basis for cancellation. It is impossible to notify each appointee when to apply for endorsement — it is your responsibility. Word from our SEC regarding approval of the Michigan Communications Plan is encouraging. As soon as it is ratified by the FCC and the FCDA, our RACES Plan can blossom into being. Many AREC registrations are being received, but many more will be needed to fill the ranks. GJH has spent much time doing the ground work so let's show our appreciation by backing him and the rest of his AREC organization with a solid membership. Remember, fellows, in the event of a disaster only those qualified as RACES stations will be allowed to help. Traffic: (Feb.) W8NUL 144, ILP 137, URM 75, NOH 73, SWG 68, IUJ 66, DAP 60, QIX 59, HKT 58, PHA 54, SRK 52, WVL 49, FX 40, IV 37, OQH 27, WXO 25, ZHB 23, RAE 22, HSG 21, AUD 17, DSE 17, TBP 12, PHM 10, NTC 9, QQK 7, EGI 5, FSZ 4, TQP 4, TIC 3. (Jan.) W8IKX 44, MLR 44, IV 41, TQP 4.

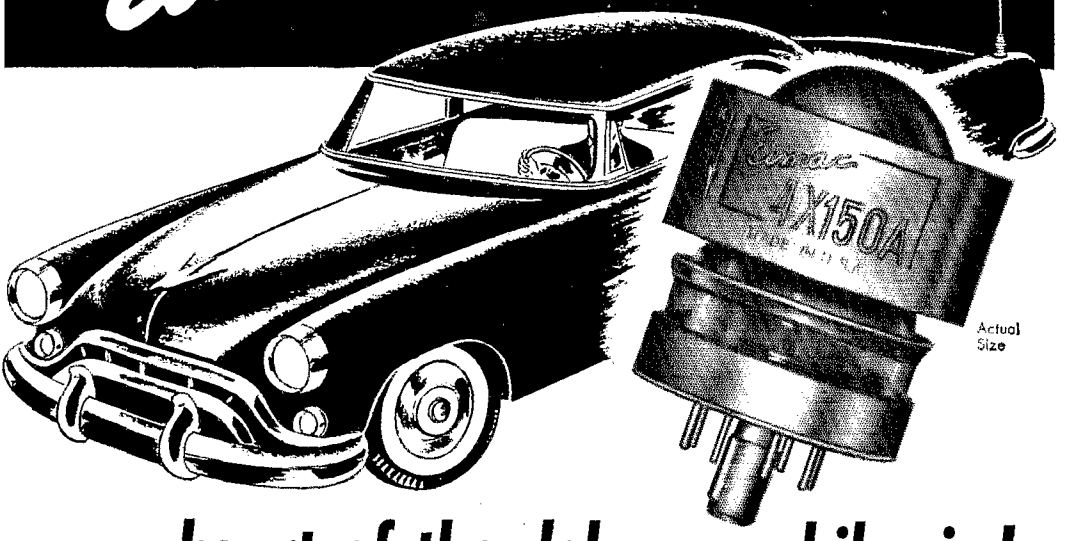
OHIO — SCM, John E. Siringer, W8AJW — Asst. SCMs: J. C. Erickson, 8DAE; W. B. Davis, 8JNF; E. F. Bonnet, 8OVG. SEC: UPB. RMs: DAE and FYO. PAMs: EQN and HUX. DAE and FYO made BPL for February traffic. New appointments are GLM as EC, WN8UJG as OES, and MYV and OMK as OBSs. EL2X is looking for stations on 20-meter 'phone in the Youngstown Area at about 2000Z. DZO will remain indefinitely in Arizona. Recently-elected Intercity Radio Club officers are HTO, pres.; OZZ, vice-pres.; and QXD, secy. MHF and NFO are the transmitter-hunting champs in Cincy, while IFX and HDA invariably finish last. VPX is the assigned call of Patterson Co-op High in Dayton. ILC has been bitten by the 2-meter bug. HHF is conducting code and theory classes for his neighbors. This is one way to alleviate TVI complaints. The Tiffin gang was scheduled to join ranks with the SVARC in Fremont on Mar. 14th to honor our fabulous SEC. PBX's Boy Scout students are making great progress, with WN8SAI attaining a nice score in the Novice Roundup. RCJ reports he now has 33 states worked. The Lake and Geauga Club had 36 attending its annual dinner. WN8SVL's 25 watts gives the Cincy "Big Boys" something to worry about. According to DAE, the Sat. and Sun. 1100 BN sessions are bringing 'em out. The Net has procured 1000 message cards with a pool of 12 sharing the expense. This should afford excellent publicity for BN and the National Traffic System. LVF has returned to Columbus and has resumed his duties as NCS of the 2-meter FM Net. QEF did a nice job as acting NCS during his absence. You can't beat the feminine touch! New officers of the Toledo Mobile Radio Assn. are VQP, pres.; MBE, vice-pres.; MNR, secy.-treas.; and OFG, corr. secy. The *Nelsonville Tribune* gave the Hocking Valley Club a front-page spread with numerous references to Rita, HPP, Ohio's "Miss Amateur Radio." PIZ is the new activities manager of the Van Wert Club. Hamilton's *Feed Line* reports that VHS has gone mobile and that the club mobile frequency is 29.1 Mc. Dayton's *ItV Carrier* informs us that ILC and RKJ are conducting code practice sessions; QFA is on 220 Mc.; Novices VGA and UVW are YLs; and the Hamvention program is shaping up beautifully. The Columbus *Carascope* states that ZYU is running high power with 80 watts; AER is operating mobile in Florida; JDK and VHO are vacationing in Florida; and WN8VFI was the leading local scorer in the Novice Roundup. The OVARA's Ether Waves has developed into a first-rate DX publication. New OVARA officers are 4EPA, pres.; 8DQC, vice-pres.; 4JBQ, treas.; 8SDJ, secy.; 4OMW, editor; 4KVX, DX editor; SDJ, v.h.f. editor; and PBU, act. mgr. The Hocking Valley *Key Kliks and Feed Back*, the newest bulletin received here, tells us that LQH has gotten on 75 meters; LGR/M worked Connecticut on 75 meters; HPP has a new romantic interest; and membership is now up to 35. Springfield's *Q-5* features an article by OKB on how to work DX. The Toledo *Shack Gossip* relates that BIQ has 76 countries on 15 meters; YAE is making his home in Toledo; TLC's son is serving in the Far East; HCN has an 813 clicking on 20 and 75 meters; and OKO has deserted 160 for 80 meters. Eastern Ohio's *Ham Flashes* reports that BZW has Youngstown's first TV transmitter; PWI has returned to 10 meters; JWC has erected a 44-foot vertical; OYQ is a city detective in the Youngstown Police Dept.; the Tri-State Club meets at RZ's home every other Fri. night; and EX is attending Fenn College in Cleveland. Traffic: (Feb.) W8FYO 582, UPB 293, DAE 248, LHV 186, ARO 175, IFX 88, MQQ 76, ILC 75, HNP 73, AL 67, LZE 58, LJH 47, MVJ 46, KDY 35, AJW 27, EQN 26, BEW 16, GZ 13, TLW 12, LMB 10, ET 9, AJH 8, AYR 8, HFE 7, OQP 7, MGC 6, QIE 6, HZJ 4, LGR 4, LZR 4, NQQ 4, PIJ 4, FBZ 3, TJD 3, HPP 2, HUX 2, RO 2, SAQ 2, WYL 2. (Jan.) W8LHV 106, IFX 65, BEW 12, PBX 10.

HUDSON DIVISION

EASTERN NEW YORK — SCM, Stephen J. Neason, W2ILI — SEC: RTE. RM: TYC. PAMs: GDD and LJG.

(*Continued on page 88*)

Eimac 4X150A



Actual Size

...heart of the deluxe mobile rig!

POWERFUL all-band operation through 420mc, top performance in double or single sideband service and more watt-hours per dollar make the Eimac 4X150A radial-beam power tetrode a tube for the deluxe mobile rig. The advantages offered by the versatility, power and reliability of the Eimac 4X150A make the necessary simple forced-air cooling well worth while—with an Eimac Air-System Socket an automobile defroster type blower is all that's needed to do the trick. With 1000 volts on the plate in typical plate modulated service, the Eimac 4X150A delivers 150 watts of useful plate power output with 200 watts of power input and only 2 watts driving power. The high power gain Eimac 4X150A is also ideal for increasingly popular Single Sideband mobile application. In typical AB_1 operation at 1000 plate volts, it delivers 150 watts of peak envelope power output with virtually no driving power requirement. Maximum ratings show a peak envelope power output of 350 watts with 2000 plate volts. This outstanding performance can be yours by taking incomparable Eimac quality on the road with you in the heart of a deluxe mobile transmitter.

TYPICAL OPERATION

	Class AB_1	Class C Phone
D-C Plate Voltage	1000 volts	1000 volts
D-C Screen Voltage	400 volts	250 volts
D-C Plate Current	250 ma	200 ma
D-C Screen Current	30 ma	20 ma
D-C Grid Current	0 ma	15 ma
Driving Power	0 watts	2 watts
Plate Power Input	250 watts	200 watts
Plate Power Output	150 watts	150 watts

The plate power output shown does not allow for circuit losses. The 4X150A may be operated at maximum ratings up to 500mc.

For further information about Eimac tubes and applications write our Amateur Service Bureau.

Eimac

EITEL-McCULLOUGH, INC. SAN BRUNO CALIFORNIA

The World's Largest Manufacturer of Transmitting Tubes

The SARA is conducting a WAS contest for its members. The contest started Feb. 7, 1955 and will end on Feb. 7, 1956. K2BE has replaced his old end-fed horizontal with a 44-foot vertical ground plane on 3.5 Mc. It works FB. K2BSD is very proud of the certificate of merit he received from the 2nd Regional 'Phone Net. New officers of the HHRL are AAD, pres.; K2DRN, secy.; K2AVZ, treas.; and OIT, act. mgr. K2EHI has a new 1500-watt portable power plant and two rigs operating on all bands. KN2JWM, the son of HM, is active on 7 and 3.5 Mc. with a Viking Ranger and a Windom antenna. Mike is interested in the traffic nets. Congrats to K2CIX and his new XYL. K2BOT gave an FB talk and demonstration with an electronic key at a recent meeting of the YARC. K2EDH received his well-earned Section Net certificate for activity on NYS. K2BJS, our acting RM for NYS, makes BPL again. RUF, mgr. of NYS, reports that outlets are badly needed for the area between Schenectady and Plattsburg, also in Sullivan and Delaware Counties. Attention ECs: If your appointment is due or past due for endorsement and you wish to continue, it is important that you notify the SCM within the next thirty days. Failure to do so will result in immediate cancellation. KN2GZM has a 522 on 144 Mc. K2DRN has a box of parts he hopes to whip into a Viking Ranger. K2CQS completed his s.s.b. rig. K2AJN is on 3.9 Mc. KN2HXR is building a 150-watt final designed by K2CQS. WRI is operating s.s.b. and is busy building a 300-watt final for his 20A. Traffic: (Feb.) K2BJS 601, EDH 53, W2LRW 38, K2BSD 26, BE 15, EHI 13, W2BSH 6. (Jan.) W2LRW 40.

NEW YORK CITY AND LONG ISLAND — SCM, Carleton L. Coleman, W2YBT — Asst. SCM: Harry J. Dannals, 2TUK. SEC: ZAI. PAM: JZX. RMs: VNJ and LPJ. ZAI reports AREC/RACES activity is excellent in Brooklyn, Queens, Staten Island, Nassau, and Suffolk. Nassau 10-meter AREC is planning monthly hidden transmitter hunts. ADO assisted in the Nassau-Suffolk 10-meter relay during RACES drill. VNJ has started NLT (NLI Training Net) at 1530 EST on 3710 kc. (Mon., Wed., Fri.). This is an excellent opportunity for Novices and slow-speed operators to get started in traffic-handling. LPJ made BPL again and became the sixth NYC-LI medallion winner. KEB/KFV again tops the traffic list. K2CQP made BPL and is DX-hunting on 80 meters. JOA needs Asia for WAC. OME has a new mobile antenna. Illness in the JZX family has kept Vi from being on the air regularly. K2AMP built an antennascope. AEE is participating in propagation reliability tests requiring over 100 hours per month of operation. K2IWV became General Class. K2ECN is the new Asst. EC in Brooklyn. The BAREC Net has PNR, K2DDE, and KN2IXP as new members. K2JYL is on the air with 5 watts. BO is remodeling the shack with a new console. IN has 20-watt s.s.b. rig on 40 meters. PF would like to start an s.s.b. traffic net. Anyone interested? K2DVT is building a new c.w. and s.s.b. rig to replace the 20-watter. EEN has a new 40-foot tower for the 20-meter beam. DLO completed a 20-meter shortened beam in time for the DX Contest. K2AMM has finished the 220-Mc. converter. K2ESZ has a 6360 rig planned for 220 Mc. K2HYK plans 150 watts 'phone/c.w. IVU and IVS are competing for CD Party section honors. JBQ soon will finish redecorating and will return to the NLI Net. NEG is finishing the 40-meter ground plane. LGK and K2CJP earned Net certificates for their activity in Queens AREC. KN2LIX is a new Novice at HJ. K2JPG dropped the "N." K2ANE is active from East Norwich on 40 and 80 meters. The Lake Success RC, YKQ, is heard on 144 Mc. New members of the NYRC are K2s ERL, GOT HGP, IMD, and JFQ, and KN2s IAD, JVT, and LAG. K2LJM is the Fordham RC call, with AMR, NSH, RRR, K2s BTJ, IFO, IKZ, ISK, and KN2IBZ as new members. News from Suffolk County finally arrived! The Suffolk County RC officers are MZB, pres.; JFU, vice-pres.; K2BTT, secy.; and OKK, treas. OOQ has a new YL. FHX was presented with twins, a boy and a girl. TPZ became a grandpa. Ex-RTZ, now 8UFZ, is 8UKV's XYL. CXG is with the USAF in Mississippi. IYS is operating the s.s.b. rig on 75 meters. EAF, FTV, and MZB are getting started on 2 meters. AJF may join them. It looks like a new club may start in Eastern Suffolk, with K2EC leading the way. AJR is chasing DX on 15 and 20 meters. YBT has moved to a new house. K2BAH is looking for 220-Mc. activity in the Richmond Hill Area. New officers of the SIARA are HFQ, chairman, CGJ, treas.; IPA, rec. secy.; and VKF, corr. secy. K2EUZ has 500 watts almost ready to go. JUN has a new Tecraft 2-meter converter. NEG is beginning a radio club at Seaford H.S. The New York Radio Club is holding its third annual picnic and transmitter hunt at Bethpage State Park, at Bethpage, Long Island, N. Y., on Sun. May 22nd, starting at 11 A.M. Women and children free; all OMs $1.00. All hams are welcome and a good time is assured. Refer inquiries to CYK, picnic chairman. Traffic: (Feb.) W2KEB 937, KFV 636, K2CQP 507, W2LPJ 502, VNJ 348, JOA 209, OME 157, K2ABW 114, W2JZX 110, MUM 108, K2AMP 81, W2AEE 72, DSC 64, GXC 38, K2CRH 32, W2OBU 29, BO 16, HJ 13, IN 11, K2AED 10, W2PF 10, K2DVT 1. (Jan.) K2CQP 402, W2IVU 186, HJ 20, GXC 16. (Dec.) W2GXC 80.

NORTHERN NEW JERSEY — SCM, Lloyd H. Manamon, W2VQR — SEC: IIN. PAM: CCS. RMs: EAS, CGG, and NKD. OGU has been appointed Technical Advisor to the Raritan Bay Radio Amateurs Club. K2EQD has returned from a Florida vacation. Hal also is a new OO. TTM is on the air with a new 829 in the final on 144 Mc. K2DDM is busy getting settled in his new QTH in Sayerville. Our thanks to K2BEV for keeping us informed of activities of the RBRA. COT is working on an s.s.b. rig. New hams in the Livingston Area are NMB and KN2LFD. The Teen-Age Rag-chewers Net meets Mon.-Fri. on 3525 kc. New members are invited to call in any time. KN2HXP is building a new rig with 6146 in the final. CCS is back in the swing of things after a lull in activity. Henry has just finished his term as director of TCPN. The new second-call-area director is HTD, of Red Bank. Code and theory classes conducted by the Irvington Radio Amateur Club are very well attended. Average attendance ranges from 20 to 25 each session. KN2JCA and KN2IRM have passed their General Class exams. NIY received WPR-50 certificate. K2EQP is busy with a new VFO. K2GBP is putting his mobile rig in the new car. COG receives the sympathy of the gang on the death of his mother. AYP is back in civilian life. AQC is on 144 Mc. with 1.5 watts and six-element beam. K2HHG is working DX from his mobile rig while going to and from work. K2BIF prefers working DX to writing out tickets — he's a cop! NSG, the modern ham station at Upsala College, has installed a c.c. job for Novice members of the college radio club. GTF is a complete DX station at St. Peters College with K2AEK trustee and chief of operations. KN2KJP, a student in the senior term of TV school, has been assigned the station call to match the initials of his name, K. J. Pelletier. KN2IGH has a new jr. operator, a son. KFR reports the Penn-Jersey Radio Club meets the 1st and 3rd Wed. of each month at County Court House, Belvidere. NKD is in a new QTH at Scotch Plains. OO reports were received from seven appointees this month. NIE is the proud owner of a new 20-A s.s.b. exciter. Your SEC, IIN, is going through the EC appointments and weeding out the inactive members. If your appointment has lapsed and there is no report of activity for a period of six months or more, he is cancelling the appointment. We notice that some of you still are mailing your reports to the office of the SCM at the old QTH. Please check page 6 of *QST* for the new address. Word has been received from ZK, aboard the *Atka*, in the form of an official New Year's greeting. The letter was received as a first-day cover from the ship's post office dated Jan. 12th and now is framed and adorns the shack wall at VQR. Traffic: W2EAS 135, K2GFX 81, BWQ 14, W2CCS 12, CFB 8, BRC 7, NIY 3, CVW 1, HXP 1.

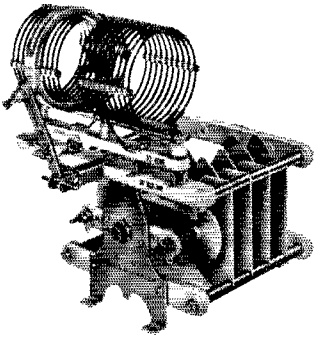
MIDWEST DIVISION

IOWA — SCM, William G. Davis, WØPP — The Waterloo Club has an activity calendar out for the full year. Good idea! Twenty-seven reported this month. New officers of the Clinton Club are KGZ, pres.; JAD, vice-pres.; USF, secy.; 9ZIP, treas. HMM has a father/son team in his classes i.e., DST and WNØYZE. The club at Luther College is progressing nicely. QLU sends in the first report I've had from an OES. BDR apologizes because there wasn't more traffic to report and he's still No. 1. Hi! SCA gets his 50th BPL. We have three crowding for BPL — PZO, CZ, and LJW. Hope they make it before my term runs out. New stations on TLCN are UCE, UIJ, and SQE. RJX represents TLCN on TEN each Fri. night. LJW has a new 140-X. PP has a new SX-96. A new WN in Burlington is 13-year-old KNØAAH. KP4WU/Ø now is WØZOH. EHH now has a Globe Scout 40-A and an HQ-140X. New Novices at Creston are ZUZ and ZAZ. Ben Fowler, Iowa c.d. director, spoke at the Ft. Dodge Club. PAN is hoping for a BPL. HVW reports that KWT, UTD, OPQ, and HWU put on a program demonstration for the Science Club of Independence High School Feb. 10th with 50 in attendance. New hams in Waterloo are OFV, WNØZLL, and WNØZHA. WNØTQI is hot after his General Class Ticket. A new Novice in Des Moines is ZZM. Traffic: WØBDR 1459, SCA 1225, PZO 364, CZ 221, LJW 218, QVA 79, EHH 62, KVJ 34, LFZ 33, BLH 31, NGS 23, PAN 22, RMG 21, SFK 9, HWU 6, FDM 5, UTD 4, HXA 2, NYX 1, WNØTQI 1.

KANSAS — SCM, Earl N. Johnston, WØICV — SEC: PAH. PAM: FNS. RM: KXL/NIY. The WARC held its annual banquet and installation of officers Feb. 17th. New officers are BIX, pres.; WNN, vice-pres.; BVM, secy.; and IJV, treas. The Lawrence ARC held a meeting in the new quarters at Police Headquarters Feb. 25th to discuss plans for c.d. The CKRC of Salina conducts code and theory classes every Tue. and Thurs. The 1st class produced 6 Novice tickets. Also the CKRC mobile group helped the Police collect more than $8,000 for the "Mothers March for Polio." PSL has a 20A s.s.b. rig, making 4 for Salina. MVG visited ARRL at West Hartford. WNØZQG, who has a Globe Scout and an NC-173, is a new station in Colby. LBJ received his RCC certificate. LQX is working for his WAS on 80-meter c.w. MOX reports 2-meter contacts with FRK, OTN, and several KC boys. KEC and ZDB, of Lawrence, have made several 420-Mc. contacts. DIU, of KXXX fame, has acquired an XYL. ECF, of Topeka, is back on the air with a new Ranger. LIX is having success with his

(Continued on page 90)

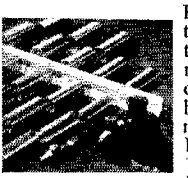
QUALITY PRODUCTS BY B&W



JUNIOR AND HEAVY DUTY BUTTERFLY VARIABLE CAPACITORS

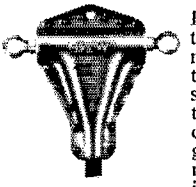
B&W heavy duty butterfly capacitors pave the way for increased efficiency in single-ended and push-pull circuits, provide better L.C. ratios at high frequencies with beam power tubes. Junior butterfly capacitors are ideal for medium power triode or tetrode stage plate circuits, etc. Having 25% of the frontal area of the heavy-duty type, these units provide peak efficiency, more power, in less than normal space.

ALL OF THESE FINE B&W products are available at leading distributors' everywhere.



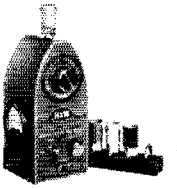
MINIDUCTORS

Highly efficient miniature coils offering extremely low losses and real space saving economy. Ideal for compact, high frequency circuits, mobile and portable rigs. Diameters from ½" to 1", standard lengths of 2" or 3". Choice of 4, 8, 16, or 32 turns/inch.



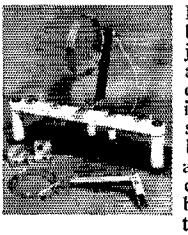
COAXIAL CONNECTOR

Permits efficient, watertight, coaxial cable connections for antenna systems. In addition, it serves as a center insulator for a half wave doublet antenna. Ruggedly constructed of aluminum, with steatite insulation, connector withstands a 500 lb. pull.



DIP METER

This indispensable instrument serves as a sensitive grid dip meter, signal generator, absorption wave meter, or signal monitor from 1.75 to 260 mc. Saves time in transmitter tuning, neutralizing, antenna loading, etc. Color coded 5 band dial matches five coils supplied.



BASES, MOUNTING ASSEMBLIES

Permit compact assemblies with capacitors, jack bars, plug-in coils, and links. Available for open wire plug-in swinging links or Faraday shielded links. Assemblies include jack bar, arm and hinge, open wire or shielded link, metal bottom plate or capacitor mounting bracket.

B&W Barker & Williamson, Inc.

Barker & Williamson, Inc., 237 Fairfield Ave., Upper Darby, Pa.

new mobile. UML is active in the Nebraska Slow-speed Net. In case some of the Novices haven't heard of it the Kansas Novice Net which started Feb. 27th is called "QKN" and meets on 3735 kc. at 1400 Sun. Am sorry to report another Silent Key this month, WNØYPO, of Topeka. Traffic: (Feb.) WØOHJ 385, BLI 266, UAT 243, NIY 242, FEO 90, MXG 82, ABJ 61, EOT 54, NFX 45, FDJ 42, KSY 42, ECD 33, LQX 24, LCQ 22, FNS 21, IFR 19, SQX 18, YJU 17, SAF 16, SVE 16, LOW 15, ONF 13, YFE 13, TNA 11, KFS 10, LQX 9, ICV 7, ITO 7, ZUA 7, VBQ 6, TRG 4, DEL 3, UML 3, RXM 2, LIX 1. (Jan.) KØFDL 403, WØMXG 50.

MISSOURI — SCM, Clarence L. Arundale, WØGBJ — SEC: VRF. PAM: BVL. RMs: OUD and QXO. The Rolla Amateur Radio Association has elected the following officers: NXG, pres.; MRV, vice-pres.; PXK, secy.; GCL, treas. LQC has been awarded the MARS station-of-the-month award for the 10th Air Force 16-state area. EBE's mother recently passed away. QMF installed a VFO in the 144-Mc. rig. OMM won for the WØ section in the YL Anniversary Party. CKQ received his CP-25 and A-1 certificates. RTW added a modulator to his Heath AT-1. HUI received an A-1 certificate. TCF added a Q-multiplier to the NC-88. PNA is rebuilding the transmitter. OIV has a new Viking II. VPQ is EC for Waynesville Area. WNØYFV has a new SX-42, ESY an HT-9, and NVJ a new SX-99. FLN has joined the MARS organization. WAP is having excellent results with the Show-Me Net since moving to 3580 kc. I wish to thank the radio clubs and individual amateurs in our section for their splendid coöperation and assistance during my terms as SCM. It has been a pleasure to have served you the past four years. I wish to urge your continued support of GEP, your new SCM, who is a very capable man with a great deal of experience in traffic work. Traffic: (Feb.) WØCPI 1033, KØFBO 391, WØGAR 306, GBJ 260, BVL 210, OMM 126, SAK 110, RTO 97, CKQ 86, WAP 69, VPQ 64, RTW 62, OUD 55, W9LHB/Ø 52, WØEBE 49, KA 45, KIK 42, HUI 31, OMP 26, PNA 26, SUV 25, QMF 10, TSZ 9, WIS 9, ECE 8, MFB 8, RCV 7, BUL 4, WNØZOI 3, WØETW 2, TCF 2. (Jan.) WØETW 56, QWB 8, WIS 4.

NEBRASKA — SCM, Floyd B. Campbell, WØCBH — Asst. SCM: Tom Boydston, ØVYX. SEC: JDJ. Total QNI for the C.W. Net was 411 QTC 441. New members of the net are GEQ, GDZ, RIN, DDT, EZT, QMY, and FXH. 5DTA/5 has been reporting into the Net from Fort Worth bringing traffic from Florida and Southern points. BEN, from Colorado, also has been a frequent reporter into the C.W. Net. DDT has a CP certificate. RNH and KDW have received certificates for TEN. RDN also has 5000 Trafficker's Club certificate. PZH has rebuilt and now has 200-watt 'phone and c.w. all-band VFO with hot and cold water. AIN was notified by KOGA, at Ogallala, to get on the air during a recent blizzard when some people were lost. ERM assisted and everything worked very smoothly. Stations helping out were LOD, ZAA, GEQ, UOB, and BEN. The SOO Radio Club of Sidney is planning big things. GDZ has a new 75A-3, Viking II with VFO and all the trimmings. RHL is secretly eyeing a better location for DX and better antennas. OED is back on the air with 65 watts 'phone and c.w. AZC, RCH, VUO, and ADK are on 40-meter 'phone. The Union Pacific Radio Club is being organized. Any amateur employed by U.P. is eligible. Drop a line to R. D. Burghart, WØWR, Box 501, Valley, Nebr. Be sure to give your occupation and enclose your QSL. Traffic: (Feb.) KØAIR 385, WØRDN 302, ZJF 189, RNH 165, RIN 135, KDW 66, HTA 50, MAO 33, VYX 33, FQB 30, FXH 29, AEM 24, ERM 20, DDP 16, AGP 12, CBH 12, EGQ 12, HQN 12, OCU 12, ORW 12, FTQ 11, BEA 10, FMW 10, GVA 10, ZGH 8, IRW 7, PUT 7, QXA 7, AIN 6, IAY 5, NIK 5, HXH 4, RAM 4, UJI 4, BOQ 2, CIH 2, FRF 2, LEF 2, NGZ 2, NHS 2, PDJ 2, PZH 2, UOV 2, PPT 1. (Jan.) WØRDN 166, KDW 32.

NEW ENGLAND DIVISION

CONNECTICUT — SCM, Milton E. Chaffee, W1EFW — SEC: LKF. PAM: LWW. RM: KYQ. MCN and CN 3640, CPN 3880, CTN 3640 Sun., CEN 29,580 kc. CN moved 187 messages in 24 sessions according to KYQ, the RM. KYQ, RGB, RFJ, and LV rated QNI honors. CTN meets Sun. at 0900 on 3640 kc. and is ideal for the new traffic men and those who want to learn traffic-handling at slow speed. RFJ is net manager and will welcome all comers — straight keys only. MCN rolled up 163 messages in 23 sessions with QNI leaders YYM, IBE, RGB, and RFJ. CPN accounted for 114 messages listing KGT, LWW, VSH, VWL, YBH, and DAV topping their QNI list. UJG reports lack of time is holding up his v.h.f. developments. ICP put on his TVI talk and demonstration for the Hamden Club Mar. 9th. EDA schedules 6LQU, 7ZZZ, and 4CSD and also checks into UTL. YBH is a regular on DSDN, TCPN, and CPN. APA is active on 7-Mc. 'phone and has worked 35 countries there. BDI is trying a CD-2 on 144 Mc. YNC reports his traffic activity still is hampered by low power. WNH is back in business on CN and other schedules. GIX renewed OPS, OBS, and OO appointments while TD renewed OBS, AOS, FSH, and MHF renewed EC appointments and AMJ became a new EC in Waterbury. WHO has a new Ranger on 28.5 Mc. and a new 144-Mc. final featuring

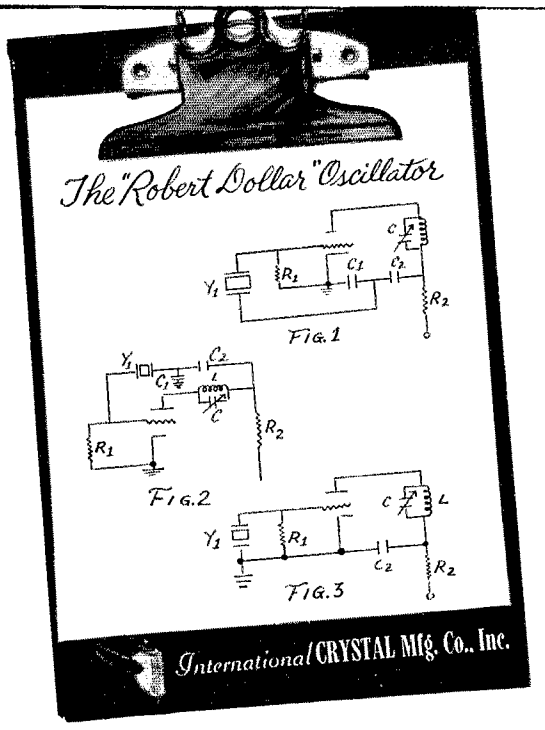
(Continued on page 92)

a pair of 6146s. VLE wrecked his 829B so retired temporarily from 144 Mc. ULY is a mobile member of DSDN. The HCARA meeting Mar. 18th featured a talk by Al Pichitino, chief engineer E. F. Johnson Co. BGP reports new Novices DML, DOU, DXJ, and DZC in Stratford. New officers of the Meriden Club are STT, pres.; WEE, vice-pres.; ULL, secy.; and OOC, treas. MARC has resumed publication of its *Key Klix*. ZJY reports KNT is credited with a big assist to new Novices AES, BSZ, and CLL and new General Calss to ZJY and ZJZ. BVB and VW came through with OO reports. ZFK is ready for business with Technician Class ticket. Traffic: (Feb.) W1YBH 141, CUH 129, AW 118, EFW 100, KYQ 96, NJM 88, LV 86, RRE 80, YYM 80, LIG 54, HYF 51, RFJ 44, BDI 38, ZDX 35, APA 29, UED 26, QJM 20, EDA 18, KV 17, AYC 10, BVB 7, JTD 6, WNH 6, FTM 5, GVJ 4, SJ 4. (Jan.) W1FTM 16.

MAINE — SCM, Bernard Seamon, W1AFT — SEC: BYK. PAM: WRZ. RM: OHT. The Pine Tree Net meets Mon., Wed., and Fri. on 3596 kc. at 1900 hours. The Sea Gull Net meets Mon. through Fri. on 3940 kc. at 1700 hours. The Barnyard Net meets Mon. through Sat. on 3960 kc. at 0700 hours. The OX Net meets daily at 2000 hours on 29.5 Mc. This is a true emergency net composed of eighteen RACES stations in Oxford County. The radio club over there places posters in prominent spots in the County inviting the filing of traffic. A nice note was received from LDC, who works high atop Mt. Washington at MTW-TV. BOK has been elected as assistant fire chief of Dexter. AWN, of Lincoln, is recovering from serious surgery at the Eastern Maine General in Bangor. The best to you from all the gang, Al. YDX is carrying on very much alone down in Kittery on 430 Mc. He would like some contacts. WRZ is on with a fat 400-watter. The Maine amateurs again have asked the Maine State Legislature to issue them distinctive automobile license plates in order that they may be of even greater public service by being readily identifiable to police, fire, and c.d. officials. Your SCM has appointed BPI chairman of the License Plate Committee. Al and about fifty Maine amateurs appeared before the Transportation Committee and gave a good accounting of our aims and ambitions. Traffic: W1WTG 102, LKP 99, UDD 50, LYR 44, ZME 43, YYW 29, EFR 24, BX 20,B TY 17, YTE 12, AFT 8, WRZ 7, FKH 4, TGW 2.

EASTERN MASSACHUSETTS — SCM, Frank L. Baker, jr., W1ALP — New appointments: WUW Foxboro, TFJ Wilmington, ZXZ Marshfield as ECs; TNK as OO. Appointments endorsed: LJT Brockton, RRA Winchester, AR Belmont, VRK Swampscott, AGX Peabody, TQP Area 1 Radio Comm., and DDC Ayer as ECs; LJT as OES; QMJ, AGX, and WSN as ORSs; HIL, MD, and AR as OPSs; CTR and SPL as OBSs; and JOJ as OES/OBS. ZXZ is Satuit Radio Club president. 6MUY is visiting in Quincy. Heard on 2 meters: CEI, NBS, APW, UZZ, WNI, CWR, QZF, ZFD, ZQL, DPN, ZSD, ZXH, DWF, DRJ, CHN, and 4ZVK/1. KHH is on 10 meters. Heard on 20 meters: ARG, WHD, VMU, KVH, EGR, UWB, LR, and ALP. ALP has a Match Box for his Viking II. New General Class hams: AJG, BNZ, CSP, DIL, AJH, ZVS, BJX, and CPP. New Tech. Class: CAS, DDN, ZXC, WQH, YRI, CPW, and CQE. New Novices: DPC, DWH, and DWG. ZEN/RCJ visited CTR. UIR, VOU, KWD, and CTR are working on a Quad beam for 2 meters designed by MME. The Arlington C.D. Net had a checker game on the air. FWQ is Radio Officer and LLY is Alternate. The Lexington Net visited THO for Panadapter checks of mobile signals. AGX has a new QTH in West Peabody. Radio Amateur Open House had a talk by TCG on Indicating Instruments in the Ham Transmitter. Area 1 Radio Comm. held a meeting with BL, KTG, CQ, OTK, ZYK, and ALP. The South Shore Club held regular meetings. The Braintree Radio Club, DUO, held a meeting in its new quarters. WSN has a new rig for 20 meters. BGW still is on RTTY and has sked with VE2ATC on Sun. A.M. TUD and DWO are on 160 meters. DQF has her rig in her kitchen. SSA is back on 10 meters. TYU is in Quincy Hospital. CF and PIG are now K2FM and W2PIG at Hixon, N. J. VTH moved to Weymouth. DXQ now is in Quincy. TY has a new QTH. CLF has a new wide-spaced four-element beam for 20 meters. QLT has a Viking Adventurer and RME-69. BSY gave a talk at the Wellesley Amateur Radio Society on Using All-Band Antenna with Tuned Feeders. The Buzzards Bay Cape and Islands Emergency Net meets on 145.260 Mc. at 1900 Mon. BCN is N.C and CMT, UUM, DPO, OH, PMC, CUY, DJK, TYZ, TJW, DUI, AQN, LNR, MYE, ZGO, LYV, YHQ, MFI, QWI, JNI, MNF, NKS, ZSJ, YAN, and MKW are on. KBN and UOZ are members of the College Net. The Norwood c.d. group helped out with mobile rigs when 3 Boy Scouts were lost. SIX reports a c.d. demonstration of communications at Georgetown with AFJ, WTK, KT, CVG, YYL, and WCI helping out. They used 2-meter radio units in 5 cars with one in the Central Fire Station. TTY has a Ranger kit. UKA has a new job. PIW is on 10-meter c.w. PYM will have high power on 20 meters. QMU plans a long wire in Stoughton. SXD is back at work again. UH has a new 20-meter beam. LMU is trying low power on 10-15 meters. RM has a new mast. Newton c.d. members meet on 6 meters Sun. nights. EK has a Sonar rig at work. JOW is on 6-meter f.m. DGY has his General Class license. GGP has moved to Hialeah, Fla. The Winthrop c.d. group had the

(*Continued on page 94*)

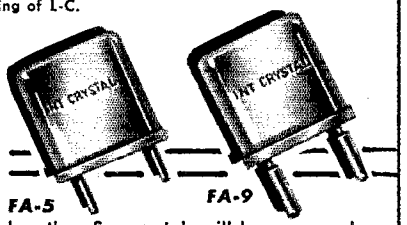


Further discussion of the "Robert Dollar" Oscillator

Last month we discussed use of the circuit shown in Fig. 1 for overtone use; and, as redrawn in Fig. 2, as a basic Pierce Oscillator. (QST, April, 1955).

Now, if capacitor C (Fig. 2) is tuned to approach the third overtone resonant frequency, a point will be reached where the crystal ceases to oscillate on its fundamental and begins to oscillate on its overtone frequency. At this point a change in the oscillator frequency occurs, since the overtone frequency is not an even multiple of the fundamental. An increase in grid current and output on the third harmonic will be noted as capicator C is tuned. This same circuit may be used on even harmonics, however the crystal continues to oscillate on its fundamental in this case. Thus it can be seen that the "Robert Dollar" circuit will oscillate under a wide variety of conditions and if the tuned circuit L-C is not properly adjusted, overtone operation will not be realized.

With plated overtone crystals the circuit shown in Fig. 3 provides equal or more output under similar conditions than does the circuit in Fig. 1. In this circuit the crystal will operate only on its overtone frequency and depends on the tuning of L-C.



ONE-DAY PROCESSING

Spot Frequencies 1500 KC to 75 MC

.01% TOLERANCE—Crystals are all of the plated, hermetically sealed type and calibrated to .01% or better of the specified frequency. See specifications below:

For closer tolerance and commercial applications use the F-6 series crystal. Write for full information.

SPECIFICATIONS

Holders: Metal, hermetically sealed, available in .093 dia. pins (FA-9) or .050 dia. pins (FA-5).

Calibration Tolerance: ±.01% of nominal at 30° C.

Temperature Range: —40° C to +70° C.

Tolerance over temperature range from frequency at 30° C ±.01%.

Circuit: Designed to operate into a load capacitance of 32 mmf on the fundamental between 2000 KC and 15 MC. Designed to operate at anti-resonance on overtone modes into a grid circuit without additional capacitance load. Write for recommended circuits).

Orders for less than five crystals will be processed and shipped in **one working day.**

HOW TO ORDER—In order to give the fastest possible services, crystals are sold direct. However, crystals are also available by special order through your local jobber. Where cash accompanies the order, International will prepay the Airmail postage; otherwise shipment will be made C.O.D.

PRICES

FA-9* (Pin Diameter .093)*
FA-5 (Pin Diameter .050)

Pin Spacing .486 (*FA-9 fits same socket as FT-243)

RANGE	TOLERANCE	PRICE
Fundamental Crystals		
1500-1799 KC	.01%	$4.50
1800-1999 KC	.01%	$3.90
2000-9999 KC	.01%	$2.80
10000-15000 KC	.01%	$3.90
Overtone Crystals		
(for 3rd overtone operation)		
15 MC—29.99 MC	.01%	$2.80
30 MC—54 MC	.01%	$3.90
(for 5th overtone operation)		
55 MC—75 MC	.01%	$4.50

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following on: UOC, BDU, DJ, OIR, MQB, NMX, VIS, DPN, DLY, DQF, DRP, HFJ, BOX, DEL, CMW, TTH, BB, BB/1, ZVO, and DUV. QUX now is in Winthrop. 4VVU/mm was heard on 10 meters coming into Boston. CTP is a new ham in Fall River on 40 and 80 meters. UE has a 522 on 2 meters. DDC will be on 2 meters again and has been on 80-meter c.w./'phone working DX, F7ER and FA8DA. SX spoke on s.s.b. at the Wellesley Amateur Radio Society meeting. YYE has a Viking Ranger. WN1DOM, Quincy, has an Adventurer transmitter. AAI is now General Class. Traffic: (Feb.) W1EMG 287, UKO 202, IBE 183, EPE 112, WSN 90, LM 79, UE 49, TY 32, AVY 29, NUP 29, BY 21, BB 7, WU 6, TYN 5, AHP 2, ATX 1, HIL 1. (Jan.) W1CLF 18, BGW 10, QLT 10.

WESTERN MASSACHUSETTS — SCM, Osborne R. McKeraghan, W1HRV — SEC: RRX. RM: BVR. PAM: QWJ. The WM C.W. Net meets on 3560 kc. Mon. through Sat. at 1900 EST. New SEC is RRX, Holyoke. QWJ and JYH put on a fine demonstration of s.s.b. at the HCRA, Inc., February meeting. The HCRA v.h.f. gang lost to the Hartford boys in the January V.H.F. SS and the payoff dutch treat dinner was held at Tintis, Agawam, Mar. 4th. After the feed all went to the HCRA meeting for presentation of a gavel to the Hartford Club and enjoyed a fine v.h.f. talk and demonstration by Ed Tilton. The WM C.W. Net has been very active and efficient this winter but is badly in need of representation in Franklin County. Any c.w. men up there? RM BVR is working up a net bulletin, with DVW as associate editor. JYH, KFV, WEF, QWJ, and AJX took part in the New Hampshire QSO Party. AZW has a new NC-88. DQX has a new HRO-60. MNG is OBS on the following schedules: 3870 kc., Wed., 6:30 P.M.; 29.5 Mc.; Tues., 7:45 P.M.; and 145.2 Mc.; Thurs., 7:15 P.M. NLE has a Collins transmitter. JYH has built a set of three 813 finals for a contest rig. AOU passed Gen. Cl. New Novices are WN1CFB, CGJ, CSR, DGJ, DMT, DPZ, and DUP. 4URF/1 is stationed at Fort Devens, living and operating in Fitchburg, and has received WAS certificate and 2nd-class commercial ticket. YXV has 26 countries confirmed. NPL is building all band pi-net 813 final and reports that ICW has a new Telrex short beam. LDE says the 15-meter band acts like 10 "way back when." BH has a new 125A all-band final to follow his 10B on s.s.b. AMI is doing a fine job representing Worcester County on the WM C.W. Net. Traffic: W1UKR 199, HRV 109, BVR 106, SRM 60, MNG 52, WEF 50, DVW 37, RRX 35, AMI 30, ABD 29, WCG 12, HRC 11, WDW 11, TAY 10, JYH 8, AJX 5, W4URF/1 5, W1YCU 4, JAH 2, VE2UKJ/W1 1.

NEW HAMPSHIRE — SCM, Harold J. Preble, W1HS — SEC: BXU. RM: CRW. PAM: AXL. The Nashua Mike and Key Club held its annual banquet Jan. 22nd. Officers elected for 1955 are UAB, pres.; YVJ, vice-pres.; YJD, secy.; QJH, treas.; NAZ, act. mgr. The 6th Annual New Hampshire QSO Party was a great success with more stations participating than any previous year. AOQ claims high score. TNQ has been called to active duty with the Air Forces. PVF is now with the U. S. Army in Korea. VZS has been appointed EC for Cheshire County. CVB has received his Technician Class license. VGX is a freshman at Harvard and is working out of 1AF on 20 meters. AIJ, TDJ, and LCD, all the same age with the same birthday, held their third annual party Feb. 24th at the QTH of AIJ. Welcome to Novices DDQ and DDR. The Concord Brasspounders meet the 1st Thurs. of each month. All amateurs are invited to attend. WBM is making some changes in his station and is off the air temporarily. RCEN c.w. section meets at 1000 Sun. on 3685 kc.; the 'phone section meets at 1230 Sun. on 3950 kc. All Rockingham County stations are invited to participate in either net. Traffic: (Feb.) W1ARR 127, COC 91, IP 58, PFU 35, CCE 25, POK 14, FZ 13, VZS 12, AIJ 8, HS 8, CDX 6. (Jan.) W1GMH 81.

RHODE ISLAND — SCM, Walter B. Hanson, jr., W1KKR — SEC: TQW. RM: BTV. PAM: VXC. Activity seems to have slowed a little this month, but the regulars keep reporting. KCS is pouring 800 watts c.w. on 2 meters and maintaining regular skeds now with New Jersey and Maine. The State has plans for the purchase of considerable new gear, and that will mean increasing activity in c.d. drills this summer. The PRA Dinner Dance is to be held at Johnson's Hummocks on May 14th. VXC is looking for OPS applications. TQW has lined up ten ECs and the framework of an honest-to-goodness emergency net is already a reality. CDV has been the only Rhode Island link with the TCPN and he's looking for a successor when he leaves for duty. It's not too early to think about getting that mobile gear ready for the summer months and even more important for the fall hurricane season. Traffic: W1UTA 95, CDV 46, BXN 34, YKQ 34, VXC 16, ZXA 13.

VERMONT — SCM, Robert L. Scott, W1RNA — SEC: SIO. PAM: RPR. RM: OAK. At the time of writing this, there are two bills in the General Assembly of Vermont which are of interest to the hams. (1) H-181. Subject: Television Interference. Information to date leads to the belief that if FCC regs are complied with the stations have nothing to worry about (I hope). (2) H-285. Subject: Special number plates. This was introduced by Mr. Niquette of Winooski and has been referred to the Committee on Highway Traffic, where it still is at this writing. Several hams have requested the above committee to hold a public hear-

(Continued on page 96)

MALLORY HAM BULLETIN

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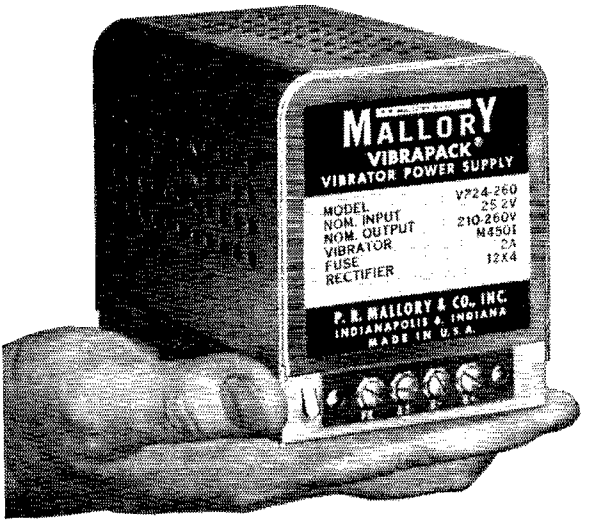

Before you start working over your battery-powered gear for the outdoor radio activity that will soon be in full swing, stop in and see your Mallory distributor. He is prepared to introduce you to a new Mallory Vibrapack vibrator power supply that you can fit into almost any type of mobile equipment.

So small that it fits into the palm of your hand, this new power supply puts out plenty of wattage. It embodies design principles that Mallory engineers have learned in 25 years' experience in building vibrator operated power supplies for communications equipment. You'll find that our designers have used techniques formerly reserved exclusively for commercial mobile equipment.

Here are some highlights. The same communication-duty, series drive vibrator found in taxi, police and utility two-way transmitters and receivers is used. High stability ceramic capacitors are used in critical parts of the circuit. Heavy gauge steel protective cover and bottom plate snap on and off in an instant, to make replacement of vibrator and rectifier tube a few seconds' work even on field location. When you remove the bottom plate, all wiring is exposed and accessible for trouble-shooting.

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Power ratings are conservative, to assure you of higher efficiency, peak conservation of battery power and long operation between charges.

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ing on H-285 so that those interested may appear in its behalf. Traffic: W1OAK 148, AVP 74, RNA 53, IT 27, ZEW 25, BJP 21, TAN 12, FPS 5.

NORTHWESTERN DIVISION

IDAHO — SCM, Alan K. Ross, W7IWU — Caldwell: EYR, the local EC, aided in the search for watermelons for two Portland leukemia patients. His antenna "farm" now consists of one 44-ft. vertical for 75, 40, and 20 meters, a vertical for 15 meters, and a 75-meter folded dipole. Lewiston: IDZ is doing a little 15-meter operation. WN7YBV is getting out of town OK on 80-meter c.w. with the rig borrowed from DTJ. NOG is starting a 2-meter rig. GMC and VIO are rebuilding. Kellogg: RQG asks about the GEM Net and is willing to be NCS. Look on 3638 kc. for the Idaho gang. Gifford: VWS is going strong with DX and has 40 states worked, 30 confirmed, all on 80-, 40-, 20-, and 15-meter c.w. Boise: If we want call letter license plates for Idaho we must start to work on it now for the 1957 legislature. Everyone write to Dean Mayes, MKS, Box 486, Meridian, Idaho, who will spearhead the drive.

MONTANA — SCM, Leslie E. Crouter, W7CT — SFK has a new Globe King 500 and is working on plans for the Glacier Park Hamfest to be held at Apgar Camp Ground July 23rd and 24th. RIL has been transferred to Ellensburg, Wash. KUH is NCS for the Montana Weather Net Sun. mornings. MM has a new 20-A on s.s.b. Others on s.s.b. in the Great Falls Area are GCS, YPY, UWN, YLM, and DSS. RRI has moved to Butte and is with the CAA. Ex-FYN is now KAIOJ. FDH, with the help of JGG, put up a 30-ft. "Pop-can" vertical on the house of FDH on New Year's Day. SWE has a two-element 15-meter beam. NPV needs Asia for WAC on 15 meters. OOY has been appointed chairman of the seventh district YLRL. New calls in Great Falls are YLA, YLC, YLD, and YLM, also WN7YIO and YDY. Recent appointments or endorsements: FDH as OES, BSU as OO, EWR, PAF, and VVU as ECs. The SCM is in the process of moving to Helena and inefficiency can be expected until he is settled in his new quarters. Traffic: (Feb.) W7SFK 71, PCZ 28, EWR 12, CJN 6. (Jan.) W7SFK 82, TKB 21, CJN 8, EWR 8.

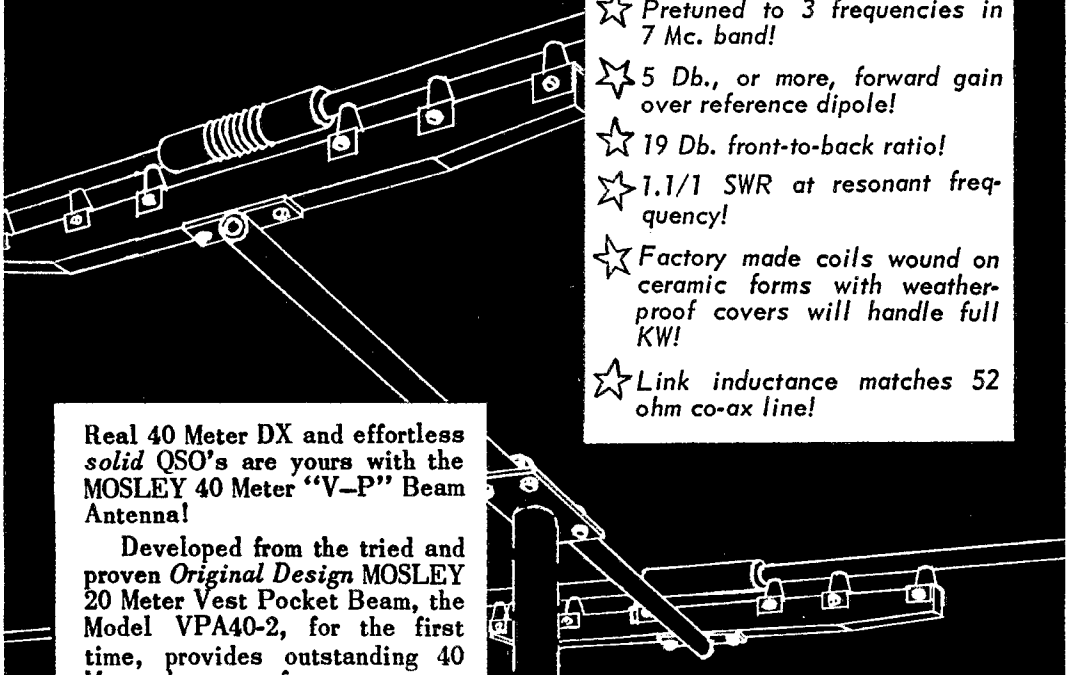
OREGON — SCM, Edward F. Conyngham, W7ESJ — SEC: WAT, RM: AJN, PAM: IRZ. ESJ has assumed the duties of SCM, with WAT taking over as SEC. THX is a new EC appointee and has 12 stations lined up for AREC work around the mouth of the Columbia River. ADX is preparing for a big test this spring. A brief AREC test and drill was held in Oregon the first Sun. in February to ascertain the coverage and signal strength. Those participating were AJN, BDU, BVH, ESJ, FIX, LT, LJC, PRA, RNY, SBX, USO, WAT, and WHE. The test will be repeated on the first Sun. of each month at 1100 PST on 3585 kc. The Oregon State Net (OSN), meeting on 3585 kc. at 1830 PST daily, has made rapid gains. Attendance was 202 in 23 sessions. EZR advises that the Rogue Valley Club is now meeting in UGE's school room until the new club house is finished. Steve at GPJ expresses thanks and appreciation for the help received from all amateurs and MARS and ARS members who sent watermelons on his emergency request for two hemophilia victims in the hospital in Portland, Oregon. Traffic: W7APF 533, OKU 138, BLN 96, WAT 70, AJN 64, THX 33, HDN 23, PRA 23, ESJ 16.

WASHINGTON — SCM, Victor S. Gish, W7FIX — The Valley Amateur Radio Club (Puyallup) reports its annual election and banquet was held Feb. 18th. New officers are MCU, pres.; GWK, vice-pres.; UZE, secy.; VLC, treas.; SWA, trustee; WN7VVZ, sgt. at arms. The Tacoma Amateur Radio Club, Inc., heard a talk on "The Role the Amateur Plays in C.D." given by Tacoma C.D. Director, Frank Evans. RGD reports further that MFG's ¼-watt handie-talkie was heard in Eatonville; GDW is off the air as mobile temporarily while getting a new Mercury hard-top convertible; OVW was on the air with a Ranger, but the big wind came and took the antenna and chimney down; AZI is NCS of the Tacoma AREC Net the 1st and 3rd Wed. at 8 P.M. on 29.6 Mc.; band practice was held at the QTH of IMB with RGD, RXT, RXS, OVW, KKN, SKR, AEA, and IG attending. The Skagit Amateur Radio Club reports 1955 officers are PQT, pres.; REC, vice-pres.; LVB, secy.-treas. The Skagit AREC Net meets on 50.7 Mc. at 0800 Sat. BA really cut down on traffic by spending half the month in Hawaii. QYN is a new OBS in the Moses Lake Area. EVW reports he is on 40 RTTY, 20 'phone, 10 mobile and MARS Nets. TIQ reports AREC activity in Vancouver really is hot with the appointments of RML as EC and RCM as SEC. ETO is contemplating all-band vertical to replace off-center Hertz and keep the antenna in his own yard. FZB and the four jr. operators had chicken pox, which allowed the OM to try out his new Ranger. AVM reports working Olympia on 2 meters but has neither heard nor worked any other 2-meter station. TGO worked (80-meter c.w.) KM6AX, VP9PL, SM8CWC, several ZLs, and YV5BJ. VAZ reports going TDY (temporary duty) in Alabama in March. ZU reports QRM on 14-Mc. 'phone Sun. mornings on his sked with 7PRZ/2 chased them back to c.w. PHO is working Pacific traffic with a Ranger on 20 meters. AIB is assembling a Ranger. K6BDF/7 is all shook up over the lack of discipline on the local nets. All radio clubs Wash-

(Continued on page 98)

FOR "40"

2 Element, 40 Meter MOSLEY VEST POCKET BEAM



- ☆ *Pretuned to 3 frequencies in 7 Mc. band!*
- ☆ *5 Db., or more, forward gain over reference dipole!*
- ☆ *19 Db. front-to-back ratio!*
- ☆ *1.1/1 SWR at resonant frequency!*
- ☆ *Factory made coils wound on ceramic forms with weatherproof covers will handle full KW!*
- ☆ *Link inductance matches 52 ohm co-ax line!*

Real 40 Meter DX and effortless *solid* QSO's are yours with the MOSLEY 40 Meter "V–P" Beam Antenna!

Developed from the tried and proven *Original Design* MOSLEY 20 Meter Vest Pocket Beam, the Model VPA40-2, for the first time, provides outstanding 40 Meter beam performance ... at low cost and with an array of convenient size and weight!

SPECIFICATIONS

- 14'10" Tubular Steel Boom with factory welded element support plates.
- 36'1¾" Maximum Element Length. (61S-T6 alum. alloy.)
- 68 lbs. Assembled Weight.
- Element Sections and Element Supports pre-cut, pre-drilled for fast assembly.
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MODEL VPA40–2, MOSLEY 2 Element 40 Meter "V–P" Beam, less 52 ohm coax line, rotor and mast.

AMATEUR NET **$74.95**

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ington section: Please submit a nomination for EC if your club does not at present have one. Traffic: (Feb.) W7PGY 886, BA 825, FRU 727, VAZ 563, K7FAE 335, W7PHO 207, FIX 81, UYL 51, K6BDF/7 50, W7KT 49, APS 46, KUS 46, USO 32, EHH 29, RXH 24, FWD 21, PQT 17, AIB 14, HKA 12, GVV 10, GAT 7, LVB 6, ETO 5, AVM 4, TGO 4, ZU 4, EVW 3, FZB 2. (Jan.) W7VCF 21.

PACIFIC DIVISION

HAWAII — SCM, Samuel H. Lewbel, KH6AED — On Feb. 28th a big volcanic eruption started. YI, 3¼ miles from the spot, alerted the Hilo hams. AFQ, AFS, AXQ, ATT, AQE, IN, GP, AU, AUP, AYG, AZL, and BFQ set up the net between Pahoa and Hilo. AED set up the C.D. Net with AUJ, OS, AXY, BEH, AN, AAI, and DE manning the Honolulu end for traffic to c.d. headquarters. The Hilo-Pahoa Net operated 24 hours a day from the start and at report deadline, 7 days later, was still working. All other hams in the Islands are to be commended for the way they kept the frequencies clear. Now that you have seen how an organized net can step in and handle a rush situation let's have your applications for AREC membership. I am also looking for applicants for OBS, OPS, ORS, and OO appointments. The 49th State Net reorganized in Feb., AGB is NCS. The Net meets Wed. and Fri. at 1645 HST and Sun. at 1300 on 7290 kc. with outlets for traffic on all Islands. Traffic: (Feb.) KA2GE 882, AK 712, HQ 139. (Jan.) KA7LJ 1025.

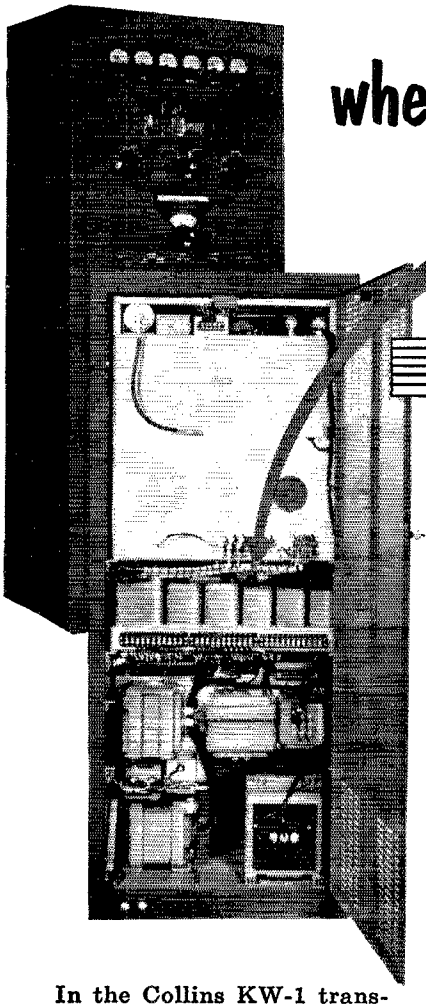
NEVADA — SCM, Ray T. Warner, W7JU — ECs: PEW, PRM, TVF, TJY, and ZT. OPSs: JUO and UPS. ORSs: MVP, PEW, and VIU. OBS: BVZ. Nevada State Frequencies: 'Phone, 3880 and 7268 kc.; c.w., 3660 and 7110 kc. Old-Timer ex-8CNC blossoms out with a new call, YRY, and a show of activity in Boulder City. K6BJ is expected to give another lecture, this time on VFO Construction and Single Sideband, at the Water and Power Hall in Boulder City, June 2nd. LGS is active from his new QTH in Reno. UPS, in Elko, completed his new three-element 20-meter beam. JU is preparing for some 6-meter activity with a rebuilt Channel 2 TV Yagi. SXD confines his 40-meter activities to the early morning hours. SNP, Virginia, keeps her Viking busy on all bands from 15 to 75 meters. TVF is sniping for 100 Nevada QSLs! Write to BJY if you are interested in the "Worked 25 Nevada" certificate.

SANTA CLARA VALLEY — SCM, R. Paul Tibbs, W6WGO — SEC: NVO. Ed Turner has just been appointed SEC and is busy organizing the section. Any club which has not been contacted and has any suggestions to make about its area and AREC problems should drop Ed a line at 2837 Fernwood Ave., San Mateo. AIT is active in traffic and will be break-in operation soon with the new system just completed. YHM got a BPL medallion for making BPL three times. EDC is building an amplifier for use on 420 Mc. using a 4X150. The San Mateo Radio Club Hamfest will be held on June 5th this year. Further details will be announced later. This column was in error some time back and it corrects this by saying that the San Mateo Club elected NUI, pres.; and QOY, vice-pres.; MKM was named EC for the San Mateo Area. WLI is having fun on 144 Mc. and reports only two new countries were worked in this year's DX Contest. The larger the total the harder new ones come, Norm. NX is having a Collins KW-1 converted to single sideband. We advise everyone to remove the antenna coils from the receiver when Frank opens up now. The SCCARA reports there have been no new cases of TVI for some time now. The code and theory classes started in February by the SCCARA are well attended. Classes are guided by VZT and AVJ. The c.w. nets still need more c.w. operators to share the work in traffic-handling. The more of you checking into these nets the more the work can be spread around. Everyone is welcome to check in. Traffic: W4YIP/6 816, W6YHM 520, K6BBD 178, W6HC 83, AIT 18, K6BAM 6.

EAST BAY — SCM, Guy Black, W6RLB — Asst. SCMs: Oliver Nelson, 6MXQ for v.h.f.; and Harry Cameron, 6RVC, for TVI. SEC: Jay Amaro, WGM, 199 Harrier Street, Vallejo. EC: Les Brolliar, K6EER, 1511 Laurel Ave., Richmond; J. Wayne Clarke, 770 Hoffman Ave., Napa.; Walt Stangel, FLT, Clearland Highlands; Les Sweitzer, ZZF, 121 Morningside Rd., Vallejo; Maj. Allan C. Forbes, K6GK, 4107 Brookdale Ave., Oakland; A. V. Wright, QDE, 660 38th St., Richmond. If you are not in touch with the EC who lives nearest to you, get in touch with him direct, or contact the SEC. Remember, 100 per cent amateur participation in AREC is the ultimate goal. You would pitch in and help in a real emergency, wouldn't you? Then why not say so by joining the AREC. We now have a third RM in the East Bay section, Ralph Hall, EFD, who needs no introduction to traffic men. One of Ralph's other activities has been sharing the load of sending out code practice over JZ when Ray has been away. The other two RMs, IPW and JOH, have wanted Ralph to join them for a long time. K6WAY keeps skeds with K5FKF, KL7FAF, KL7AIR, KH6AJF, and KA2JW besides regular MARS nets. K6CCQ now has 41 states with his 60 watts to an 807. ITH reports a kw. s.s.b. rig under way. HBF and K6EPC have been appointed ORS on recommendations of the RMs. The v.h.f. gang really started making plans for 6 meters as soon as the word on the Technician privilege there was

(Continued on page 100)

where only the best will do



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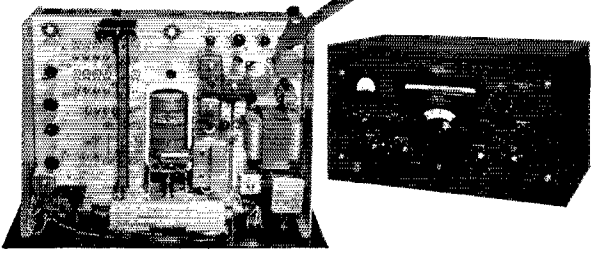
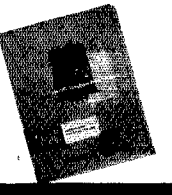
in the new KW-1 transmitter and 75A-3 receiver



In the Collins KW-1 transmitter, where quality and performance are the only considerations, Collins chose CHICAGO transformers.

The conservative ratings and precision construction of Chicago's "Sealed-in-Steel" transformers are a complete guarantee of reliability for this superb 1000 watt transmitter. To insure excellent intelligible audio quality, only CHICAGO transformers are used throughout the audio system.

Recognized by hams everywhere as the finest in receiving equipment, the Collins 75A-3 features remarkable stability, calibration accuracy and high sensitivity. This receiver, designed for long periods of trouble-free operation, is powered exclusively by CHICAGO transformers.



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received. The Oakland Radio Club heard EFT on RTTY and other Robert Dollar equipment. Prof. Lester Reukema, of the University of California, talked to the East Bay Radio Club on atomic energy. VSV talked to the SARO on 2-meter antennas. JHV moved to Castro Valley. A new active member of the 2-meter gang is NCL. ACN is hard at work at the license plate bill. Are you supporting him? PCN is the new editor of the *CCRC Calendar*. Her QTH is San Francisco. Because I have moved out of the East Bay section, to 281 Loucks Ave., Los Altos, I have resigned as SCM. However, I will continue to serve as Acting SCM until an election can be held, so for the time being send your reports to my Los Altos QTH. Traffic: K6WAY 858, FDG 522. W6IPW 152, K6GK 88, W6EFD 50, HBF 15, ITH 11, K6CCQ 4.

SAN FRANCISCO — SCM, Walter A. Buckley, W6GGC — The Humboldt Radio Club members are helping 14-year-old Linda Harvey (who is confined in a wheelchair because of polio) to obtain her ticket. They also are preparing the rig for her to go on the air. JSY won the Club's "California Counties Contest" (worked 43 counties). The Mt. Tamalpais Radio Club held its annual dinner at "Tommie's Place" in Novato. CDF gave a very informative talk on single sideband. YME, a technical director, will talk on the opposing side at the next meeting. K. D. Wilson received a certificate for working all California counties. HAMS still is on 2 meters but has 10 stations checking in on 6 meters each Sun. night. URA is NCS. The S.F. Naval Shipyard Club members have agreed to join HAMS on Field Day and also have invited the HAMS to join them in their annual dinner sometime in April. Membership in the SF Naval Shipyard has been opened to outsiders. Newcomers will not be allowed into the shipyard proper for the meeting night but can attend the other meeting, which is held in Red Cross Bldg. LOU, of the Sonoma County Radio Club, reports that he is busily working on plans for the Mission Trail Roundup which will be held in El Verano on June 18th. CBE, of the Larkspur Radio Club, says he worked 31 counties on 'phone the first week end. The Cathay Radio Club acted as host to the SCM at the February meeting and treated him royally in Chinatown after the meeting. The San Francisco Radio Club had John F. Honey, of the Stanford Research Institute, as guest speaker in February. He spoke on single sideband. ATO has been doing a fine job on the speakers committee and has excellent features lined up for future meetings. The Club presented GGC with a beautiful plaque. Thanks again, gang. The Ladies Club SF combined a meeting night with a baby shower for PIR. BIP was appointed chairman for the San Francisco Club Field Day activities. The 29ers Club had 17 cars with about 50 passengers at its February hidden transmitter hunt. GCV and PCN are planning a new QTH soon. DEK is back on the air after receiver troubles. K6HEZ is mobile on 6 meters. MXV is playing around with an 813. K6BJO, W6LL, JWF, GHI, K6GPX, EKF, and GGC all attended the Wasco Whing-ding Feb. 26–27. Seventy-two amateurs were there. The License Plate Committee reports that more than 300 dollars was spent on sending out literature on Senate Bill #222 and Assembly Bill #593. ACN was appointed by the Central California Radio Clubs to represent them as lobbyist at the legislature. To date a clause has been added to the original bill; that special plates are to be awarded to amateurs with mobile installations only. The California Motor Vehicle Dept. reports that the lists sent to law representatives in California cost $75 per copy. If the bill is made permanent at this session there is hope of lowering the $3.00 extra fee. Traffic: W6SWP 1111, GQY 234, QMO 160, GGC 26, YC 16, CBE 6, GQA 3.

SACRAMENTO VALLEY — SCM, Harold L. Lucero, W6JDN — The Dunsmuir Amateur Radio Club elected new officers as follows: JDN, pres.; K6IVD, vice-pres.; W6IOM, secy.-treas., K6BJO, act. mgr. IVD also is EC. KTB is EC for the Yreka Area. C.d. is taking form in Siskiyou County and all towns now have an EC. The Siskiyou County AREC Net meets each Sun. at 0900. K6CFZ reports new hams in Colusa are KN6IRZ, GNJ, and IUT. K6BJV is in RACES. Colusa will be the relay point during the boat races, Stockton to Redding. K6ER is doing fine work as OO. FYK still is on 2, 6, and 440 Mc. K6BYS is EC for the Chico Area. There will be a ham get-together at Ruth, Calif., July 3–4. New officers of the Golden Empire Radio Society are MWR, pres.; HNL, vice-pres.; K6BMU, secy.; K6BSY, act. mgr. The Club has an Instructograph code machine to be loaned to radio aspirants. The Club's call is RHC, a memorial to Nola Dixon who joined the Silent Keys some time ago. MWR has reënlisted for another four-year hitch and volunteered for another year as NVRES station-keeper in Chico. The Sacramento Council of Amateur Radio Clubs would like to have representatives from all clubs attend its meetings. The license plate bill is up during this session of the State Legislation. We hope that it becomes a law. All amateurs should write their State Senator and their Assemblyman and state their wishes. Traffic: W6OPY 33, MWR 20, JDN 5.

SAN JOAQUIN VALLEY — SCM, Edward L. Bewley, W6GIW — SEC: FBL. RM: K6BGM. PAMs: ZRJ and WJF. The Central Valley Amateur Radio Council meeting was held in Merced, with representatives from Stockton, Turlock, Merced, and Coalinga attending. Also present

(Continued on page 102)

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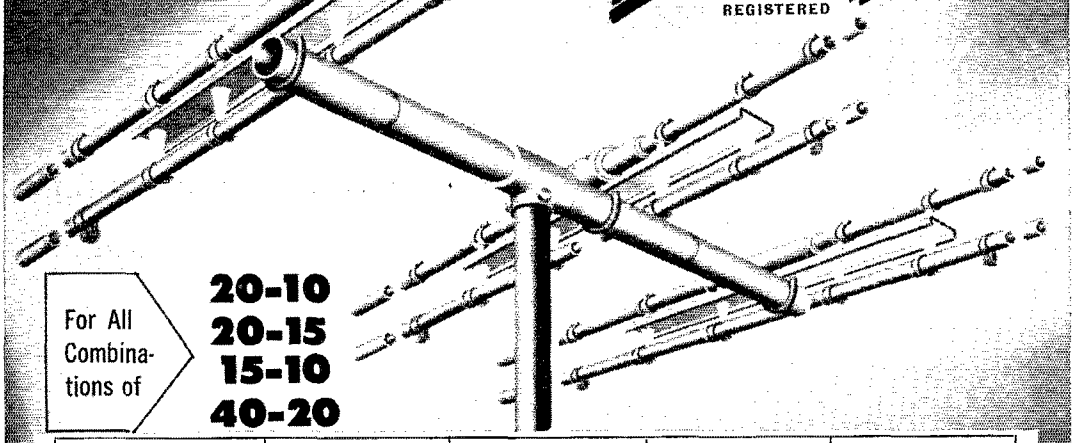

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20-15
15-10
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	20 — 10	20 — 15	15 — 10	40 — 20
No. of Elements	3 El. "Shortbeam" on 20 3 El. Full Size on 10	3 El. "Shortbeam" on 20 3 El. "Shortbeam" on 15	3 El. "Shortbeam" on 15 3 El. Full Size on 10	2 El. "Shortbeam" on 40 2 El. Full Size on 20
Boom Length	16 Feet	16 Feet	12 Feet	12 Feet
Longest Element Length	16 Feet on 20 16 Feet on 10	16 Feet on 20 13 Feet on 15	13 Feet on 15 16 Feet on 10	33 Feet on 40 33 Feet on 20
Forward gain reference to full size dipole	4.8 db on 20 8.8 db on 10	4.8 db on 20 4.8 db on 15	4.8 db on 15 8.8 db on 10	4.4 db on 40 5.6 db on 20
Front to Back Ratio	20 db on 20 25 db on 10	20 db on 20 20 db on 15	20 db on 15 25 db on 10	15 db on 40 20 db on 20
Approx. Weight	30 lbs.	35 lbs.	28 lbs.	48 lbs.
Impedance match	52 ohms on both bands	52 ohms on both bands	52 ohms on both bands.	52 ohms on both bands.
Element Construction	61ST6 7/8"-3/4" dia. Alum. both bands	61ST6 7/8"-3/4" dia. Alum. both bands	61ST6 7/8"-3/4" dia. Alum. both bands	61ST6 1 1/4"-1 1/8" dia. Alum. both bands.
Amateur Net	**$97.50**	**$107.50**	**$94.50**	**$127.50**

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were FYM, Central California Council president, and ACN, license plate committee. Major results of the meeting were planning unified action of TVI committees and the suggested endorsement of ACN as representative of the clubs for the license plate bill. ZNL has been appointed temporary chairman of the Council. The Sonora group has officially formed a club and named it the Tuolumne Amateur Radio Society with EBL, pres.; and PCB, secy.-treas. The Bakersfield Club has, as the communication reserve, acquired two Viking Rangers, an NC-183D, a BC-221, and four beams with rotators. K6EKS is in New York with the IBM Co. JLL is active on 160 meters and is looking for QSOs. OYF is quite ill in St. Joseph's Hospital, Stockton. FIP and RLG are back on 2 meters. NQC passed the 2nd-class commercial test. OVR was NCS of SJCEN for February. KN6GTA was Maritime Mobile on 2 meters. New officers of the Fresno Club are UJU, pres.; QOS, vice-pres.; ONK, secy. The Fresno Club has received official approval of the Pacific Division Convention to be held in Fresno May 21st and 22nd. JPU is working on an ART-13 for RTTY. ZOI and BFH are going s.s.b. A group of Fresno v.h.f. men are building a 2-meter repeater station for the hills east of Fresno. Traffic: W6FEA 141, K6EVM 74, W6ADB 70, SNF 44, EBL 21, SJJ 10, WJF 8.

ROANOKE DIVISION

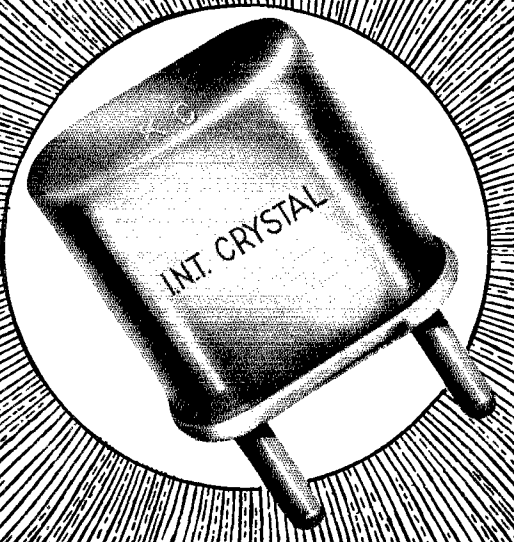
NORTH CAROLINA — SCM, Charles H. Brydges, W4WXZ SEC: ZG. RM: VHH. PAM: ONM. OO: SOD. If you are interested in Section Net activities, join the Tarheel Emergency Net on 3865 kc. That is your ARRL Section Net and will be only as good as you make it. EIV has a new 75A-3 and a Globe King. It sure is unusual to hear Howard not mobile. The Raleigh gang sure has been doing some hard work on the license plate bill. Show your appreciation by giving your hearty thanks. Lots of 2-meter activity is popping up everywhere. Let's hear from some of your guys on OES appointments. New stations in Charlotte are KN4BVJ and K4BZI. BZI is ex-5EWQ and is sales manager for WWOK. ZQB is moving to a new place to get a little more room for his Dixie Half Gallon. GKG has thoughts of rebuilding his 304-TL final. All who are seriously interested in forming a North Carolina 'phone traffic net on Saturday, please drop me a line. The Gastonia group has a monthly paper called *GAB (Gastonia Amateur Bulletin)*. It is packed full of excellent information on local happenings and may be a good idea for other clubs or groups over the State. DF has a new 20-meter beam and has been working DX. Traffic: W4RRH 25, ONM 11, BUA 4.

SOUTH CAROLINA — SCM, T. Hunter Wood, W4ANK — The Aiken Club has elected new officers: WSD, pres.; EQD, secy.-treas.; ZVY, act. dir.; and AYD, pub. ZVY demonstrated the antenna 'scope and GDO at the February meeting. FM is building an SS rig. LXX has a new trailer with more room for a ham shack. FGX is QSY to W2-Land. SMI reports good 10-meter DX. AUL is working DX on 20 meters. TSU has a new beam on 20 meters. ULH is to be congratulated for his assistance to newcomers in Florence. WN4HOZ reports two new KNs in Greenville: BWZ and BXA. WN4HOZ has worked 42 states with a 32-foot vertical on 40 meters. TTG reports his XYL is now KN4BXH and is looking for South Carolina contacts on 3736 kc. We hear that SOF, of Dillon, is secy.-treas. of the Lumberton Club. SOD is a member of the Lumberton Club, which boasts of 20 charter members. New Greenville Club officers are ASD, pres.; VUU, vice-pres.; K4AIB, secy.-treas.; NJG, act. mgr.; FNS, trustee. The Greenville Club has secured the old control tower at the airport as a club house and the club station, NYK, will be on the air from this location soon. The Club boasts of 15 mobiles with 6 on 75 meters and 7 on other bands. Thanks to Virginia for the nice report. ZRH transmits code practice at 1900 EST on 3700 nightly Mon. through Fri. The South Carolina C.W. Net meets Mon.-Fri. on 3525 kc. at 1900 EST. Traffic: W4HDR 265, AKC 198, ZIZ 158, FFH 66, RPV 56, FML 36, ANK 25, YAA 10, FM 3.

VIRGINIA — SCM, John Carl Morgan, W4KX — SEC: RTV. By the time this appears, KX will have moved to Fredericksburg. See page 6 for new address. Others on the move include YS to DL4, VUF to North Carolina, CGE and YKB on a 3-week Navy cruise, LK abroad for 3 months. RTV holds a meeting of ECs each Sun. at 0800 on 3835 kc. and has appointed ZCL as his assistant in charge of c.w. AREC operations. New ORSs: AAD, WYC. New OPSs: RGZ, CWB. New OO: EUH. Appointees are required to suggest other likely candidates for appointments. Or if you want one, just ask. Don't be bashful. VPO and his XYL, HLF, are teaching a code class of about 20 in Orange. YE's 11-year-old son now is WN4CAX, making three hams in the family. Big brother is YZC. KAO has mobile working on all bands, while YVG says he's doing pretty well scrounging parts for one. BYZ has a new Globe Scout. KWP reports an emergency net in formation among the C. & O. Ry. employees who are hams. KFC worked TI9MHB on 40, 80, and 160 meters for country No. 225. Among the Virginia gang at the banquet of "Ozone Sniffers" (old-timers) at Olney, Md. in February were AKN, KFC, KX, EBH, and NV. KN4ASU, radio instructor at Norfolk Naval Base, shucked the "N." TFZ is looking for volunteers

(Continued on page 104)

ANNOUNCING THE NEW



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for ODN NCS. When you read this, the summer slump will be imminent. But this is an excellent time for the newer hams to get their hand in, in net operation, especially the c.w. nets. Get in touch with RMs TVO, PXA, or YZC if interested. We suggest you take a try at NCS — you'll find it's a lot of fun and quite easy when you get the hang of it. Anyone capable of 20 w.p.m. or better is a natural. Finally, we urge you to report any activity or traffic to the SCM each month. Regular reporting cards are available on request. Traffic: W4PFC 894, BLR 166, KX 73, YZC 71, YVG 38, TFZ 36, CFV 25, KFC 20, ASU 19, PPI 14, IA 12, AAD 11, JAU 10, CWB 6, LK 5, WYC 5, RGZ 4, BYZ 3, LW 3, CGE 2, TFX 2.

WEST VIRGINIA — SCM, Albert H. Hix, W8PQQ — SEC: YPR. PAMs: FGL and GCZ. RMs: DFC, GBF, HZA, and JWX. GBF has been doing good frequency-measuring work. CHP has a new Globe King. PRM is active in Bridgeport on s.s.b. and c.w. He is ex-operator from DL4AIR. ORD is on s.s.b. with 300 watts and is building kw. linear amplifier. IWB had a good article on mobile signal-strength meter in March *QST*. LBT is on 15-meter mobile. PQQ has a new kw. amplifier on 15 meters. GEP informs me that Princeton Club is planning another picnic-hamfest in June. UYR has a new vertical on 80 meters. TMI, in Nitro, is ex-4PHR. He is building a 100-watt linear. IXG has a new HQ-129X. GBF and JWX sure did a bang-up job this month. The Tri-State Club in Huntington is very active on 6 meters. VCT is back in Texas for a short spell. ZJS is planning s.s.b. gear. LSG is planning on getting a high-power rig soon. AVW is back on and is getting a new two-element 20-meter beam. LS is doing a lot of mobile work. EOJ has the s.s.b. job finished. Thanks to NLT, LS, WSL, and NBG for their tremendous help in working on the license plate bill. The hams in this section responded very well in sending in letters and messages to the Delegates and Senators. Traffic: W8GBF 642, JWX 410, GEP 84, HZA 61, IXG 19, DFC 11, LBT 7, PQQ 3, UYR 3.

ROCKY MOUNTAIN DIVISION

COLORADO — Karl Brueggeman, W0CDX — SEC: MMT. RM: KQD. PAM: IUF. We now have about 1100 hams in Colorado with only 220 AREC members. There is lots of room for improvement so let's all join and see how close we can come to 100 per cent. MMT or your SCM will be very happy to send out applications, so just send either one of us a post card, and we will answer promptly. Also remember the EC check-in around the first of the month. OMN has finished this year's radio class and has three ready for Novice Class examinations. Ben will conduct a similar class next fall. WN0ZZS and KN0AAI are two new Novices from Pueblo. IUF has a new final. TVI has 41 states toward WAS, including W1AW. The Colorado nets have been having a lot of trouble lately with QRM. Most of it seems to come from hams who do not check their frequency before transmitting. Net operation is very important and can be done efficiently only if all of us cooperate. The news was quite sparse this month and as a result this column is short. Traffic: K0WBB 821, W0KQD 398, W6PKL/0 262, W0TVI 73, PGN 61, LNH 47, IA 10 IUF 3.

UTAH — SCM, Floyd L. Hinshaw, W7UTM — The Utah license call bill has passed the House. By the time you read this it is hoped the bill will have become law! TCC expects to be back in Utah to participate in the April CD Party. JPN still is busy with defense activities and is not on the air as much as he would like. Hal is sparking the 2-meter activity in this Area. Ogden news: SAZ says that OCX has gained membership in the c.d. net. RQT has toaster interference (TI?). Hi. VHS is looking for 6-meter openings. MWR made BPL on originations plus deliveries. Traffic: (Feb.) W7MWR 212, UTM 7. (Jan.) W7JPN 6.

WYOMING — SCM, Wallace J. Ritter, W7PKX — Sorry to report the failure of the Wyoming License Plate Bill S-41 to pass the House Committee. The Casper Radio Club had a very successful booth at the hobby show. The Sheridan Radio Club is starting on mobile 2-meter c.d. rigs and is getting started on RACES set-up. HLA, in a new home, should have an antenna up soon. WET is rebuilding the all-band rig. JJO was elected secretary of the Cheyenne Club and is sporting a new Ranger. SQT would like to start a 7-Mc. Wyoming Net. Two new ones at Cheyenne are WN7YWV and WN7YWW. POA, OZP, and BJS transferred out of Cheyenne. EUZ is very lonesome on 2 meters, all fired up with no one to QSO. Wyoming now has a c.w. net, known as the "YO" Net, in operation on 3610 kc. Mon., Wed., and Fri. at 1830 MST, with DXV acting net control. PKX is going on vacation to XE-Land. Traffic: W7PKX 260, DXV 65, HDS 36, MNW 20, PMH 6, VXV 2.

SOUTHEASTERN DIVISION

ALABAMA — SCM, Joe A. Shannon, W4MI — SEC: TKL. RM: KIX. PAM: RNX. Section nets: AENB, daily at 1900 on 3575 kc.; AENP daily at 1800 on 3955 kc.; AENB C.W. operates at a speed of 15 w.p.m. on Sat. and Sun. and welcomes newcomers. Four stalwarts hit the BPL trail in February: K4FDY, W4COU, HKK, and UHA.

(*Continued on page 106*)

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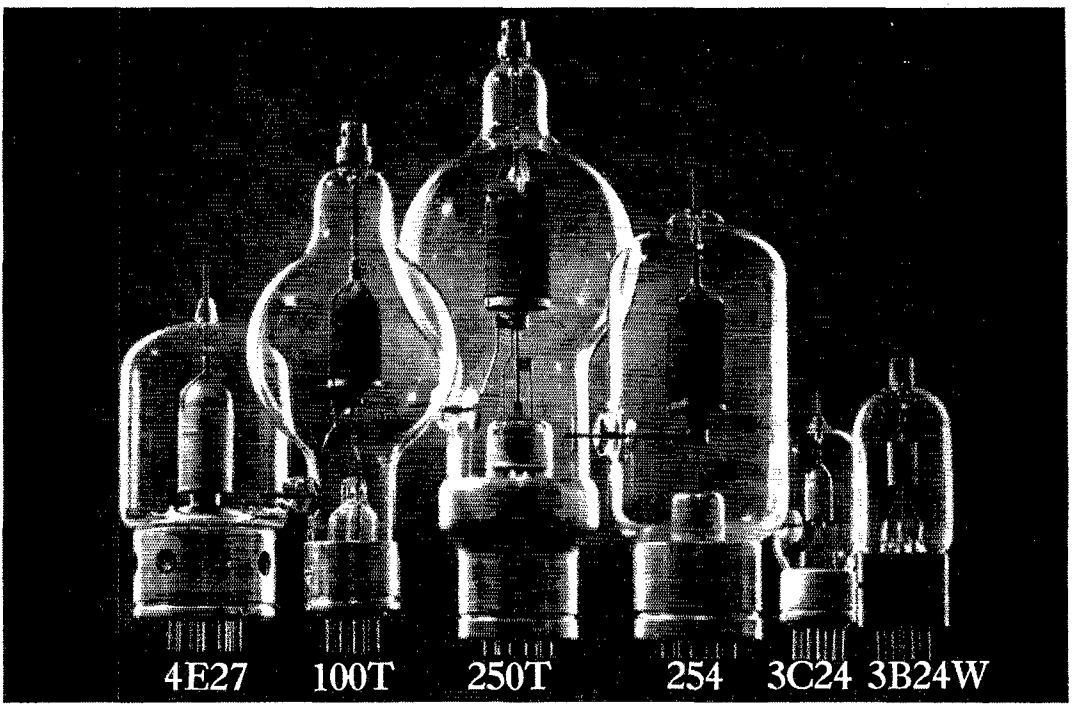

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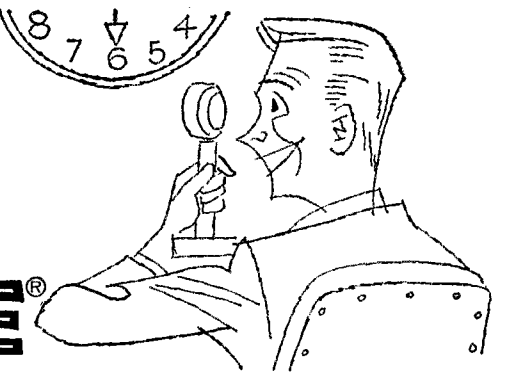
COU is experimenting with a Franklin Oscillator. ZSQ was voted the most efficient NCS on AENP for February, and RTQ the outstanding net member for the month. WOG has moved to a new location and FAJ is now living in Coral Gables, Fla. ZWE is signing portable from York. After four tries at 'phone patches, ZSQ says he can now offer his services in Birmingham! Welcome to KN4ASG, Winfield, and KN4CCI, Anniston. TKL has a new Chevvie and the job of converting mobile to 12 volts and reinstalling. CAH says he has worked VP5AE, Grand Turks Island, on 15 meters! RLG is back in the traffic column after a year's absence. Traffic: K4FDY 1158, W4COU 602, HKK 516, UHA 449, YRO 69, EJZ 60, WOG 59, ZSQ 52, KIX 48, K4ACO 27, W4ZSH 26, OAO 24, TKL 24, YAI 24, RNX 21, BFM 14, CEF 14, PWS 14, TXO 14, HYI 12, DXB 10, JKU 6, CAH 4, OR 4, RLG 4, NLB 2, USM 2.

EASTERN FLORIDA — SCM, John W. Hollister, jr., W4FWZ — Our SEC, IM, is planning on May 15th for JOCO. A nice report was received from PJU on the LJM transmitter fund. The B&W 5100 was delivered Feb. 27th and set up by DPD, DDW, CPG, and VIE. Because TOJ was listening, a dying child in Oregon received her wish to taste some Florida watermelon via Eastern Air. The three foregoing disassociated ham activities certainly point up our belief in our hobby and my belief in the amateur. Ye SCM got first-hand information on some good things in store for those heading for St. Petersburg in June for the ARRL Convention. An enjoyable evening was spent at the SPARC meeting, Ft. Lauderdale: The Flamingos are aiming to please the gals in their outings this year. *Bird Sparks:* VGT is building a new shack. TOJ uses an SX-88 with a Globe King and TOK uses the NC-183. WAQ uses B&W 5100 and s.s.b. on 20 meters with Telrex two-element Mini. Thanks to SDI/MVR for the TOJ-Oregon story. KN4BXR is 15. WN4HRU is NCS for 3735-kc. Novice division of Broward Emergency Net. Gainesville: TJU reports new GAS officers are K4AQR, TJU, WEM. WEM, the EC, has 7 mobiles in the GAS Net. TJU says the gang is getting polished up for Field Day (June 25–26). Jacksonville: CNC reports NEK has nice skeds, so drop him a line. Key West: We are sorry DRT is moving on. ELS says club station K4NCN now has the beam up. Miami: Thanks to IYT and PBS for the honorary DEN certificate. PBS and IYT report the DEN drill of Feb. 28th was a big success with 11 mobiles. Key men included PBS, YCL, UIW, CUR, and IYT. Renewed 144-Mc. activity brought in FLH with 600-watt duplex with KQG and ZDR. RNV also is on 144 Mc. CUR says AZO is on 144 Mc. with 500 watts and reports a new club, the South Miami Radio Club. YJE uses B&W 5100. Orlando: BMY is building a new shack and console. Tampa: 2JWJ swears by his rhombic. Norm says KL7AWH died in Clearwater. Traffic: (Feb.) W4TYE 679, IYT 585, PJU 526, LAP 340, DVR 262, WEO 190, WS 123, WHK 103, ELS 79, YJE 65, TJU 54, FSS 40, LMT 34, ZIR 32, K4ANJ 27, W4RWM 27, FJE 20, IM 14, FWZ 12, NEK 12, YOX 12, DES 5, BWR 4, YNM 2, DRT 1. (Nov.) W4PJU 524.

WESTERN FLORIDA — SCM, Edward J. Collins, W4MS/RE — SEC: PLE. ECs: HIZ and MFY. CQX sends an FB report on the Novice program. New Novices are KN4s BMQ, BNA, BKP, BRQ, BQY, BKU, and BKW. 9CPI now is K4BZX. CQX is coming on with a kw. MUX has been burning up 75 meters. KWM rebuilt the kw. rig for 20 meters. RKH and PLE are cleaning up TVI in their rigs. ROM has a new 10-meter rig. SMM has the new mobile rig going. UXW is on 10-meter mobile. WKQ is getting all set for Field Day. PLE is looking for ECs for the central and eastern parts of this section. HQG is a traffic man on 75 meters. BGG has a car and is dreaming of mobile gear. MS has a new B&W but KN4AGM claims it. Hi. QK has the 813s booming on 75 meters. UCY is after higher power. NJB is on again. JPD swears by the 40-meter band. TTM is very active in the YLRL. KN4ADY is getting the rig set to come on the air. 6UQZ is in the area again after 18 years. VR keeps 40 meters going along with AXP. OOW is renewing his ticket. RZV is faithful to the Dagwood Net. UCY is happy over the 10-meter openings. YFF, YFG, and YFH have antenna problems. Traffic: K4AKP 341.

GEORGIA — SCM, George W. Parker, W4NS — SEC: OPS. PAMs: ACH and LXE. RMs: MTS and OCG. Nets: Georgia Cracker Emergency Net meets on 3995 kc. Sun. at 0830, Tue. and Thurs. at 1830 EST. Georgia State Net (GSN) meets on 3590 kc. Mon., Wed., and Fri. at 1900 EST. CCM has a new 500-watter. It is a new YL at QDM. DJF is working on a kw. sideband rig. BVE is working on a modulator for his c.w. rig. KN4BXD is a new Novice in Jackson. YTO made WAS. CFJ sold his kw. sideband final and is building a new one. A new club has been organized at Quitman High School. KN4BBI is new in Bainbridge. New officers of the Thomasville Radio Club are NDX, pres.; ZDP, secy.-treas. The South Georgia Rag-Chewers Net held its annual picnic meeting in Thomasville. The Southeaster Single Sideband dinner was held in Atlanta on Feb. 19th with more than 70 sidebanders in attendance. KN4s ADV, AYC, and BAI are active in Columbus. YUM has a new 35-ft. pole in his backyard and is active on 15 meters. MTS is building a sideband rig. DOC has a new 32V-2 and a 75A-3. RVH now is mobile. ZUF has a new

(*Continued on page 108*)



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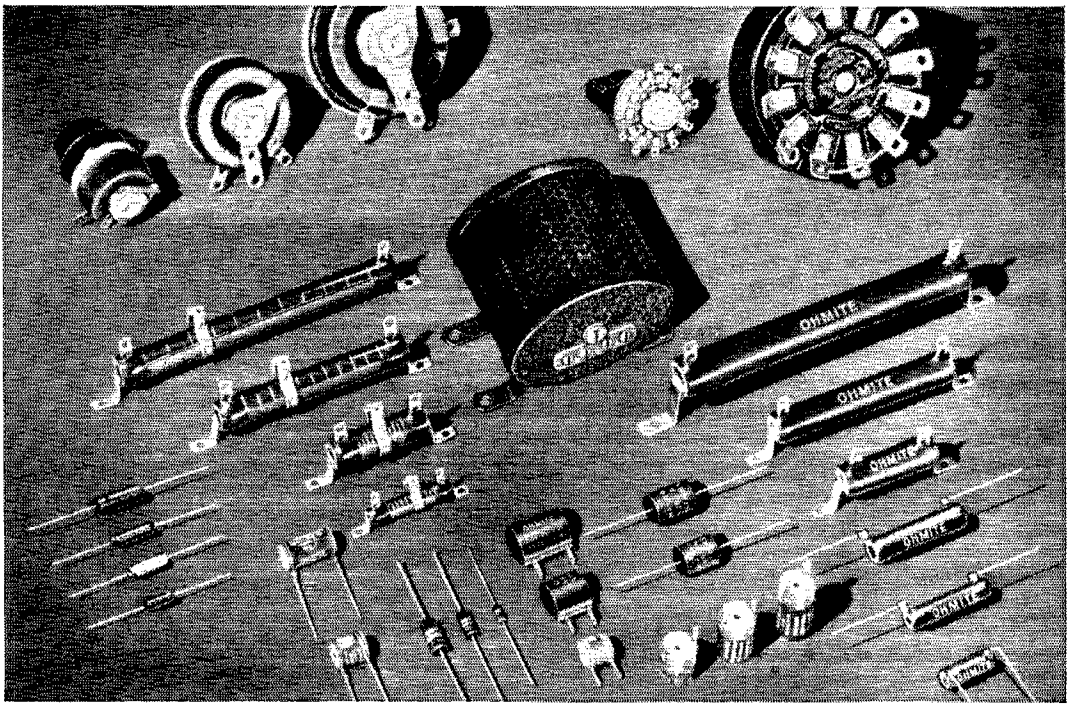

Your rig is sure to give more care-free hours if you are using Ohmite components. They provide an extra margin of safety. For example, Ohmite "Little Devil" composition resistors are rated at 70°C instead of the usual 40°C... Ohmite wire-wound resistors have *welded terminals* that give perfect, permanently stable electrical connections. For the utmost in dependable performance, select Ohmite components for your equipment.

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beam on a 35-ft. telephone pole and is after that rare DX on 20 meters. YU1GM (GMP) works the home town regularly from Belgrade. HYN, in LaGrange, is back on the air on 75 meters. All appointees are requested to check appointment expiration dates and forward their certificates to the SCM for endorsement if over one year old. Traffic: K4WAR 706, W4CFJ 320, PIM 315, BVE 225, ZDP 64, BWD 30, NS 22, MTS 20, ZD 14, K4BGB 10, W4YTO 2.

WEST INDIES — SCM, William Werner, KP4DJ — KD renewed ORS appointment. The appointments of HZ, QR, and KG4AO have been cancelled because of inactivity. ZW is preparing to get on 75 meters to QSO Island stations. SK, one of our co-workers and an old-time amateur, has gone back to W2-Land. ABC has a new Viking Ranger working on all bands. W2ADD visited WV at Aquadilla. W2TO visited AZ, MP, C.D. Radio Officer, is active on 75 meters. RA has returned from a long visit to the States and promises early activity. WD made WAC-'phone. YT has a new HRO-60. DA is active on 7 Mc. DV and ZW are working feverishly in the c.w. portion of the DX Contest. ACB, with the highest QTH in KP4 on top of a mountain near Castaner, applied for amateur weather observer appointment to report to the Antilles Net. ABA has 40-meter vertical. US, ZC, AAA, ABA, ABD, and ACB visited the SCM. AAA is CAP Radio Officer. KD has a new 80-meter Zepp and reports working 64 countries on 3.5 Mc., 86 on 21 Mc., 18 countries and 4 continents on 1.8 Mc. US and ABA were subjects of a two-page write-up in a newspaper printed by the Dept. of Instruction with an 8 x 10 picture in color on the front page. AZ has a new Lysco Transmaster. Traffic: (Feb.) KP4WT 76, ZW 8, DJ 2. (Jan.) KP4WT 90.

CANAL ZONE — SCM, Roger M. Howe, KZ5RM — AU and FL moved into new homes in the new housing development on Ridge Road. They are practically across the street from each other, but both claim this is not going to cause trouble because they are going to install a special switch which will automatically lock out the other's converter for a half hour. The ham gang surprised ML and FL with a house-warming party at their new QTH. New license application forms are in the making and shortly will be available at the Cristobal, Margarita, Balboa, and Balboa Heights Post Offices. They also will be available at either of the two radio clubs. JW, CZARA club station, is in business with the interlaced 10–20 beam. SCM, RM, and his XYL, KA, will be on leave Stateside from the end of May to the end of August, during which time SEC, WA, will act as SCM. Traffic: KZ5WA 118, DG 52, CF 30, KA 22, LB 11, GD 9, BD 8.

SOUTHWESTERN DIVISION

LOS ANGELES — SCM, Howard C. Bellman, W6YVJ — Explorer Post No. 177, SLW, worked PY4DK with its 500-watt Greyhound Mobile. These boys are all physically handicapped. KN6ICI's best DX is WN7YHD, in Montana. All scouts are invited to take part in radio classes at the Lowman School, North Hollywood, 7:30 to 9:00 P.M. Fri. QJW reports that the ECs in the southern part of Los Angeles County are participating in the American Heart Campaign by providing mobile units to pick up money from the volunteer workers. Two W6s were heard by 5FAG, Albuquerque, on Feb. 18th, according to ORS, who worked FAG on the 21st on 75 meters. Apparently this was caused by ionization from atom blasts. K6BAG, the Mt. Pacifico Radio Club, is scheduled for the mountain of the same name next Field Day. K6JLY, publicity secretary of Hamilton High Radio Club, indicates that the Club's constitution now includes words which provide for expulsion of any member known to be "bootlegging." *The Oscillator*, from Long Beach, reminds us of the YLRL Convention to be held at the Miramar Hotel in Santa Monica in June. New calls for "Riohons" include K6JLS, TV technician at Lovell's, a recent graduate of the code class. Russ is on the Novice c.w. bands. Tom Lovell, sr., father of KN6IPD, is now KN6JRH and has worked San Francisco with his Heathkit. Another father and son combination will be Pres. Beaird, who recently passed the Novice exam and is awaiting his call, and his son, Gil, now General Class with the call K6IMF. Gil is on 40-meter 'phone with a Globe Scout. KN6IMG is bringing his dad around to code classes. The Jennings family, father and two sons, are making progress toward 5 w.p.m. Thanks for the report from UKC, of the *Riohon Listening Post*. FMG has asked for cancellation of his ORS appointment as he expects to be very inactive in ham radio circles in the near future. Traffic: (Feb.) W6MBW 425, USY 234, GYH 210, K6LDQA 172, W6CAK 139, KN6HOV 104, W6MLZ 100, CMN 91, BHG 70, ORS 66, K6COP 32, BWD 31, W6CK 28, HIF 12, CBO 5, FAI 3, K6BEQ 1. (Jan.) K6FCZ 945, W6FAI 6.

SAN DIEGO — SCM, Don Stansifer, W6LRU — Asst. SCMs: Tom Wells, 6EWU; Shelly Trotter, 6BAM; Dick Huddleston, 6DLN. SEC: VFT. ECs: BAO, BZC, DLN, HFQ, HIL, HRI, IBS, KSI, KUU, and WYA. RM: ELQ.

(*Continued on page 110*)

The entire San Diego section mourns the recent passing of Johnnie and Neva Fredenburgh, VJQ and YXI, who were killed in an auto accident. K6JCF, ex-W4VZH, is now in Del Mar. KN6JGI is a new Novice in Vista. Officers of the Gillespie Club are K6ILO, pres.; W6KUU, vice-pres.; and K6DXZ, secy. The Rohr Club now has a Viking II on the air. SKB is recovering at home after a recent auto accident. The Convair Club has a Collins 32V-3 on all bands. K6CTQ worked 12 new countries in the DX Contest on c.w. BSD is now handling traffic on RTTY. The Orange County Club is conducting code and theory classes in coöperation with c.d. in the area. K6DNO now sports a BC-342 while KN6HKY has an NC-183. LYF has a Ranger. FJH, our ex-SCM, is now in Arcadia. All clubs continue to show activity preparing for Field Day. The club call for the new Gillespie group is K6JCC. SYA and his XYL recently vacationed in Death Valley, but came home early because of the intense cold. The meeting space for the Convair Club will be doubled in a new building soon to be completed. VFT is back at his normal duties of teaching after an enjoyable trip East to receive the Edison Award. A 9- and an 11-year-old at Silvergate Elementary School passed their Novice tests and are awaiting calls. All persons holding appointments in the section are asked to send certificates to the SCM when they expire so they can be endorsed and returned. This would help me to keep my records straight. Traffic: W6IAB 3350, YDK 621, BSD 599, IZG 91, K6DBG 32.

SANTA BARBARA — SCM, Vincent J. Haggerty, W6IOX — K6NBI still is the traffic leader in this section. QIW says poor conditions make for hard work on the traffic nets lately. Activity at FYW is limited to CARS and local contacts presently. AGO skeds the East Coast on 3.5 Mc. BRY's brother is now K6END. IHD is finishing his s.s.b. final amplifier and working on a 2-meter receiver. Members of the section are urged to give their support to QIW, your new SCM as of April 12th. Congratulations, Bill! Traffic: (Feb.) K6NBI 93, W6QIW 8, FYW 4. (Jan.) W6QIW 26.

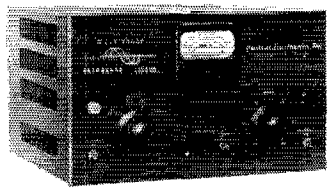
WEST GULF DIVISION

NORTHERN TEXAS — SCM, T. Bruce Craig, W5JQD — SEC: RRM. PAMs: PAK and IWQ. RMs: PCN and QHI. SQX has returned to Lubbock and Reece AFB. BSX reports 15 members of the Cleburne Club have a project of 5-10-meter transmitter-converter to tie in with the Sheriff's Dept. WB has given more than 400 exams in the past 25 years. New officers of the Snyder Club are FPH, pres.; COU, vice-pres.; CRP, secy.-treas. CDO has cubical quad on 20 meters. BXE has moved back to Snyder. New officers of the South Plains Amateur Radio Club at Lubbock are NGX, pres.; TUW, vice-pres.; and HDX, secy.-treas. OBS is in Germany. GLX is a new YL ham in Tyler. AJ renewed his commercial license. IMQ worked Canal Zone on 35-watt 15-meter home-spun rig. The Blue Ridge Net, on 160 meters, had an 88 per cent attendance on 1880 kc. for February. UUR reports on the annual Boy Scout Hamoree held Feb. 20th, conducted by No. Tex. Emerg. Net. Code classes are being conducted by amateurs and Naval Reservists each Tues. at 7:30 P.M. in the Naval Armory, Lubbock. TFP reports WN5HHK's father is WN5KAS, Dallas. YL YKE worked YL KZ5DG in Canal Zone on 15 meters. BMR reports on the early morning ham breakfast held each 3rd Sun. at the Piccadilly Cafeteria in Fort Worth. CF worked into the No. Tex. Liaison Net from mobile while en route to the Lawton Hamfest. QGR, Midland Club president, reports the City deeded land to the hams for the new club house they are building. NRI is back on mobile after being off when s.s.s.c. took his fancy. GVA is all-band mobile. ESR is back on NTEN after recent surgery. GQN has organized the TNT (Texas Novice Traffic Net), which meets at 1900 CST each Tue. on 7191 kc. Traffic: K5FFB 870, W5KPB 366, DTA/5 355, BAT 212, PAK 196, AHC 187, UBW 160, ACK 136, CF 129, BKH 122, OCV 37, YKE 27, ASA 26, HKF 7.

OKLAHOMA — SCM, Dr. Will G. Crandall, W5RST — Asst. SCM: Ewing Canady, 5GIQ. SEC: KY. RM: GVS. PAMs: PML, SVR, and ROZ. The Lawton-Ft. Sill Radio Club Hamfest and Dinner held at the Hotel Lawtonia was the highlight of the month with both the newly-elected Director, CF, and the Vice-Director, MA, present and making short talks. PML was M.C. and allowed your SCM and SEC, KY, to say a few words. A total of 94 attended the dinner with about 35 ARRL members present. KY is doing an exceptional job in lining up and training ECs for as many counties as possible and now has over 60 per cent of the counties covered. The usual tornado path from the S.E. to the N.W. across the State is almost completely covered. The tornado season has begun and the progress of the squall line is being followed by a storm-warning net, with CZB as originator and NCS. A tie-in with the state weather bureau is in the process. The North Fork ARC has set the date of its annual hamfest and picnic at Quartz Mt. Park as May 21st and 22nd. Your SCM has been remiss in notifying ARRL appointees of expiration of their appointments, but appointments will be made on the recommendation of the RM, PAM, or Net Mgr. if application is made for OPS, ORS, or OPEN certificate. Traffic: W5GVS 143, MRK 83, FEC 69, ADC 56, GXH 44, TKI 44, MGK 41,

(*Continued on page 112*)

HARVEY PRESENTS CENTRAL ELECTRONICS EQUIPMENT for AM, CW and SSB



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New meter features include: reads input power directly in watts . . . reads grid current . . . reads output in RF amperes . . . shows reflected power due to mismatched load . . . input level calibrations for AM, PM and CW. Function selector knob switches meter to any reading while transmitting.

Has built-in power supply with excellent regulation of bias and screen voltages. The 600L is effectively TVI-suppressed with thoroughly shielded and Hypassed RF compartments.

Available in either table or rack model.

Complete (factory-wired) **$349.50**

New MULTIPHASE 'Q' MULTIPLIERS

A tunable IF electronic filter that provides tremendous receiver selectivity for peaking or rejecting signals on AM, CW or SSB. Employs new 2-tube circuit with high-Q inductor. Continuously variable from 60 cps to normal IF pass-band. Interfering carriers attentuated up to 50 db.

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Model AQ — Designed for installation in Model A Slicer. Includes new front panel. Power-IF cable plugs into accessory socket.
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Model DQ — Designed for use with any receiver with 450 to 500 kc IF. Has power-IF connecting cable. Power requirements are 225-300 vdc at 12 ma and 6.3v at .6 amps. Can provide additional selectivity and BFO for mobile SSB or CW reception.
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Wired **29.50**

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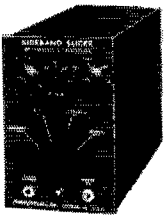

Permits selectable SSB reception on any receiver with 450-500 kc IF. Cuts QRM and reduces interference from 15 kc TV harmonics. Has built-in power supply.
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AP-1 ADAPTER — Plug-in IF stage for use with Slicer. Allows receiver to be switched from SSB to normal.
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AP-2 ADAPTER — Combines AP-1 and crystal-mixer for use with receiver having 50, 85, 100, 915 kc or other IF systems.
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Complete Sideband Slicer same as Model A, but including built-in 'Q' Multiplier. Does not require AP-1 Adapter.
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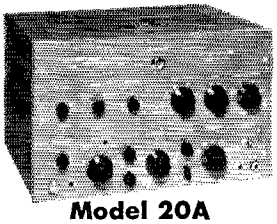

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QAC 32, CBY 30, ZKK 30, PML 28, PNG 27, MFX 26, SVR 25, RST 20, KY 18, FU 17, WTC 13, TC 12, GIQ 7, PAA 5, ITF 4.

SOUTHERN TEXAS — SCM, Dr. Charles Fermaglich, W5FJF — ABQ, who has been in bed for a very long time, is now up and around again and beginning a full kw. rig just for 80-meter c.w. Good luck to you, Jerry, and we are all happy that you are recovering. URW is doing a lot of MARS and NTO operating and soon will be heard on STEN. The next Annual STEN Meeting will be held in Kerrville May 28–29. From *Gutter Dope*: FND and his XYL are moving into a new home on the north side. VI is sporting a new mobile on 75 meters and a new QTH out on Fredericksburg Rd. EPB is building a new Q multiplier. THU has just installed a new Elmac transmitter in his mobile. We wonder if JHH has his car painted yet, and how about the 24-volt system? GKI is ready to fire up an ART-13 mobile. Emergency Net NCS, KQG, has recovered from laryngitis. EVT is having lots of fun operating his new Viking Ranger. LVE is mounting his put-put on a new trailer. OER reports 3855 kc., the mobile frequency, is crowded in Houston. TSE says we should be seeing LFG soon. The Galveston County ARC is doing an FB job of publicizing amateur radio. ULN presented a program on oscillators. The Club call is KMK and Campbell is trustee. The GCARC had an FB picnic in March. Elder, Judd, and Bolles were the committee. New Novices in Galveston County are Mr. and Mrs. W. C. Fulton and Jimmy Taylor. WN5JSV, and OM, WN5JSU, share the same station. Jim's call is WN5GMX. DJG, a 13-year-old YL, is thought to be the youngest in Texas. AET has moved to a new QTH in Pharr and is loading up the clothesline pending completion of an antenna. FZO is back on the air with his numerous transmitters but he still is having some trouble. The hams in Hidalgo County participated in the Red Cross simulated disaster Mar. 5th. DTJ is on 40-meter 'phone and c.w. with 60 watts for the first time since 1951. It is his first 'phone rig since becoming a ham in 1933. At a recent meeting the HARC elected RPW, pres.; Sam Dixon, vice-pres.; FZD, treas.; URU, secy.; PBX, membership chairman; VWF, prog. chairman. Traffic: W5MN 631, FJF 42, ABQ 16, URW 16.

NEW MEXICO — SCM, G. Merton Sayre, W5ZU — SEC: KCW. PAM: BIW. V.H.F. PAM: FPB. RM: JZT. The NMEPN meets on 3838 kc. Tue. and Thurs. at 1700, Sun. at 0730; the NM Breakfast Club every morning except Sun. 0700–0830 on 3838 kc.; NM C.W. Net daily on 3633 kc. at 1900. Changes in NCS for the Breakfast Club: Mon. ZGG, WKX; Tue. TBP, BZB; Wed. CEE, AK; Thurs. WBC, GYN; Fri. CEE, VLZ, Sat. PSP, CXC. WBC is NCS for Tue. and Thurs. NMEPN, with CXC alternate; GEM is NCS Sun., BXP is alternate. BIH and FPB are candidates for the SCM post. Remember the State Ham Picnic at Albuquerque June 4–5, the West Gulf Division Convention at Fort Worth June 10–12; and Ruidoso in 1956 for the West Gulf Division Convention site. AQQ has left the State. NMEPN stood by for three days when Albuquerque amateurs provided communications in connection with the TWA plane search and rescue activities in the Sandia Mountains. Caravan Club members did a grand job. WIY and CGE moved to Mojave. DNK, ECS, FAG, FPB, HAG, NSJ, RKS, UEO, UZL, WIY, YXM, and others were at the Feb. Albuquerque V.H.F. Club meeting. FAG and NSJ are trying to work DX after each Nevada test. SB is in Farmington as a TV engineer. GUB attended Chicago school on microwave and teletype maintenance. PBV works on u.h.f. gear for CAA. POI lost his whip and coil in a snow storm. AAU has a communications service in Farmington. Traffic: K5WSP 268, W5RFF 54, QR 48, JZT 43, VLZ 40, HJF 39, WPA 39, AQQ 38, CEE 31, HOE 16, ZU 15, ARD 12, BZB 9, BIH 5, BXP 5, WBC 5, DZB 4.

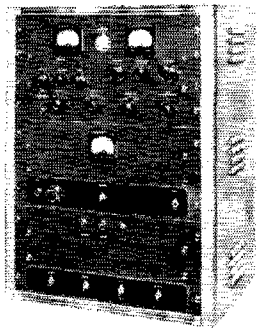
CANADIAN DIVISION

MARITIME — SCM, Douglas C. Johnson, VE1OM — Asst. SCM: Fritz A. Webb, 1DB. SEC: RR. RMs: VE1HJ and VO6X. PAMs: VE1OC, VO2AW, and VO6N. ECs: VE1AAY, VE1DQ, VE1DW, VO2G, and VO6U. A new appointee is PF, PAM for N.B. We regret the passing of EA. Clary was particularly noted for his 160-meter transatlantic pioneer work, and had set a number of DX records on that and other bands. The Cape Breton C.D. Net meets Sun. at 1:30 P.M. on 3750 kc. Congrats to AV and his XYL on the new jr. operator. A movie interview of FQ was shown on CBHT after Brit had informed the press that two missing Arctic travelers were found. BN is using new all-aluminum sky hook with 450-ohm feed. VO1s M, U, V, and Y have migrated to 20 meters. VO1AB has a new mobile. VO1AE is active on all bands. VO1AM is back on after a few years layoff. VO3X and VO1D participated in the BERU Contest. W4BRP/VO2 has 5 watts on 3.5 Mc., and 500 on 14 Mc. Congrats to VO1AH and his XYL on the new jr. operator. VO6N is running 150 watts and has worked up to 77 countries. VO6AH is Acting NCS for the Labrador Net. The GBARC is conducting a training program in theory and code under the direction of VO6R. Traffic: VO6N 158, VE1FQ 129, VO6B 106, VE1PX 51, VO6S 46, VE1HJ 35, VO6AF 34, VE1QM 33, VE1UT 29, VE1OM 28, VE1ME 20, VE1OC 15, VO1D 8, VE1DB 3, VE1AV 2.

(*Continued on page 114*)

Everybody's Talking About Our GLOBE KING!

A Globe King transmitter was used in the Amateur Radio Booth at the recent State Fair of Texas. How did it operate? Here's what Mr. Edward F. Aymond, Jr. Amateur Day Committee Chairman, has to say:



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Dallas, Texas
W5UHV

". . . was operated on 14.228 mc for 16 days continuous from 10:00 a.m. till 10:00 p.m. Some 200 different amateurs used this transmitter and not once . . . did we have any trouble whatsoever.

". . . no interference either on the video or the sound as a result of the Globe King being operated in this close proximity (3 feet) to (two) television sets. During the operation at the Fair, 41 states were contacted, 5 of the Canadian Districts, Alaska, Hawaiian Islands, Canal Zone, Cuba, Nicaraqua, Honduras, Peru, and Columbia. All operation was via phone.

". . . we were more than pleased with this operation and wish this transmitter had belonged to one of us personally"

and . . .

Dan Hoover (W9VEY) of Hillsboro, Illinois says, "It sure is a wonderful rig. QRM just melts and backs off to either side."

In the words of George H. Cooke (W2LOP) of 25 Cottler Ave., Springfield, N. J.: ". . . there is absolutely no intereference on our own TV set . . . Needless to say I'm very well satisfied with my purchase."

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ONTARIO — SCM, G. Eric Farquhar, VE3IA — We record with deep regret two Silent Keys, OW and AP. OW was well known as a member of the Air Transport Board and an active member of the Ottawa Amateur Radio Club. AP, a past secretary of the same club, and a member of the Dept. of Transport, was very active on 20, 40, and 80 meters. The Nortown Radio Club of Toronto is possessor of the Marconi Trophy for being top Canadian scorer in the 1954 ARRL Field Day operation. Up Simcoe way the Norfolk Club recently held a banquet, but lack of information has us guessing as to what took place. The annual banquet of the Brantford ARC was a tremendous success. Some eighty hams who attended, representing Windsor, Chatham, Gravenhurst, Elora, Toronto, Hamilton, Galt, Kitchener, and Belmont, heard some very interesting data on civil defense, ably presented by P. H. Fox, Chief Transport Officer for Canadian Civil Defense. He described civil defense as "a pressing necessity toward safeguarding the lives and well-being of our people and the preservation of that way of life which we hold so dearly and prize so deeply, within our hearts." 2BE, ARRL Canadian Division Director, who recently completed 25 years of service to Canadian Amateur Radio as its representative, outlined the benefits derived from being a League member. Touching on the AREC, which forms communication networks across Canada, he said, "These are the boys who control and operate the civil defense networks. All other organizations get their reservoir of trained personnel from this organization." TM changes receivers and says "There's a difference." BUR and his XYL were seen vacationing down Tampa way. VZ reports OSN activity keeps up. A newcomer in Belleville is BDT. VWI, in Kapuskasing, puts out a nice signal on 40 and 80 meters. BSW reports being the "first VE contact" to about 25 Novices. U.h.f. fellows are asked to be on the lookout on the 420-Mc. band for BDT, CAB, BEE, and ASD. Traffic: VE3GI 172, BUR 168, VZ 126, AJR 95, AUU 74, TM 62, DQX 38, BJV 35, CP 22, KM 22, NO 21, AVS 17, AOE 14, DPV 14, PH 10.

QUEBEC — SCM, Gordon A. Lynn, VE2GL — PQN is taking a beating these days from poor conditions, particularly long skip making short hauls difficult. However, DR continues behind it with quite a few stations reporting in. The same difficulty is being experienced on the Northland Net, as reported by FL. CA reports nothing new, just lots of traffic for the Far North. II has renewed ORS appointment after a lapse of a few years, this time from Sherbrooke. The St. Maurice Valley gang has one station or another covering 3675 kc. continuously throughout the day, as well as on 3740-kc. 'phone, on the lookout for traffic for that way. Reports from all parts of the VE2 district are solicited. Traffic: VE2CA 101, BB 82, LM 35, GL 16, CP 14, EC 14, ATQ 10, FL 10, LO 7.

ALBERTA — SCM, Sydney T. Jones, VE6MJ — PAM: OD. RM: XG. AL has n.f.m. and a.m. ready to go as soon as the OK has been received from the R.I. WC was away on a business trip to Houston, Tex. UB is active from the new QTH at Cowley. KL is building new remote control VFO. MJ is building a new antenna tuner. LQ has the new rig well under way. PS has a new TA12 rig. CE has plans for a vertical antenna. ZR has been hobnobbing with the Eskimos and working from VE8-Land. Congratulations to WO and his XYL on the arrival of a YL jr. operator. CP stays up nights chasing the elusive DX. YE is active on the BC Net. Make plans now to attend the Alberta Hamfest which will be held this year in Lethbridge. It is with regret that the death of JJ is reported. A charter member of the Hat Ham Club, his advice and help were highly valued. Traffic: VE6HM 117, YE 28, OD 27, AL 25, WC 7, IZ 5, MJ 4.

MANITOBA — SCM, John Polmark, VE4HL — OO: RB. New officers of the ARLM are NW, pres.; MO, treas.; PE, secy. The Noon Net now is registered with the ARRL. EF is having trouble with his 20-meter beam. ML, IF, and JW are sporting new mobiles all with very nice signals. QD is having TVI trouble. JW has a new antenna but still has TVI. It is curling time so we don't see much of GB. XW, wouldn't it be better to stay on the ground? We don't have too many active YLs now. No reports were received from the 20-meter gang. A fine time was had by all at the ARLM's annual "Ham Do" Mar. 5th. The ARLM had a booth at the Sportsmen's Show and handled lots of traffic; a very nice showing for ham radio. Thanks to all relaying stations Traffic: VE4GE 98, LO 18, EF 14, HL 14, KL 12, YR 11, QD 7, JM 6, AI 4, RB 4, AY 3, HS 2, OS 2.

SASKATCHEWAN — SCM, Harold R. Horn, VE5HR — QL's activities are curtailed while changing the QTH to Govan. RE is looking after PAM duties in the meantime. LT finally made the air with 807s running 40 watts and puts out a nice signal. CM put in a busy week as communications station at civil defense, Fort Qu'Appelle. FG says his big traffic count is 1 delivered 1 received with a new addition to the family, a baby girl. Congratulations, Don. TV, at Swift Current, reports the formation of a club known as the Frontier City Radio Club with BC, pres.; TV, vice-pres.; and JR, secy.-treas. Meetings are held Fri. at 7:30 P.M. and any visiting ham is welcome. LU has changed his OBS frequencies to 3827 and 3798 kc. Tue. and Thurs. at 1830 hours. HN is a new ham at Nipawin and can be heard on 75- and 40-meter c.w. Traffic: VE5FG 31, HR 16, LU 12, VL 12, BF 10, DD 10, DS 10, CB 6, LJ 6, MX 6, CI 5, GX 4, LE 4, IL 2, RG 2, RE 1.

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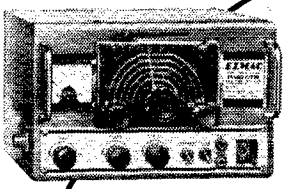
Order your new car less radio! Because, for a few dollars more, a Multi-Elmac receiver gives you full broadcast coverage PLUS dual conversion, highly selective and sensitive bandspread reception of all ham bands 160 thru 10!



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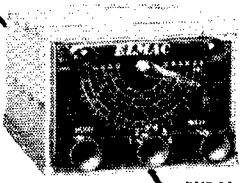

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A complete 10 tube job, with internal noise limiter, BFO, RF stage, and everything else you would expect in a modern communications receiver—all in a cabinet only 6" wide, 4½" high, by 8½" deep!

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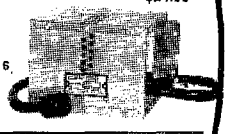

PSR-6

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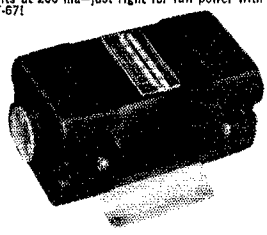
on this complete dynamotor supply, of top quality, with RF-AF filters and control relay. Delivers 500 volts at 200 ma—just right for full power with the AF-67!



Model 520VRX, 6 volt DC input. Brand new overstock, fully guaranteed. Regular net dealer price is $80.25—it's yours for only **$20.25** with the purchase of an AF-67.

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Round out your installation with these recommended top quality accessories:

Microphone. Shure controlled reluctance, Police type hand mike, with push-to-talk button. Dash mounting bracket. **$17.35**

Antenna change-over relay. Coaxial type. With contacts for push-talk control. 6 or 12 volts DC. **$10.50**

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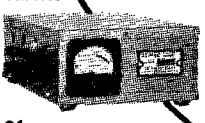
Slip the PMR-6A Receiver and the AF-67 Transmitter out of the car, and just by plugging in these AC operated power supplies you have a complete, compact, home and portable field station, or VFO exciter for KW final! Triple duty, ready for any service or emergency.

PSR-116S



115 Volt AC supply for complete operation of 6 or 12 volt model Receiver. With cable and plug.
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Same, but with S meter.
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Premax antenna mount. Link chain type, clamps on to any bumper with 1" clearance. No holes to drill! Type CA— **$5.88**

Heavy duty spring for CA—$6.47

Master Mobile DeLuxe "Any-angle" body mount. Heavy duty stainless steel spring. Coax connector. 132XXSSG—**$15.95**

Steel frame mounting racks. Fasten to bottom of dash, etc., unit is held in cushion grip, can be slid out for fixed station use.

For AF-67 or PMR-6A **$6.95**

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RG-8/U coaxial cable. The good kind! Per foot **13¢**

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Heavy dynamotor cable Per foot— **18¢**

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10% lets you start having fun, now! Take a year to pay, on Harrison's low cost, confidential terms.

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1. Use a Turner "Third Hand" to hold the mike in front of your lips. ($2.94). Light-weight yoke slips around neck. Special Shure controlled reluctance hand microphone, quickly screws on or off "Third Hand" **$8.82**
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Installations?

Certainly! Complete, professional job at reasonable cost. New York area (also in new cars at Detroit area factories).

Antenna Coupler

(Continued from page 13)

(Globar) provides a convenient load for transmitter adjustments. Our requirements were for power inputs up to 250 watts with the transmitter terminated with 50 ohms; however, work is being done on a 70-ohm version of the "Z-match."

The transmitter used here has a pi-network output circuit and this is adjusted for proper plate loading with S_2 in the first position, which connects the 50-ohm dummy load. Power can be read in the forward position of the bridge on the proper scale. No reflected power will be evident with the resistive load. The proper forward reading scale on M_1 should be selected by means of S_1, depending on the power output of the transmitter. As can be seen from the schematic and photographs, R_2, R_3, and R_4 set the 0–10-, 0–100- and 0–1000-watt full-scale levels. Reflected power calibrations are automatically taken care of by the settings of R_2, R_3 and R_4 when adjusted in the forward position.

It might be well to note here that transmitters having outputs in excess of 50 watts should be tuned up at lower power, because the dummy load in the "Z-match" is rated at 50 watts and excessive power could ruin the resistor. However, the "on-the-air" rating of the "Z-match" is much higher than 50 watts.

The antenna should be connected to the output terminals J_3 or J_4, depending on the frequency. S_2 is then switched to the second position and C_{10} and C_{11} tuned for minimum reflected power, as read on the meter. The two controls will interlock somewhat, but a few trials will readily lead to a good null. The system is then ready for use. In testing with a wide variety of both antennas and resistive loads, the reflected power was below one watt in all cases. After this minimum or zero reflected-power reading has been obtained no readjustment of the transmitter is necessary if it has previously been adjusted to work into the dummy load.

The tuning capacitor C_{11} will be near maximum capacitance for both 3.5- and 14-Mc. operation, while the setting will be near midscale at 21 Mc. On 7 and 28 Mc., the capacitance will be nearly at minimum. The setting of C_{10} will vary with different loads. In the third position of S_2 straight-through operation can be used, enabling the amateur with a matched 50-ohm line to use the bridge. The bridge is an excellent instrument for adjusting element lengths on a beam for lowest reflected power.

(Continued on page 118)

Strays

As a service to visiting mobileers, the Amateur Radio Society of Eglin Air Force Base, Fort Walton, Fla., maintains a monitoring watch on 29,560 kc. Signs patterned after the ARRL diamond have been posted on main highways in the area to bring attention to the call-in frequency.

W3LOE

BOB CHEEK . . . WHO HAS BEEN A "HAM" FOR 23 YEARS AND OPERATES W3LOE . . . IS ASSISTANT MANAGER OF THE ENGINEERING DEPARTMENT AT THE WESTINGHOUSE ELECTRONICS DIVISION.

WITH AN IMPORTANT MESSAGE FOR ALL ELECTRONIC ENGINEERS!

You may have heard Bob Cheek on the DX bands during the recent DX contest. Bob is a ham of 23 years standing, and is recognized as an outstanding DX operator, both phone and CW. Like many hams, Bob finds that his "rig" is relaxing and educational . . . and as stimulating as his work on advanced development projects at the Westinghouse Electronics Division.

Can a job be as interesting as a hobby? Bob says it can! "At Westinghouse," he contends, "the combination of professional surroundings, creative freedom and challenging 'projects of tomorrow' has put me in a real 'engineer's heaven'! In addition, the income and employe benefits, fine suburban living conditions, and so forth have helped both myself and my family achieve many of our lifetime goals while we are still young enough to enjoy them!" For the expansion of work on the interesting projects mentioned by Bob Cheek, Westinghouse needs still more experienced electronics engineers. If you have an engineering degree and would like more information on top-level openings to be filled in the near future . . . drop us a line today! All replies will be treated with the strictest confidence!

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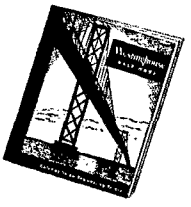

Results

The "Z-match" has been in use at the writer's station for the past several months and the results have been excellent on all bands from 3.5 to 30 Mc. Two transmitters have been used. One is a Harvey-Wells T-90 Bandmaster running between 75 and 90 watts input on both c.w. and 'phone. The second, with a pair of 4–65As in the final running inputs up to 300 watts, has been used with no apparent breakdown of capacitors, coils or the Z bridge. The first transmitter utilizes a pi-network output tank, and after tuning this properly on any band into the 50-ohm load, no retuning is necessary after the "Z-match" is tuned for minimum reflected power. The second transmitter uses an all-band tank with series-tuned link output and the results were the same with this output circuit. The fact that retuning the transmitter is not required after tuning the coupler for zero reflected power indicates a definite impedance match.

Although the functions of the "Z-match" have been described in terms of matching the transmission line to a coax line to the transmitter, it is equally useful for coupling the line to a receiver. The same antenna is used for both transmitting and receiving at the writer's station, and received signals have been given a tremendous boost by the use of this coupler, mainly because the receiver has a nominal input impedance of 50 ohms and its antenna terminals are finally looking at the proper impedance. The send-receive switching is of course done in the coax link.

After operating conventional-type antenna couplers with no visual means of obtaining a match, we wonder how many times a mismatch has been tolerated. Quite often, we think, at this station, because the percentage of contacts for stations called has gone up tremendously since the installation of the "Z-match," and in the recent DX contest the speed of tuning helped in running up the best score we ever had, on both 'phone and c.w.

Mobile Antenna Tuning

(Continued from page 18)

completed unit is ready for testing and adjustment. With all turns of the variable series antenna inductor removed (tap at top of L_1 in Fig. 4), the externally-mounted loading coil (center or base) should be adjusted for resonance at the extreme high end of the band in use. This adjustment will place the transmitter and the antenna system on precisely the same frequency. Temporarily disconnect the tuning motor from the control unit. Adjust balance control R_1 to its electrical center position, and adjust the sensitivity control to the point where both relays K_1 and K_2 (Fig. 3) are operated, as evidenced by illumination of both indicator lamps, I_1 and I_2. Then slowly back off the sensitivity control until either one or both relays deënergize. If both relays

(Continued on page 120)

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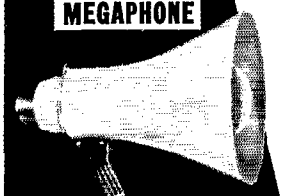
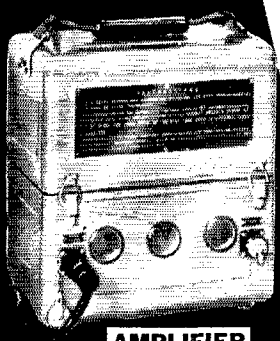
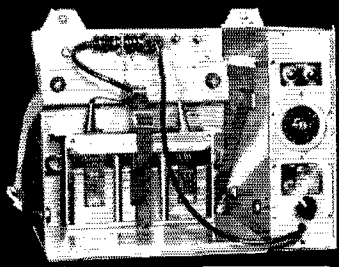




AMPLIFIER



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Lafayette made a terrific deal with the U. S. Navy—bought a quantity of U. S. Navy Model PAE-2 Portable Amplified Electronic Megaphone Systems which enables us to offer the complete system at a price which can never be duplicated again.

Here is an ideal system for such applications as fishing boats, yachts, traffic control, sports events, construction crews, surveyors, carnivals, car owners, life-saving stations, or any place where handling of large crowds is necessary, and wherever convenient power line connections are not available, because unit operates from self-contained rechargeable 6-volt storage battery. Can also be used as a stationary or permanent system when used with charging rack, which is designed to hold entire portable amplifier and battery.

System consists of portable amplified electronic megaphone—operated by a trigger switch in the pistol-grip-handle—dynamic type microphone unit rated at 50 ohms at 1000 cps, and a reproducing unit, all contained in megaphone mouthpiece and housing.

A powerful 20 watt 6 tube amplifier, housed in a water-proof, two-piece, portable metal case (as illustrated), having compartment for and supplied with 3-cell 6-volt storage battery. Amplifier built with finest quality parts to rigid Navy specifications.

A UNIVERSAL BATTERY CHARGING RACK that operates from 110 volts AC 50-60 cycles, 110 volts DC, 12 volts DC, 24 volts DC, 48 volts DC, or 96 volts DC. The charging rack consists of a battery recharger with time switch and also provides a space for stowing the portable amplifier. Two pilot lights in the front panel of rack indicate a "Low" or "High" charging rate. Timing switch controls the rate of charging. Has separate On/Off switch.

Approximate Dimensions & Weight : Megaphone 20" long, diameter 13½".
Amplifier dimensions—in 2-piece Portable Metal Case, housing 6 volt storage battery—13¾" H, 12¾" W, 9¾" deep.
Charging Rack 15½" H, 13" W, 12" deep.

COMPLETE SHIPPING WEIGHT 88 LBS.

Complete System consisting of electronic megaphone, 20 watt portable amplifier with tubes and storage battery in case, as illustrated, Universal Battery Charging Rack with all necessary interconnecting cables and plugs and 30 page Instruction Book with schematic diagrams of all units. Net **89.50**

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drop out at the same positioning of the sensitivity control, no balance adjustment is necessary. If one relay drops out before the other, the balance control should be adjusted for simultaneous operation of K_1 and K_2. Following adjustment of the balance control, the sensitivity control may be adjusted for optimum sensitivity. This system may be made sufficiently sensitive to respond to carrier shift brought about by nonlinear modulation and slight overmodulation excursions and to antenna detuning caused by passing pedestrians, automobiles or any phenomena causing even the slightest antenna detuning effect. Normal sensitivity adjustment is a matter of choice and will vary with individual operating requirements. R_3 should not be adjusted to the point where K_1 and K_2 are energized simultaneously. Such an adjustment renders the tuning motor inoperative.

Sensing of this system may be changed by reversal of the output and input coaxial connectors. Reversal of the tuning-unit operation may be obtained by reversal of the two control leads from the remote control unit. In normal operation, series inductance is automatically added with a capacitive antenna and inductance reduced with an inductive load.

A great deal of satisfaction in mobile operating has been brought about by the use of this system. It is a real pleasure to QSY about the 40- and 75-meter bands without the worry of antenna resonance, and to be confident that no matter what the position of the mobile whip — *it is resonant.*

Two-Tone Generator

(*Continued from page 35*)

Using the Two-Tone Generator

If the generator is used to test an s.s.b. exciter equipped with a high-impedance microphone input circuit, it will be desirable to divide down the output signal by means of a circuit such as shown in Fig. 4. If an input terminal or jack for audio

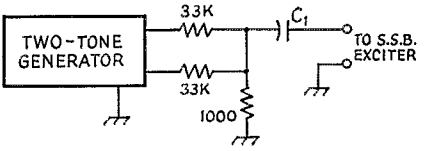

Fig. 4 — Method of connecting the two-tone generator to the microphone input terminals of a speech amplifier. The 33K resistors provide good isolation between the sources of the two output frequencies. C_1 may be 0.01 μf. for the usual high-impedance microphone input circuit.

input at higher levels is provided on the unit, the output of the generator need not be divided down. Since a few volts of d.c. exists from the output of the generator to ground, a blocking capacitor should be used if one is not employed in the equipment under test.

Two-tone test procedures have been outlined in references (2), (3) and (4). (See p. 124.)

(*Continued on page 122*)

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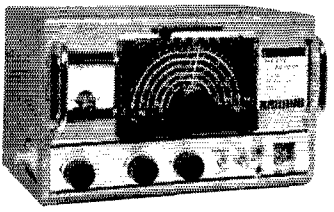

MULTI-ELMAC AF-67 TRANSCITER—Designed as an exciter—speech amplifier, VFO, driver, or a complete low powered transmitter. Covers 7 amateur bands: 10 through 160 meters. Single control band-switches all stages simultaneously—built-in VFO. Out-put circuit uses coaxial connector and a Universal Pi Matching network for wide variety of impedance matching. Provisions for 40 watts of audio at 500 ohms. Grid and plate circuits metered. Operates from 6 or 12 volt AC-DC source.

Complete with tubes and 15 prong power connector ..... ONLY **$17.70** DOWN

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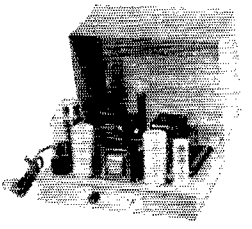

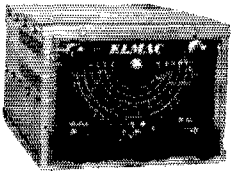

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In the preceding paragraphs considerable emphasis has been placed on minimizing distortion. Low-distortion test signals are especially important when testing phasing types of transmitters because distortion on the test signal produces sideband components in the region of desired sideband suppression.

Another point which is worthy of consideration when evaluating the performance of the phasing-type exciter is the absolute phase shift in the 90-degree audio phasing network at the two test frequencies used. Reference (5), which discusses a typical phasing network, indicates a possible variation of about ± 1.3 degrees phase shift over a frequency range of 225 to 2750 c.p.s. For best results it is therefore desirable to select two test frequencies such as to produce equal phase shift; this results in equal suppression at each frequency and minimizes any slight ripple modulation which would otherwise be superimposed on the two-tone envelope output. Slight variation in components of one of the two oscillators may be made in this case so as to obtain a pair of frequencies fulfilling the above requirement.

The two-tone test generator is simple and inexpensive to construct and is believed to be a very worth-while addition to the test equipment used by the s.s.b. and a.m. man.

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1) Ginzton and Hollingsworth, "Phase-Shift Oscillators," *Proc. of the I.R.E.*, Feb., 1941.
2) Reque, "Linear R.F. Amplifiers," *QST*, May, 1949.
3) Ehrlich, "How To Test and Align a Linear Amplifier," *QST*, May, 1952.
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Keyer

(*Continued from page 37*)

released. V_{10} conducts and $R_{28}R_{29}$ is negative. The dash selection potential is clamped by D_4R_{26}. The dot memory clears as the dot starts. V_{10} cuts off on -13 volts from $R_{30}R_{32}$. $R_{28}R_{29}$ rises to $+12$ volts to pass the dash selection to V_{11}. Conduction in V_{11} establishes $+10$ volts at R_{25} for a dash on the next positive time-base pulse, and drops $R_{19}R_{20}$ to -7 volts to lock out any new dot selection made before the dash starts. The reverse transfer actions are obtained through circuit symmetry.

With their interlocks and activation circuits, V_{10} and V_{11} comprise effectually a tri-stable system. Either one or the other tube may be conductive, but never both. However, both tubes may be nonconductive. The three conditions correspond to selection of dot, dash, and spacing characters. By itself, this structure guarantees that a given character will be held in storage if an opposite type character(s) has been priorly selected, and it will not be released until that prior character(s) has been transmitted.

C_8 and C_9 delay the rise of sequencor cathode voltages. When control is transferred from one

(*Continued on page 124*)

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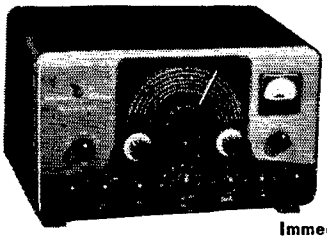

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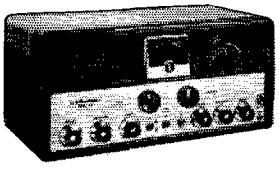

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side to the other this delay guarantees that both memories are not cleared by the same clearance pulse and that both generating triggers are not tripped by the same time-base pulse. Without capacitive delay this would occur, since generator trip, memory clearance and sequence transfer are virtually simultaneous.

Sequence Seizure

Thus far, a given sequencor tube cannot be activated by its associated memory or key until the opposite sequencor is released by both its key and memory, because of the interlock function. V_9 and V_{12} generate seizure pulses to override the interlocks in such a manner that the output exactly follows the order of selection, regardless of subsequent key manipulations or holdings. The crisscross grid and cathode connection to the memories results in nonconduction in both tubes if both memories are clear or if both memories are actuated, and conduction in one of the tubes when the memory associated with its grid is actuated and the other memory is clear. This obtains from the following potentials in the memories: actuated — cathodes +11 volts, junctions $R_{32}R_{33}$ and $R_{40}R_{41}$ +1 volt; clear — cathodes +1.3 volts, $R_{32}R_{33}$ and $R_{40}R_{41}$ −17 volts. When both memories are actuated, $R_{32}R_{33}$ and $R_{40}R_{41}$ rise to +3 volts as the grid-current loading in V_9 and V_{12} is removed.

Assume the dot and dash keys closed in that order before any output starts, with only the dot key held closed. Without seizure the closed dot key would hold the sequencor after the first dot on +10 volts from $R_{37}R_{38}$ for continuous dot output, and the stored dash would not appear in the order of selection. However, when the dot memory clears, its cathode (and that of V_9) drops to +1.3 volts and V_9 conducts as a result of the +1 volt on its grid from the actuated dash memory. C_6, slowly reverse charged by R_{17}, charges through V_9 and R_{18}. This momentarily reduces $R_{19}R_{20}$ from +12 to −7 volts, to cut off V_{10} by pulling down the dot-holding potential at D_3R_{21}. Junction $R_{28}R_{29}$ momentarily rises to +12 volts while V_{10} is cut off. The positive selection potential from the actuated dash memory seizes V_{11} via R_{26} while $R_{28}R_{29}$ is positive, and conduction in V_{11} permanently holds $R_{19}R_{20}$ at negative interlock potential to isolate the closed dot key. Thus sequence control has been transferred to the dash side despite the closed dot key, and the next output character will be the dash. When the dash memory clears, the still-closed dot key will reëstablish V_{10} conduction for dot output. If both keys have been held closed, the dash hold potential will retain control of the sequencor, since the dot memory is now clear and no pulse will be generated by $V_{12}C_{10}$ when the dash memory clears in the presence of an already-cleared dot memory.

Assume that the dash key is not closed until after the first dot (or any dot of a series) has started. The dot memory will be clear at this time with V_{10} conducting on the +10 volts from the closed dot key. The cathode of V_9 stands at

(*Continued on page 126*)

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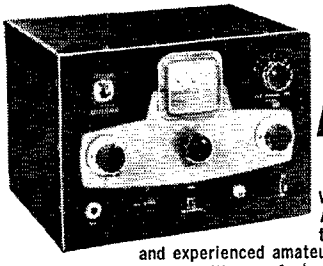

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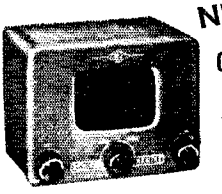

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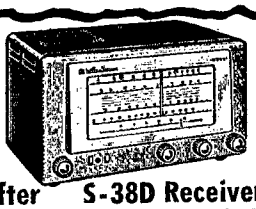

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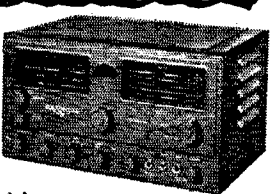

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+1.3 volts and that tube will conduct immediately when the dash memory is activated, seizing the sequencor as before.

In both cases, with both keys held closed, the subsequent output is a series of dashes until either the dash key is released or the dot key is released and reclosed. After clearance of the dash memory, release of the dash key applies −13 volts to the grid of V_{11} and initiates a simple sequencor transfer to the +10 volts from the closed dot key. Opening and reclosing the dot key with the dash key still closed actuates the dot memory for a $V_{12}C_{10}$ seizure, and the output switches to dots. The opposites of these seizure actions obtain from symmetry.

Summary of SMS Functions

1) Momentary closure of a key actuates the associated memory. The memory directs an activating potential toward the associated sequencor.

2) Continued closure of a key directs an independent holding voltage toward the associated sequencor. This hold potential is effective only after the associated memory has assumed or seized control of the sequencor.

3) Actuation of a memory with the opposite key and memory idle *assumes* control of the sequencor, isolating the opposite memory and hold potentials.

4) Actuation of a memory *seizes* control of the sequencor over continuously closed opposite key hold potential, if the opposite memory is clear.

5) Actuation of a memory does not take control of the sequencor over an actuated opposite memory.

6) Clearance of a memory whose key is closed allows an actuated opposite memory to seize control of the sequencor over the hold potential from that closed key.

7) Clearance of a memory whose associated key is closed does not relinquish control to an opposite closed key whose associated memory is not actuated.

8) In the absence of any actuated memories, release of one key after both keys have been held closed places the sequencor under control of the still-closed key.

Summary of Actions of the Keys

1) A single character is generated by momentary or prolonged closure of a key. The character is held by the memory for a positive time-base pulse if the key is released prior to that pulse.

2) Successive like characters are generated by constant closure of a key.

3) When one memory is already actuated, closure of the opposite key before generation of the first-stored character activates the opposite memory. The firstly actuated memory retains control of the sequencor until one character of its type is delivered at the output. The secondly actuated memory then assumes control of the sequencor (as the first key is open or still closed) and the next output character is of the second type.

(Continued on page 128)

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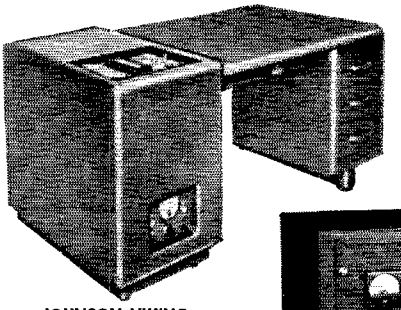

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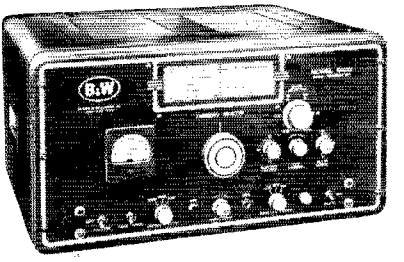

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4) Continued closure of this second key maintains control of the sequencor after the transfer action, and the output is a series of the second type until that key is released. This obtains even with the first key still closed.

5) Release of the second key, with the first key still closed, causes the output to revert to the first character type.

6) Release and reclosure of the first key (just a flick!) reactuates the first memory and seizes control of the sequencor — the second key closed all the while — and the output reverts to the first character type until that first key is again released or until the opposite type character is flicked in by the second key. At least one character of the first type is guaranteed by the memory.

7) In recapitulation, any closure of a key guarantees at least one character of that type, transmitted in correct relationship to the order of closure, regardless of intervening selective motions. Whenever a key makes contact, the output subsequent to the character in progress corresponds to that key until the other key makes contact or the first key is released.

With automatic spacing, perfect characters, and memory and seizure leeways, all the operator has to do is spell. With a few more tubes, the keyer might be tied in to a dictionary.

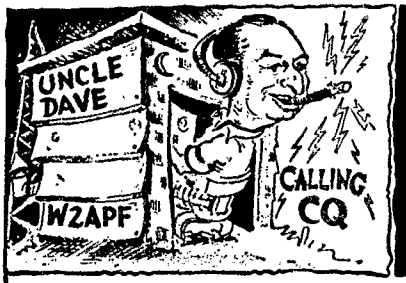
D.C. Output

To eliminate the one relay, the circuit modification of Fig. 3 (Part 1) can be applied. With this circuit, V_3 conducts during spacing and its plate stands 120 volts negative with respect to ground. Cut-off voltage from -30 to -120 is available at the arm of R_2, for control of a vacuum-tube keyer. R_3 protects the memory clearance junction R_1R_2 from loading effects by connected equipment and also serves as the key-click filter resistance.

The plate of V_3 drops 60 volts on marking, transmitting a 60-volt negative pulse via C_1 to the grid of V_3. The C_1R_4 time constant is sufficiently long to hold V_3 cut off for a 2-w.p.m. dash. With V_3 cut off the output load stands at ground potential, marking condition for the standard vacuum-tube keyer.

Heavy line surges can produce as much as 10 volts negative swing across R_4. The 24-volt positive grid return of V_3 to R_5R_6 ensures that these surges do not appear in the output. Since the generator and SMS trigger configurations are quite independent of source voltage, they are stable in the presence of any surge short of complete outage. Use of this output circuit demands that V_3V_4 be at the absolute ground end of any heater strings. Even though the 12AU7 heater-cathode insulation is rated at 180 volts, the maximum point is approached in V_3 when the line voltage exceeds 125.

(Scramble in Part I, April, 1955, *QST:* Page 14, left-hand column, in last paragraph, the text should read: ". . . insulated from the chassis by ⅜-inch Plexiglas. Metal pivot blocks, tapped for 8–32, are bolted to the ⅜-inch Plexiglas levers and threaded on the 8–32 pivot bolts. The pivot bolts are secured. . . .")



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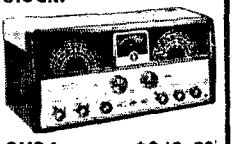
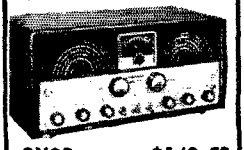
HALLICRAFTERS
New models in stock.



SX96 ..... $249.50
Speaker 19.95



SX99 ..... $149.50
Speaker 19.95

S38D $49.95

SX88 ..... $675.00
Speaker 19.95

S85 ..... $119.50
S94 (30-50mc) 59.95
S95 (150-170mc) 59.95

BARKER AND WILLIAMSON

5100	$442.50
51SB	270.50
504C	95.00

Freq. Multiplier
350 ..... $4.65
Audio phase shift network. 2Q4
360 ..... $35.00
Torodial SSB receiving filter

TIME PAYMENTS

Fort Orange
RADIO DISTRIBUTING COMPANY
904 BROADWAY, ALBANY, N. Y.
TELEPHONE ALBANY 5-1594

Sweepstakes Results

(Continued from page 49)

WNØTTX...2678- 71-21-A-19
WØBUM...2100- 43-21-A- 6
WØYGC...1688- 38-18-A- 7
WØGUP...1512- 36-21-B-12
WØUQV...1428- 34-21-B- 1
WØNCK...1305- 29-18-A- 2
WNØUML..660- 12-16-A-13
WØSDT...575- 27-10-A-13
WØQWM...330- 12-11-A- 4
WØLPA...250- 12-10-A- 2
WØDXM...140- 8- 7-A- 1
WØERH (WØs GUP IPQ LPA MEF MNR UQV) 5610- 69-34-A-15

Missouri

WØLLU...64,103- 396-66-A-39
KØFCT[5]..46,431- 371-63-B-37
WØMSB...38,060- 346-44-A-40
WØQWS...36,083- 289-51-A-38
WØETW...29,349- 223-53-A- –
WØMCX...21,528- 207-52-B-32
WØPXK...20,335- 170-49-A-20
WØPUV...19,643- 146-54-A-24
WØQYJ...18,100- 182-40-A- –
WØFIN...15,045- 129-51-A-24
WØQDF...13,320- 74-72-A-19
WØECE...10,215- 115-36-A-16
WØPXO...8240- 103-32-A-19
WNØTDR...5386- 71-31-A-30
WØKIK...4793- 71-27-A-20
WØTGI...2828- 44-26-A-12
WNØTDS...1788- 60-13-A-26
WØTCF...248- 11- 9-A- 3
WØRTW...180- 18- 4-A- 5
WØACK...158- 9- 7-A- 6
WØGVI (WØs EZU GVI) 46,778- 300-63-A-23

Nebraska

WØURB..109,395- 645-68-A-38
WØDW...61,115- 371-68-A-40
WØRNH..58,870- 425-56-A-36
WØBUR...41,423- 264-63-A-23
WØDDT...24,644- 202-61-B-37
WØOFM...13,325- 132-41-A-12
WØRIN...11,610- 130-36-A-22
WNØVKT...1000- 28-16-A- 5
WNØVUB...488- 22-10-A- 5

NEW ENGLAND DIVISION

Connecticut

W1ZDP[6]..109,683- 604-73-A-37
W1BIH...101,250- 566-72-A-34
W1WPO[6]..95,200- 560-68-A-40
W1ODW...94,099- 546-69-A-36
W1UFW...85,638- 527-65-A-34
W1MHF...83,680- 523-64-A-40
W1EOB...73,146- 501-73-B- –
W1QIS[6]...71,200- 447-64-A-35
W1SVS...53,805- 425-51-A-30
W1JTD...45,260- 310-73-B-36
W1LVQ[6]...41,184- 312-66-B-17
W1FTX...41,085- 250-66-A-17
W1NJM[6]..33,770- 307-44-A-16
W1GVK...29,904- 267-56-B-26
W1YYM[6]..29,815- 226-53-A-13
W1TX...19,950- 200-50-B- 9
W1ZDX...15,638- 210-30-A-18
W1CJL...14,973- 114-53-A-29
W1ILV...14,168- 154-46-B- –
W1RFC...13,440- 168-32-A-23
W1BDI[6]...11,295- 126-75-B-12
W1HV...11,180- 86-59-A-12
W1AW[6,7]...8855- 128-35-B- 5
W1ZMF...8406- 136-25-A-25
W1RWS...7575- 101-30-A- 6
W1WPR[6]...6446- 96-27-A-13
W1SYG...6090- 105-29-B-17
W1EFW...4050- 60-27-A- 5
WN1CDD*..3803- 59-26-A-39
WN1CKA..3270- 59-24-A-10
W1WY...1530- 36-17-A- 3
W1CQS...1425- 30-19-A- 6
W1UED[6]...1013- 27-15-A- 5
W1RFJ...900- 24-15-A- 2
WN1CDC...858- 27-14-A-14
W1WRV...738- 23-13-A- 5
WN1AMZ...645- 26-12-A-10
WN1AXE...450- 17-12-A-12
W1ZIB[6]...370- 19- 8-A- 6
W1UUD[6]...245- 14- 7-A- –
W1ZID[6]...94- 8- 5-A- 3
W1ULY...8- 2- 2-B- 1
W1NLM...3- 1- 1-A- 1
W1WGJ...3- 1- 1-A- 1
W1ORS (Wis ASO BSP GVK REJ RIO TCW ZTY, WNIs APS BHZ) 17,175- 321-30-A- –
W1ICP[6] (Wis ICP WPO) 5596- 100-23-A-10
W1CUT[6] (Wis CUT WPO) 4514- 79-23-A- 7

Maine

W1IKE...81,453- 527-62-A-37
W1VEH...26,082- 288-46-B-40
W1CRP...2890- 34-34-A-15
WN1CEV...1400- 36-20-A-12
W1VXV...450- 21-10-A- 9
WN1BBB...248- 20- 9-A-10

Eastern Massachusetts

W1IAP...106,225- 609-70-A-40
W1YMA/1 104,583- 741-71-B-38
W1BOD...90,953- 544-67-A-40
W1AQE...83,799- 550-61-A-40
W1JSM...82,578- 493-67-A-38
W1RND...81,428- 517-63-A-40
W4YHD/1 65,010- 394-66-A-21
W1TVZ...61,800- 442-56-A-34
W1TW...61,250- 350-70-A-26
W1EPE...57,338- 348-66-A-36
W1ONP...51,900- 346-60-A-36
W1WAI...51,380- 367-56-A-28
W1RXT...50,400- 336-60-A-15
W1SAD...44,958- 367-49-A-38
W1PEG...43,584- 344-64-B-40
W1JYC...43,168- 280-62-A-36
W1CMU..37,800- 336-45-A-31
W1LQQ...35,179- 240-59-A-24
W5HNW/1 30,208- 256-59-B-25
W1EIQ...26,130- 201-52-A-26
W1YFM/1 23,704- 196-49-A-22
W1MQV...21,450- 165-52-A-20
W1PTH...21,450- 156-55-A-22
W1SSZ...21,200- 165-53-A-32
W1SFW...16,290- 181-36-A-24
W1PLJ...15,435- 147-42-A-33
W1WLZ...15,428- 185-34-A-16
W1PH...14,700- 168-35-A-25
W1JVZ...12,580- 148-34-A-31
W1JCE...12,279- 105-47-A-16
W1VJE...8750- 125-28-A-30
WN1BLD*..5740- 87-28-A-29
W1QIB...3850- 77-25-B-17
W9TPH/1...3518- 69-21-A-14
WN1CFF...2915- 53-22-A-37
W1WTJ...2898- 61-19-A- 9
W4VXD/1..2808- 54-26-B-10
W1KMS...2350- 47-25-B- 7
W1WBR...2000- 41-20-A-16
W1IKT...1880- 47-16-A- 7
W9CQL/1...1868- 42-18-A- 3
W1ZPY...1760- 44-16-A- 5
WN1BVP...1675- 34-20-A- –
W1UBC...1380- 38-20-B- 5
WN1ZVS...1240- 32-17-A- 9
W1CMW...660- 22-12-A- 6
W1AMQ...540- 19-12-A- 4
W9VJD/1...200- 10- 8-A- 1
W1MEG...120- 8- 6-A- 2
WN1ZQB...26- 4- 3-A- 2
W1SW (K2ADV, WN1ZZB) 14,754- 205-29-A-28
W1MX (W4YHD, W9GQL) 5180- 74-35-B- 3

Western Massachusetts

W1JYH..119,340- 663-72-A-34
W1SRM...90,390- 524-69-A-35
W1WEF...77,440- 484-64-A-31
W1ZIO...56,420- 403-56-A-36
W1AJX...23,040- 288-32-A-39
W1WDW..20,500- 165-50-A-20
W1CJK...14,900- 150-40-A-10
W1LHY...14,396- 176-33-A-18
W1MVF...11,275- 110-41-A- 9
W1YXV...9783- 151-26-A-15
W1MNG...8000- 125-24-B-14
W1RLQ...3770- 58-26-A- –
WN1BYH...926- 32-13-A-17
WN1CFA...390- 21- 8-A- 7
W1YK (Wis UBC VAH VVO WMH YFY, K2CHM) 41,475- 281-60-A-36

New Hampshire

W1ARR/1 102,935- 606-68-A-40
W1OIG...51,590- 370-56-A-31
W1IP...12,638- 169-30-A-15
W1PDN...7000- 88-40-B-12
W1ZIW...119- 11- 5-A- 2

Rhode Island

W1CJH...64,431- 427-61-A-30
W1BGA...38,828- 251-62-A-26
W1ZFV...35,616- 345-53-B-36
W1UTA...21,690- 241-36-A-28
W1LQA...17,050- 155-44-A-28
W1TXG...10,115- 120-34-A- –
W1AWE...8526- 87-49-B-13
W1ZXA...4110- 70-24-A-13
W1SXX...3420- 57-24-A-13
WN1CJM...729- 29-11-A-21
WN1CMH...324- 19- 7-A-18

Vermont

W1RWP...58,476- 443-66-B-40
W1QMM..30,820- 230-67-B-26
W1BNV...26,547- 259-41-A-27

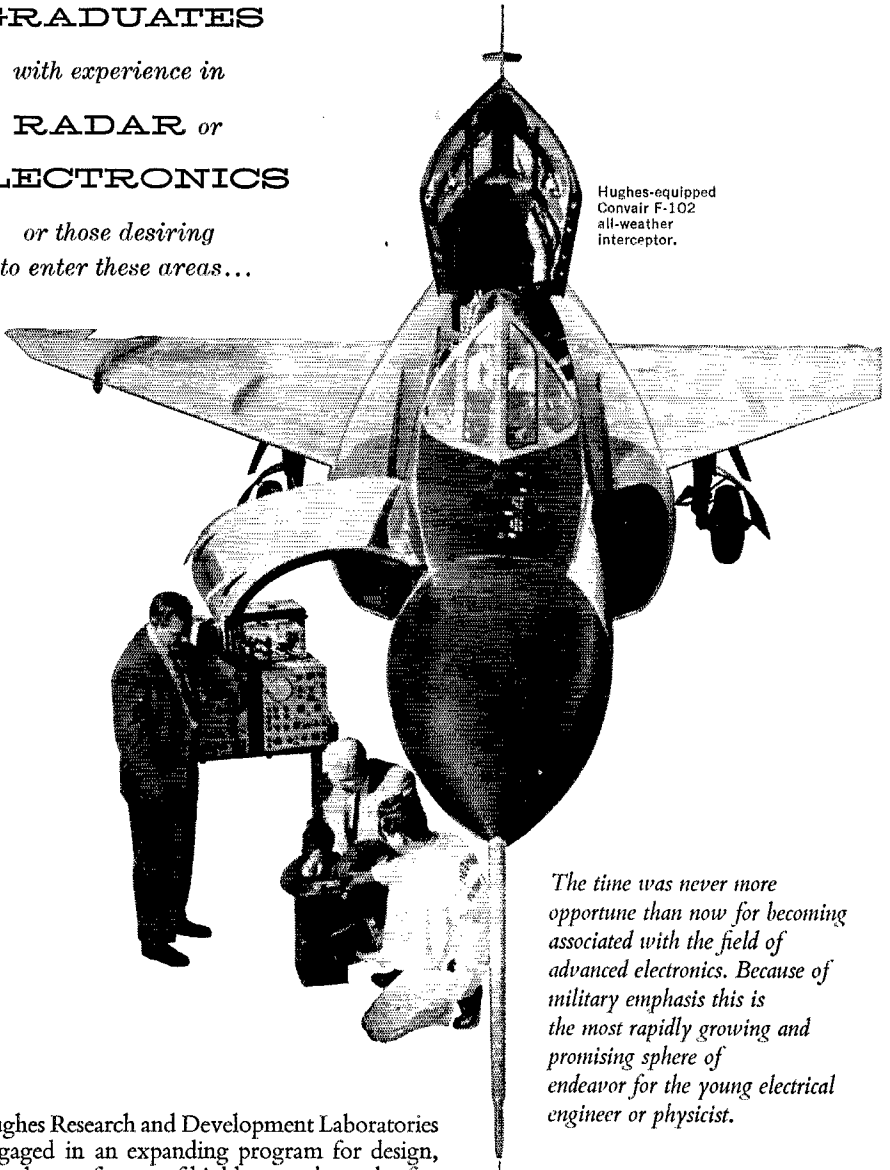
(Continued on page 132)

E. E. *or* PHYSICS GRADUATES

with experience in

RADAR *or* ELECTRONICS

or those desiring to enter these areas...



Hughes-equipped Convair F-102 all-weather interceptor.

The time was never more opportune than now for becoming associated with the field of advanced electronics. Because of military emphasis this is the most rapidly growing and promising sphere of endeavor for the young electrical engineer or physicist.

Since 1948 Hughes Research and Development Laboratories have been engaged in an expanding program for design, development and manufacture of highly complex radar fire control systems for fighter and interceptor aircraft. This requires Hughes technical advisors in the field to serve companies and military agencies employing the equipment.

As one of these field engineers *you will become familiar with the entire systems* involved, including the most advanced electronic computers. With this advantage you will be ideally situated to broaden your experience and learning more quickly for future application to advanced electronics activity in either the military or the commercial field.

Positions are available in the continental United States for married and single men under 35 years of age. Overseas assignments are open to single men only.

SCIENTIFIC AND ENGINEERING STAFF

HUGHES

RESEARCH AND DEVELOPMENT LABORATORIES

Culver City, Los Angeles County, California

Relocation of applicant must not cause disruption of an urgent military project.

NORTHWESTERN DIVISION

Alaska

KL7EVR	43,330-	314-56-A-36	
KL7FAF*	27,258-	232-59-B-13	
KL7AOL	21,780-	242-36-A-40	
KL7AWB	19,552-	188-52-B-19	
KL7FAJ*	17,085-	171-51-B-26	

Idaho

W7TYG	14,006-	132-45-A-18	
W7MKD	12,599-	149-43-B-14	
W7VWS	12,255-	258-38-A-25	
W7VVC	430-	25- 8-A- 6	

Montana

W7KYU	202,210-	1108-73-A-40	
W7PCZ	74,736-	523-72-B-40	
W7QYA	18,213-	155-47-A-15	
W7TKB	15,744-	123-64-B-20	
W7EWR	10,428-	99-43-A-10	
W7FUB	9494-	101-47-B-24	
W7VOO	7388-	100-30-A-22	
W7NZJ	7040-	89-32-A-14	
W7T8M	4200-	61-28-A-19	

Oregon

W7GEB	116,253-	641-73-A-24	
W7RNY	50,160-	352-57-A-37	
W7JHA	49,270-	381-65-B-40	
W7TML	43,326-	378-58-B-38	
W7TDK	31,569-	317-51-B-27	
W7AXJ	30,875-	228-52-A-35	
W7TRE	23,205-	228-42-A- –	
W7UHK	19,500-	200-39-A-21	
W7LT	16,185-	166-39-A-35	
W7JMW	2835-	54-27-B- 8	
WN7WNN	1743-	45-17-A-29	
W7JAZ	1185-	44-15-B-11	
W7SYF	69-	6- 5-A- 8	

Washington

W7NLI	126,114-	713-71-A-39	
W7PQE	94,900-	659-73-B-40	
W7DYQ	84,042-	611-69-B-38	
W7AJS	81,082-	573-71-B-38	
W7MLV	53,088-	344-62-A-39	
W7JJK	43,718-	303-58-A-30	
W7UOX	38,475-	288-54-A-36	
W7JC	36,450-	270-54-A-34	
W7OEB	32,007-	218-59-A-20	
W7AIB	31,900-	221-58-A-34	
W7EUY	31,128-	237-68-B-39	
W7SXN	22,860-	191-48-A-32	
W7PQP	16,652-	183-46-A-35	
W7KKH	14,805-	145-42-A-20	
W7ETO	8250-	100-33-A-15	
W7VOL	6270-	106-24-A-23	
W7EVI	5199-	100-21-A-20	
WN7VPT	2041-	41-23-A-24	
W7CSK	1333-	42-13-A-10	
W7FZB	1333-	41-13-A-20	
W7ZU	1193-	27-18-A- 4	
W7TIQ	1103-	32-14-A-15	
W7HVM	1033-	30-14-A- 5	
W6VUW/7	275-	11-10-A- 2	
W7CWN	262-	15- 7-A- 3	
W7SXM (W7s SXM SXQ)	11,054-	121-37-A-24	

PACIFIC DIVISION

Hawaii

KH6IJ	32,670-	297-55-B-17	

Nevada

W7KEV	168,448-	930-73-A-40	
W7VDC	44,619-	310-59-A-36	
W7VIU	41,974-	267-63-A- –	
W7TVF	35,850-	243-60-B-23	
W7SXD	1748-	38-23-B- 5	

Santa Clara Valley

W6HOC	127,294-	700-73-A-37	
W6UTV	104,025-	570-73-A-39	
W6EAE	90,388-	519-70-A-34	
W6YHM	68,272-	503-68-B-33	
W6GMF	35,585-	219-65-A-26	
W6QPM	31,560-	262-60-B-18	
K6EBB	30,740-	232-53-A-35	
K6DYX	21,240-	180-48-A-27	
W6DWJ	19,320-	161-60-B-35	
K6DOU	14,248-	139-41-A-22	
K6BBD	4822-	68-29-A-10	
W6MMG	4530-	76-24-A- 8	
W6VJK	4219-	70-25-A-12	
W6UIW*	725-	37-10-A- 4	
KN6HOB	588-	25-10-A-16	

East Bay

W6TT	78,768-	547-72-B-31	
W6EFD	70,800-	475-60-A-38	
W6SZV	59,898-	447-67-B-40	
W6IPH	47,652-	361-66-A-28	
K6AUD	45,612-	363-63-B-36	
K6AUC	31,213-	232-55-A-32	
K6DVA	27,068-	203-54-A-29	
K6CCQ	10,570-	151-28-A-38	
W6HHX	10,200-	102-40-A-18	
W6JOH	3753-	79-19-A- –	
W6EJA	2500-	50-25-B- 5	
W6AW	1890-	36-21-A-18	
W6FAR	1811-	35-21-A-11	
KN6EWP	411-	24- 7-A-15	

(Continued on page 134)

W6OJW	10-	2- 2-A- 1	
W6PYH (W4UID, W6PYH)	106,489-	587-73-A-40	

San Francisco

W6BIP	72,781-	499-73-B-33	
W6YC	23,240-	209-56-B-23	
W6HPM	21,816-	202-54-B-22	

Sacramento Valley

W6MYT	27,775-	256-55-B-32	
W6HIR	27,146-	191-57-A-18	
W6SYY	16,215-	138-47-A-10	

San Joaquin Valley

W6MPG	47,439-	386-63-B-40	
W6ZTY	32,263-	225-58-A-30	
W6EGX	25,550-	183-56-A-26	
W6UPS	23,625-	221-45-A-35	
W6QXF	23,550-	157-60-A-34	
W6SQN	23,418-	247-38-A-37	
W6EUH	23,375-	187-50-A-20	
W6PRA	17,919-	156-47-A-13	
K6AMW	4465-	96-19-A-20	
KN6HFA	193-	12- 7-A- 5	
K6BLL (W6s ARI BRP BVM BYH EFV HT HYK WNX ZEK ZVP, K6ELZ, KN6s ECB GZY)	133,590-	734-73-A-40	
W6MYP (W6s KIG MYP)	62, 100-	450-69-B-40	

ROANOKE DIVISION

North Carolina

W4VHH	69,370-	500-56-A-37	
W4BDU	40,700-	370-55-B-33	
W4YWB	16,144-	158-41-A-13	
W4IZR	15,134-	162-47-B-20	
W4BTZ	12,000-	150-32-A-24	
W4ZPD	9824-	147-29-A-21	
W4EJP	3848-	61-27-A-17	
W4YBU	465-	16-12-A- 5	
WN4GJJ	236-	13- 9-A-12	
W4BNX	180-	9- 8-A- 4	
W4BUU	10-	2- 2-A- 1	
W4EXU (W4s EIU SDW SWC)	14,592-	198-38-B-15	

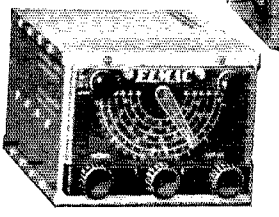
South Carolina

W4TL	68,741-	404-69-A-37	
W4GQE	4,38,940-	238-66-A-29	
W4FGX	37,125-	295-54-A-33	
W4GCB	2050-	41-20-A- 9	

Virginia

W4KFC	203,850-	1137-72-A-40	
W4PNK	129,634-	753-69-A-40	
W4BZE	115,005-	698-66-A-34	
W4HJK	109,395-	646-68-A-40	
W4CXA	105,680-	666-64-A-40	
W4NH	101,170-	604-67-A-38	
W4JAT	92,880-	516-72-A-35	
W4IA	91,840-	575-64-A-36	
W4JUQ	87,360-	645-56-A-40	
W4TKR	87,344-	539-65-A-40	
W4CC	83,985-	509-66-A-25	
W4YKO	76,246-	569-67-B- –	
W4KXV	67,084-	402-67-A-22	
W4SNH	66,640-	476-56-A-35	
W4AMZ	60,288-	371-65-A-40	
W4GF	19,946-	352-57-A-30	
W4WBC	41,596-	282-59-A-33	
K4AQU	39,260-	302-52-A-40	
W4HQN	38,150-	273-56-A- –	
W4WRM	34,437-	282-50-A-39	
W4JXN	29,778-	277-43-A-36	
W4NQM	28,275-	290-39-A-32	
W4VRT	26,614-	227-47-A-25	
W4FPX	26,028-	245-54-B-31	
W4JHK	25,645-	225-46-A-10	
W4CIT	23,895-	266-36-A-24	
W4FJ	23,400-	195-48-A-29	
W4KX	21,070-	215-49-B-11	
W4FZG	20,604-	202-51-B-11	
W3FKA/4	19,530-	217-36-A-28	
W4TFX	18,169-	162-45-A-11	
W4APM	17,937-	175-41-A-13	
W3LEZ/4	17,520-	146-48-A-13	
W4CHK	16,003-	173-37-A-18	
W4AJJ	15,181-	176-35-A-21	
W4DNB	14,800-	152-40-A-19	
W4NAD	10,725-	130-33-A-12	
W4JUJ	10,076-	115-44-B-10	
W4ZCL	8540-	122-28-A-18	
W4BLR	8122-	132-31-B-15	
W4AVO	6720-	101-28-A-19	
W4DNQ	4860-	84-24-A- 8	
W6LON/4	4250-	85-20-A- 8	
W4JWL	4050-	60-27-A- 6	
K4ATD	3488-	49-30-A-15	
W4BXI	3313-	55-25-A-14	
W4CRG	2475-	50-21-A- 5	
WN4DNC	2475-	47-22-A-17	
W4ASJ	2150-	43-20-A- 8	
W4RTV	1440-	32-18-A- 2	
W4KUJ	1056-	33-16-B- 4	
W4BMH	715-	33-11-B- 8	
W4JLS	473-	21 9-A- 5	
W4ILV	270-	14- 8-A- 5	
W4AGI/4	154-	11- 7-B- 1	
W4RNQ	150-	10- 6-A- 2	
W4BYZ	125-	10- 5-A- 3	
KN4ANF	3-	1- 1-A- 1	

WE HAVE A MOBILE RIG FOR ANY CAR!



ACT NOW! We have all MULTI-ELMAC products in stock including a new mounting rack. Order your mobile rig now, insure immediate delivery.

MULTI-ELMAC

AF-67 TRANS-CITER.....net $177.00
PMR-6A RECEIVER.....net $134.50

POWER SUPPLIES FOR PMR-6A

PSR-6 For 6 volt operation.....net $24.50
PSR-12 For 12 volt operation...net $24.50

I am interested in .....

I want to trade in my .....

NAME..... CALL.....

ADDRESS.....

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C & G Radio Supply Company
2502 Jefferson
Tacoma 2, Wash.
Phone
BR 3181

PLEASE MAIL QUOTATION

NO OBLIGATION

W4YE (W4s YE YZC)
82,960- 611-68-B- –
W4YZC (W4s YE YZC)
67,904- 532-64-B- –
W4ZYV (W4s ASJ ZYV)
963- 28-14-A- 7

West Virginia

W8PQQ...52,488- 365-72-B-30
W8UMR...47,515- 280-68-A-25
W8TDG...41,976- 318-66-B-27
W8JWX...39,043- 341-46-A-33
W8UYR...33,060- 294-57-B-28
W8KDQ...30,160- 212-58-A-16
W8HZA...28,951- 219-53-A-16

ROCKY MOUNTAIN DIVISION

Colorado

WØEWH..79,275- 453-70-A-30
WØCYT...65,835- 418-64-A-32
WØIC....63,998- 372-69-A-23
WØSJT...49,630- 358-56-A-39
WØANW..40,975- 304-55-A-36
WØJPT...35,945- 285-52-A-27
WØRDM..21,675- 172-51-A-29
WØBON....4896- 70-36-B-10
WØPGN....4388- 61-30-A-15

Utah

W7QDM..85,844- 523-67-A-40
W7QDJ...59,440- 373-64-A-30
W7CCC...46,160- 292-64-A-20
W7RRJ...30,533- 207-59-A-20
WN7WLD...184- 13- 7-A-10

Wyoming

W7HRM..69,438- 490-71-B-27
W7PSO...49,995- 304-66-A-29
W7UFB...10,725- 100-44-A-15
W7PMA....6660- 74-36-A-14
W7TPX....6375- 88-30-A-18
W7RVO....4200- 56-30-A- 9

SOUTHEASTERN DIVISION

Alabama

W4RAL...64,654- 413-63-A-32
W4CEB...56,935- 404-59-A-38
W5ONL/4..50,478- 333-61-A-23
W4WOG...31,655- 245-65-B-24
W4YRO...18,213- 156-47-A-26
W4FMW..15,435- 126-49-A-17
W4DGP...14,663- 178-34-A- –
W4ZSE....7942- 107-38-B-18
W4DGY....5425- 82-25-A-31
W4TKL.....462- 21-11-B- 3
W4CIU.....315- 14- 9-A- 6

Eastern Florida

W4LVV...101,756- 612-67-A-40
W4WHK...76,294- 470-65-A-40
W4LOM...57,525- 361-65-A-21
W4RTX...37,763- 265-57-A-20
W4DXL...26,624- 260-52-B-28
W4BCF.....8138- 119-31-A-29
W4IYT....4290- 65-33-B- 4
W4DFU (W4s CKB OGI)
41,020- 300-56-A-22
W4WEC (W4s WEC YSF)
34,775- 280-52-A-34
W4AGK (W4s AGK UHC)
8512- 115-38-A-32

Western Florida

W4WKQ..109,743- 672-66-A-40
W4ZAE...75,904- 600-64-B-35
W4CHZ...47,198- 326-58-A-29
W4BIJ....10,761- 106-51-B-13

Georgia

W4FCB...62,712- 436-72-B-31
W4BQF...25,573- 193-53-A-30
W4YK....16,320- 120-68-B-18
W4BYJ...13,493- 132-42-A-18
W4BXV....8168- 101-33-A- 9
W4GGD....6825- 70-39-A- 8
W4GSP....4538- 67-30-A-26
W4WRY....1063- 26-17-A- 6

West Indies

KP4AAC..31,625- 232-55-A-33
KP4DJ...25,700- 259-50-B-23
KP4ZW...23,459- 198-49-A-32
KV4BK...11,025- 105-42-A-19

Canal Zone

KZ5NB....4900- 57-35-A-17

SOUTHWESTERN DIVISION

Los Angeles

K6CFF...130,123- 714-73-A-38
W6SBB...89,010- 663-69-B-38
W6ULD...86,423- 501-69-A-36
W6HJK...73,700- 444-67-A-40
W6MUR...73,000- 500-73-B-18
K6AUZ/6..51,450- 294-70-A-28
K6GLS....48,128- 314-62-A-37
W6NKR...39,488- 312-64-B-19
K6BWD...38,625- 258-60-A-39
K6ASL....30,625- 250-49-A-26
W6UED...22,612- 201-45-A-24
W6OAY...17,494- 158-45-A-21
W6AGL....15,730- 143-44-A-29
W6MBW...15,566- 181-43-B-19
K6CSP....11,563- 125-37-A-23
W6JKR....9867- 128-39-B- 9
W6UUC....8514- 99-43-B- 9
KN6EVR*..8229- 114-29-A-46
K6CUX[1]...7576- 106-29-A-10
K6BNV....6743- 94-29-A-26
W6LVQ....5280- 66-32-A-10
K6EWL....5168- 76-34-B-19
KN6ELX...4938- 63-25-A-29
K6BFK....3200- 82-16-A-17
W6FEB....3120- 60-26-B- 8
K6DNH....3105- 55-23-A-13
W6RNA....2800- 50-28-B- 8
K6DGX....2795- 112-13-B-26
W6LIT....2475- 56-18-A- 8
K6CHQ....2063- 33-25-A- 5
K6DKA....1675- 35-20-A-11
K6GUZ....1463- 41-15-A-22
W6ZOL....1188- 25-19-A- 3
K6CDW.....764- 25-13-A- 5
KN6GPK....260- 15- 8-A- 8
KN6HAN....260- 13- 8-A- 9
K6DDO.....119- 10- 5-A- 8
K6CXF (K6CXF, KN6IDB)
2280- 50-19-A-23

Arizona

W4KMF/7 82,800- 499-69-A-35
W7RZQ....71,020- 425-67-A-35
W7UYE....9799- 106-39-A-25
W2ZEP/7...3770- 58-26-A- 7
W7SX.....3220- 60-28-B- 6
W7PUV.....259- 12- 9-A- 3
W7VMP (W7s VMO VMP
VMQ)...74,621- 532-71-B-40

San Diego

W6EPZ..142,076- 779-73-A-36
K6AM....59,850- 401-60-A- –
W6JVA...40,275- 273-60-A-40
W6CRT...26,000- 200-65-B-21
W6LJQ...24,290- 174-56-A-15
W6GBG...17,531- 129-55-A-20
K6AQO...13,755- 132-42-A-15
K6DNL...11,475- 131-36-A-25
K6EQL...11,055- 134-33-A-12
K6EBH.....1620- 38-18-A- 8
W6KXN (W3s SLQ YOU,
W4TMH)..71,967-539-69-B-40
K6DGB (W6EDG, K6DGB)
43,500- 303-58-A-40

Santa Barbara

W6ULS..119,653- 659-73-A-40
W6YK....71,358- 397-73-A-40
K6ASB....56,270- 332-68-A-35
K6CST....25,688- 248-52-B-38
W6BOK...18,741- 160-47-A-22
W6RRK/6..5063- 82-25-A-27
W6OTO.....4725- 67-28-A-10
K6CKU....3465- 78-18-A-17
W6SNI.....1314- 37-18-B- 6

WEST GULF DIVISION

Northern Texas

W5TFB...152,479- 836-73-A-40
W5BJA...101,948- 593-69-A-40
W5COY....82,283- 496-69-A-37
W5CAY...59,520- 400-64-A-35
W5CUO...55,025- 355-62-A-27
W5IHM...54,810- 435-63-B-31
W5OC....54,750- 366-60-A-32
W5LOT...42,780- 280-62-A-25
W5VNW...38,220- 333-60-B-37
W5QF....30,690- 249-62-B-26
W5AEV...27,685- 230-49-A-29
W3BQU/5.23,490- 177-54-A-27
W5AHC...26,434- 205-53-A-25
W5EGX....5616- 80-36-B-10
WN8HIS*..2719- 51-25-A-16
W5ZWR....2125- 34-25-A- 5
W5ZOY....1825- 39-20-A- 6
WN5PTD...1240- 31-16-A-17
WN5GNE....840- 24-14-A-18
W4TRY/5...349- 16- 9-A- 4

Oklahoma

W5WZV...41,120- 257-64-A-27
W5ZZJ....38,080- 344-56-B-37
W5NQF...11,250- 100-45-A-19
W5BBB...10,591- 115-37-A-21
W5CKT...10,387- 111-47-B- 9
W5LPL.....7695- 83-38-A-14
W5VBD.....160- 9- 8-A- 4
W5BCJ.....55- 7- 4-A- 4
W5BDL (W5s BDL CKT)
6552- 78-42-B-15

Southern Texas

W5WQN..121,440- 704-69-A-40
W5BTS...114,188- 661-70-A-40
W5ZD....96,769- 596-65-A-40
W5BLA...18,448- 158-47-A-28
W5TFZ.....4900- 59-35-A-15
W5AKS....4865- 70-28-A-22
W5YXW....2028- 40-26-B- 9
W5AER.....630- 21-12-A- 3
WN5GQN....300- 16- 8-A-18

(Continued on page 136)

8-TUBE SYLVANIA FM-AM CHASSIS

★ 7 UV. FM SENSITIVITY!
★ AC CIRCUIT SUPPLY!
★ OUTPUT TRANSFORMER!
★ PHONO INPUT SWITCH!
★ "FLAT" TONE CONTROL!
★ UNTUNED RF STAGE FM!
★ AM LOOP ANTENNA!
★ 8 NEW SYLVANIA TUBES!

★ EASILY CONVERTS TO TUNER, WE SHOW HOW!

OVER 50% OFF

$31.95

Worth $70

EXCLUSIVE IN EASTERN U.S.A. AT RADIO SHACK, this brand new famous-make Sylvania chassis is the buy of '55 at a price less than a common garden variety ac/dc FM-AM radio! The straight AC circuit with transformer power supply allows conversion — if desired — to tuner with 71c-worth of parts (listed below) and our SIMPLE instructions which are INCLUDED with every set. To operate at once, attach ANY speaker having 3.2 ohm voice coil impedance.

SPECIFICATIONS INCLUDE: dual concentric controls: volume-power/tone, and FM-AM-Phono/Tuning. Tone control: flat center position and continuous from bass boost through treble droop — an important feature! Lab-checked excellent sensitivity of 7 microvolts for 30 db quieting — very fine figure.

★ NEEDS ONLY A SPEAKER TO USE IMMEDIATELY!

Untuned RF stage on FM, shielded condenser gang, ratio detector circuit will operate with only a 4 ft. piece of hookup wire in local areas; provision for external antenna. Spare fuses AC receptacle on rear for phono motor. AC power transformer AND 3.2 ohm output transformer! AM loop. Includes instructions, schematic diagrams, conversion to tuner procedure for feeding external amplifier, lucite escutcheon which edge-lights by pilot lamp. IMPORTANT: circuit is AC — not AC-DC — and employs 8 tubes: two 6AU6, 6BE6, 6BA6, 6AL5, 6AT6, 6W6GT output, 7Z4 rectifier tube. Overall size: 10¼" wide, 5½" high less escutcheon, 6½" deep (8" with knobs). Ship. wt. 15 lbs.

PRICE LIST AND ACCESSORIES:

Order No.	Description	Wt.	Net
R-4244	8-Tube FM-AM Chassis	15 lbs.	$31.95
R-8161	Special 4" Speaker	½ lb.	1.25
31-593F	8" Speaker	2½ lbs.	3.45
15-016F	V-M Intermix Changer	12 lbs.	30.22
09-179F	5-Ohm 10-Watt Resistor*	2 oz.	.44
30-517F	3 ft. Audio Cable*	6 oz.	.27
30-519F	5 ft. Audio Cable*	6 oz.	.34

*For conversion to tuner. Choose 3 or 5 ft. cable.

Radio Shack Corporation

167 Washington Street, Boston 8, Massachusetts

230-234 Crown Street, New Haven 10, Connecticut

W5ULN	200-	10- 8-A-	3
WN5EAO	26-	5- 3-A-	4
W5YXH (W5s EGD YXH)	68,805-	417-66-A-	46

New Mexico

W5QNZ	126,936-	887-72-B-	38
W5VRP	111,240-	621-72-A-	38
W5CA	48,675-	300-66-A-	20
W5KWP	41,111-	290-57-A-	28
W5QVZ	23,484-	206-57-B-	30
W5UWA	10,880-	136-40-B-	17
W5AWN	4675-	56-34-A-	13
W5YKB	864-	27-16-B-	3
WN5FHL	10-	2- 2-A-	2

CANADIAN DIVISION

Maritime

VE1AR	103,850-	678-62-A-	39
VE1AAY	83,555-	492-68-A-	37
W4KVM/VO6	24,439-	172-57-A-	27
VO6N	13,140-	146-36-A-	40
VO6U	2444-	43-23-A-	6
VE1CU	2243-	39-23-A-	4
VO6AH	510-	18-12-A-	11

Quebec

VE2BX	56,560-	405-56-A-	36
VE2PZ	20,746-	228-46-B-	20
VE2ADD	8514-	100-43-B-	14
VE2CB	5303-	102-21-A-	10
VE2CP	3750-	60-25-A-	7
VE2OL	2940-	56-21-A-	4

Ontario

VE3AUU	62,235-	474-54-A-	38
VE3QE	61,596-	522-59-B-	39
VE3ACB	55,770-	338-66-A-	33
VE3DRD	50,540-	370-56-A-	36
VE3DBP	44,451-	419-43-A-	38
VE3FAM	44,033-	309-57-A-	37
VE3BXF	26,069-	243-43-A-	27
VE3BHS	25,650-	181-57-A-	28
VE3FAU	20,470-	178-46-A-	20
VE3YV	18,408-	177-52-B-	24
VE3BUR	15,170-	154-42-A-	12
VE3BJV	14,153-	170-34-A-	26
VE3AVS	13,867-	142-49-B-	22
VE3DQX	4550-	91-20-A-	5
VE3DFE	4025-	58-28-A-	12
VE3DME	2703-	49-23-A-	12
VE3BSW	2520-	51-21-A-	9
VE3AR	2125-	34- 4-A-	3
VE3DLS	935-	22-17-A-	9
VE3DSG	20-	4- 2-A-	4
VE3DNK	15-	3- 2-A-	1
VE3UOT (VE3s AQO DAT)	21,244-	227-47-B-	20

Manitoba

VE4MX	45,900-	312-60-A-	30
VE4GB	2610-	47-29-B-	10
VE4MT	1140-	31-16-A-	6
VE4SU	768-	25-16-B-	8
VE4HS	420-	15-14-B-	4
VE4ER	75-	6- 5-A-	1

Saskatchewan

VE5CW	44,756-	337-67-B-	25
VE5DZ	25,315-	218-61-B-	36

Alberta

VE6ZR	42,776-	283-61-A-	34
VE6NX	33,975-	231-60-A-	22
VE6CE	20,295-	186-44-A-	34
VE6AJ	14,800-	149-50-B-	26
VE6OS	11,655-	131-36-A-	21
VE6SX	8750-	105-35-A-	31
VE6HM	1825-	37-20-A-	11
VE6VG	1781-	48-15-A-	14
VE6TY	1260-	35-18-B-	5
VE6KW	561-	26-11-B-	4
VE6AL	260-	13- 8-A-	3

British Columbia

VE7ZK	62,245-	422-59-A-	32
VE7YR	45,988-	283-65-A-	29
VE7MW	42,413-	306-58-A-	30
VE7QC	26,190-	244-54-B-	28
VE7AC	18,571-	190-49-B-	-

[1] W3ULI, opr.; [2] W3PST, opr.; [3] K2IKS, opr.; [4] W2BRA, opr.; [5] W8CEL, opr.; [6] Hq. Staff, not eligible for award; [7] W1QIS, opr.; [8] W3PZW, opr.; [9] KL7AKE, opr.; [10] K6BBD, opr.; [11] WØHAW, opr.

Beginner's Receiver

(*Continued from page 32*)

choke lead. Four leads are brought out from the power supply to connect to the receiver: the two heater leads, the B+ lead, and the B− lead.

When the power supply is wired and the leads connected to the receiver, the unit is ready for testing.

Testing and Using the Receiver

If you already have an antenna strung up, connect the end of it to Terminal 2 — the one connected to the rotor of C_1. If you don't have an antenna, any wire, 20 to 40 feet long or longer, can be strung up. An outside antenna will perform better than one indoors, although you'll hear plenty of signals with a wire just strung around the room.

Connect your headphones to the tip jacks and plug in the 80-meter coil. Plug the power cord into the 115-volt a.c. line and watch the 6U8 to see if the heater lights up. If it doesn't, turn off the power and check your wiring from the power supply to the heater pins, 4 and 5, on the 6U8 socket.

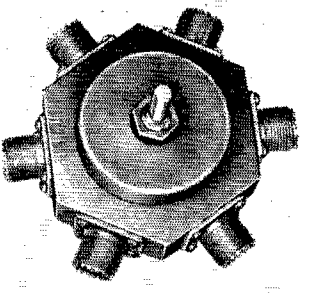
The receiver will only take a minute to warm up. Turn the regeneration control and, at one point, you should hear a change in the characteristic of the noise. This is the point where the receiver starts to oscillate. Tune the general-coverage condenser slowly and you should hear signals. Leave the capacitor set at or near one

(*Continued on page 138*)

Take The Fuss Out of Switching Circuits

Now you can eliminate the fumbling and annoyance of screwing and unscrewing coax connections. With B&W's new Model 550 coaxial switch, you can instantly select antennas, transmitters, exciters, receivers, and other r-f generating devices merely by turning a knob.

This new multi-position coaxial switch has six S0239 connectors for selecting any one of five 52 or 75 ohm lines. It will handle up to 1 kw of modulated power with a maximum crosstalk of –45 db at 30 mc. Housed in a 2¾" diameter aluminum case, the unit is designed for single hole mounting.



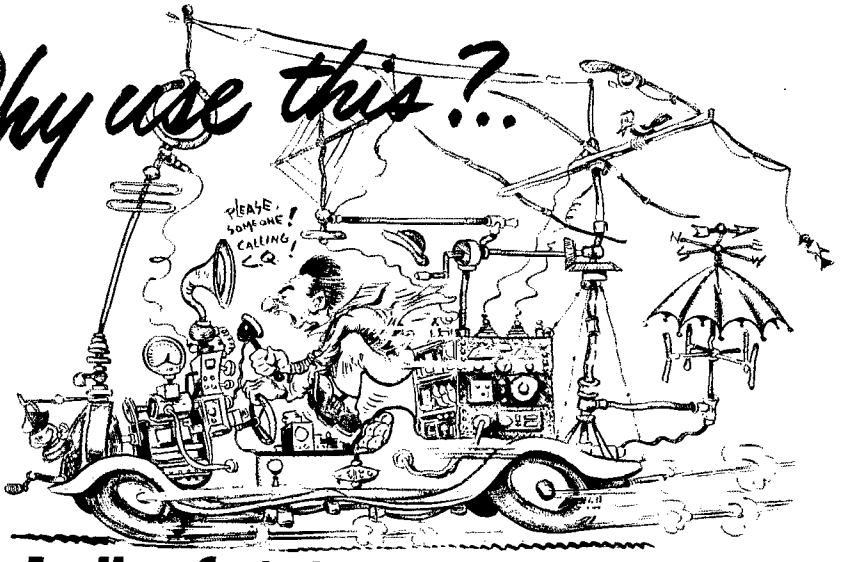
PRICE:
Model 550
$13.65
Amateur Net

SEE IT NOW AT YOUR DISTRIBUTOR'S,
or write for literature.

B&W

BARKER & WILLIAMSON, INC.
237 Fairfield Ave. • Upper Darby, Pa.

Why use this?..



For More Contacts... use Master Mobile Antennas and Mounts

Master Mobile Mounts, Inc.
1306 BOND STREET · LOS ANGELES 36, CALIFORNIA

AT LEADING RADIO JOBBERS EVERYWHERE

Parts List for Regenerative Receiver

2 100-$\mu\mu$f. midget variable capacitors (Millen 20100) (C_1, C_2)
1 15-$\mu\mu$f. midget variable capacitor (Millen 20015) (C_3)
1 100-$\mu\mu$f. mica or ceramic capacitor
3 0.001-μf. disk ceramic capacitors
1 0.01-μf. disk ceramic capacitor
1 0.01-μf. 250-volt paper capacitor
1 10-μf. 25-volt electrolytic capacitor
2 16-μf. 250-volt electrolytic capacitors (or dual 16-μf.)
1 470-ohm ½-watt carbon resistor
1 68,000-ohm 1-watt carbon resistor
1 0.1-megohm ½-watt carbon resistor
1 0.5-megohm ½-watt carbon resistor
1 1.0-megohm ½-watt carbon resistor
1 50,000-ohm potentiometer
2 1-mh. r.f. chokes (National R-50)
80-, 40-, and 20-meter Barker & Williamson Baby Inductors MEL (L_1,L_2)
1 interstage transformer (Stancor A-53-C) (L_3)
2 6-henry 40-ma. filter chokes (UTC R-55) (L_4, L_5)
1 power transformer, 120-volt secondary at 50 ma.; 6.3 volt at 1 amp. (Merit P3045 or P3046, or equivalent)
1 selenium rectifier, 130 volts, 20 ma. (Federal 1159) (CR_1)
1 aluminum chassis, 7" × 7" × 2"
1 aluminum panel, 7" × 6"
1 piece of aluminum for power-supply chassis, 3" by 10" (the panel and this piece are obtainable at any sheet-metal shop)
1 9-pin miniature tube socket, bakelite or mica filled
1 5-pin socket for coils L_1 and L_2, bakelite or isolantite
4 3-terminal tie points
7 ⅜" rubber grommets
1 Panel bearing assembly, over-all length 6"
1 insulated shaft coupler
1 terminal strip, 5 terminals
2 pin jacks, insulated type
Miscellaneous 6–32 machine screws and nuts
6 ground lugs
25 feet of hook-up wire
4 knobs for controls (In the unit shown, a National type K dial was used for bandspread.)
1 6U8 tube
1 length of spaghetti wire covering
Line cord and plug

of the signals and then tune the bandspread capacitor. This capacitor gives a slower tuning rate, making it much easier to tune in signals.

With a signal tuned in, rotate the antenna-trimmer control and the signal should get louder at one point. If it doesn't, change the antenna to terminal number 1 and short terminals 2 and 3 together with a short piece of wire. Try the antenna trimmer again, and you should find that the signal will peak up. The regeneration control setting may have to be changed to maintain oscillation.

Locating the amateur Novice bands is simple. Tune the receiver until you find an amateur 'phone station. The Novice band on both 80 and 40 meters is immediately below the 'phone bands. To tune lower in frequency than the 'phone bands, the bandspread capacitor is turned so that the capacitance increases, or the plates mesh.

The beginner will find great satisfaction in completing the receiver and many happy hours of listening will be his for the asking.

Novice Round-up Results

(Continued from page 51)

KN2HVM.....1633- 71-23-20
KN2JYF.....1275- 60-17-40
KN2ITZ.....1100- 40-20-11
KN2HKG..... 663- 24-17-16
KN2KER..... 234- 18-13- 4

Northern New Jersey

KN2JLQ.....5070-120-39-38
KN2KDW.....4928-139-32-31
KN2KFP.....4625-125-37-30
KN2JOM.....3510-130-27-16
KN2HFI.....3078-114-27-19
KN2JMX.....1428- 68-21-14

Nebraska

WNØVKI....16,225-295-55-33
WNØWLO.....6600-135-44-36
WNØWSN.....4104-114-36-36
WNØVKM.....1620- 60-27-21
WNØVUB..... 187- 17-11-10

NEW ENGLAND DIVISION

Connecticut

WN1CKA.....9000-180-45-25
WN1AXD.....7260-145-44-40

Connecticut winner, Paul Neven, WN1CKA, used a pair of TZ-40s and a Super Skyrider to gather 9000 points, 180 contacts, 45 sections, all within 25 hours of operation.

KN2HXP.....1292- 68-19-34
KN2IFP.....1273- 67-19-16
KN2JSP.....1102- 58-19-31
KN2KML..... 297- 13- 9-25
KN2INQ..... 90- 10- 9- 3
KN2KDG..... 82- 22-36-36
KN2KLR..... 6- 3- 2- 1

MIDWEST DIVISION

Iowa

WNØUSP.....4928-112-44-35
WNØVXO.....4865-129-35- -
WNØWPM....2924- 86-34- -
WNØUJD.....1988- 56-28-14
WNØWNE..... 940- 47-20-13
WNØUJF..... 656- 31-16-16
WNØWDK.... 225- 15- 9-23
WNØSZW..... 132- 7- 6-10
WNØWEX..... 85- 17- 5- 6
WNØTLQ..... 66- 11- 6- 2

Kansas

WNØUZM.....2232- 72-31-23
WNØVGE..... 322- 23-14-15

Missouri

WNØUVH..... 525- 20-15-24
WNØVVY..... 228- 19-12- 5

WN1CDD.....2580- 71-30-30
WN1CDC....1978- 76-23-24
WN1DIE.....1140- 52-20-28
WN1CRX..... 140- 14-10-10
WN1BEM..... 145- 29- 5-15
WN1AQA..... 99- 11- 9- 4

Maine

WN1BCD.....2323- 86-23-13

Eastern Massachusetts

WN1CFF.....4050-120-30-40
WN1ZUM.....2046- 78-22-14
WN1BPW.....1302- 52-21- 8
WN1BVP..... 702- 39-18- 8
WN1COL..... 608- 38-16- 6
WN1CCM.... 518- 37-14-23

Western Massachusetts

WN1AUF.....3519-143-23-40
WN1BYH.....1235- 50-19-15

Rhode Island

WN1BIS.....3753-134-27- 9
WN1CGZ..... 893- 47-19-11

(Continued on page 142)

NORTHWESTERN DIVISION

Idaho

WN7WMO....1176- 49-24-21

Montana

WN7YHS..... 168- 9- 7- 3
WN7VQX..... 126- 21- 6- 5

Oregon

WN7WNN.... 2022- 77-26-17
WN7WGI..... 660- 44-15-17
WN7WKA..... 210- 11-10-12

Virginia

KN4ASU/4....3078- 79-27-18
WN4HVA[1]....1407- 67-21-38
WN4FKP..... 435- 29-15- 9
KN4ADJ..... 360- 24-15- 7
WN4EZB..... 108- 8- 6- 3

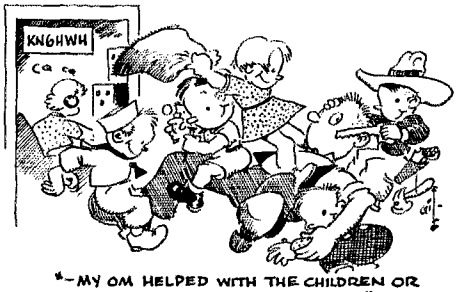
West Virginia

WN8SWX..... 969- 42-17-25

ROCKY MOUNTAIN DIVISION

Colorado

WNØVPE..... 936- 39-24-17



"—MY OM HELPED WITH THE CHILDREN OR I NEVER WOULD HAVE MADE IT."

Washington

WN7YAQ.....7050-126-50-40
WN7WHV.....6642-162-41-36
WN7VPT.....4662-106-37-36
WN7YCO..... 688- 43-16-30

PACIFIC DIVISION

Nevada

WN7YEX..... 585- 39-15-27
WN7YNO..... 117- 13- 9-13

Santa Clara Valley

KN6CMO.... 2054- 79-26-29
KN6EIG.....1200- 48-25-19
KN6HOB.....1008- 48-21- 8

East Bay

KN6ERT..... 943- 41-23-10
KN6HDM..... 429- 29-11-19
KN6HOJ..... 147- 11- 7-11

San Francisco

KN6HWH....3808-112-34-37
KN6EJC.....3132- 87-36-33
KN6HTC.....1826- 83-22-33
KN6HWI.....1380- 69-20- -
KN6HGV..... 720- 36-20-13

Sacramento Valley

KN6GNJ..... 629- 37-17-11

San Joaquin Valley

KN6HFA.....3240- 80-36-30
KN6IKT..... 738- 41-18-18

ROANOKE DIVISION

North Carolina

WN4HRS.....4292-106-37-27
WN4GJJ.....1904- 58-28-15
KN4AQY..... 936- 39-24- 9
WN4GHV..... 286- 22-13- 5
KN4ADT..... 198- 18-11- -

South Carolina

WN4GFT.....7216-164-44-39
WN4HOZ.....3304- 98-28-17
WN4HGW....3162- 93-34-23

Utah

WN7WSS.....5520-115-48-37

SOUTHEASTERN DIVISION

Eastern Florida

WN4HDT..... 527- 31-17-13

Georgia

WN4HYV.....3729-103-33-22
KN4BAI.....2325- 65-31-37

SOUTHWESTERN DIVISION

Los Angeles

KN6EVR.....5375-110-43-30
KN6HAY.....3564- 99-36- -
KN6EUH.....2871- 87-33- -
KN6ELX.....1650-110-15-18
KN6IGZ.....1273- 57-19-16
KN6HAN.....1242- 54-23-38
KN6HVV..... 663- 36-13-19
KN6EWJ..... 517- 37-11-25
KN6GWM.... 360- 35- 8-39

Arizona

WN7YCU..... 266- 19-14-13

WEST GULF DIVISION

Northern Texas

WN5FJN....10,553-173-61-30
WN5HIS.....4294-113-38-27
WN5GTR.....1500- 50-30-24
WN5HDD.....1311- 69-19-22

Oklahoma

WN5EQT.....7084-141-44-28
WN5ENU.....1456- 52-28-11

Southern Texas

WN5EXU.....4386-102-43-21
WN5IND.....2730- 68-35-15

New Mexico

WN5FHL..... 20- 5- 4- 3

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Grid Circuit: High efficiency band switching turret —well shielded, high Q.
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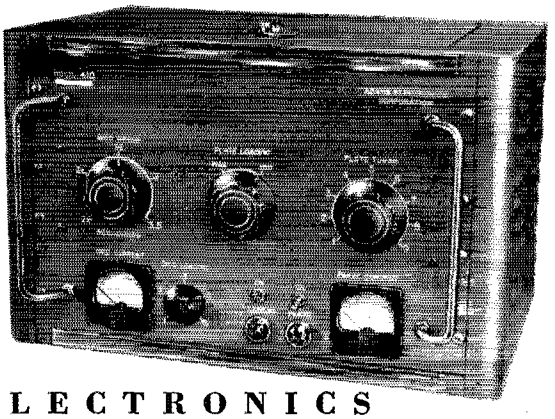

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217 MERRICK ROAD, AMITYVILLE, L. I., N. Y.

Correspondence

(Continued from page 64)

meters. This is a problem for the Novices who are located near the Canadian border. Also, many Novices are not financially able to buy a super-selective receiver at the first chance. Each 'phone station takes up more room than a few c.w. stations. If the 'phone station is stronger than the c.w. station, it will blank it out. Furthermore, since Novices are crystal-controlled, they are not able to change frequency so readily when 'phone or other QRM appears.

— *George Hippisley, KN2KIR*

202 N. High St.
Mt. Vernon, N. Y.

Editor, *QST:*

I wish to take issue with the viewpoints taken by Messrs. Clark and Brogdon in March *QST.* Both of these letters seem to indicate signs of the so-called "progressive" viewpoint prevalent in amateur circles.

I agree with Mr. Clark in condemning the use of c.w. in the 'phone bands; it is definitely an ungentlemanly practice. But the reason is not that c.w. was here first. The same argument could be applied to argue that spark was here first so it should be allowed. As has been pointed out before, c.w. is necessary in case of communications emergency or breakdown of speech equipment, so it is necessary to have c.w. allowed everywhere (on the hambands that is). This does not give c.w. operators the right to use normally-assigned 'phone channels, the reason being courtesy to the 'phone men.

Mr. Brogdon carries his "progressive" ideas a bit too far. Granted that "sideband" is a more efficient form of communication. But how many, in spite of the technical niceties, are on s.s.b. compared to those on double-sideband? For that matter, a kilowatt is technically superior to 50 watts for reliability and readability of communication but are 50-watt rigs outlawed? The factor that makes for outlawing something should be the will of the majority of hams, not how closely some new system approaches perfection.

— *Karl Felperin, W2FSJ*

R. D. No. 2, So. Side
Oneonta, N. Y.

Editor, *QST:*

. . . I too came up through the Novice ranks; I too am disgusted with the shenanigans to be heard on the 75-meter 'phone band; but please, I say please, don't ask for five hundred kilocycles of unidentified carriers, sloppy splatter-band operators, etc. . . . Admitted, there are always a few c.w. signals to be found in the 'phone bands, also admitted that there are quite a few lids running "kilowatts." Nothing has sounded as jolly as the character from Ohio heard for several evenings calling "CQ eighty" on the so-called wide-open c.w. portion of the band!

As you have assumed, I am primarily a c.w. man, part Scotch, yes, with a full 25 watts on 80 meters. I wouldn't be caught dead in your end of the band, because I don't have the patience or the experience to make me feel eligible to work a band which I always recall as the Happy-Hunting Grounds for the old-timers of this business.

— *W. W. Thompson, W2MTA*

C.W.-BAND S.S.B.

2029 Hopkins Court
Alameda, Calif.

Editor, *QST:*

After reading the pros and cons of a.m. 'phone *vs.* s.s.b. in the March issue from some of our (ugh) brothers, some of the heated arguments are rather nauseating.

I think both a.m. and s.s.b. definitely have their place in amateur communications if operated properly and I have heard some poor excuses for both. Some operators have the idea that s.s.b. operation eliminates the possibility of TVI, BCI, and even improper operation, but this to me is only an admission of ignorance. I have heard extremely wide signals complaining of the other, while operating close to each other.

The a.m. 'phone men complain naturally about s.s.b. and c.w. signals in the 'phone portions of bands, and I agree with them in many respects, but I think the fault lies with

(Continued on page 146)

the FCC in allocating such large portions of the bands to c.w. operation and small portions to the more useful means of communications, a.m. 'phone. If the c.w. and s.s.b. boys continually pat themselves on the back for operating on such small segments then maybe they would like to have less and be forced to operate in what the a.m. boys are using now.

It is my belief that if s.s.b. were forced to operate in separate portions of the band from a.m. they would have many more join them in true progress. The a.m. boys would leave the crowded 'phone segments to enjoy the merits of s.s.b. This may not lay too well on the s.s.b. boys' stomachs at first but think it over boys, it would be wonderful to operate s.s.b. in the c.w. bands. It is a nuisance to try to operate a.m. and have a s.s.b. close in frequency. Also, it must be tough for s.s.b. boys to be repeatedly referred to as "voice modulated key-clicks."

So it all boils down to this: we are not getting any place beating each other on the head, trying to convert a.m. to s.s.b., preaching lengthy sermons over the air, and committing the very act of libel and slander. The only reason for rivalry between s.s.b. and a.m. is because we are guilty as poor representatives and members of ARRL properly to govern ourselves and correctly allocate bands for proper operation. Instead of fighting each other we should exert all our force to allow s.s.b. to operate in the c.w. bands and let the a.m. boys have their segment in peace.

— *Jack R. Perciful, W4PDC/6*

THEY CAME, TOO

119 Eustis Avenue
Newport, R. I.

Editor, *QST:*

The second paragraph of your editorial in the March issue of *QST* might lead some to think that amateur affairs were handled by the Federal Radio Commission between 1927 and 1934. However, some of us who originally obtained our amateur and commercial tickets from the Radio Division of the Department of Commerce recall that it was not until July, 1932, that the responsibilities and duties of the old Radio Division were transferred to the FRC.

(Continued on page 148)

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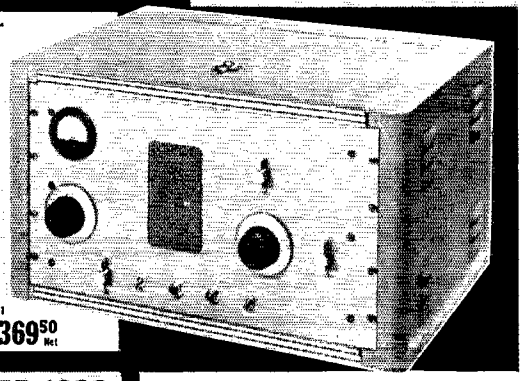

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375	396	418	484	505	527	442	463
376	397	419	485	506	529	444	464
377	398	420	486	507	530	445	465
379	401	422	487	508	531	446	466
380	402	423	488	509	533	447	468
381	403	424	490	511	534	448	469
383	404	425	491	512	536	450	470
384	405	426	492	513	537	451	472
385	406	427	493	514	538	452	473
386	407	429	494	515		453	474
387	408	431	495	516		454	475
388	409	433	496	518		455	476
390	411	435	497	519		456	477
391	412	436	498	520		457	479
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6610		2155	2320	2557	3550	

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4330	5725	6300	6900	7673	7973
4397	5040	6325	6925	7675	7975
4490	5750	6350	6950	7700	8260
4495	5773	6373	6975	7706	8273
4735	5780	6375	7450	7725	8275
4840	5806	6400	7473	7740	8300
4930	5840	6406	7475	7750	8325
4950	5852	6425	7500	7773	8630
5030	5873	6673	7506	7775	8683
5205	5875	6675	7525	7800	8690
5300	5880	6700	7540	7825	
5385	5906	6706	7550	7840	
5397	5925	6725	7573	7850	
5437	5940	6750	7575	7873	
5485	5950	6775	7600	7875	

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3735	6200	6650	7325	8175	8625
3800	6440	7000	7340	8200	8650
3885	6450	7025	7350	8340	8700
3940	6473	7050	7375	8350	8733
3990	6475	7073	7425	8380	
6000	6500	7075	7440	8400	
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6050	6550	7125	8025	8450	
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C-P

I also recall that originally the FRC was created by Congress in 1927 to bring order out of the chaos in the broadcast field. At that time its life was only going to be for one year, yet like many other Washington agencies that came along later, they imitated the "Man Who Came to Dinner" and picked up additional duties along the way. That is how they got amateur affairs in 1932. Then, in 1934, Congress straightened out the whole thing by creating the Federal Communications Commission.

It is refreshing to read an article that compares today's activities with earlier days.

— *Lester C. Harlow, W4CVO/1*

[EDITOR'S NOTE — OM Harlow is correct. The story appeared in Sept. 1932 *QST*.]

ONE SOLUTION

Rt. 1, Box 825
Tigard, Ore.

Editor, *QST*:

. . . True — there is a lot of QRM these days, but why not solve it nicely instead of trying to either change the rules or shove other amateurs around. Since one of the prides of being an American amateur is to be flexible and help with many new "firsts" in radio, wouldn't the best solution be to improve your own operating techniques first and then try to help the other fellow instead of drowning him out.

Many hams in this area have taken their rigs "upstairs" and are finding a new world in v.h.f.; c.w. for me on 80 and 40, and 'phone on 2 — and you can't ask for better ham radio when you practice good operating principles.

— *Jim Strickland, W7SEZ*

YL News & Views

(Continued from page 55)

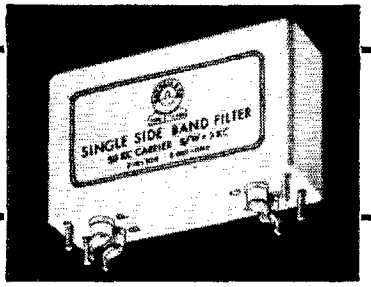
and OM W4HHH. . . . W5SYL, Iva, was one of some 100 YLs and OMs who assisted in the search for the body of W5DM, pilot of a plane which crashed in Texas. . . . And in Lancaster, Calif., K6HWB, Vivian, stayed on the air for more than 20 hours monitoring, relaying, and keeping 3995 kc. clear during a search for a Douglas jet test pilot on

(Continued on page 150)

Devotees of amateur radio come younger all the time. Here's one chap who was exposed to 75-meter QRM at the innocent age of several hours.

For five days following the birth of son Mark Eric in January, Mildred Drummond, WØGXG, kept three schedules daily with OM WØBWP, Rev. Wesley J. Drummond, pastor of the Second Presbyterian Church, Flandreau, S. Dak. Mildred's transmitted instructions on household matters were dutifully carried out at home by her OM, 11-year-old son John, WNØTLR, and 9-year-old daughter, Darlene.

We note with womanly interest that it is becoming fairly common practice for mothers-to-be to pack a portable transmitter and receiver with a suitcase to take to the hospital for a maternity confinement. Seems opportune for a few days of leisurely (?) QSOing.



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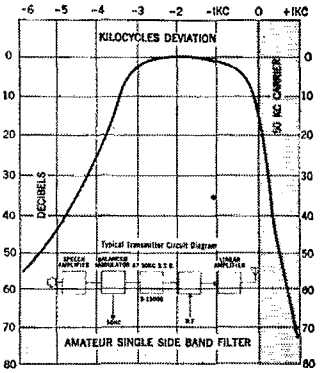

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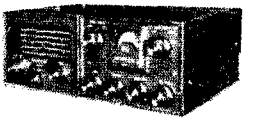

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Take a teen-ager and her mother, both licensed amateurs, and you can virtually see the mutual pride that exists between them. Add a teen-age brother and a father with tickets, and you have a situation that any therapist would recommend for family happiness. In the case of the Hansen family of Cheney, Wash., mother Rosella, W7ULK, interested in radio for twenty years, got her license first, built a transmitter and started teaching her family. Daughter, son, and husband followed with the calls *WN7s* VWU, VWZ, and WVA respectively. An ex-schoolteacher, Rosella has been coaching a number of teen-agers who aspire to become hams. She recently worked her daughter for her 100th QSL and a YL Century Certificate.

Jan. 13th. Twenty-seven amateurs and 11 mobile units helped locate the pilot within 48 hours. . . . K6DEN, Evelyn, is on 20 and 75 'phone regularly from Redwood City. . . . At a March meeting, committee chairman for the first YLRL International Convention gave various progress reports. It was announced that a fashion show would be staged during the luncheon on June 25th. . . . We regretfully note the untimely passing of Neva Josephine Fredenburg, W6YXI, and her husband John, W6VJQ. The couple perished when their automobile collided with another near Alpine, Calif. A charter member of the San Diego YLRL unit, Neva was past-president, vice-president, and secretary. Owners of a radio and TV store in San Diego, Neva and John were particularly active in AREC and c.d. activities. They will be missed by their many friends.

How's DX?

(*Continued from page 67*)

by Statesider W3ZXD . . . . . W6ZOL could use a tip on ex-KS4AQ's present whereabouts . . . . . A belated bow to W2GTY for the idea behind last month's Jeevesie cartoon . . . . . In very few months the FG7XB ten-watter with two crystals made contact with over 200 stations in 33 ARRL DXCC List countries. There is *nothing* like a call! . . . . . Club North American notes. *WGDXC:* WØAIW, WØEIB and YN4CB have been straining at the leash to put YNØYN on the air from Corn Island. KS4 and HKØ operation is a possibility on this jaunt, too. Meanwhile, KS4AW hopes to keep Swan Island available for another month or so. *NCDXC:* VP7NX (W6RRG) subsequently may be heard as VP2NX, VP2RG and HI6NX . . . . . SCDXC outfitted itself with four nifty trophies to be awarded to high club scorers in the '55 ARRL DX Test, plus another rotating plaque award to be held by southern California's top all-around DX performer each year . . . . . Sparked by the news-gathering of W4KVX, Ohio Valley Amateur Radio Association's *Ether Waves* burgeons into quite a juicy DX newsletter . . . . . W9FGX does DX-editing chores for *Sparks*, organ of the Tri-State Amateur Radio Society with headquarters in Evansville, Indiana.

(*Continued on page 152*)

DXCC NOTES

Announcement is hereby made of the addition to the ARRL Postwar Countries List of two new countries. For purposes of identification these will appear on the list as Saint Martin and Sint Maarten. Saint Martin will encompass all French territory within the limits of 17 and 19 degrees north latitude and 62 and 64 degrees west longitude. Sint Maarten shall serve to designate Netherlands territory within these same boundaries.

DXCC credit will be given starting July 1, 1955, for creditable confirmations dated on or after November 15, 1945. This will permit foreign amateurs to start receiving credits at the same time as those in U. S. A. Confirmations received prior to July 1, 1955, for these countries will be returned without credit.

In future ARRL DX Competitions, those making contact with amateur stations located in either Saint Martin or Sint Maarten may claim credit for a separate country in accordance with DXCC rules.

DX CENTURY CLUB AWARDS

HONOR ROLL

W1FH....258	W3BES....248	W3JTC....245
W6VFR....254	G2PL....247	W6SYG....245
W6AM....253	W3GHD....246	PY2CK....245
W6ENY....251	W6MEK....246	W2AGW....244
W8HGW....251	W6SN....246	W3KT....244
WØYXO....250	W8NBK....246	W6MX....244

Radiotelephone

PY2CK....238	W1MCW...215	W9RBI....210
W1FH....230	XE1AC....215	W3JNN....209
VQ4ERR...227	W1NWO...214	W9NDA....209
ZS6BW....223	W8HGW...214	SM5KP....207
W1JCX....215		W6DI....205

From February 15 to March 15, 1955, 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

VP9G....155	W1LQQ....104	W5UUK...101
WØANF....139	W6YRA...103	DL3NX....100
G3GFG....110	W2FCQ....102	DL3RM...100
W3MNG...106	OH9NV....102	G3IAD....100

Radiotelephone

W8JBI....122	W4IQG....110	W4JGO....100
IIBSB....116	W4DOV...102	W7HXG...100
W3ECR....116	ZD1SW....102	WØGEK...100
	W8QJR....101	

ENDORSEMENTS

W6DZZ....240	W4EPA....153	W1NLM...130
W6ADP....232	W9LI....153	W9MQK...130
ZS6BW....230	W3JNM....150	K2BZT....125
W6GFE....219	W9VIN....150	W8EV....125
W2TQC....200	W8DFQ....147	W5UX....120
W8UAS....200	W9KA....141	ZS5LA....113
PAØLB....170	OZ3Y....141	W9VP....111
ZL4GA....170	W6YK....140	W2WDP...110
W9BQE....168	DL1YQ....139	ZL4CK....110

Radiotelephone

CN8MM...184	G6AY....160	W1PST....130
G3HLS....180	VP9G....152	ZP5CF....130
W4DCR....160	W8BKP....141	W3JNM...129
W4OM....160	W8TJS....132	W4BA....112
	HCQD....132	

W/VE/VO Call Area and Continental Leaders

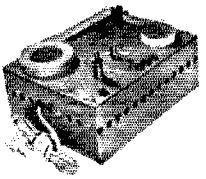
W4BPD....241	VE2WW...181	VE8AW....160
W5MIS....243	VE3QD....210	VO6EP....190
W7AMX...240	VE4RO....223	4X4RE....210
W9NDA....243	VE5QZ....140	ZS6BW....229
VE1HG....150	VE6GD....108	ZL2GX....235
	VE7HC....209	

Radiotelephone

W2APU....202	WØAIW....179	VE4RO....120
W4HA....177	VE1CR....120	VE7ZM....140
W5BGP....205	VE2WW...102	OD5AB....154
W7HIA....181	VE3KF....163	ZL1HY....190

FACTS ABOUT LEARNING CODE

Now— A PROFESSIONAL TELEPLEX IN THE NOVICE PRICE RANGE



SENDS correctly timed signals from 5 words to 70 words per minute. Sixteen lessons. Its 110 volt A.C. motor makes it hold an even, steady speed. Code is received on the air over headphones; therefore, it should be learned with oscillator and headphones. Furthermore, an oscillator is an excellent device with which to learn sending.

YOU get TELEPLEX TWO PHASE, STEP BY STEP instruction. That means first you train your EAR to HEAR the signals in the same manner you hear spoken words. You learn only a few letters at a time. You advance step by step in an orderly manner. You may select for concentrated practice characters that give you trouble. You are never confused by jumping from one character to another without sufficient time to thoroughly learn the sound.

You get plenty of cipher groups that you will never memorize. Speed up to 25 words is child's play with TELEPLEX. Forty to fifty words certainly is within reason.

Send postcard for brochure describing MASTER TELEPLEX, the only Code Teacher that records your own signals so that you can see and hear just how you make your signals. (See it at Blan's, 64 Dey St., New York.)

NOVICE SPECIAL with 16 Lessons $15.95 prepaid. Built-in oscillator with radio tube $6.00 extra. Complete oscillator kit with tube; you wire it up $4.00 (Oscillator or kit not sold separately.) Get it from your dealer or order direct. State your present code speed if any.

TELEPLEX CO. 415 G. Street Modesto, California

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We stock nationally advertised Ham parts

CURLE RADIO SUPPLY

439 Broad Street, Chattanooga, Tennessee
406 Meridian Street, Huntsville, Alabama

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FOR DETAILS WRITE FOR CATALOG Q-5

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242 EAST 137th ST., N.Y.C. 51, N.Y.

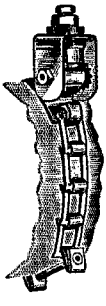
PREMAX

"CA" BUMPER MOUNTING FITS ANY CAR

Mount Your Mobile Antenna without Drilling or Marring!

Even the massive bumpers of new 1955 cars can be outfitted with Premax's newly improved "CA" mobile antenna mounting, *without* spoiling chrome finish. Mounting includes extra chain links and braided copper wire ground lead. Ask your dealer for the "CA", or write,

Division
Chisholm-Ryder Co., Inc. **PREMAX PRODUCTS**
5581 Highland Avenue, Niagara Falls, New York



Here's Why!

There's no drilling or damage to Bumper or splash-pan necessary. "CA" Bumper Mounting is fully adjustable with 9 links of chain. Add or remove links as needed!

HAM-ADS

(1) Advertising shall pertain to radio and shall be of nature of interest to radio amarteurs or expeimenters 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.

(3) The Ham-Ad rate is 30¢ per word, except as noted in paragraph (6) below.

(4) Remittance in full must accompany copy. 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, and is placed and signed by a member of the American Radio Relay League. 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, if by a member of the American Radio Relay League take the 7¢ rate. An attempt to deal in apparatus in quantity for profit, even if by an individual, is commercial and all advertising by him takes the 30¢ rate. Provisions of paragraphs (1), (2) and (5), apply to all advertising in this column regardless of which rate may apply. To expedite handling of your copy please state **whether you** are member of ARRL.

(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 communication equipment bought and sold. W5BCO, Ralph Hicks, 204 E. Fairview, Tulsa, Okla.

WANTED: Cash or trade, fixed frequency receivers 28/42 Mc. W9YIV, Troy, Ill.

WANTED: Early wireless gear, books, magazines and catalogs. Send description and prices. W6GH, 1010 Monte Drive, Santa Barbara, Calif.

CODE slow? Try new method. Free particulars. Donald H. Rogers, Tyyland, Penna.

URGENTLY need AN/APR-4 items particularly tuning units for important defense contracts. New high prices. Engineering Associates, 434 Patterson Rd., Dayton 9, Ohio.

WANTED: ART-13 transmitters. Write James S. Spivey, Inc., 4908 Hampden Lane, Washington 14, D. C.

OUTSTANDING ham list always. Our prices on trade-ins of all amateur brands are realistic and down to earth. We feature Johnson National, Collins, Hallicrafters, Gonset, Elmac, Harvey-Wells, Morrow, Central Electronics and other leaders. We trade easy and offer our own time-payment plan tailored to fit you. All leading brands of new equipment always in stock. Write today for latest bulletin, Stan Burghardt, WØBJV, Burghardt Radio Supply, Inc., Box 41, Watertown, S. Dak.

DON'T Fail! Check yourself with an up-to-date, time-tested "Surecheck Test." Novice $1.50; General, $1.75; Amateur Extra, $2.00. Amateur Radio, 1013 Seventh Ave., Worthington, Minn.

ANTENNA for bandswitching transmitters up to 300 watts input, approx. 120 feet long, centerfed with 75-ohm line, 70 feet included, low SWR, tunes 80–40–20–10 meter bands. U. S. Patent 2,535,298. Each one tested for resonance on all bands. Send stamp for details. $18.95 each. Lattin Radio Laboratories, 1431 Sweeney St., Owensboro, Ky.

NEED ART-13. Ritter, 4908 Hampden Lane, Bethesda, Maryland.

FREE Bargain Bulletin. Visit store for thousands of unadvertised bargains. New BC610 tuning units TU-47, TU-48, TU-49, TU-50, TU-51, TU-52, $5.95 each. Surplus RG-8/U cable, 100 ft., $5.95; 250 ft., $13.25, 500 ft., $25.00. Selsyns, 110 volt size 5, $12.95 pr. 1000 Kc standard crystals, $2.95. Wanted: Surplus radio equipment. Navy synchros. Lectronic Research Laboratories, 719 Arch St., Phila., Penna.

RUBBER Stamp with your call letters, name and address, $1.50; stamp pad thirty-five cents. El Kay Stamps, Box 5-WT, West Toledo Station, Toledo 12, Ohio.

CALL SIGNS — Three color, reflectorized (glass-beaded), aluminum, 4" x 12", $1.50 postpaid, includes mounting frame for car, rig or shack. Lackner, W9WFT, 2029 Bradley, Chicago 18, Ill.

MICHIGAN HAMS! Amateur supplies, standard brands. Store hours 0800 to 1800 Monday through Saturday. Roy J. Purchase, W8RP, Purchase Radio Supply, 605 Church St., Ann Arbor, Michigan. Tel. 8-8696, No. 8-8262.

SUBSCRIPTIONS. Radio publications. Latest Call Books, $4.00. Mrs. Earl Mead, Huntley, Montana.

SELL: Vibrator power supplies, Model 2606 Hampack, 6VDC to 300VDC 100 Ma., $14; Heavy duty 5.6VDC to 420VDC 280 Ma., $25; 6VDC to 110VAC 50W, filtered, $17; combination 6VDC or 110VAC to 300VDC 100 Ma. and 6.3VAC, filtered, $22; 6VDC to 110VAC 100W maximum, filtered, $30. All commercially manufactured, in excellent condition. Miscellaneous other supplies. BC946 broadcast receiver with 110VAC supply, $25. F.o.b. St. Paul, Minn. WØBUO, Charlie Compton, 1011 Fairmount, St. Paul, Minn.

UHX-10 wanted. Advise condition, coils and price. W1KJG, Box 295, Morrisville, Vt.

QSL Cards? Largest and finest variety. Samples 25¢ (refunded). "Rus" Sakkers, W8DED, P. O. Box 218, Holland, Mich.

QSLS. Something new — Different — All printed in 3 colors or more on glossy stock, $3.85 per 100. Preference when ordering such humorous, plain or modern. Be surprised. Satisfaction guaranteed. 2-day service. Constantine Press, Bladensburg, Md.

QSLS. Samples dime. Printer, Corwith, Iowa.

QSLS-SWLS. Meade WØKXL, 1507 Central Avenue, Kansas City, Kans.

QSLS. Neat, reasonable. Samples 10¢. Cyrus Jones, W3EHA, 840 Terrace North, Hagerstown, Md.

QSLS: 2-color, 150 for $2.00. Samples 10¢. Bob Garra, Lehighton, Penna.

QSLS-SWLS. Varicolored specials. Samples 10¢. Snyder, W9HIU, 113 Harrison, Jeffersonville, Ind.

QSLS! Modern designs and craftsmanship. Samples 10¢. Tooker Press, Lakehurst, N. J.

QSLS-SWLS. Samples free. Backus Press, 5318 Walker Ave., Richmond, Va.

QSLS-SWLS. Samples free. Bartinoski, W1VHD, Williamstone, N. J.

QSLS-SWLS. Cartoons, Rainbow, others. Reasonable. Samples 10¢ (refunded). Joe Harms, 225 Maple Ave., North Plainfield, N. J.

QSLS: New, different. Samples 10¢. Graphic Crafts, Rt. 12, Ft. Wayne, Ind.

QSLS of distinction! Three colors and up. 10¢ brings you samples of distinction. Uncle Fred, Box 80, Lynn, Penna.

QSLS-SWLS. High quality. Reasonable prices. Samples. Bob Teachout, W1FSV, 204 Adams St., Rutland, Vt.

CANADIAN QSLS! New designs, samples 10¢. Beynon, VE3WV, Collingwood, Ont., Canada.

QSLS-SWLS. 100, $2.85 and up. Samples 10¢. Griffeth, W3FSW, 1042 Pine Heights Ave., Baltimore, Md.

QSLS, SWLS. America's Finest!!! Samples 10¢. C. Fritz, 1213 Briargate, Joliet, Ill.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

QSLS. Samples free. Albertson, W4HUD, Box 322, High Point, N. C.

QSLS! Two colors, $2.00 hundred. Samples for stamp. Rosedale Press, Box 104, Asher Station, Little Rock, Ark.

QSLS "Brownie," W3CJI, 3110 Lehigh, Allentown, Penna. Samples 10¢; with catalogue, 25¢.

QSLS! Taprint, Union, Mississippi.

QSL-SWL cards, Sensational offer, Bristol stock 500 1 color $3.95, 2 color $4.95, 3 color $5.95. Super gloss $1.25 extra. Rainbow cards. Samples 10¢. QSL Press, Box 71, Passaic, N. J.

QSL samples. Dime, refunded. Roy Gale, W1BD, Waterford, Conn.

QSLS. Postcard brings samples. Fred Leyden, W1NZJ, 454 Proctor Ave., Revere 51, Mass.

QSLS-SWLS, as low as $1.50 per color. Samples dime. Stronberg, P. O. Box 151, Highland Station, Springfield, Mass.

QSLS-SWLS, Samples 10¢. Malgo Press, 1937 Glendale Ave., Toledo 14, Ohio.

QSLS. Nice designs. Samples. Besesparis, W3QCC, 207 S. Balliet St., Frackville, Pa.

FINE quality QSLs, 100, $2.75. Oscar Craig, Newark, Arkansas.

QSLS: 10% discount to back-logging eager beavers. 15 samples, "Super-Speed Specials," 10¢. Robinson, W9AVH, 12811 Sacramento, Blue Island, Ill.

QSLS. Distinctively different. Postpaid. Samples free. Dauphinee, K6JCN, Box 66009, Mar Vista 66, Calif.

DELUXE QSLs. M. Vincek, W2INT, 117 Center St., Clifton, N. J. Samples dime.

N. R. M. Wholesale Radio, 286 Teaneck Rd., Ridgefield Park, New Jersey. HU 7-0715, for National, Gonset, B & W, Bliley, Johnson, ICA, Eldico, Elmac, ARRL publications. Relays, Dow, Peterson xtals. Mail order also.

HAMFEST! Another Big Annual Affair for the Midwest hams, their families and friends. The Starved Rock Radio Club Hamfest, June 5, 1955. For details, see Hamfest Calendar or write W9MKS, Utica, Illinois.

XYL approved, the VS baby mobile antenna is beautifully chromed, only 4 ft. high. High Q, weatherproof plug-in miniature loading coils permit instant band changes. Top section resonates antenna to operating frequency. Becomes regular car whip when coil is removed. Perfect for 50-watt bandswitching transmitters. It's tiny but effective on all bands. Replaces regular cowl or fender broadcast whip. Easily installed in a few minutes. Coils available 75 thru 10 meters. With all mounting hardware and one coil, $12.95 ea. Specify band. Other coils, $2.75 ea. W6VS, Bill Davis, 225 Cambridge Ave., Berkeley 8, Calif.

2-METER aluminum Brownie beams, $22 and up. Write to H. W. Snyder, W3LMC, 4330 Glenmore Ave., Baltimore 6, Md.

600 Watt Deluxe transmitter, all band with HT-18 VFO microphone DE-TVI'd. Many extras. Write to VE3AUJ, 511 Peel St., Woodstock, Ont., Can.

NEW BD77 dynamotor: $17.50. Trade for a 2-meter converter. Cliff Moir, Rte. 4, Bath, Me.

WANTED: All types aircraft & ground transmitters, receivers, ART-13, RT18/ARC1, R5/ARN7, BC610E, BC221 mounts and parts wanted. Fairest prices possible paid. Dames, W2KUW, 308 Hickory St., Arlington, N. J.

CENTRAL ELECTRONICS 10A $99.95; Collins 32V1 $399.95, 32V-2 $495.00, 32V-3 $599.00; Deltronic CD-144 $99.95; Eldico MR-2 $39.95, MD-40P $39.95, TR-75TV $49.95, A-300 $19.95; Eico 145 $15.00, 221 $25.95, 315 $39.95, 320 $15.00, 360 $49.95, 425 $44.95, 950-R $19.95; Hallicrafters S-38 $34.95, S-40 $69.95, S-41G $24.95, SX-42 $179.95, SX-43 $129.95, SX-62 $250.00, SX-71 $159.95, S-72 $49.95, HT-17 $39.95, HT-18 $69.95; Lettine 240 $59.95; Meck Too-1 $59.95, T-60-2 $69.95; National HFS $99.95, HRO-M $99.95, NC-46 $64.95, NC-57 $69.95, NC-98 $119.95, NC-100X $75.00, NC-200 $79.95, SOJ-3 $17.95, SW-54 $34.95; other used items available; free list from CARL, W1BFT, Evans Radio, Concord, N. H.

WANTED: Your amateur or surplus transmitters, receivers, test equipment, especially ART-13, ARN-7, APR-4, BC-610, Teletype, 75A, 32V, ARC-1, TDQ, DY-12, BC-348, BC-342, BC-221, TS-173, etc. Cash, or trade for NEW Johnson Viking, Ranger, Hallicrafters, *Hammarlund*, Barker and Williamson, Elmac, Central Electronics, Morrow, Gonset, Telrex, Fisher, Pentron, Bell, National, Astatic, Vibroplex, Harvey-Wells. Write Alltronics, Box 19, Boston 1, Mass. Richmond 2-0048. (Stores: 44 Canal St., Boston, 60 Spring St., Newport, Rhode Island.)

FOR Sale: Meissner signal shifter. Late turret type. Used only a few hours building and testing a KW final. Looks new, $50.00. W7CPY, 837 Park Hill Drive, Billings, Montana.

FOR Sale: Complete station, Collins 30KI transmitter, 375 phone 500 c.w.; 310E exciter, bandswitching 80 through 10; Astatic D104 mike, NC-183D recvr, relays, spare parts, guaranteed perfect condition: $995 takes all. Not sold separately. W5HEJ, F.o.b. West Monroe, La. 205 Circle Drive.

FOR Sale: Meissner 150-B transmitter, 250 w. 813 final 1.5 to 12.5 Mc. converted to cover 10 m. and 20 m. bands. TVI filtered. Single switch on front panel, changes to 250 w. ssb final. Hear it on 75 mornings or week-ends. Price $250 with mike, key and spare parts. J. Taylor, W2OZH, Mt. Kisco, N. Y.

COLLINS exciter 310-B-1 coils and book: $200. H. Johnson, W1BGB, 25 Taylor St., East Longmeadow, Mass.

WANTED: Bandspread coils for HRO Sr. (or HRO5 or 7). Will pay cash or swap. Have for sale or for swap D104 mike with desk stand; Lettine 240 transmitter with all coils; Heath antenna tuner, Advance Elec. Relay 110v. co-ax relay. Frank V. C. Yates, K2DZS, 58 Wayside Lane, Trenton, N. J.

FOR Sale: Bassett Chamberlain cabinet trans. 200 W. out—c.w. fone; complete, in gud condx, with coils 10 to 80 m.; xtal controlled and instruction book: $125.00. Wm. Storrs, 133 Firth St., So. Plainfield, N. J. W2MMS.

BC-312, converted, speaker, hopped up 2nd det., worked 130 countries: $48.00. K2GNC, William Pfaff, R.F.D. 5, Huntington, L. I., N. Y.

SELL: Electro-Voice 210-S, SB carbon mike, $16; LW-61, 2 mtr. converter, $13. KN2IJT, Leone, 200 Park Ave., Medina, N. Y.

COLLINS 32V-3; in excellent condx and in original shipping cartons: $500. J. L. Hollis, W3WUQ, 9401 Saybrook Ave., Silver Spring, Md.

SELL: New, material cost only, cash-carry! 3 element 20-meter Midget beam, $22; pair each, FM power line carrier receivers, 25 watt xmitters, all for $300. J. P. Neil, 1567 College Ave., Palo Alto, Calif.

REAL Bargains! New and reconditioned Collins, National, Hallicrafters, Hammarlund, Johnson, Elmac, Barker & Williamson, Gonset, Morrow, Babcock, RME, Harvey-Wells, Millen, Meissner, Lysco, Sonar, Central Electronics — all others. Reconditioned S40A, $69.00; S40B, $79.00; S76, $129.00; SX71, $159.00; NC57, $59.00; NC98, $119.00; NC125, $129.00; HRO60, $189.00; HQ-129X, $169.00; SP400X, $259.00; 32V1, $345.00; 32V2, $445.00; 75A2, 75A3, Viking I, Viking II, Viking Ranger, HT9, NC183D, many others cheap. Shipped on approval. Easy terms. Satisfaction guaranteed. Write for free list. Henry Radio Stores, Butler, Mo.

EMERGENCY power for Field Day. Surplus 1000 volt @ 350 mils and 14 volt @ 25 amp. DC generators with attached relay control box. Can be driven from car motor or with a 1½ to 4 HP gasoline engine. Flexible coupling and spare brush kit included, only $14.95 f.o.b. Elkhart, Ind. Shipping weight 100#. Easco Communications Co., 2611 Goshen Ave., Elkhart, Ind.

COLLINS 75A3 receiver, in perfect condition: $445. A. H. Hardwick, W2YQ, 391 Tremont Pl., Orange, N. J.

FOR Sale: 6 Elmac 250TH, $15 each, 25 a pair; 5 Elmac 4-65-A, $10 each; 2 RCA 810s, $10 each, $15 a pair; 5 24-G, 75¢ each, $1.00 pair; Measurements Corp. pulse generator, Mod. 79-B, $40; Bendix aircraft xmitter, TA-12-B, $40; Bendix aircraft receiver, RA-10-B, $25; all tubes brand new, money-back guarantee. Selling out. Send for list. W4IUW Lemon, 3206 Oakdale Rd. S. W., Roanoke, Va.

VIKING II, $225; Viking VFO, $35; BC779 SuperPro with power supply, $75; Eldico Electronic keyer $15; BC-221-Q, $65; BC454 3-6 Mc. $10; HF 10-20, $45; plus many extras. Joseph Singer, W2RQJ, Hickory 6-0092.

FOR Sale: 10 dynamotors 6 volt in 425 volts at 375 mils outp., $19.00 each. Precision E400 sweep generator, $50. Robert D. Mersey, W2TXI, 118 Franklin Ave., Lynbrook, N. Y.

10 Meter mobile Motorola T-69-20-A w/ps, cables, $40; Tri-Band, Gonset converter, $25. Noise limiter, $5. All in excellent condx. W2EGQ, Reed, 329 Cook Ave., Middlesex, N. J.

SELL 3-element 20-meter and 8 element 2-meter Hy-Lite beams. W2LFB, Azzara, 13 Shepard Pl., Nutley, N. J.

FOR Sale: SLR 12-B Navy recvr, in gud condx (less spkr). Made by Scott Radio Lab. Best offer takes it. Zaval, K2AWX, 292 Riverdale Ave., Brooklyn, N. Y.

SELL: Lettine 240, $49. K2EGW.

FOR Sale: PE103A brand new, in original sealed shipping crate, $25. Also practically new Morrow 5BR-1 converter $50. Gerald Drake, W9RVD, 211 N. Cofer, Urbana, Ill.

FOR Sale: HRO complete with CE sideband slicer, in perfect condition, so guaranteed first $400. VFO-GO9 in cabinet with own power supply, most stable made. Freq. coverage cw/am- ssb. A steal at $100. W1CPI, 413 Ind. Bank Bldg., Providence, R. I., tel. DE 1-1317.

BC-348L modified 110 volt, $65, with speaker LS-3: $85. SCR-522 complete $50. K. Horton, 26 Sherwood Road, Stamford, Conn.

MODULATOR for 1 Kw final, pair of 811s, Class B; Thordarson multi-match transformer; metered relay rack panel; power supply for above, two 866As, time delay, metered, relay rack panel. Both in excellent condition: $100.00. W2RVD, 464 Jericho Turnpike, Mineola, L. I., N. Y.

$26 Worth of valuable radio parts for only $6! Here are a few of the usable parts you'll find in this Army Surplus power supply unit: 1 Ninety second time delay switch; 1 adj. pilot lamp socket assembly; 1 interlock switch, 125V AC, 12 amp; 1 filter cond. 1 μfd, 200 VDC; 1 filter choke, 2½ Hy. 2000 VDC; 6 rectifier tubes, #836, 5000 V 25 ADC; 1 aluminum case, black crackle finish, 8" x 5" x 19"; 2 tube sockets, P STD ceramic; 2 plate caps, ceramic fit 836, etc.; 2 terminal strips, 3 term. $6 each; 2 for $10. Cash with order or C.o.d. Army Surplus Outlet, 91 N. Second St., Memphis 3, Tenn.

RECEIVERS: transmitters, repaired and aligned by competent engineers, using factory standard instruments. Collins, Hallicrafters, Hammarlund, National. Our nineteenth year. Douglas Instrument Laboratory, 176 Norfolk Ave., Boston 19, Mass.

SELL: Eldico TR75TV and Eldico T100 w. modulator. Both $75. Going to higher power. Freeman, K2GZE, 196 Rockaway Parkway, Brooklyn, N. Y. Tel. DIckens 2-4219.

BC-221C with power supply for sale. Galbasin, WØMHN, 1801 Glen Moor, Denver 15, Col.

HAMMARLUND HQ129X for sale. Practically new and in perfect condition. Has the new HQ140X bandspread dial (covers the 15 meter band): $170. Instructograph (A.C.) with oscillator and ten tapes also for sale. Used very little and in excellent condition, $50. Want 75A-1 or HRO-50. Dave Smith, K2CHS, The Choate School, Wallingford, Conn.

FAMOUS 500W 813 rig A-1 construction as shown in Jan. '54 *QST* and ARRL Handbook at cost of parts: $175.00. W4AZU, 1713 Blanton Lane, Louisville 16, Ky.

SELL Or trade for complete ham transmitter: Motorola taxi base transmitter (FMTU 50B) and receiver (FMRU 16B) in operating condx. Write W1SAV, Box 23, Needham, Mass.

ENGINEERING Degrees, E.E. major electronics, earned through home study. American College of Engineering, Box 27724 (D), Hollywood 27, Calif.

FIXED Station: BC-459 modulated, complete with 400 volt 300 mill pwr supply; Hallicrafters Super Sky Rider recvr. Will sell both for $150 or trade for mobile equipment. Sam E. Lack, W5DOE, Box 218, Oakdale, La.

WANTED: 2-meter transmitter, converter and pwr supply. Jim O'Connell, 4224 Bobolink, Skokie, Ill.

COLLINS 32V-3 and 75A2A with factory installed mechanical filter; 8B1 xtal calibrator, 148C-1NBFM adapter installed, both 3 Kc and 800 cycle filters included, plus speaker: $1432 value factory tested and like-new. Best cash offer. F.o.b. accepted. Write or wire Charles W. Boegel, Jr. WØCVU, 1500 Center Point Road, N.E., Cedar Rapids, Iowa.

SALE: Heathkit AR-2 communications receiver, factory aligned, cabinet practically new: $25. Dr. Solomon, 41 Westbrook Lane, Roosevelt, L. I., N. Y.

SELL: Hallicrafters SX-25. First $80 takes it; Gonset Mobile VFO, $15. W9TRK/Ø, Box 734, Carleton College, Northfield, Minn.

TRADE new Crown antenna rotor and like-new Philco pocket Oscilloscope for clean Lettine 240 or Globe Scout. Must be in very gud condx. Bruce C. Vaughan, W5H1X, Springdale, Ark.

SELL: 60-watt phone transmitter; 807 final mod. with pair 6I6s, AB2, xtal osc. with 2 doubler stages; 40-meter xtal and coils for 10 meter output furnished, rf and audio on same chassis: $30; power supply for above transmitter, 600V, 300 Ma., 6.3V, 6A, uses pair 866As: $22.50. Both transmitter and power supply very neatly wired and used very little. Used 1200-0-1200V, 300 Ma., power transformer, $12.50; new Astatic JT-30 mike, $5.00; new Heathkit AO-1 audio oscillator, $17.50; new Heathkit T-3 signal tracer, $17.50; new Heathkit SG-8 signal generator, $15.00. All neatly wired and in perfect condition. New Bud CPO-128A Codemaster, $10. No trades. All inq. answered. W5LFB, W. L. Cook, 1614 Morson Rd., Jackson 9, Miss.

MEISSNER 150-B; VFO, 275w. phone, 80/10 mtrs. Many extras. Used 200 hours: $275; Hallicrafters SX-25, $75; "Mark II" mobile transceiver, new, $75. W3MCO, Trumper, 155 Summit, Bala-Cynwyd, Penna.

BARGAINS: With new guarantee: R-9er, $12.50; S-72, $59.50; SW-54, $35.00; S-38C, $35.00; S-40B, $79.00; Lysco 600S, $139.00; S-27, $99.00; SX-43, $129.00; S-76, $149.00; SX-71, $179.00; SR-75 Novice transceiver, $49.50; SX-42, $189.00; HRO-50, $275.00; Heath AT-1, $25.00; HT-17, $32.50; Meck T60, $49.00; Globe Trotter, $49.50; Harvey-Wells Del.uxe, $79.00; Viking I, $209.50; Viking II, $259.00; New SS-75, $189.00; early HT-9, $139.00; Globe King 400B, $359.00; 32V1, $395.00; 32V2, $450.00; 32V3, $550.00. Free trial. Terms financed by Leo, WØGFQ. Write for catalog and best deals to World Radio Laboratories, 3415-27 West Broadway, Council Bluffs, Iowa.

SELLING new, unused Telrex beams: 5-E-20-15 M; 6E-10M. Box 62, Brooklyn 12, N. Y.

FOR Sale: 500W phone transmitter; Bud rack panel; PP 100TH final; 100TH buffer; VFO, name brand components; extra tubes; Thordarson, RCA, UTC transformers in 5 power supplies; 10 and 20 meter coils. Priced to sell. W5MBP, Roberson, Jr., Box 293, Terrell, Texas.

SELL: PE-103, 807 mobile xmittr, mike, Motorola recvr, all cables. Need Meissner signal shifter. Gardner, 5333 Waterman St., St. Louis, Mo.

FOR Sale: NC-125 receiver with matching speaker, year old; maritime transmitter modified for broadcast use, meters, Command transmitters and receivers. W. Rathje, WØESM, Grand Mound, Iowa.

HEATH AC-1 antenna coupler, wired $10. Johnston, W3TDZ-809 Hampshire, Drexel Hill, Penna.

FOR Sale: Lettine 240 transmitter; Vibroplex Lightning Bug De-Luxe. W1UFZ, 3 Alder Lane, Burlington, Vt.

SELLING Klienschmidt tape perforator with case and rectifier: $150; GO-9 transmitter, 3 to 18 Mc., built-in temperature compensated VFO; pi network output, 803 final; matching 500 w. power supply: $125.00. Ernest Hufnagel, 11 Post Road, Pompton Plains, N. J.

SELL: Bud VFO-21 coils for 10, 20, 40, 80. Best offer over $20.00. WØNVI, Orville Braaten, 406 E. 9th, Morris, Minn.

SELL all or part; make offer: two Bliley 500 kc. xtal type BC; two Westinghouse meters 0-10 amps, R.F.; Navy LM frequency meter with modulation; in gud condx, no book; BC453-B. A. Holzmiller, 423 McElroy Rd., Mansfield, Ohio.

METERS: Two 5 ampere, radio frequency ammeters, jewell make, $8.50 each; one 0 to 500 DC milliammeter, jewel make $7.50. All are used, but in A-1 condition. Nat G. Scott, Myrtle, Miss.

FOR Sale: Mobile rig, complete; Stancor xmittr, PE103, 2BR conv., mike, cables, whip, $85.00. Alexander Amato, W8SKT, 5980 W. 130th, Cleveland 30, Ohio.

LYSCO 600, excellent: $80.00, less shipping costs. W8OZL, Simmons, 338 W. Walnut, Ashland, Ohio.

HALLICRAFTERS S-36, in exc. condx: $70.00; 2000 VCT 200 Ma. Chicago Transformer, $10.00. Ben Logan, W8LUW, LeRoy, Ohio.

WASHINGTON Area: High power phone/c.w. rig: 3000V 650 Ma.; power supply: 4-250A final, completely protected with relays and special circuits. TVI suppressed; NC-173, HF 10-20, frequency standard, 61 ft. Vesto tower, rotator, synchros; big 20-meter beam, many other components. All priced for a quick sale. Cdr E. P. Bonner, USN, W4MXP, JE 3-7862, Falls Church, Va.

BUILDING UHF xmitting station. Desire second hand equipment in good condition. Write to Alex Paleogos, 144–64 Sanford Ave., Flushing 55, L. I., N. Y.

WANTED: Heathkit Q meter, Millen grid dipper and 300 watt Multimatch modulation transformer. Larry Kleber, Belvidere, Ill.

FREE List: Miscellaneous equipments, tubes, transformers, capacitors, etc.; Seidman, W2GNZ, 1535 Longfellow Ave., Bronx, N. Y.

SELL Or trade: 1955 Automatic Rolleiflex Tessar f 3.5 lens; Rolleiflex BC flashgun, 35 mm. adaptor, 6 Rolleiflex filters, Rollei closeup lens, sets 1 and 2, and lenshood. Need: HRO-60 or 75A3. W5LAK, c/o Mrs. J. L. Garrett, Loganville, Ga.

FOR Sale: Teletype Model 26 and 12. Some 15 parts. Navy FRA teletype terminal. W6III, 310 No. Rural Dr., Monterey Park, Calif.

SELL Or trade: New unused Harvey-Wells VFO. Want G.D.O., 810's or what have you? WØSVA, Rosellini, 2619 So. Gaylord, Denver, Colo.

FOR Sale: NC-183D with speaker. Excellent condition: $275. Will deliver within 40 miles. Harry E. Cudney, Jr., W2KNQ, R. D. Hewitt, N. J. Phone Upper Greenwood Lake 77–2192.

WANT to buy reasonably priced HQ129X; RME-70, HQ120X or similar receiver. Sell: Jackson CRO-2, "color TV" oscilloscope, brand new condx: $169. WØZHJ, Kirkman, 2444 Dee, Lincoln, Nebr.

SELL: SX-71 with speaker, $160; HT-18 VFO, $60, gud condx. Henke, W9FCF, 1503 7th St., Wausau, Wis.

SELL: Collins PTO 70E-7, W6VS all-band mobile antenna, GR decade box, beam rotator, selsyns, teletype perforator. Long list for a 3¢ stamp. W9ERU, 2511 Burrmont Rd., Rockford, Ill.

SELL: Millen grid dipper, $40; BC-221, $75; Heathkit audio generator, $20; Dumont 5" oscilloscope, $60; Gonset Triband with motor rcvr, $35; Motorola 10-meter xmitter with mike and all cables, $40. All equipment in new condition. E. C. Zamber, 633 N. Penn, Indianapolis, Ind.

ATTENTION VE Hams! For sale: Telvar T-60 xmittr, 60 watts input; 80 meters through 10 meters, with 'phone and c.w. and in gud condx, no scratches: $110.00 f.o.b. Kearney, Ont., Canada or best offer. No trades! John Somerville, VE3DJI, Kearney, Ont., Can.

SALE: All new condition with instructions: Gonset Super Six $38.00; McMurdo Silver 701 xmttr 80 to 6, all coils: $35.00; Waterman S11A industrial 'scope (list $142), $70.00. H. I. Griffiths, 39–82 65 Place, Woodside 77, L. I., N. Y.

SELL: BC696, $10; Command 160m VFO, $10.00; BC458, $4.00; 4-65A, $10.00; Want: R9er, Electronic bug. WØIUB, Harmon, 5019 Gramar, Wichita, Kansas.

FOR Sale: Kilowatt xmitter: pr. 250TH final; 810s in modulator; 813 driver; VFO controlled-exciter; wonderful speech amplifier inc., sep. pwr supplies each stage; coils for 10–20–40; Variac, overload relays throughout; worked 80 foreigns one year with 47 confirmed; TVI suppressed, a complete rig for $900, or best offer. 2000 volt at 300 mills pwr supply, $50.00; pair new JAN 4-1000A xmttg tubes with fil. trans, $75; pr. UTC smoothing and swing choke, 3KV 1 amp, new, $30; new ARC-4 transceiver $25; BC669 transceiver for 75 meters, $35; Westinghouse dynamotor 410 volts @ 275 mills, $12.50; BC306A ant. tuner, $5.00; any reasonable offer considered. S. Ades, W3WQN, 9700 Marshall Ave., Silver Springs, Md.

VERTICAL antenna for 20–40–80M, all material and information included: $59.50. No C.o.d. El Cajon Electronic Engineering, 720 So. Johnson Ave., El Cajon, Calif.

SELL: New BC-348P and LS-3 speaker and dynamotor, converted for 110 v. Guaranteed perfect: $80.00. Archie Foster, Colton, N. Y.

FOR Sale: Tecraft cascode 2-meter converter. Output 14–18 Mc. In gud condx. Complete with tubes and xtal: $25.00. Philip Mooney, WN1CZR, Waterbury, Vt.

SALE: Sonar 100w. phone 120w C.W., all-band, newest model, factory-wired transmitter and power supply with VFO and filter. Best offer over $175. Sonar 3-band mobile receiver 20, 10 and 75, complete with filtered Mallory Vibrapack, new condx, $60.00; National NC-125 receiver with speaker, $125.00, new condx. Herb Holzberg, W2FCI, 125 Hobart Ave., Rutherford, N. J. Tel. WEbster 9–1101.

FOR Sale: New Viking Ranger, HQ-129X, like-new, with matching speaker: $350.00 for both f.o.b. Lexington, Ky. Will accept Leica 111F or late model Rolleiflex in trade. W4JFB, Congleton, 1244 E. Cooper Drive, Lexington, Ky.

SELL: TBS50C Bandmaster Sr.: $50.00; Morrow 2BC converter, $25.00; Gonset 10–11, $12.00; Knight factory-wired VTVM, $16.00; BC1206, $5.00; Stancor 120 watt A2908 Mod. xfrmr, $10.00; 2 Thordarson 700 mil T15C56 chokes, $7.00 each; converter 6V dc in-110 v, 60 cycle, 25 KVA outp., $7.00; 3 dynamotors, 6V dc inp. 250 V 60 mils outp. 6 V dc inp. 250 V 140 mils outp. and 12V dc inp. 680 V 210 mils outp. Make an offer. W9GBS, Schachte, 6020 N. Neva, Chicago 31, Ill.

FOR Sale: New and used Gonset mobile equipment, also two and six-meter Communicators. R. T. Graham, W1KTJ, P. O. Box 23, Stoneham, Mass. Tel. ST: 6–1966.

WANTED: SX-28A receiver. State price and condition. W8AKY, Kelch, 2857 Ambler Ave., Cleveland, Ohio.

FOR Sale: SX-16 newly aligned and tubed, excellent condx: $55.00; matching hi-gain Browning pre-selector 1.7 to 39 Mcs., $15.00. Both units, $68.00. Gordon 1 KW antenna switching relay, new, $7.00; PE-94, $1.50; 3½" DB meter, new, $4.00; Mallory Vibrapack 12v. input 300v. @ 100 Ma. output, $8.00; Weston Laboratory a.f. output voltmeter, Mod. 687, new, $20.00. First check buys. All shipped postpaid except rcvr and PE-94. Spencer Tucker, W2HLT, 51–10 Little Neck Parkway, Little Neck 62, L. I., N. Y.

FOR Sale: 600 watt conservatively rated xmitter in Bud deluxe 66" cabinet, using 4-250 A final into antenna tuner, Class B modulated by pair of 838s. Separate pwr supp. for final and mod. All TVI suppressed with Collins 310B1 as remote driver unit. Will sell amplifier modulator unit without Collins 310B1. Can be converted to high power line for SSB. Any reasonable offer will not be refused. Sil Thompson, W5BUF, 6460 Vicksburg St., New Orleans, La.

FOR Sale: Viking Ranger, $175.00; TBS-50C with power supply, $65.; P.P. 813 final 10–20–75 meter coils. Cost $175 to build as per 1952 Handbook. Sacrifice for only $85.00. Sonar low pass filter LP-7, $10.00. Frank Harrington, W1ERX, 34 Emerson St., East Norwalk, Conn.

FOR Sale: Complete 130-watt xmittr, 'phone/c.w.; 6146s final, 807s mod.; pi-net, bandswitching 80–40–20, xtal VFO, spare tubes. In 17" Bud cabinet, and in excellent condx: $110. New BC375 mod. xfrmr, $2.00; Heath resistor and condensor substitution boxes, $3.50 each. JT-30 mike, $8.00; W5GXH, Gordon, 520 So. Second, McAlester, Okla.

NOVICES! For sale, AT-1, $22.00; hot AR-2, $35.00. Thiele, W8RBW, 14006 Ardenall, Cleveland 12, Ohio.

SELL: 32V1 and 75A2, both in excell. condx: $325.00 each. Saltus, K6AVF, 9251 Carthay Circle, Spring Valley, Calif.

SELL: RT-19/ARC-4 complete unit, $30. John McLaughlin, 405 S. Hartwell Ave., Waukesha, Wis.

FOR Sale or Swap: Eastman Kodak 16mm silent movie projector, $35; Castle Films, $5 each; General Electric LB-530 portable radio, $35; Consumer's Research triode amplifier, $25; Pickering 230-H preamplifier, $17.50; Garrard RC-65 record-changer, GE cartridge, $15; Motorola car radio, control head, cables, $12.50. All guaranteed in exc. condx, priced f.o.b. V. R. Hein, 418 Gregory, Rockford, Ill.

2-Meter beams; 6 element, horizontal or vertical, all seamless aluminum, $6.95 prepaid. Wholesale Supply Co., Lunenberg, Mass.

TRADE: two new, coin-operated Popperette vending machines in factory-sealed cartons; automatic popping and dispensing of popcorn. Money-makers for stores, service stations, drive-ins, taverns. Cost $990. Trade for high quality transmitter and receiver. W9EFV, Graham, 419 So. Oakwood, Angola, Ind.

DELUXE KW rig, all bands $500; Deluxe exciter $150.00. Deluxe mobile rig, 3-band, VFO automatic bandswitching, complete, $150. Don M. Lidenton, 701 Poplar St., Poplar Bluff, Mo.

WILL Pay $150 for good clean AN/ARC-1 20-channel preferred. Also BC-610E, BC-614E, BC-939, BC-729, BC-221, TCS and others. Cash for Sig. Corps, Navy, Air Force stock catalogs; maint. and instr. TM's for war surplus equipment. Amber Co., 393 Greenwich St., N. Y. 13, N. Y.

FOR Sale: HRO-60, coils A, B, C, D; in perfect condition, in original carton. R. E. Ridenour, 839 Wildwood Parkway, Balto. 16, Md.

PRACTICALLY new Eldico TR-1TV xmtter; 300 watts fone/c.w., TVI suppressed. What am I offered? All inquiries answered. Sapora, 916 West Charles, Champaign, Ill.

EUROPEAN Bargain! Sell splendid all-band KW amplifier, two 4-400 final, two 250TH modulators, 3 power supplies, best parts, beautifully built in 6 ft. enclosed commercial cabinet, worked 140 countries in one year. Will sacrifice at price of $490, time payments or cash. Lt. Col. Lloyd Colvin, DL4ZC, 4th Signal Group, APO 403, Heidelberg, Germany.

FOR Sale: BC-348-R 110VAC, $65; Hallicrafters SX-25 with matching speaker, $65. All in excellent condx. All inquiries ans'd. F.o.b. Birmingham, Ala. James Johnson, W4KPU, 301 Crest Dr., B'ham 9, Ala.

VIKING II and VFO, in perfect condx: $250. Marcel Valois, W5FYC, Box 488, Covington, La.

FOR Sale: Viking II with VFO: $260. Used less than 25 hours. G. E. Driscoll, W9RHE, 6920 N. Medford, Chicago, Ill.

SELL: 32V-3, like new, $525; Teletype TG-7-B (Mod. #15) complete; 75A-2, Dumont #241, HRO, NC-100, 12,000 ohm dpdt relays, Model 12, 26, 21A teletype. Tom Howard, W1AFN, 46 Mt. Vernon St., Boston 6, Mass. Tel. RIchmond 2–0916.

SACRIFICE because of sudden total deafness, new 75A3 with mech. filter, 32V1; BC1016 ink tape recorder; Panadaptor, $750 all or sell items separately. Claude Sweger, 16 Buccaneer Drive, Corpus Christi, Texas, WØBTV.

FOR Sale: McMurdo Silver 906 signal generator: $25; National HFS recvr with power supply: $75; BC610 HV plate transformer: $50. Will ship anywhere. W. Wehe, W6VZB, 16080 Cambrian Dr., San Leandro, Calif.

FOR Sale: Fascinating selection of radio, radar, transmitting, receiving and ham gear sold by the piece or by the pound. Step in, browse around and make some real buys. L. Katz, 2901 W. 37th St., Brooklyn, N. Y. Tel. ESplanade 2–3766.

BARGAINS: KW power supplies and components; SSB builders note! Xfrmers, chokes, condensers, 6 ft. cabinet, $15; 2 smaller ones, Variac 110/220, prop pitch with selsyns and cable, $20; commercial rotator with control box, selsyns, $40; mod. xfrmrs 500 and 125 watt, Q5'er, $12; 805, 810, 833A, 450, other items too numerous to mention. State your needs. All top quality gear. W7NRB.

WILL sell or trade for good rcveiver: ½ KW xmittr with power supplies; VFO bandswitching exciter, 813 final; surplus Command xmitters and rcvrs for 80 and 40; pp 35T final with spare tubes; surplus TU's. No reasonable offer refused. K6CIM, Farrand, 2490 Middlefield, Palo Alto, Calif.

COLLINS 32V3 xmittr, like new, $525; PE103 dynamotor, like new, $25; Stancor P-6315 power xfrmr, new, never used, $7; Stancor A-3893 polypedance modulation xfrmr, $6, new, never used. Don DeShazo, Jr., W9BVC, 529 Blackstone Ave., LaGrange, Ill.

TV camera and xmttr: RCA type CRV-59AAA, ideal for ham or closed circuit TV. Never monkeyed with. Original cost $225. Best offer accepted. R. T. Tucker, 2175 N. Star, Columbus, Ohio.

SELL: National HRO-50, in excellent condx, $235; Viking Mobile xmttr, also exc. condx: $65. Wendell Kollen, W8LEO, Rte. 3, Holland, Mich.

75-WATT c.w. bandswitching (160 through 10) transmitter kit, $59.95. Includes socket for external modulator. Hart Industries, 467 Park, Birmingham, Michigan.

SX-71 for sale, like new. Best offer. Going away to college. William Ross, W4VES, 28 Prospect, Berea, Kentucky.

WANTED: 160-meter bandspread coils for FB7. Shiels, WJOKP, 584 Ardmore Blvd., Wilkinsburg, Penna.

ELDICO TR-ITV, with antenna tuner and VFO, 3 months old, $375. Globe King, 400B with coils for 80, 40, 20 and 10 meter bands; spare V-70D's and 5514s, and 300 ohm low-pass filter, $350. Bryson Lowman, W4TTH, 1009 Northwood St., Columbia 2, So. Carolina

MEISSNER VFO unit, 25 watts on all bands, TVI suppressed, complete manuals. K2GFQ, 76 Hewlett St., Rye, N. Y.

"DANGER High Voltage" attractive sign for transmitter or wall 7" x 10" baked enamel on 30 gauge steel, $1.25, shipped prepaid. No C.o.ds. Ferth's, Box 37, West Hempstead, L. I., N. Y.

COLLINS 310B-3, like new, no changes, little use by single owner. In original carton with manual: $200. R. B. Parker, 38 Ayer Lane, Harwichport, Mass.

WANTED: All tubes, transmitting, receiving, industrial and microwave. Surplus equipment, receivers, transmitters, standard electric timers, test equipment. Tube checkers, Hickock, any condition. Will buy, sell or trade for standard or surplus. Your best deal is with "TAB", 111 Liberty St., N. Y. C., N. Y.

WANTED: Side-swiper key. "Pete" DeKing, Jr., Luverne, Minn.

WANTED: LM frequency meter manual. Please give number and price. R. H. Strid, W1RUU, 234 Washington, North Easton, Mass.

HAVE S-40B rcvr, TR-75TV xmtr (factory-wired); Instructograph (with self-contained oscillator, elec. motor, 10 tapes); J. C. Higgins Model 50 30.06 rifle with 4x 'scope and case. All above in like-new condition. Want factory-wired Viking IIxmttr, with Viking VFO and Matchbox in same condition. How will you trade? R. J. Hochhalter, W7UTL, 3180 Lawrence, Salem, Oregon.

FOR Sale: Harvey-Wells TBS-50D and APS-50, never used: $95. Jack Mowry, 2164 Oakdale, Cleveland 18, Ohio.

MOBILEERS! Send now for your free copy of Mobile Antenna Design. We cater exclusively to supplying the needs and answering the problems of the mobile ham. Write to Skyline Electronics, Ham Division, 5835 W. Chicago, Chicago 51, Ill.

COMPLETE Station sale: KW transmitter, complete with power supply, coils, tubes, contained in three matching, heavy-duty steel cabinets stocked on roller base; modulator and final both having pair of 304TLs, five meters plus built-in Lambda modulation 'scope; Supreme AF-100 transmitter, AM-1CW-FM-VFO-xtal with 4-65A final used as exciter; Astatic T-3 mike; SX-42 rcvr with matching speaker; BC-221-N converted frequency meter; Gonset converter; Ereco beam rotator; Instructograph with 11 tapes; BC-342-M receiver with LS-3 speaker; metered heavy-duty line transformer; Variac, coax cable; extra tubes. All for $600 cash and carry. W4VMP, Linder, 5515 Danley Lane, Richmond 28, Va.

MUST make room for new offspring. All equipment purchased new in the last six months. Central 20A, factory-built, HQ140X, sideband slicer A, and BC456 VFO converted by Central. All or part. Paul E. Stone, W9BFX, 518 Congress St., Green Bay, Wis.

WANTED: RME-45 and DB22A and VHF152. Can use an RME 43 or RME50. Have for sale base reflex cabinet. C. Gerst, 2674 W. 25th St., Cleveland 13, Ohio.

FOR Sale: SCR522 converted 2 meters. Everything but antenna ready to go: $40; Amtran KW xtrmr $40; Millen 90700 VFO, $20; 90800 with coils, four bands, $22.50; KW final pp 813s, coils four bands, $40; other gear. Write to Wicht, W5FGE, Hattiesburg, Miss.

COLLINS 32V-3 in original carton: $500; factory wired Multiphase 20A with QT-1, $225; Elencor PA-400SSB amplifier: $200; Harvey-Wells TBS-50D, $75; RME-MC55 converter, $42; brand new T-126/ARC-5 2-meter transmitter, $25. W1RMS, Oser, 198 Euclid Ave., Waterbury, Conn.

FAMOUS DXCC transmitter for sale in 2-66 inch Par-Metal racks; 1 KW input. 810-S push pull final. 805-S class B modulators; Stromberg-Carlson speech amplifier; Millen exciter and oscilloscope; high voltage power supply Variac controlled. Transmitter used on 10 meters. Can be used on 15 and 20 by installing proper coils. Also extra tubes. Cheap! D. W. Keefe, W2MFS, 37 Highridge Road, Hartsdale, N. Y.

FOR Sale: Lysco 600 $100, Harvey-Wells TBS-50D, $85; VFX-680, $20; SOJ-1, $15. All in gud condx; Carter Genemotor 6v in., 400VDC, 375 Ma. outp., new, $30. All F.o.b. Louisville. Misc. small parts. List for self-addressed, stamped envelope. W4YDN, Art Crain, Jr., 105 Seminole Crt. Louisville 8, Ky.

SELL: National 183-D with matching speaker, $235; Gonset 2-meter converter with noise clipper, $25; Viking VFO $25. All in exc. condx. W2ULS, GI4-3219, Ridgewood, N. J.

SONAR 2-meter rcvr, $30.00; Sylvan crystal-control 2-meter converter, $25; Navy model HRO recvr, 5 sets coils, with power supply in rack mounting, $50; McElroy tape puller and four 1600 ft. reels of code tape Candler System, $25; 2-meter 4-el. beam, $6.00; 8-el. beam, $10. Sundry parts. Send for list. 522 recvr converted, $15.00; Saul H. Schachet, W2HNG.

SELL: 500-watt deluxe SSB transmitter in cabinet rack. Five illuminated meters behind glass panel. Lattice exciter, voice control, VFO, pi-network final, by-passed for TVI suppression. Details on request. $350, crated. Also walnut operating desk, p. 495, 1952 Handbook, $35. W4HAV, J. A. Fulmer, 55 Vernon Lane, Ft. Thomas, Ky.

WANT: Policalarm M-51; low or hi-freq. handie-talkies; Eldico EE-2. Ed Howell, W4SOD, Lerton, N. C.

SELL: HT-9 xmitter, all band. In excellent condx. 150W c.w., 130W 'phone. Very effectively TVI-suppressed. With manual, $125. Home brewed, PP812s, 300W 'phone and c.w. xmitter in 6 ft. rack; R. F. section needs TVI suppressing. Make offer. Drake low pass, $6.00. Locals preferred. W2NHV, D'Onofrio, 26 Eaton Road, Hicksville, L. I., N. Y. HI 3-6417.

HIGH Q, all band antenna coils for center-loaded mobile antennas. 10-80 meters. Tapped on both ends for ⅜" studs. Price: $7.95: Universal Measurements Co., 44110 Heaton, Lancaster, Calif.

SELL: Elincor lo-meter beam, 50' of RG8U, rotator and wire, chimney mount: $40. WØMSB, Pass, 33 Briarcliff, Clayton, Mo.

SELL: Globe Scout mod. 40-A, with Lysco mod. 382 V.R. VFO. Like new, $95. Fred Kurz, W9VTQ, 2711 W. 29th St., Zion, Ill.

LOW loss open wire line antennas for all ham bands, complete kits $4.95 and up, or completely assembled extra, by antenna experts, 35 years' experience. "Antenna Joe" Gibbons, K2EF, 18 Liberty St., Port Jervis, N. Y.

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FOR Sale: QSTS complete from first issue through 1940. Personal collection of late A. A. Hebert, W1ES, ARRL Treasurer. Bound in volumes, first-class condition. Includes special issue selling ARRL bonds after War I. Make offer. Write Secretarial Dept., ARRL Hq.

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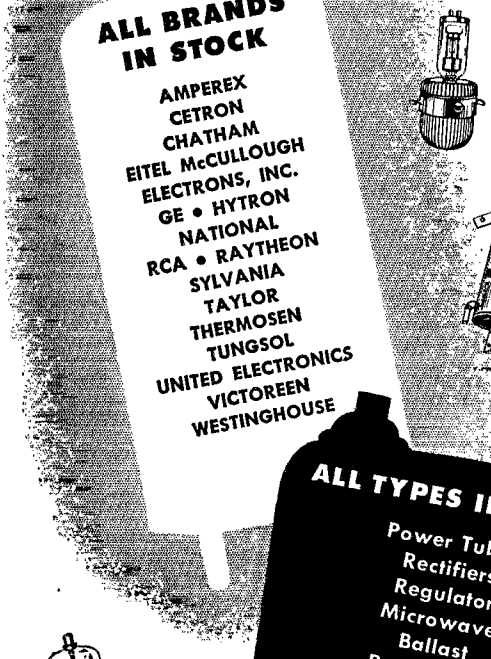

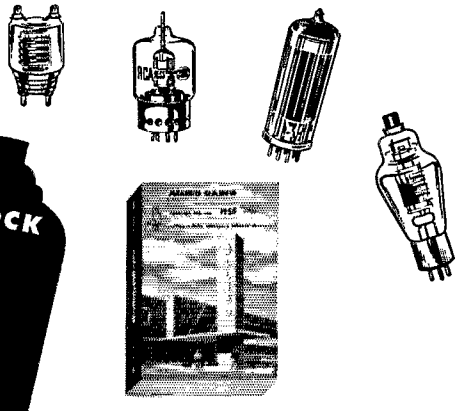

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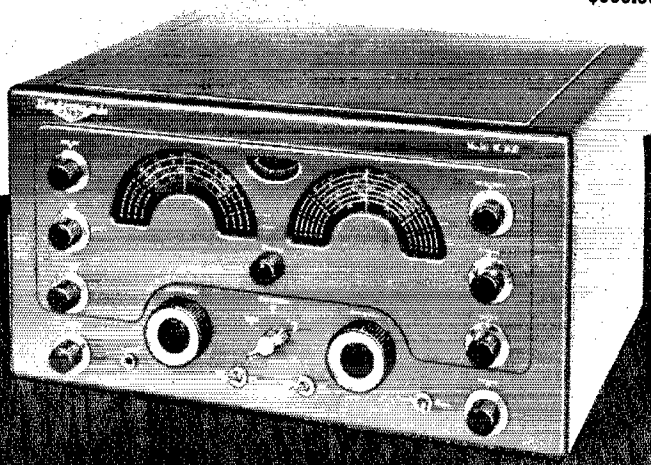

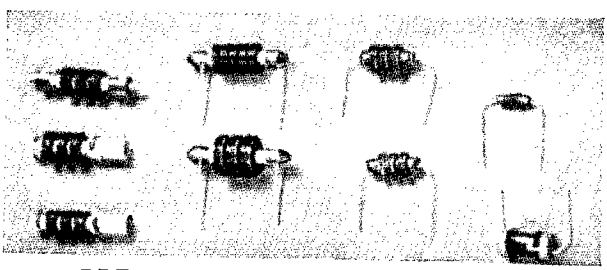

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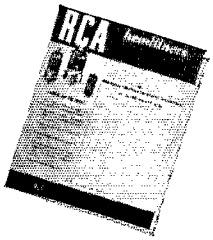

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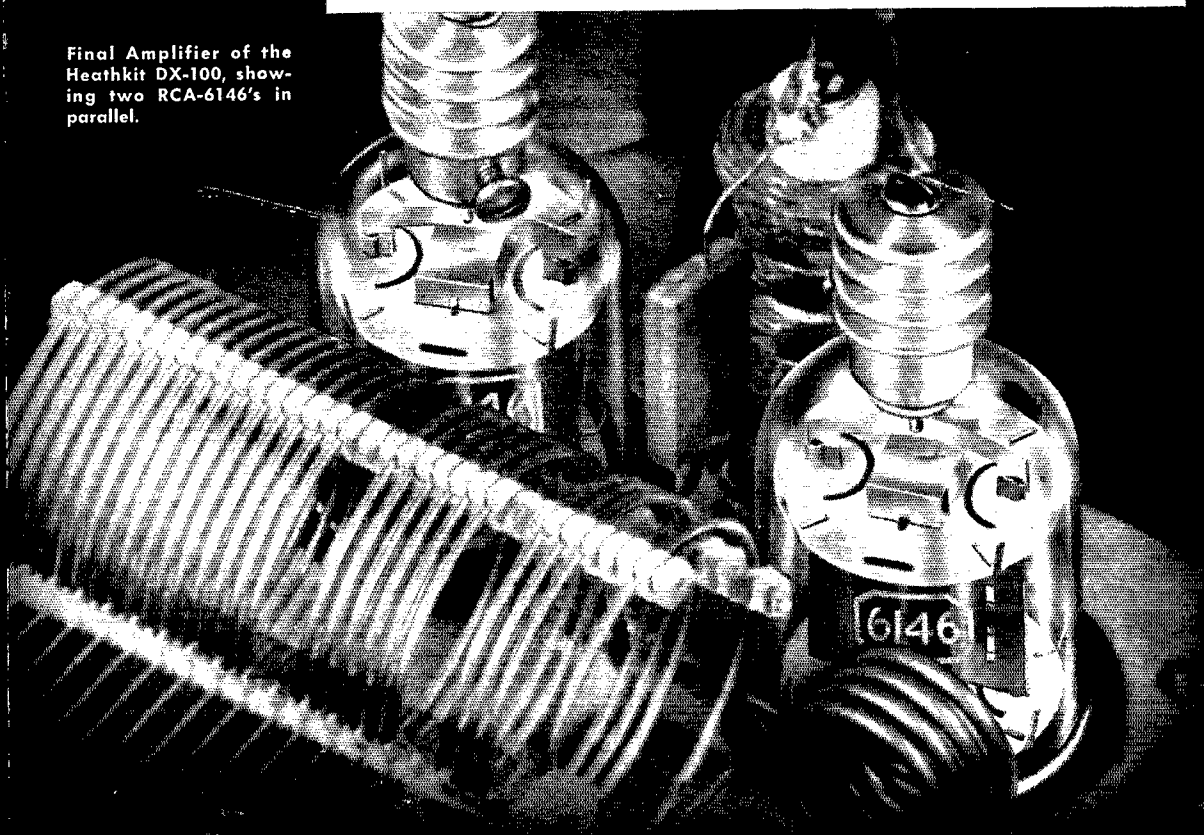

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